2nd GRF One Health Summit 2013
17–20 November 2013 • Davos • Switzerland

ONE HEALTH
ONE PLANET ONE FUTURE

Programme
&
Short Abstracts

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CHAIRMAN’S WELCOME

On behalf of my staff, I am very pleased to welcome you to Davos for the 2nd GRF One Health Summit 2013, and I would like to thank you for joining this global symposium.

The deliberations and discussions of the GRF One Health Summit Davos 2012 on “One Health, One Planet, One Future: Risks and Opportunities” have shown that One Health has evolved to a broad and holistic paradigm that addresses and frames the complex interactions between human health, livestock, pet and wildlife health, climate, ecosystems, agriculture, food systems and human development. It includes aspects of nutrition, agriculture, the safety and security of food supplies, environmental stewardship and the management of natural resources, water, energy, and ecosystems services, as well as questions of awareness, behaviour and learning, governance, economics, and disaster preparedness. Keeping in mind that more than half of the worldwide population is living in urban areas and rural exodus continues to grow; One Health may become a crucial approach to successfully cope with all the drivers and consequences in urbanization dynamics.

Recently, One Health has begun to move beyond the status of a mere concept to become a truly global movement at the interface of science, society, policy and practice. It is deeply interdisciplinary and cross-sectorial and provides a fascinating, powerful framework that a variety of professional communities and social groups can adhere to.

Our best hope is that the One Health paradigm will be helpful in reversing the worst of current problems at the human–animal–environment and development interface thus fostering a more sustainable way of life on Mother Earth.

Davos, November 2013

Dr Walter J. Ammann
Chairman, 2nd GRF One Health Summit 2013
President, Global Risk Forum Davos
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• **Kurt Zuelke**, Director, Australian Animal Health Laboratory, East Geelong, Australia
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- Academia Raetica, Davos, Switzerland
- Animal Health Australia, Canberra, Australia
- Association of qualified nutritionists Switzerland, Bern, Switzerland
- Beijing Normal University, Beijing, China
- CK Care AG, Davos, Switzerland
- Center for Refugee and Disaster Response, Johns Hopkins Bloomberg School of Public Health, Baltimore, USA
- Commonwealth Scientific and Industrial Research Organisation (CSIRO), Clayton South, Australia
- DesertNet International, Hamburg, Germany
- Swiss Federal Institute of Aquatic Science and Technology, Eawag, Dübendorf, Switzerland
- H + Die Spitäter der Schweiz, Bern, Switzerland
- Institute for Biosecurity (IBS), Halle, Germany
- Integrated Risk Governance Project (IRG-Project), Beijing, China
- Maastricht University, Maastricht, The Netherlands
- Northumbria University, Disaster and Development Centre, Newcastle-upon-Tyne, United Kingdom
- Periperi U, Universiteit Stellenbosch, Stellenbosch, South Africa
- One Health Initiative, Sarasota, USA
- SAFOSO AG, Bern, Switzerland
- Santésuisse, Solothurn, Switzerland
- Southern African Centre for Infectious Disease Surveillance (SACIDS), Sokoine University of Agriculture, Morogoro, Tanzania
- Swiss Academy of Medical Sciences (SAMS), Basel, Switzerland
- United Nations University, International Institute for Global Health (UNU-IIGH), Kuala Lumpur, Malaysia
- University of Canberra, Faculty of Health, Canberra, Australia
- University of Franca, Franca, Brazil
- VETSuSSE Faculty, University of Bern, Department of Clinical Research and Veterinary Public Health Institute, Bern, Switzerland
- World Society for the Protection of Animals (WSPA), London, United Kingdom

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### Programme Overview

#### Date: Sunday, 17/Nov/2013

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<thead>
<tr>
<th>Time</th>
<th>Event</th>
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<tbody>
<tr>
<td>3:30pm</td>
<td>Opening Ceremony</td>
<td>Aspen</td>
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<tr>
<td>4:35pm</td>
<td>Honorary Lecture: Addressing Health and Environmental Linkages: Key to Sustainable Development</td>
<td>Aspen</td>
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<tr>
<td>5:15pm</td>
<td>Prof. Dr. Her Royal Highness Princess Chulabhorn MAHIDOL, President Chulabhorn Research Institute, Bangkok, Thailand</td>
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<tr>
<td>5:15pm</td>
<td>Keynote I: Setting the Stage: Moving Forward on One Health</td>
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<td>Plenary I: Feeding the World – the Water – (Energy) - Food Nexus</td>
<td>Aspen</td>
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<tr>
<td>8:00pm</td>
<td>Welcome Reception &amp; Poster Session</td>
<td>Coffee Break &amp; Lunch Area</td>
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<tr>
<td>9:00pm</td>
<td>SUN6.1: Poster Session</td>
<td>Coffee Break &amp; Lunch Area</td>
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#### Date: Monday, 18/Nov/2013

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<thead>
<tr>
<th>Time</th>
<th>Event</th>
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<tbody>
<tr>
<td>8:30am</td>
<td>Plenary II: The Social Dimensions of One Health - Toward an Agenda for Social-Ecological Justice</td>
<td>Aspen</td>
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<tr>
<td>10:00am</td>
<td>Plenary session co-hosted and organized by University of Denver, Denver, USA</td>
<td>Aspen</td>
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<tr>
<td>10:30am</td>
<td>Keynote III: The Intersection of One Health and WASH</td>
<td>Aspen</td>
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<tr>
<td>11:00am</td>
<td>Keynote Speaker: Janet HERING, Director, Swiss Federal Institute of Aquatic Science &amp; Technology, Eawag, Duebendorf, Switzerland</td>
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<td>11:30am</td>
<td>Keynote Speaker: Joan ROSE, Laboratory Director/Principal Investigator, Homer Nowlin Chair in Water Research, Co-Director Center for Water Sciences and, Center for Advancing Microbial Risk Assessment, Michigan State University, East Lansing, USA</td>
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<tr>
<td>11:30am</td>
<td>Plenary III: Water, Sanitation and Hygiene (WASH)</td>
<td>Aspen</td>
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<tr>
<td>12:45pm</td>
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<td>Aspen</td>
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<tr>
<td>1:30pm</td>
<td>MON5.1: Livestock risks and opportunities</td>
<td>Jakobshorn</td>
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<tr>
<td>3:00pm</td>
<td>MON5.2: One Health Perspectives on Protected Areas, Nature Conservation, and Human-Animal Connections</td>
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<tr>
<td>4:45pm</td>
<td>MON6.2: One Health for food safety and food security</td>
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<td>5:00pm</td>
<td>MON6.3: Integrative One Health Risk Management</td>
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<td>6:30pm</td>
<td>Plenary IV: Allergies and Asthma – A Rapidly Growing Disease</td>
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### Programme Overview

**Date: Tuesday, 19/Nov/2013**

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<tr>
<th>Time</th>
<th>Event</th>
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<tbody>
<tr>
<td>8:30am</td>
<td>TUE1.1: An Unrecognized One Health Threat: Leptospirosis</td>
<td>Jakobshorn</td>
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<td>TUE1.2: One Health approaches for early warning and detection</td>
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<tr>
<td>10:00am</td>
<td>Keynote V: The FAO-OIE-WHO Collaboration: Sharing responsibilities and coordinating activities to address health risks - The example of rabies control</td>
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<td>11:00am</td>
<td>Plenary V: Emerging and Zoonotic Diseases – Strengthening Global Surveillance Systems</td>
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<td>12:30pm</td>
<td>TUE5.1: Diagnosis and surveillance of infectious diseases in wildlife (WildTech) - Session 1</td>
<td>Jakobshorn</td>
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<td>TUE5.2: Environmental degradation and health issues</td>
<td>Pischau</td>
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<td>TUE5.3: The urban environment and health</td>
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<tr>
<td>1:30pm</td>
<td>TUE6.1: Diagnosis and surveillance of infectious diseases in wildlife (WildTech) - Session 2</td>
<td>Jakobshorn</td>
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<td>3:00pm</td>
<td>TUE6.2: One Health capacity building approaches</td>
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<td>3:15pm</td>
<td>TUE6.3: Emerging diseases</td>
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<td>5:00pm</td>
<td>Plenary VI: Implementation of a Global One Health Approach – The Way Forward</td>
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**Date: Wednesday, 20/Nov/2013**

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<th>Time</th>
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<tr>
<td>8:30am</td>
<td>WED1.1: Disease detection and prevention technologies</td>
<td>Jakobshorn</td>
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<td>WED1.2: Zoonotic Diseases</td>
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<td>WED1.3: Improving Public Health Risk Governance by Integrating Modelling with Concern Assessment</td>
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<tr>
<td>10:00am</td>
<td>Plenary VII: University Initiatives in One Health: A Global Perspective</td>
<td>Aspen</td>
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<td>12:00pm</td>
<td>WED5.1: Prenatal Exposure To Endocrine Disruptors And Its Impact On Adult Onset Disorders</td>
<td>Jakobshorn</td>
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<td>WED5.2: Wildlife diseases</td>
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<td>WED5.3: One Health approaches and trends</td>
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<tr>
<td>2:45pm</td>
<td>WED6.1: Global and national directions and approaches for One Health</td>
<td>Jakobshorn</td>
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<td>WED6.2: Lifestyle Diseases</td>
<td>Pischau</td>
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<tr>
<td>4:15pm</td>
<td>Closing Plenary</td>
<td>Aspen</td>
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**Date: Thursday, 21/Nov/2013**

**Post-Conference Workshop**

**to develop an International Research and Implementation Strategy**

Organized by the Michigan State University, the CK CARE AG, Davos, and the Global Risk Forum GRF Davos (on invitation only)
Entrance Congress Centre Promenade

Level -2 Parkgeschoss
15:30-16:35
Opening Ceremony
Aspen

Orchestre TrioConBrio
Flute: Christina Singer; Violin: Franziska Dürr; Guitar: Andrea Förderreuther

Walter J. AMMANN, President, Global Risk Forum GRF Davos, Davos, Switzerland

Mario CAVIGELLI, Government Councillor, Head of Department for Construction, Transport and Forestry, Canton of Grisons, Chur, Switzerland

Tarzisius CAVIEZEL, Mayor of the City of Davos, Davos, Switzerland

Ian GRAY, Professor and Senior Advisor to the President, Michigan State University, East Lansing, USA

16:35-17:15
Honorary Lecture: Addressing Health and Environmental Linkages: Key to Sustainable Development
Aspen

Prof. Dr. Her Royal Highness Princess CHULABHORN, President Chulabhorn Research Institute, Bangkok, Thailand

Orchestre TrioConBrio
Flute: Christina Singer; Violin: Franziska Dürr; Guitar: Andrea Förderreuther

17:15-17:45
Keynote I: Setting the Stage: Moving Forward on One Health
Aspen

Keynote Speaker
David BUTLER-JONES, Chief Public Health Officer, Public Health Agency of Canada, Toronto, Canada

17:45-18:00
Break

TRIOCONBRIOSometimes called “the world’s smallest orchestra”, TrioConBrio, with its unusual line-up of instruments, offers spirit, wit, charm and fire to match its name – as reviewers have often observed. The ensemble was originally formed in 1990, with Christina Singer and Franziska Dürr joining Andrea Förderreuther and bringing fresh inspiration to TrioConBrio’s established tradition of close collaboration, exceptional musicianship and uncompromising artistic standards.
**Keynote II: Climate Change and Food Security: Insights from Infectious Disease Control**  
*Aspen*  
**Felicia WU**, John A. Hannah Distinguished Professor, Michigan State University, East Lansing, USA

**Plenary I: Feeding the World – the Water – (Energy) – Food Nexus**  
*Aspen*  
**Steve PUEPPKE**, Director Global & Strategic Initiative, CANR, Michigan State University, East Lansing, USA

An estimated 925 million people on our planet suffer hunger. The effects of recent food price increases are likely to aggravate the vulnerability of those who spend between 50% and 80% of their family budget on food, mostly basic staple. All four dimensions of food security – availability, access, utilisation and stability – are therefore of equal importance. The world’s food systems are closely linked to water and energy demands. Water is needed to extract energy and generate power; energy is needed to treat and transport water; and both water and energy are needed to grow food. Pesticides, antibiotics and many other hazardous additives can lead to continuous accumulation in the whole food chains for humans and animals with enormous potential for subsequent health risks. Institutions tend to function independently. These include government services – and their ministries – with separate responsibilities for animal and human health, the environment, as well as for water, energy, agriculture and trade. Applying one health thinking to food and nutrition safety and security requires a broad range of stakeholders to work in synergy as they pursue immediate and longer term food security outcomes.

In order to achieve equitable and sustainable improvements in people’s lives, long-term health and resilient livelihoods, multi-disciplinary and multi-stakeholder movements, anchored to institutions under the leadership and control of national and international authorities and a comprehensive framework for action are needed to better control and direct food production, distribution and consummation.

**Panelists**  
**Achim DOBERMANN**, Deputy Director General for Research, International Rice Research Institute (IRRI), Los Baños, Philippines  
**Curt ELLIS**, Co-Founder and Chief Executive Officer, FoodCorps, New York, USA (tbc)  
**Marco FERRONI**, Executive Director, Syngenta Foundation for Sustainable Agriculture, Basel, Switzerland  
**Gerard GOVERS**, Professor Department of Earth and Environmental Sciences, University of Leuven, Leuven, Belgium  
**Geof RAYNER**, Centre for Food Policy, City University London, London, UK

**Additional Panelists**  
**Felicia WU**, John A. Hannah Distinguished Professor, Michigan State University, East Lansing, USA

**Welcome Reception & Poster Session**  
*Coffee Break & Lunch Area*  
Please refer to page 37 for an overview of posters presented
Plenary II: The Social Dimensions of One Health – Toward an Agenda for Social-Ecological Justice

Plenary session co-hosted and organized by University of Denver, Denver, USA

Location Aspen

Chair James Herbert WILLIAMS, Dean, DU Graduate School of Social Work, University of Denver, Denver, USA

The One Health paradigm and discourse aims at connecting the health and well-being of humans, animals and the environment in a novel and integrated way. While scholars and practitioners from the areas of medical science and public health, veterinary sciences as well as ecological sciences have joined the One Health movement and contribute to its research and outreach activities, the social dimensions of One Health still appear somewhat under-represented and under-researched. This session seeks to address an array of themes, topics and issues associated with those social dimensions of One Health, including, inter alia, human-animal connections, mental health aspects, child well-being, poverty and governance. The ultimate goal is to raise awareness and build a community to foster our understanding of One Health as a concept that has great potential toward improving social-ecological justice.

Panelists

Daniel BRISSON, Associate Professor, Graduate School of Social Work, University of Denver, USA, “Concentrated Poverty and its Correlates: A Case Example of Social Development Informing One Health”

Shana GILETTE, Co-Director, Adapting Livestock Systems to Climate Change, and Assistant Professor, Colorado State University, Fort Collins, USA,

Asfaw KUMSSA, Coordinator, United Nations Centre for Regional Development (UNCRD), Nairobi, Kenya, “Conflict, Migration and Environmental Degradation in Dadaab Refugee Camp in Northeastern Kenya“


Philip TEDESCHI, Professor, Executive Director, Institute of Human-Animal Connection, University of Denver, Denver, USA, “Animal Welfare to Human Security: The connection between animal abuse and human anti-social behaviors “

10:00–10:30 Coffee Break

10:30–11:00 Keynote III: The Intersection of One Health and WASH

Aspen

Keynote Speaker Janet HERING, Director, Swiss Federal Institute of Aquatic Science & Technology Eawag, Duebendorf, Switzerland
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<td>Aspen</td>
<td>Joan ROSE, Laboratory Director/Principal Investigator, Homer Nowlin Chair in Water Research, Co-Director Center for Water Sciences and, Center for Advancing Microbial Risk Assessment, Michigan State University, East Lansing, USA</td>
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<td>11:30–12:45</td>
<td><strong>Plenary III: Water, Sanitation and Hygiene (WASH)</strong></td>
<td>Aspen</td>
<td>Andreas RECHKEMMER, Professor and American Humane Endowed Chair, University of Denver, and Chief Science and Policy Advisor, GRF Davos, Denver, USA</td>
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Over 1 billion people globally lack access to safe drinking-water supplies, while 2.6 billion lack adequate sanitation. Diseases related to unsafe water, sanitation and hygiene result in an estimated 1.7 million deaths every year. A huge number of these children and adults die from diseases that have arisen from the human–animal–environment interface, in particular diarrhoeal diseases in developing countries.

Access to water and sanitation is a fundamental human right and essential to life, health and dignity of humans and animals. Timely and adequate provision of clean water and sanitation services to uprooted people is particularly important, given the vulnerability of their situation.

Water resources are perhaps most crucial, as humans and animals depend on safe water for health and survival, and sources of clean water are dwindling due to demands from agriculture and global climate change. As water becomes scarcer, animals and people are squeezed into smaller workable areas. Contact among infected animals and people then increases, facilitating disease transmission. Water scarcity also means that people and animals use the same water sources for drinking and bathing, which results in serious contamination of drinking water and increased risk of zoonotic diseases.

Thus, the provision of adequate sanitation services is highly important. Proper disposal of all waste as well as control of the carriers of communicable diseases, including mosquitoes, rats, mice and flies, is crucial to mitigate health risks and prevent epidemics. The major causes of water-related morbidity and mortality include diarrhoea, malnutrition and malnutrition–associated disease, drowning, malaria, intestinal infections, trachoma, and schistosomiasis.

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<th>Panelists</th>
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<tr>
<td>Jamie BARTRAM, Director Water Institute and Professor, Department of Environmental Sciences &amp; Engineering, University of North Carolina, Chapel Hill, USA (tbc)</td>
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<tr>
<td>Gueladio CISSÉ, Project and Research Group Leader, Ecosystem Health Sciences Unit, Department of Epidemiology and Public Health, Swiss Tropical and Public Health Institute (Swiss TPH), Basel, Switzerland, “Wastewater, Ecosystems and Health: Risks and Opportunities”</td>
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<tr>
<td>Johannes HEEB, Operational Manager, International Centre for Water Management Services (CEWAS), Willisau, Switzerland</td>
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<td>Seung LEE, Sr. Director for School Health and Nutrition, Save the Children, Washington DC, USA (tbc)</td>
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**Detailed Programme Monday, 18 Nov. 2013**

**Arno ROSEMARIN**, Senior Research Fellow, Stockholm Environment Institute, Stockholm, Sweden

**Janet HERING**, Director, Swiss Federal Institute of Aquatic Science & Technology Eawag, Duebendorf, Switzerland

**Joan ROSE**, Laboratory Director/Principal Investigator, Homer Nowlin Chair in Water Research, Co-Director Center for Water Sciences and, Center for Advancing Microbial Risk Assessment, Michigan State University, East Lansing, USA

**12:45-13:30** LUNCH

Location Coffee Break & Lunch Area

**12:45-13:30** Press Conference

Location Rinerhorn

**13:30-15:00**

**MON5.1: Livestock risks and opportunities**

Location Jakobshorn

**Chair**

**Dr. Md. Jalal Uddin SARDER** – Rajshahi University, Bangladesh

**Speakers**

**LAN TIER, Frederic**

*N A D I R, the European Network for Animal Diseases Infectiology Research Facilities* by LANTIER, Frederic (1); STOCKHOFE, Norbert (2); BLANCO, Esther (3); SIMMONS, Hugh (4); WILLIAMS, John (5); WISSELINK, Henk (2); BALKEMA-BUSHMANN, Anne (6); NADIR, Partners (7) – 1: INRA, Tours–Nousilly, France; 2: CVI, Lelystad, Wageningen University, NL; 3: INIA, Madrid, Spain; 4: AHVLA, Weybridge, UK; 5: PTP, Lodi, Italy; 6: FLI, Greifswald–Insel Riems, Germany; 7: http://www.nadir-project.eu/nadir_project/

**HALL, David Clement**

*Animals, water, and public health in Vietnam.* by HALL, David Clement; LE, Quynh Ba – University of Calgary, Canada

**MAGOURAS, Ioannis**

*A human Q fever cluster linked to a sheep farm in Lavaux, Switzerland* by MAGOURAS, Ioannis (1); BELLINI, Cristina (2); CHA PUIS-TAILLARD, Caroline (3); CLERC, Olivier (4); MASSEREY, Eric (5); PEDUTO, Giovanni (6); PÉTER, Olivier (7); SCHERRER, Simone (8); SCHUEPBACH, Gertraud (9); GREUB, Gilbert (4,9) – 1: Veterinary Public Health Institute, University of Bern, Bern, Switzerland; 2: Service of Infectious Diseases, Riviera Regional Hospital, Vevey, Switzerland; 3: Service of Infectious Diseases, Medical Center of Vidy, Lausanne, Switzerland; 4: Service of Infectious Diseases, Centre Hospitalier Universitaire Vaudois and University of Lausanne, Lausanne, Switzerland; 5: Service of Public Health, Canton of Vaud, Lausanne, Switzerland; 6: Service of Veterinary Affairs, Canton of Vaud, Lausanne, Switzerland; 7: Service of Infectious diseases, Central Institute of Valais, Sion, Switzerland; 8: Institute of Veterinary Bacteriology, University of Zurich, Zurich, Switzerland; 9: Institute of Microbiology, Centre Hospitalier Universitaire Vaudois and University of Lausanne, Lausanne, Switzerland

**ALDERS, Robyn**

*An analysis of Newcastle disease reporting data from African Union member countries in the context of Highly Pathogenic Avian Influenza H5N1* by GARDNER, Emma G. (1); ALDERS, Robyn (1,2,3) – 1: Tufts University Cummings School of Veterinary Medicine, United States of America; 2:
International Rural Poultry Centre, Kyeema Foundation, Mozambique and Australia; Faculty of Veterinary Science, University of Sydney, Australia

ROMANOWICZ, Basia
The Benefits of Farm Animal Welfare For Sustainable Food Production by LAMBERT, Lesley Anne; ROMANOWICZ, Basia; HIRD, Vicki – World Society for the Protection of Animals International, United Kingdom

DANIELS, Peter Wallace
What Can Be done to Manage Catastrophic Human Disease Threats from Farmed Animals? by DANIELS, Peter Wallace – CSIRO, Australian Animal Health Laboratory

13:30–15:00
MON5.2: One Health Perspectives on Protected Areas, Nature Conservation, and Human–Animal Connections

Location Pischa
Chair Michael James MANFREDO – Colorado State University
Speakers
TEEL, Tara
Linking Human, Wildlife, and Ecosystem Well–Being: The Case of Big Cat Conservation in India by Tara TEEL, Associate Professor, Human Dimensions of Natural Resources, Colorado State University, USA and President, Social Science Working Group, Society for Conservation Biology, USA.

SANDSTRÖM, Camilla
“Health Considerations in the Restoration of Large Carnivore Populations in Sweden by Camilla SANDSTRÖM, Professor, Department of Political Science, Umeå University, Sweden

RECHKEMMER, Andreas
Social–Ecological Justice in the One Health Context by Andreas RECHKEMMER, Professor and American Humane Endowed Chair, University of Denver, USA and Chief Science and Policy Advisor, Global Risk Forum Davos, Switzerland.

TEDESCHI, Philip
Understanding the Human–Animal Bond in One Health Applications by Philip TEDESCHI, Clinical Professor and Executive Director of the Institute for Human–Animal Connection, University of Denver, USA

13:30–15:00
MON5.3: Aging, Health and Environment: Coping with Challenges in the Framework of One Health

Location Parsenn
Chair Wensheng ZHANG – Beijing Normal University
Speakers
ZHANG, Wensheng
Aging and Health Challenges: Coping with AD by ZHANG, Wensheng – Beijing Normal University, China, People’s Republic of

YAN, Qingchun
Case Study: Aging, Health and Environment Issue in China by YAN, Qingchun – China National Committee On Aging, China, People’s Republic of

HE, Tao
Idea of Aging and Health Risk Management Decision–Making Simulation Visualization Experimental Platform Based on Complex System by HE, Tao – Beijing Normal University, China, People’s Republic of
Detailed Programme Monday, 18 Nov. 2013

HU, Xiaobing  
_Idea of Aging and Health Risk Management Decision-Making Simulation Visualization Experimental Platform Based on Complex System_ by HU, Xiaobing – Beijing Normal University, China, People’s Republic of

YE, Qian  
_Nexus of Aging, Health and Ecosystems from Risk Governance Perspective_ by YE, Qian (1,2) – 1: Integrated Risk Governance Project (IRGP/IHDP); 2: Beijing Normal University

HAN, Zhanggang  
_System Risk Research on Elderly Health_ by HAN, Zhanggang – Beijing Normal University, China, People’s Republic of

15:00–15:15 Coffee Break

15:15–16:45  
**MON6.1: Why Animal Health and Welfare Matters To Human Health**  
Location Jakobshorn  
Chair Mike BAKER – WSPA  
Speakers BAKER, Mike  
_Why Animal Health And Welfare Matters to Human Health_ by BAKER, Mike – WSPA, United Kingdom

MURITHI, Mbabu  
_Zoonotic Disease Unit Of Kenya: Blueprint For A National One Health Office_ by MURITHI, Mbabu (1); NJERU, Ian (2) – 1: Kenya Ministry of Livestock Development, Nairobi, Kenya; 2: Kenya Ministry of Public Health and Sanitation, Nairobi, Kenya

15:15–16:45  
**MON6.2: One Health for food safety and food security**  
Location Pischa  
Chair Gretchen Christianna NEISLER – Michigan State University  
Chair Tao HE – Beijing Normal University  
Speakers IVANOV, Alexander  
_Role of Biotechnology in the Implementation of Food Safety Doctrine in Russian Federation_ by IVANOV, Alexander (1); IVANOV, Arkadiy (1); SHURALEV, Eduard (1,2) – 1: Federal Center for Toxicological, Radiation and Biological Safety, Russian Federation; 2: Kazan Federal University, Russia

ALDERS, Robyn Gwen  
_Useing a One Health Approach to Promote Food and Nutrition Security in Tanzania and Zambia_ by ALDERS, Robyn Gwen (1,3); AONGOLA, Agnes (2); BAGNOL, Brigitte (3); KIMBOKA, Sabas (4); KOCK, Richard (5); LI, Mu (1); MAULAGA, Wende (6); MCONCHIE, Robyn (1); MOR, Siobhan (1); MSAMI, Halifa (6); MULENGA, Francis (7); MWALA, Mick (8); MWALE, Shadreck (7) – 1: University of Sydney, Camperdown, Australia; 2: Ministry of Health, Lusaka, Zambia; 3: Kyeema Foundation, Brisbane, Australia and Maputo, Mozambique; 4: Tanzanian Food and Nutrition Centre, Dar es Salaam, Tanzania; 5: Royal Veterinary College, London,

CONVERTINO, Matteo  
_Probabilistic Supply Chain Risk Model for Food Safety_ by CONVERTINO, Matteo (1); LIANG, Song (2) – 1: University of Minnesota, School of Public
MON6.3: Integrative One Health Risk Management
Location Parsenn
Chair Johannes BIRCHER – University of Bern, Switzerland
Chair Busaya VIRAKUL – National Institute of Development Administration (NIDA)
Speakers

SCHULTINK, Gerhardus
Risk Characterization and Quantification: An Operational Perspective on Concepts, Needs and Opportunities for the Developing World by SCHULTINK, Gerhardus – Michigan State University, United States of America

FUHRER, Mechthilde
Disability Inclusive Disaster Risk Reduction by FUHRER, Mechthilde – Council of Europe, France

LIIMATAINEN, Jukka
Enabling People With Disabilities To Access Health And Safety Assistance Via Mobile Technology: Research Specifically Focused On The Visually Impaired by LIIMATAINEN, Jukka (1); SULLIVAN, Helen T (1,2) – 1: University of Jyväskylä. Finland; 2: Rider University, United States of America

CHASI, Vimbai Z.J
An Integrative Study of Measles Outbreaks in the City of Cape Town, South Africa: 2000–2011 by CHASI, Vimbai Z.J; HOLLOWAY, Ailsa – Disaster Mitigation for Sustainable Livelihoods (DiMP), Stellenbosch University, South Africa

SCHMID-GRENDELMEIER, Peter
Hayfever As Christmas Gift – By Man-planted Imported Alder Tree Pollen Of Alnus Spaethii by GASSNER, Markus (1); GEHRIG, Regula (2); SCHMID-GRENDELMEIER, Peter (3) – 1: Allergology and Internal Medicine, Grabs SG, SWITZERLAND; 2: MeteoSwiss Zürich, Switzerland; 3: University Hospital of Zürich, Switzerland
BRISSON, Daniel
*Sustainable Development and Global Practice: Educating Professionals for the Social Dimensions of One Health* by BRISSON, Daniel – University of Denver, Unites States of America

ROHITRATTANA, Juthasiri
*Relationship between children's environment and organophosphate pesticide exposures among children living in agricultural area, Thailand* by ROHITRATTANA, Juthasiri (1); SIRIWONG, Wattasit (1,2); TUNSARINGKARN, Tanasorn (1); ROBSON, Mark G. (2,3,4); FIEDLER, Nancy (4) – 1: College of Public Health Sciences, Chulalongkorn University, Thailand; 2: Thai Fogarty ITREOH Center, Chulalongkorn University, Thailand; 3: School of Environmental and Biological Sciences, Rutgers University, USA; 4: Environmental and Occupational Health, UMDNJ–Robert Wood Johnson Medical School, USA

16:45-17:00 Break

17:00-18:30
*Plenary IV: Allergies and Asthma – A Rapidly Growing Disease*

Location Aspen

*Plenary session co-hosted and organized by European Academy of Allergy and Clinical Immunology, Zurich, Switzerland*

Chair

Peter SCHMID–GRENDELMEIER, Head Allergy Unit, University Hospital of Zurich, Zurich, Switzerland

The heavy price that humanity has paid for technological progress is the overwhelming pollution that has been unleashed upon the land, waterways and atmosphere. Such chemicals as herbicides, pesticides, antibiotics, paints, solvents, fuels, etc.—despite all the benefits derived from them—have accumulated in such high amounts over the years that they can now be readily found everywhere, even in places where they do not belong. Some such places include the food people eat, the water they drink, and the air they breathe.

The prevalence of allergic diseases has increased in recent decades in the industrialized world. Exposure to environmental pollutants may partially account for this increased prevalence. In effect, air pollution is a growing public health problem. Air pollutants not only have a direct or indirect effect upon the individual, but also exert important actions upon aeroallergens. The body’s immune system is supposed to intercept materials and biological intruders that find their way inside the body. When such a system is overwhelmed the result can be an “allergic reaction.” It happens when too much of a certain substance enters the body; it can also happen when the wrong thing gets past the body’s natural defences. Allergies are only the tip of the iceberg when it comes to the medical problems that may be triggered or worsened because of all the substances people and animals can come in contact with.

In the case of indoor air pollution, for example, many of the substances previously thought to be harmless are now suspected of inducing serious medical problems such as cardiovascular disease, autoimmune disorders, breathing problems and cancer.
IMAXIO is an integrated biotech company focused on vaccines, and based on the combination of commercial and R&D activities:

PHARMACEUTICAL PRODUCTS

A vaccine against human leptospirosis and an orphan drug indicated in Wilson disease, both of them marketed in France.

LEPTOSPIROSIS

- Contamination routes:

- Prevention:
  • Avoid soiled hand contact with the eyes, nose or mouth
  • Disinfect and protect the skin wounds
  • Wash hands with soap and water after freshwater activities
  • Vaccination of exposed individuals.
  The use must be defined on the basis of official recommendations.

IMX313 TECHNOLOGY PLATFORM

An immunoenhancing antigen re-engineering platform for vaccines and immunotherapies development.
08:30–10:00  
TUE1.1: An Unrecognized One Health Threat: Leptospirosis
Location Jakobshorn
Chair  
Eric BERTHERAT – World Health Organization
Chair  
Michel François JANCLOES – Health and Climate Foundation
Speakers
BERTHERAT, Eric  
The Global Leptospirosis Environmental Action Network: Leptospirosis From A One Health Perspective by BERTHERAT, Eric (1); JANCLOES, Michel (2); DURSKI, Kara (1) – 1: World Health Organization, Switzerland; 2: Health and Climate Foundation, USA
MUNOZ-ZANZI, Claudia A.  
Drivers of Leptospirosis Transmission at the Human–Animal Interface in Distinct Community Types by MUNOZ-ZANZI, Claudia A. – University of Minnesota, United States of America
BELMAIN, Steven  
Can human incidence of Leptospirosis be reduced through implementing ecologically-based rodent management? by BELMAIN, Steven – Natural Resources Institute, University of Greenwich, United Kingdom
SCHNEIDER, Maria Cristina  
Leptospirosis Outbreaks in Nicaragua: Identifying Critical Areas and Exploring Drivers for Evidence-Based Planning by SCHNEIDER, Maria Cristina (1); NAJERA, Patricia (1); ALDIGHIERI, Sylvain (1); BACALLAO, Jorge (2); SOTO, Aida (3); MARQUINO, Wilmer (3); ALTAMIRANO, Lesbia (3); SAENZ, Carlos (4); MARIN, Jesus (4); JIMENEZ, Eduardo (4); MOYNIHAN, Matthew (1); ESPINAL, Marcos (1) – 1: Pan American Health Organization, United States of America; 2: Universidad de Ciencias Médicas de La Habana Cuba; 3: Pan American Health Organization Nicaragua; 4: Ministerio de Salud de Nicaragua
HARTSKEERL, Rudy  
Diagnosis of Leptospirosis by HARTSKEERL, Rudy – Royal Tropical Institute (KIT), Netherlands, The
DENIS, Jérôme  
Overview On Human Vaccines Against Leptospirosis by DENIS, Jérôme – IMAXIO SA, France

08:30–10:00  
TUE1.2: One Health approaches for early warning and detection
Location Pischa
Chair  
Je-Yoel CHO – Seoul National University
Chair  
Selina HAENY – Antenna Technologies
Speakers
ORT, Christoph  
Sewage Analyses as an Early Detection System for Diseases and Indicator of Various Public Health Aspects by ORT, Christoph (1); BANTA–GREEN, Caleb (2); BÉEN, Frédéric (3); BJULSMA, Lubertus (4); CASTIGLIONI, Sara (5); EMKE, Erik (6); FIELD, Jennifer (7); GARTNER, Coral (8); KASPRZYK–HORDERN, Barbara (9); LAI, Foon Yin (8); PRICHARD, Jeremy (10); REID, Malcolm ( – 1: Swiss
Federal Institute of Aquatic Science and Technology (Eawag) Switzerland; 2: University of Washington, USA; 3: Université de Lausanne, Switzerland; 4: University Jaume I, Spain; 5: Mario Negri Institute for Pharmacological Research, Italy; 6: Wate

HOSSAIN, Rifat
Knowing Ahead Can Save Lives: How To Realize An Early Warning System For Cholera by WATSON, Kym Stephen (1); HOSSAIN, Rifat (2); TRTANJ, Juli (3)
- 1: Fraunhofer IOSB, Germany; 2: WHO; 3: NOAA

HASHSHAM, Syed A.
Gene-Z and idx: Hand-held Networkable Platforms for Low Cost, Multiplexed, and Decentralized Genetic Testing by HASHSHAM, Syed A. (1); STEDTFELD, Robert D (1); KRONLEIN, Maggie (1); STEDTFELD, Tiffany (1); LIU, Terry (1); SORENSON, Jacon (1); SEYRING, Gregoire (1); TOURLOUSSE, Dieter (1); PRICE, Scott (1); SRIVANNAVIT, Onnop (2); AHMAD, Farhan (1); GULARI, Erdogan
- 1: Michigan State University, United States of America; 2: University of Michigan, United States of America

ALOCILJA, Evangelyn C.
One Health: Nano-assembly based biosensor for rapid detection of infectious diseases by ALOCILJA, Evangelyn C. - Michigan State University, United States of America

YOUNGBLOOD, Jessica Erin
Metagenomic Applications for Environmental Health Surveillance by YOUNGBLOOD, Jessica Erin; WALLACE, James C; PORT, Jesse A; CULLEN, Alison C; FAUSTMAN, Elaine M - University of Washington, United States of America

DE QUINCEY, Ed
Potential of Social Media to Determine Hay Fever Seasons and Drug Efficacy by DE QUINCEY, Ed (1); PANTIN, Thomas (2) - 1: University of Greenwich, United Kingdom; 2: Blackpool Teaching Hospitals NHS Foundation Trust, Blackpool, United Kingdom

CILIBERTI, Alexandre
Prioritisation Of Wildlife Potential Infections To Be Targeted In Future European Surveillance Programmes: Expert-Based Risk Analysis In The Frame Of The WildTech Project (2009–2013) by CILIBERTI, Alexandre (1); GAVIER–WIDÉN, Dolores (2); YON, Lisa (3); HUTCHINGS, Mike (4); MARION, Glenn (4); ARTOIS, Marc (1) – 1: VetAgro Sup, France; 2: Statens Veterinärmedicinska Anstalt; 3: The University of Nottingham; 4: Scottish Agricultural College

10:00–10:30 Coffee Break

10:30–11:00 Keynote V: The FAO–OIE–WHO Collaboration: Sharing Responsibilities and Coordinating Activities to Address Health Risks – The Example of Rabies Control

Location Aspen

According to the FAO, over 60 percent of existing and emerging pathogens affecting humans originate in animals. These diseases create public health scares, can wipe out food sources and cause economic upheaval globally and locally, in particular for farmers dependent on livestock for their food and income.

Disease risks are multiplying exponentially due to global trends: booming trade, increased demand for meat and animal products – such as milk and eggs – from emerging economies, the urgent need to produce more food for a growing population, and intensification of farming to ramp up that production.

Yet unregulated expansion of livestock farming encroaches on pristine habitats, pushing domestic animals, humans and wildlife into closer and more frequent contact. Crowded unhealthy conditions create the same tinderbox for disease in animals as they do in humans: HIV, severe acute respiratory syndrome (SARS), H5N1 highly pathogenic avian influenza and pandemic H1N1 influenza that emerged in 2009 are recent examples. The recent spread of animal diseases, such as the African swine virus, foot-and-mouth diseases, peste des petites ruminants and porcine reproductive and respiratory syndrome underpins that the “business as usual” approach won’t win the battle. Zoonotic diseases, those which can pass between animals and humans, such as anthrax, brucellosis, rabies and Rift Valley fever, not only threaten global food security but also continue to kill hundreds of thousands of people every year. Other illnesses leave victims permanently disabled and families destroyed.

In the last few decades, the emergence of new infectious diseases that have rapidly spread—or have the potential to spread—into worldwide pandemics: HIV/AIDS, Ebola, SARS, highly pathogenic avian influenza, and H1N1 influenza (swine flu). These diseases threaten the health, the livelihoods, and the very lives of not only the world’s poorest people, their livestock and the wildlife in their environment. The threat of another pandemic in the next few years, from a new infectious disease like H1N1, is real.

Once these diseases spread beyond localized regions, they become exponentially more difficult to stop. Thus, early detection by effective disease surveillance networks that operate across national borders is key to containing them and preventing pandemics. However, the regions most at risk are often not equipped for the task. They do not have the capacity to effectively monitor and report the first signs of outbreaks within their nations, let alone coordinate such communications with neighbouring countries.

Panelists

Alexander KEKULÉ, Director, Institute for Biosecurity Research (IBS), Halle, Germany

Michael J. MANFREDO, Professor and Head of the Department of Human Dimensions of Natural Resources, Colorado State University, Fort Collins, USA, "The Pandora’s Box of One Health “
Katey PELICAN, Assistant Professor, Head of Ecosystem Health Initiative and Resident Fellow, Institute on the Environment, University of Minnesota, St. Paul, USA

Edward (Ned) WALKER, Professor, Microbiology and Molecular Genetics, Michigan State University, East Lansing, USA, “Ecoepidemiology of West Nile Virus Transmission in Urban Areas: Processes and Predictions of Disease Outbreaks”

Additional Panelists


12:30-13:30 LUNCH
Location Coffee Break & Lunch Area

13:30-15:00 TUE5.1: Diagnosis and surveillance of infectious diseases in wildlife (WildTech) – Session 1
Location Jakobshorn
Chair Duncan HANNANT – UNIVERSITY OF NOTTINGHAM
Speakers

BILLINIS, Charalampos
Samples: Priority pathogens for the project, SOP for sample processing, usage in the project, numbers received and characteristics. by BILLINIS, Charalampos (1); GAVIER-WIDEN, Dolores (2) – 1: Faculty of Veterinary Medicine, University of Thessaly, Greece; 2: National Veterinary Institute, Uppsala, Sweden

BARROW, Paul Andrew
Nucleic Acid and Protein Microarray Technology for Pathogen and Serological Surveillance by BARROW, Paul Andrew – School of Veterinary Medicine and Science, The University of Nottingham, United Kingdom

PETROVSKA, Liljana
Peptide Arrays for Antibody Detection: Performance and Brief Summary of Pathogens tested by PETROVSKA, Liljana – AHVLA Weybridge, United Kingdom

ABU-MEDIAN, Abu-Bakr
One Platform, Multiple Zoonotic Pathogens, Several Host Species by ABU-MEDIAN, Abu-Bakr; BARROW, Paul – University of Nottingham, United Kingdom

PETROVSKA, Liljana
Multiplex Diagnostic Technologies for Detection of Selected Pathogens in Wild Life in Europe by PETROVSKA, Liljana (1); FENNER, Jackie (1); RUETTGER, Anke (2); VANDERWAL, Fimme (3); VAN SOLT, Conny (3); BILLINIS, Charalambos (4,5); GAVIER-WIDEN, Dolores (6); HANNANT, Duncan (7); BARROW, Paul (7); CAWTHRRAW, Shaun (1); TANG, Yue (1); VALIAKOS, George – 1: Animal Health and Veterinary Laboratories Agency, Weybridge, UK; 2: Fredrich Loefer Institute, Jena, Germany; 3: Central Veterinary Institute of Wageningen University and Research Centre, Lelystad, Netherlands; 4: Faculty of Veterinary Medicine, University of Thessaly, Karditsa, Greece; 5: Department of Biomedicine, Institute for Research and Technology of Thessaly, Larissa, Greece; 6: National Veterinary Institute, Uppsala, Sweden; 7: Faculty of Medicine and Health Sciences, School of Veterinary Medicine and Science, University of Nottingham, Nottingham, UK
**TUE5.2: Environmental degradation and health issues**

**Location**: Pischa

**Chair**: Mechthilde FUHRER – Council of Europe

**Chair**: Shlomit PAZ – University of Haifa

**Speakers**

**GOVERS, Gerard**

*Soils and Planetary Health* by GOVERS, Gerard (1); MERCKX, Roel (1); VAN OOST, Kristof (2); VAN WESEMAEL, Bas (2) – 1: KU Leuven, Belgium; 2: Université Catholique de Louvain, Belgium

**OZEVREN, Erdogan**

*The Integrated Participatory Watershed Rehabilitation Approach* by OZEVREN, Erdogan (1); AVCI, Hanifi (2) – 1: Ministry of Forestry and Water Affairs, Turkey; 2: General Directorate of Combating Desertification, Ministry of Forestry and Water Affairs, Turkey

**DE LA POMERAI, Garry**

*21st Century Environmental Technology Incorporates The Social Ecological Perspective Creating Solutions For Physical And Economic Resilience To Desertification, Land Degradation and Drought* by DE LA POMERAI, Garry (1); TKATCHENKO, Yuri (2) – 1: SOLUZION VVSC LLC UAE, United Arab Emirates; 2: Magnetic Technologies LLC UAE, United Arab Emirates

**KÜLLS, Christoph**

*‘Leitbild’ and indicators of Socio-Environmental Health* by KÜLLS, Christoph – University of Freiburg, Germany

**VAN LYNDEN, Godert**

*RECARE – Preventing and remediating degradation of soils in Europe through landcare* by VAN LYNDEN, Godert (1); RITSEMA, Coen (2); HESSEL, Rudi (2) – 1: ISRIC- World Soil Information, The Netherlands; 2: Alterra – Wageningen UR, The Netherlands

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**13:30–15:00**

**TUE5.3: The urban environment and health**

**Location**: Parsenn

**Chair**: Zhangang HAN – Beijing Normal University

**Chair**: Christoph ORT – Eawag

**Speakers**

**CHRISTOFORI–KHADKA, Monika**

*Urban Health and Waste Management in Nepalgunj city, Nepal* by CHRISTOFORI–KHADKA, Monika (1); BARAL, Kamal (2); REGMI, Ishwor (2) – 1: Swiss Red Cross, Switzerland; 2: Nepal Red Cross Society, Nepal

**FASSINA, Nicole**

*The Challenges of Urbanisation: The Need for Integration in Community Resilience to Disasters and Disease* by FASSINA, Nicole; ABSON, Frances – World Society for the Protection of Animals (WSPA)

**VAN POLL, Ric**

*Urban Environmental Stressors: Extend Of Annoyance, Sleep Disturbance And Residential Satisfaction In The Netherlands* by VAN POLL, Ric;
BREUGELMANS, Oscar; DEVILEE, Jeroen – National Institute of Public Health and the Environment (RIVM) Netherlands, Netherlands, The

**SCHNEIDER, Maria Cristina**

*Where Does Human Plague Still Persist in Latin America?* by SCHNEIDER, Maria Cristina (1); NAJERA, Patricia (1); ALDIGHIERI, Sylvain (1); GALAN, Deise (1); BETHERAT, Eric (2); RUIZ, Alfonso (3); DUMIT, Elsy (1); GABASTOU, Jean Marc (1); ESPINAL, Marcos A. (1) – 1: Pan American Health Organization, United States of America; 2: World Health Organization; 3: University of South Florida

**VAN POLL, Ric**


**Detailed Programme Tuesday, 19 Nov. 2013**

15:00-15:15 Coffee Break

15:15-16:45

**TUE6.1: Diagnosis and surveillance of infectious diseases in wildlife (WildTech) – Session 2**

**Location** Jakobshorn

**Chair** Duncan HANNANT – University of Nottingham

**Chair** Tracey Suzanne MCNAMARA – Western University of Health Sciences

**Speakers**

**MCNAMARA, Tracey Suzanne**

*International perspective: Examples of the Animal/Human Interface* by MCNAMARA, Tracey Suzanne – Western University of Health Sciences, United States of America

**VALIAKOS, George**

*The reoccurrence of Rabies in Greece: Application of GIS analysis in wildlife oral vaccination programs, public health significance* by VALIAKOS, George (1,2); GIANNAKOPOULOS, Alexios (1,2); DOUDOUNAKIS, Spiridon (3); TASIIOUDI, Konstantia (4); KOROU, Laskarina-Maria (3); PAPASPYROPOULOS, Konstantinos (5); SPYROU, Vassiliki (6); TZANI, Mirsini (3); ILLIADOU, Peristera (4); TSAROUCHA, Parask – 1: Faculty of Veterinary Medicine, University of Thessaly, Karditsa, Greece; 2: Department of Biomedicine, Institute for Research and Technology of Thessaly, Larissa, Greece; 3: Animal Health Directorate, Ministry of Rural Development and Food, Athens, Greece; 4: Virology Department, Athens Center of Veterinary Institutes, Ministry of Rural Development and Food, Athens, Greece; 5: Research Department, Hunting Federation of Macedonia & Thrace, Thessaloniki, Greece; 6: Department of Animal Production, Technological Education Institute of Larissa, Larissa, Greece; 7: Department of Forestry and Management of Natural Environment, Technological Education Institute of Larissa, Karditsa, Greece; 8: Faculty of Medicine and Health Sciences, School of Veterinary Medicine and Science, University of Nottingham, Nottingham, UK; 9: VetAgro Sup, Veterinary School, Lyon, France

**BILLINIS, Charalampos**

*Genetic Analysis and Molecular Epidemiology of European Brown Hare Syndrome across Europe from 1982 to 2012* by IACOVAKIS, Christos (1,2); TOULOUDI, Antonia (1,2); BOSSSIERS, Alex (3); VALIAKOS, George (1,2); MAMURIS, Zisis (4); GAVIER-WIDÉN, Dolores (5); HAMMER, Anne Sofie (6); SPYROU, Vassiliki (7); HUTCHINGS, Mike (8); GIANNAKOPOULOS, Alexios (1,2); ARTOIS,
Marc (9); ATHANASIOU, Labrini (1,2); BIRTSAS, Periklis (10); SOKOS, Christos (1,2); SACHSE, Konrad (11); YON, Lisa (12); BOURNE, Debra (13); HANNANT, Duncan (12); PETROVSKA, Liljana (14); BILLINIS, Charalambos (1,2) – 1: Faculty of Veterinary Medicine, University of Thessaly, Karditsa, Greece; 2: Department of Biomedicine, Institute for Research and Technology of Thessaly, Larissa, Greece; 3: Central Veterinary Institute of Wageningen University and Research Centre, Lelystad, Netherlands; 4: Department of Biochemistry & Biotechnology, University of Thessaly, Larissa, Greece; 5: National Veterinary Institute, Uppsala, Sweden; 6: Technical University of Denmark, National Veterinary Institute, Section for Fur Animal and Wildlife diseases, Aarhus N, Denmark; 7: Department of Animal Production, Technological Education Institute of Larissa, Larissa, Greece; 8: Disease Systems, SRUC, Edinburgh, UK; 9: VetAgro Sup, Veterinary School, Lyon, France; 10: Department of Forestry and Management of Natural Environment, Technological Education Institute of Larissa, Karditsa, Greece; 11: Friedrich Loeffler Institute, Jena, Germany; 12: Faculty of Medicine and Health Sciences, School of Veterinary Medicine and Science, University of Nottingham, Nottingham, UK; 13: Twycross Zoo – East Midland Zoological Society, Twycross, UK; 14: Animal Health and Veterinary Laboratories Agency, Weybridge, UK

Hutchings, Mike
Introduction: Epidemiological Tools For Disease Surveillance by Hutchings, Mike – SRUC, United Kingdom

Beneult, Benedicte
Generic action plan in case of emerging disease in wildlife in Europe, a WildTech perspective by BENEULT, Benedicte; CILIBERTI, Alexandre; ARTOIS, Marc – Université de Lyon, VetAgro Sup, Wildtech, F–69280, MARCY L’ETOILE

Ayral, Florence
Disease risk mapping from surveillance of zoonotic pathogens in Norway rats; a survey in France (2010 – 2012) by AYRAL, Florence (1); GILES, Tim (2); BICOUT, Dominique J (3); ZILBER, Anne–Laure (4); WIDEN, Frederik (5); POUNDER, Kieran (6); AUBERT, Dominique (7); DJELOUADJI, Zorée (4); BERNY, Philippe (8); MCEHLINNEY, Lorraine (6); KODJO, Angeli (4); ABU–MEDIAN, Abu – 1: Université de Lyon, VetAgro Sup, USC 1233, PERS, Wildtech, F–69280, MARCY L’ETOILE; 2: University of Nottingham, UK; 3: Biomatématiques et Epidémiologie, EPSP–TIMC, UMR CNRS 5525, UFJ, VetAgro Sup, F–69280, MARCY L’ETOILE; 4: Université de Lyon, VetAgr

Yon, Lisa Karen
The Importance of Wildlife Disease Surveillance for Domestic Animal and Human Health by YON, Lisa Karen (1); GAVIER–WIDEN, Dolores (2); HANNANT, Duncan (1) – 1: 1. Faculty of Medicine and Health Sciences, School of Veterinary Medicine and Science, United Kingdom; 2: 2. Department of Pathology and Wildlife Diseases, National Veterinary Institute (SVA), Sweden

TUE6.2: One Health capacity building approaches

Location

Chair

Speakers

Lapinski, Maria K.
“Student Translational Scholars” by LAPINSKI, Maria K. – Michigan State University, United States of America
ALLEN-SCOTT, Lisa K
Transdisciplinary Institutional and Individual Capacity Building for One Health and Global Health Research: A Call to Action by ALLEN-SCOTT, Lisa K (1); BUNTAIN, Bonnie J (2); MEISSER, Andrea (3); HATFIELD, Jennifer M (1); THOMAS, Chris J (4) – 1: Faculty of Medicine, Department of Community Health Sciences, University of Calgary, Canada; 2: Faculty of Veterinary Medicine, University of Calgary, Canada; 3: Department of Epidemiology and Public Health, Human and Animal Health Unit, Swiss Tropical

KAPTAN, Kubilay
A Curriculum Development on Disaster Training Course: DITAC Project by KAPTAN, Kubilay (1); KAVLAK, Uguar (1); YILMAZ, Onur (1); TIMURLENK CELIK, Ozden (1); KGORRAM_MANESH, A. (2); FISCHER, Philip (3); LUPESCU, Olivera (4); INGRASSIA, Pier L. (5); ASHKENZAI, Michael (6); ARCULEO, Christopher (7); KOMADINA, Radko (8); LECHNER – 1: AFAM-Disaster Education, Application and Research Center, Istanbul Aydin University, Turkey; 2: Pre-hospital and Disaster Medicine Centre, Sweden; 3: UKBH University Clinic Bonn, Germany; 4: URGENTA – Clinical Emergency Hospital, Bucharest, Romania; 5: CRIMEDIM – Università del Piemonte Orientale, Novara, Italy; 6: Bonn International Center for Conversion, Germany; 7: Hanover Associates, United Kingdom; 8: General and Teaching Hospital Celje, Slovenia; 9: Disaster German Aerospace Center, Germany; 10: Disaster Nations Health Career School of Management gGmbH, Germany; 11: Croatian Urgent Medicine and Surgery Association, Croatia

MAGEN, Jed
Training Imams in Basic Mental Health Care:Capacity Building in Muslim Communities by MAGEN, Jed; ABASSI, Farha – Michigan State University, United States of America

NEISLER, Gretchen Christianna
Thinking Outside of the Silo: African University partnerships with the private sector by NEISLER, Gretchen Christianna – Michigan State University, United States of America

SCHUMAN, Andrea Frances
Methodologists in Sandals: the teaching/learning of research methodologies to ground community action by SCHUMAN, Andrea Frances – Center for Scientific and Social Studies, Mexico

STIERLIN, Karin
Playful HIV/AIDS prevention– does that work out? by STIERLIN, Karin – taboobreaker GmbH, Switzerland

15:15–16:45
Location Parsenn
Chair Herve ZELLER – European Center for Disease Control
Speakers

TUE6.3: Emerging diseases

PAZ, Shlomit
Environmental Drivers of West Nile Virus Endemiaization in Europe by PAZ, Shlomit (1); SEMENZA, Jan C. (2) – 1: University of Haifa, Israel; 2: ECDC, Stockholm, Sweden

ROEST, Hendrik-Jan
The Dutch Q fever situation – lessons learned? by ROEST, Hendrik-Jan – Central Veterinary Institute, part of Wageningen UR, Netherlands, The
SINDATO, Calvin

Spatial and Temporal Pattern of Rift Valley Fever Outbreaks in Tanzania; 1930 To 2007 by SINDATO, Calvin (1,2); KARIMURIBO, Esron (1,2); DAUTU, George (3); PFEIFFER, Dirk U (4); MBOERA, Leonard E.G (5); PAWESKA, Janusz T (6); KIVARIA, Fredrick (7) – 1: Southern African Centre for Infectious Disease Surveillance–Sokoine University of Agriculture, Morogoro Tanzania, Tanzania; 2: Department of Veterinary Medicine and Public Health, Sokoine University of Agriculture (SUA), P.O. Box 3021, Chuo Kikuu, Morogoro Tanzania; 3: Department of Disease Control, University of Zambia, Lusaka Zambia; 4: Royal Veterinary College, London, United Kingdom; 5: National Institute for Medical Research, Dar es Salaam, Tanzania; 6: Center for Emerging and Zoonotic Diseases, National Institute for Communicable Diseases, of the National Health Laboratory Service, Sandringham, South Africa; 7: Ministry of Livestock and Fisheries Development, Dar es Salaam Tanzania

DHAR CHOWDHURY, Parnali

Dengue Transmission and Risk Factors in Dhaka, Bangladesh by DHAR CHOWDHURY, Parnali (1); HAQUE, C.Emdad (1); DREBOT, Michael (2); LINDSAY, Robbin (2); BROOKS, W. Abdullah (3,4) – 1: University of Manitoba, Canada; 2: National Microbiology Laboratory, Canada; 3: John Hopkins University, USA; 4: icddr,b, Bangladesh

LONG, David T.

Impact of Agricultural Activities On Karstic Aquifer Integrity and Possible Influences On Human Health; Vratza Region, Bulgaria by LONG, David T. (1,2,3); VOICE, Thomas C. (1,3,2); NIAGOLOVA, Nedialka D. (1,2,3); MCELMURRY, Shawn P. (4) – 1: Institute of International Health, Michigan State University, United States of America; 2: Geological Sciences, Michigan State University, United States of America; 3: Civil and Environmental Engineering, Michigan State University, United States of America; 4: Civil and Environmental Engineering, Wayne State University

VOICE, Thomas C.

Environmental Partitioning and Its Role in Human Exposure to Aristolochic Acids, Plant-Derived Toxins Suspected of Causing Balkan Endemic Nephropathy by TANGTONG, Chaiyanun (1); QIAO, Lulu (1); LONG, David T. (1,2); VOICE, Thomas C. (1,2) – 1: Civil and Environmental Engineering, Michigan State University, East Lansing, MI USA; 2: Geological Sciences, Michigan State University, East Lansing, MI USA

16:45-17:00 Break

17:00-18:30 Plenary VI: Implementation of a Global One Health Approach – The Way Forward

Location Aspen

Chair Walter J. AMMANN , President, Global Risk Forum GRF Davos, Davos, Switzerland

One Health thinking has become a central feature for responsible national and international policy making. Those most at risk of food insecurity or most likely to be affected by unsafe food or market failure, working together for sensible and realistic policies to improve food and nutrition security, sustainable and bio–secure production, safe livestock products,
functioning markets and fair trade, overcoming our tendency to work in our professional niches and bureaucratic silos, and instead sharing data and analyses, developing joint policies, doing research together, implementing joint investigations and being accountable for delivering results. It helps if we undergo training together, too, focusing on outcomes that have meaning to the business community, to human health, animal welfare and wildlife advocates, to politicians and to the media and then working hard to demonstrate and communicate our results, advocating for comprehensive, and increasingly integrated responses to the current challenges faced in the health, food and agriculture, climate change and trade interface, encouraging broad-based partnerships that focus on results, requiring different organisations to work together and to link up with governments, regional organisations, private companies, civil society and – most importantly – farmers' organisations, explaining the virtues of working in a joined up way and of breaking down professional silos. Only then can we contribute to safeguarding the health, food security and economic prospects of poor communities.

Panelists


**Jeffrey JENSON**, Philip D. and Eleanor G. Winn Professor for Children and Youth at Risk and Associate Dean for Research, DU Graduate School of Social Work, University of Denver, Denver, USA, “Promoting Healthy Child and Adolescent Development: Prevention and the One Health Paradigm”


**Shubha KUMAR**, Assistant Professor and Director of Programs, University of Southern California (USC), Los Angeles, USA

**David SKOLE**, Professor, Global Ecology, Remote Sensing, and GIS, Department of Forestry, Michigan State University MSU, East Lansing, USA, “Climate Change and Poverty Alleviation: Two Problems, One Intervention”

**Chadia WANNOUS**, Senior Policy Advisor, United Nations System Influenza Coordination UNSIC, Geneva, Switzerland

19:30–23:00

**Conference Dinner**
Restaurant Hotel Grischa
Talstrasse 3, 7270 Davos Platz
Co-hosted by Colorado State University and University of Denver
**DETAILED PROGRAMME WEDNESDAY, 20 NOV. 2013**

08:30–10:00

**WED1.1: Disease detection and prevention technologies**

*Location* Jakobshorn

*Chair*

Christoph KÜLLS – University of Freiburg

*Speakers*

**GOLDIN, Shoshanna**

*Misconceptions of Pediatric Eye Care in Orissa, India* by GOLDIN, Shoshanna – Wake Forest University, United States of America

**STANESCU, Rodica**

*Leaching Behavior of Mercury from Spent Fluorescent Lamps Solidified with Cement* by BOBIRICA, Constantin; STANESCU, Rodica – Politehnica University of Bucharest, Romania

**PAIZIEV, Adkham**

*Morphological and Spectral Markers of Cervical Cancer Cells* by PAIZIEV, Adkham – Institute of Ion–Plasma and Laser Technologies, Uzbekistan

**MOHANKUMAR, Puliyur S.**

*Prenatal Exposure To Bisphenol-A And Postnatal Overfeeding On Cardiovascular Function In A Sheep Model* by MOHANKUMAR, Puliyur S. (1); VEIGA-LOPEZ, Almudena (2); PADMANABHAN, Vasantha (2); MOHANKUMAR, Sheba MJ (1) – 1: Michigan State University, United States of America; 2: University of Michigan, United States of America

**VON MESSLING, Veronika**

*A Morbillivirus Vaccine Vector Expressing Influenza HA and NP Proteins Induces Robust Humoral and Cellular Immune Responses* by ROUXEL, Ronan (2); WONG, Xiao Xiang (2); VON MESSLING, Veronika (1,2) – 1: Paul-Ehrlich-Institute, Germany; 2: INRS-Institut Armand-Frappier, Canada

**ZORIGT, Tuvshinzaya**

*Detection Of Naturally Acquired Antibody To B. Anthracis Protective Antigen In Human And Cattle Serum Of Mongolia* by ZORIGT, Tuvshinzaya (1); OCHIRBAT, Khurtsbaatar (1); SHAGJ, Agiimaa (2); NYAMDORJ, Enkhtsetseg (1); SAMDAN, Munkhtuya (2); JANTSANDORJ, Munkhgerel (3); NARANKHUU, Uranshagai (2); JARGALSAIKHAN, Enkhtuya (1) – 1: Institute of Veterinary Medicine, Mongolia; 2: National Center for Zoonotic diseases, Mongolia; 3: State Central Veterinary Laboratory, Mongolia

08:30–10:00

**WED1.2: Zoonotic Diseases**

*Location* Pischa

*Chair*

Patricia Lynn FARNESE – University of Saskatchewan

*Chair*

Pan Dong RYU – Seoul National University – College of Veterinary Medicine

*Speakers*

**PASSMORE, Erin**

*Zoonotic transmission of tuberculosis – the importance of a One Health approach* by PASSMORE, Erin (1); FERSON, Mark (2) – 1: School of Public Health and Community Medicine, University of New South Wales, Australia; 2: Public Health Unit, South East Sydney Local Health District; School of Public Health and Community Medicine, University of New South Wales, Australia
TSOKANA, Constantina
*Feline Bartonellosis and its Zoonotic Potential* by ATHANASIOU, Labrini (1); CHATZIS, Manolis (1); TSOKANA, Constantina (1); VALIAKOS, George (1); CHATZOPoulos, Dimitrios (1); KANTERE, Maria (1); KONTOU, Ioanna (2); GAROUFI, Anastasia (2); PAPAevaugeLOU, Vassiliki (2); KONTOS, Vasilios (3); BILLINIS, Chara – 1: Faculty of Veterinary Medicine, University of Thessaly, Karditsa, Greece; 2: Faculty of Medicine, National and Kapodistrian University of Athens, Athens, Greece; 3: National School of Public Health, Athens, Greece; 4: Department of Animal Production, T

LIMMATUROTSAKUL, Direk
*The Global Distribution and Burden of Melioidosis, an Overlooked Emerging Infectious Disease* by LIMMATUROTSAKUL, Direk (1); GETHING, Peter (2); MOYES, Catherine (2); DANCE, David (3,4); KITPHATI, Rungrueng (5); DAY, Nicholas (1,3); PEACOCK, Sharon (1,6); BERTHERAT, Eric (7); HAY, Simon (7) – 1: Faculty of Tropical Medicine, Mahidol University, Thailand, Thailand; 2: Department of Zoology, University of Oxford, UK; 3: Nuffield Department of Clinical Medicine, University of Oxford, United Kingdom; 4: Lao-Oxford-Mahosot Hospital-Wellcome Trust Research Unit, Mahosot Hospital, Lao PDR; 5: Ministry of Public Health, Thailand; 6: Department of Medicine, University of Cambridge, UK; 7: Global Alert and Response Department, World Health Organization, Geneva

NASSIRI, Reza
*Human–to–Bovine M. tuberculosis Transmission – A Reverse Zoonosis* by GUNASEELAN, L. (2,3); BHANUREKHA, V. (2,3); PAWAR, G. (2,3); NASSIRI, R. (1) – 1: Institute of International Health, Michigan State University, United States of America; 2: Department of Veterinary Public Health and Epidemiology, Madras University, Chennai, India; 3: Tamil Nadu Veterinary and Animal Sciences University, Chennai, India

KANEENE, John B.
*Using a One Health Approach to Control Zoonotic Diseases: Tuberculosis as an Example* by KANEENE, John B. – Michigan State University, United States of America

GIESSEN, Arjen van de
*Signalling and risk assessment of emerging zoonoses in The Netherlands* by GIESSEN, Arjen van de; MAASSEN, Kitty; VAN DER GIESSEN, Joke – National Institute for Public Health and the Environment, Netherlands, The

PASSMORE, Erin
*Animal–to–human transmission of Mycobacterium tuberculosis* by PASSMORE, Erin (1); FERSON, Mark (2); TORVALDSEN, Siranda (1) – 1: School of Public Health and Community Medicine, University of New South Wales, Australia; 2: Public Health Unit, South East Sydney Local Health District; and School of Public Health and Community Medicine, University of New South Wales
**Detailed Programme Wednesday, 20 Nov. 2013**

08:30–10:00

**WED1.3: Improving Public Health Risk Governance by Integrating Modelling with Concern Assessment**

**Location** Parsenn

**Chair** Kerstin Maja DRESSEL – sine-Institut gGmbH

**Speakers**

**DRESSEL, Kerstin Maja**

*How To Integrate Risk Perception Findings In Spatial And Temporal Risk Models? The Hanta Virus Case.* by DRESSEL, Kerstin Maja – sine-Institut gGmbH, Germany

**NIEDRIG, Matthias**

*Improved Public Health by creating an interface between concern assessment and modelling.* by NIEDRIG, Matthias (1); DRESSEL, Kerstin (2) – 1: Robert Koch Institut, Germany; 2: sine-Institut gGmbH, Germany

**VANWAMBEKE, Sophie O.**

*One Health As A Tool to Strengthen Interactions Between Risk Modelling And Veterinary And Human Public Health* by VANWAMBEKE, Sophie O.; TERSAGO, Katrien; SEDDA, Luigi – Université catholique de Louvain, Belgium

10:00–10:30

Coffee Break

10:30–12:00

**Plenary VII: University Initiatives in One Health: A Global Perspective**

**Location** Aspen

**Plenary session co-hosted and organized by Colorado State University, Fort Collins, USA**

**Chair** Mark David STETTER, Dean, Professor of Zoological Medicine, College of Veterinary Medicine and Biomedical Sciences, Colorado State University, Fort Collins, USA

In the past five years, several educational initiatives in One Health have been launched at higher education institutions around the world to prepare the next generation of leaders in One Health. In this session, we will explore the successes and challenges of launching One Health educational initiatives in different cultural and educational environments and learn from students who have been involved in these initiatives. Through these discussions, we hope to provide a guide to activities, curricula, and educational frameworks that are effectively engaging students in the communication, measurement, and implementation of One Health.

**Panelists**

**Chris CASTLE**, Chief of Section, Section of HIV and Health Education, UNESCO, Paris

**Purvi MEHTA**, Regional Representative, South Asia, International Lifestock Research Institute ILRI, Philippines

**Reza NASSIRI**, Associate Dean of Global Health Programs, Director of the Institute of International Health, and Professor of Clinical Pharmacology in MSU's College of Osteopathic Medicine, East Lansing, USA *“One Health Approach Roadmap: A University Perspective”*

**Katey PELICAN**, Assistant Professor, Head of Ecosystem Health Initiative and Resident Fellow, Institute on the Environment, University of Minnesota, St. Paul, USA
Pan Dong RYU, Dean, College of Veterinary Medicine, Seoul National University, Seoul, Korea, “One Health Initiative and Educational Programs at Seoul National University “

James Herbert WILLIAMS, Dean, DU Graduate School of Social Work, University of Denver, Denver, USA

12:00-13:00 LUNCH
Location Coffee Break & Lunch Area

13:00-14:30 WED5.1: Prenatal Exposure To Endocrine Disruptors And Its Impact On Adult Onset Disorders
Location Jakobshorn
Chair P. S. MOHANKUMAR - Michigan State University
Speakers

MOHANKUMAR, P. S.
*Prenatal Exposure to EDCs and its Effects on the Cardiovascular Function in Adulthood* by MOHANKUMAR, P. S. – Michigan State University, United States of America

MOHANKUMAR, Sheba MJ
*Prenatal Exposure to Mixtures of Endocrine Disrupting Chemicals and its Repercussions in Adult Life* by MOHANKUMAR, Sheba MJ – Michigan State University, United States of America

For Health in Africa.

SolidarMed improves health care for 1.5 million people in rural Africa. SolidarMed strengthens and expands existing medical services sustainably and meaningfully. In Switzerland, SolidarMed advocates for the health concerns of people in Africa.
PADMANABHAN, Vasantha
Developmental Programming of Reproductive Dysfunction - Contribution from Environmental Steroid Mimics by PADMANABHAN, Vasantha - University of Michigan, United States of America

KANG, Kyung-Sun
Screening of Endocrine Disrupting Chemicals using Stem Cells by KANG, Kyung-Sun - Seoul National University, Korea, Republic of (South Korea)

13:00-14:30
WED5.2: Wildlife diseases
Location: Pischa
Chair: Ioannis MAGOURAS - University of Bern
Speakers:

SHAH, Sonal
Development and application of a mini DNA microarray for the screening of wild bird populations in Europe for viral pathogens by SHAH, Sonal (1); PETROVSKA, Liljana (1); GAVIER–WIDEN, Dolores (2); VALIAKOS, Georgios (3); BILLINIS, Charalampos (3); STEINBACH, Falko (1); DASTJERDI, Akbar (1) - 1: Animal Health and Veterinary Laboratories Agency, United Kingdom; 2: National Veterinary Institute, SVA SE-751 89 Uppsala, Sweden; 3: University of Thessaly, School of Health Sciences, Faculty of Veterinary Medicine, Laboratory of Microbiology & Parasitology, Karditsa, Greece

PEREIRA, Helena
An “Ideal” Database for an “Ideal” Surveillance in Wild Animals at a European Scale by PEREIRA, Helena (1); WARNS–PETIT, Eva (1); YON, Lisa (2); GAVIER–WIDÉN, Dolores (3); HUTCHINGS, Mike (4); BILLINIS, Charalambos (5); ARTOIS, Marc (1) - 1: Vetagro Sup Campus Vétérinaire, France; 2: School of Veterinary Medicine and Science University of Nottingham, UK; 3: National Veterinary Institute (SVA), Sweden; 4: Scotland’s Rural College (SRUC), UK; 5: Faculty of Veterinary Medicine, University of Thessaly, Greece

DEPNER, Klaus
New Non-Invasive Methods To Control And Eradicate Transboundary Animal Diseases In The Back Yard And Free Ranging Pig Sector by DEPNER, Klaus (1); MILICEVIC, Vesna (2); DIETZE, Klaas (3) - 1: Friedrich–Loeffler-Institute, Federal Research Institute of Animal Health, Germany; 2: Institute of Veterinary Medicine of Serbia; 3: FAO

SHURALEV, Eduard
Prediction of Biological Risk Factors of Human and Animal Tuberculosis at the Regional Level by SHURALEV, Eduard (1,2); IVANOV, Arkadiy (1); CLARKE, John (3) - 1: Federal Center for Toxicological, Radiation and Biological Safety, Russian Federation; 2: Kazan Federal University, Russia; 3: Enfer Scientific, Ireland

KNOPF, Lea
Rabies the One Health Model - Opportunities and Challenges of a Neglected Tropical Disease by KNOPF, Lea; MIRANDA, Mary E.; BRIGGS, Deborah J. - Global Alliance for Rabies Control

ABSON, Frances Elisabeth
Canine Rabies Control: Progress Towards Integration by MUTONONO-WATKISS, Beryl; ABSON, Frances Elisabeth; KENNEDY, Mark - World Society for the Protection of Animals, United Kingdom
**WED5.3: One Health approaches and trends**  
Location: Parsenn  
Chair: Shana Cecile GILLETTE – Colorado State University  
Chair: Jorge PINTO FERREIRA – SAFOSO  
Speakers:  
LAPINSKI, Maria Knight  
*Emerging Communication Media and One Health: Reporting An Initial Research Agenda* by LAPINSKI, Maria Knight; FUNK, Julie; MOCCIA, Lauren – Michigan State University, United States of America  
RISLEY, Claire Louise  
*EID2 Database: New Tools for One Health Research and Policy Development* by RISLEY, Claire Louise; WARDEH, Maya; MCINTYRE, Kirsty Marie; SETZKORN, Christian; RADFORD, Alan; BAYLIS, Matthew – University of Liverpool, United Kingdom  
FARNESE, Patricia Lynn  
*Regulating for One Health: A Comment on Ethics and Justice* by FARNESE, Patricia Lynn – University of Saskatchewan, Canada  
BERNARDO, Theresa Marie  
*Social Media For One Health: From Early Warning To Prevention* by BERNARDO, Theresa Marie (1); RAJIC, Andrijana (2,3,4); YOUNG, Ian (2,3); ROBIADEK, Katie (5); PHAM, Mai T (2,3); FUNK, Julie (1) – 1: Michigan State University, United States of America; 2: University of Guelph, Canada; 3: Public Health Agency of Canada; 4: Food and Agriculture Organisation, Italy; 5: University of Wisconsin-Madison, United States of America  
HALL, David Clement  
*Monitoring and evaluation of One Health projects; lessons from ecohealth in Asia.* by HALL, David Clement (1); LUNNEY, Meg (2); LE, Quynh Ba (1) – 1: University of Calgary, Canada; 2: Consultant, Uxbridge, Canada  

**14:30-14:45 Coffee Break**

**WED6.1: Global and national directions and approaches for One Health**  
Location: Jakobshorn  
Chair: Simon Andrew REID – The University of Queensland  
Speakers:  
BIRCHER, Johannes  
*A New Definition of Health Based on Biological and Anthropological Principles* by BIRCHER, Johannes – University of Bern, Switzerland,  
VIRAKUL, Busaya  
*Global Challenges, Sustainable Development, And Their Implications For Organization Performance* by VIRAKUL, Busaya – National Institute of Development Administration (NIDA), Thailand  
REID, Simon Andrew  
*Leptospirosis in Fiji: A Review of the Situation in 2012* by REID, Simon Andrew (1); RACLOZ, Vanessa (1); DAWAINAVESI, Aggie (3); RAIWALUI, Vereniki (2); NILLES, Eric (3); KAMA, Mike (2) – 1: The University of Queensland, Australia; 2: Ministry of Health, Fiji; 3: World Health Organisation, Fiji
REID, Simon Andrew
*The Development of a Multisectoral National Strategy for the Control of Leptospirosis in Fiji* by RAIWALUI, Vereniki (1); REID, Simon Andrew (2); NILLES, Eric (3); KAMA, Mike (1) – 1: Ministry of Health, Fiji; 2: The University of Queensland, Australia; 3: World Health Organisation, Fiji

SCHMITT OLABISI, Laura Kathryn
*Participatory, Dynamic Models: Tools for Thinking* by SCHMITT OLABISI, Laura Kathryn (1); BLYTHE, Stuart (1); LEVINE, Ralph (1); CAMERON, Lorraine (2); BEAULAC, Michael (3) – 1: Michigan State University, United States of America; 2: Michigan Department of Community Health; 3: Michigan Department of Environmental Quality

KAPTAN, Kubilay
*Natural Disaster as Momentum for Political Action in Europe* by KAPTAN, Kubilay (1); KAVLAK, Ugur (1); YILMAZ, Onur (1); TIMURLENK CELIK, Ozden (1); KGORRAM MANESH, A. (2); FISCHER, Philip (3); LUPESCU, Olivera (4); INGRASSIA, Pier L. (5); ASHKENZAI, Michael (6); ARCULEO, Christopher (7); KOMADINA, Radko (8); LECHNER – 1: AFAM-Disaster Education, Application and Research Center, Istanbul Aydin University, Turkey; 2: Pre-hospital and Disaster Medicine Centre, Sweden; 3: UKBH University Clinic Bonn, Germany; 4: URGENTA – Clinical Emergency Hospital, Bucharest, Romania; 5: CRIMEDIM – Università del Piemonte Orientale, Novara, Italy; 6: Bonn International Center for Conversion, Germany; 7: Hanover Associates, United Kingdom; 8: General and Teaching Hospital Celje, Slovenia; 9: Disaster German Aerospace Center, Germany; 10: Disaster Nations Health Career School of Management gGmbH, Germany; 11: Croatian Urgent Medicine and Surgery Association, Croatia

WED6.2: Lifestyle Diseases

Location Pischa

Chair Peter SCHMID–GRENDMEIER – University Hospital of Zurich

Chair Stefan Leonidov TSAKOVSKI – University of Sofia & Michigan State University

Speakers

YODMAI, Korravarn
*Effects of Home-Based Lifestyle Change Program on Quality of Life among elderly in Khonkean Province, Thailand* by YODMAI, Korravarn (1); SOMRONGTHONG, Ratana (1); DANSAWATDIKUL, Tipawan (2) – 1: College of Public Health Science, Chulalongkorn University, Thailand; 2: College of Asian Scholars, Khonkean Province, Thailand

ROSICK, Edward Rudolph
*Integrative Therapies in the Prevention and Treatment of Type 2 Diabetes* by ROSICK, Edward Rudolph – Michigan State University College of Osteopathic Medicine, United States of America

TROSKO, James Edward
*Global Health Crises Caused By The Collision Of Biological And Cultural Evolution: Pre–Natal Influences On Acute And Chronic Diseases Later In Life* by TROSKO, James Edward (1); NASSIRI, Reza (2) – 1: College of Human Medicine, Michigan State University, United States of America; 2: College of Osteopathic Medicine, Michigan State University, United States of America
Detailed Programme Wednesday, 20 Nov. 2013

DIMITROV, Plamen
*Smoking Cessation Programs In Primary Health Care – An Approach For Reducing Health-Related Behavioral Risk Factors* by DIMITROV, Plamen; MANOLOVA, Antoaneta; TSOLOVA, Galia – National Center of Public Health and Analyses, Bulgaria

MOHANKUMAR, Sheba MJ
*Interaction Between Exposure To Concentrated Ambient Particles, Ozone And Diet On Stress Axis Functions* by MOHANKUMAR, Sheba MJ; BALASUBRAMANIAN, Priya; ALLEN, Katryn; WAGNER, James G.; HARKEMA, Jack R.; MOHANKUMAR, Puliyur S. – Michigan State University, United States of America

A RAHMAN, Zairina
*Perception And Support For Uncontrolled Diabetes Mellitus Patients: Study Among The Population At Rural Setting In Malaysia* by A RAHMAN, Zairina – UNIVERSITI SAIS ISLAM MALAYSIA, Malaysia

16:15–16:30    Break

16:30–17:00    Closing Plenary

Location Aspen

*Poster Award: Within the closing ceremony, the best three GRF One Health Summit 2013 Posters will be awarded.*

Walter J. AMMANN, President, Global Risk Forum GRF Davos, Davos, Switzerland

Reza NASSIRI, Associate Dean of Global Health Programs, Director of the Institute of International Health, and Professor of Clinical Pharmacology in MSU’s College of Osteopathic Medicine, East Lansing, USA
POSTER PRESENTATIONS

The initial Poster Session will take place during the Welcome Reception on Sunday, 17. November 2013 from 20:00–21:00 in the Coffee Break & Lunch Area. The posters will be displayed during the whole duration of the conference and presenting authors will be available during coffee and lunch breaks for discussion. You will find a red poster award voting sheet in your conference bag, please fill out the card and submit it at the GRF Davos booth. The Poster with the most votes will be awarded during the closing ceremony of the GRF One Health Summit 2013.

BUNTAIN, Bonnie J: A Scoping Review Identifying Key Competencies for Development and Management of Transdisciplinary One Health Research Teams presented

VAN SANTVOORT, Marlie: One Health collaboration network in a highly populated area of livestock and humans in the Netherlands

SHANAHAN, Danielle Frances: Averting The Extinction Of Experience

YANAKIEVA, Antoniya Yordanova: Perspectives For Public–Private Partnership For Medical Home Care In Bulgaria

VALIAKOS, George: Wild Birds Serological Surveillance for West Nile virus, Greece 2009–2013

ATHANASIOU, Labrini: An update of Leishmaniasis in Greece

SANTAWEESUK, Sapsatee: The Effects of Injury and Illness Prevention Program to Improve Occupational Health Risk Perception and Safety Behaviors among Rice Farmers in Nakhon Nayok Province, Thailand

TSAKOVSKI, Stefan Leonidov: Multivariate Statistical Approach as a Tool for River Water Quality Assessment

STANESCU, Rodica: The Influence of Lead Speciation in Soil on Human Bioaccessibility

LAWGALI, Youssef F: Investigation Conducted to Determine the Total Levels of Arsenic (As) and Selenium (Se) and Other Trace Elements in Rice Purchased From supermarkets In North Africa and the Middle East (NA & MIDEA)

MSHANA, Stephen: Bacterial diseases burden, antibiotic use and resistance in Zambia, Congo, Mozambique and Tanzania: An urgent need of sustainable surveillance system

ALMOHAITHEF, Mohammed: The Impact of a Food Hygiene Training Program on Foodservice Staff in Saudi Arabian Hospitals

SCHNEIDER, Maria Cristina: Leptospirosis in the Americas Region – From an Outbreak Perspective

CHUN, Myung–Sun: Public Health Scientists’ One Health Awareness and One Health Network building in Korea

CHUN, Myung–Sun: How Can We Improve Foot and Mouth Disease Policy through One Health Approach; A Delphi Survey
KAYIKCI, Cihan: Global Eating Disorder

WOLFRAM, Evelyn: The Bulgarian Swiss Joint-Research Project PhytoBalk – an example of application of biotechnological methods for the conservation of valuable medicinal plants germplasm and region independent biotechnological production of plant derived pharmaceuticals

MCBAIN, Ryan K.: Disease Burden and Mental Health Systems Capacity: A WHO Atlas Study of 117 Low- and Middle-Income Countries

CHASI, Vimbai Z.J: A Risk Governance Approach to Contemporary Disasters & Diseases: Case study of measles outbreaks in the City of Cape Town, South Africa presented by

LANTIER, Frederic: NADIR, European Network for Animal Diseases Infectiology Research

DAHAL, Rojan: Nepal: a OneHealth pilot project for the early detection of avian influenza?

KEARNS, Cathriona Ann: A Preliminary Study On Pesticide Usage On Golf Courses In Northern Ireland And Potential Risks To Golfers And The Environment

KEARNS, Cathriona Ann: Epidemiology Of Mycobacterium Bovis In Humans And Cattle In Northern Ireland, 2000–2012.


NADIRADZE, Kakha: Food Safety And Environment Protection Problems

Please find this red poster evaluation sheet in your conference bag:
Workshop Programme Thursday, 21 Nov. 2013

GRF One Health Summit 2013

Post-Conference Workshop

to develop an
International Research and Implementation Strategy

Organized by the Michigan State University, the CK Care AG, Davos and the
Global Risk Forum GRF Davos
(on invitation only)

Thursday 21 November 2013

Background
The 2nd GRF One Health Summit, to be held 17 – 20 November 2013 in Davos addresses and frames the complex interactions between human health, livestock, pet and wildlife health, climate, ecosystems, agriculture, food systems and human development. It includes aspects of nutrition, agriculture, the safety and security of food supplies, environmental stewardship and the management of natural resources, water, energy, and ecosystems services, as well as questions of awareness, behaviour and learning, governance, economics, and disaster preparedness. Keeping in mind that more than half of the worldwide population is living in urban areas and rural exodus continues to grow; One Health may become a crucial approach to successfully cope with all the drivers and consequences in urbanization dynamics.

One Health has begun to move beyond the status of a mere concept to become a truly global movement at the interface of science, society, policy and practice. It is deeply interdisciplinary and cross-sectorial and provides a fascinating, powerful framework that a variety of professional communities and social groups can adhere to. Our best hope is that the One Health paradigm will be helpful in reversing the worst of current problems at the human-animal-environment and development interface thus fostering a more sustainable way of life.

Workshop Goals
Based on the presentations and discussions at the 2nd GRF One Health Summit to be held from 17 – 20 November 2013, the workshop will synthesize the conference outcomes and formulate an international research agenda and an implementation strategy. The workshop shall encourage the formation of trans-disciplinary international teams to develop adequate research and implementation projects and shall facilitate the link to potential donors.
Who should attend?
We are looking for participation of representatives from research institutes, international agencies, from the private sector, from implementation practice, and from donor agencies and foundations who want to engage in future One Health research and implementation activities. To enable in-depth discussion, the workshop will be open for a limited number of 25 people. Participation will be handled on an “on invitation only” base.

Organisation
The workshop is jointly organized by the Michigan State University, the CK Care AG, Davos and the Global Risk Forum GRF Davos. Participation in the workshop is free of charge.

Registration
For registration, we ask you to send a brief confirmation email to Ms. Jill Portmann at jill.portmann@grforum.org. Please add a brief bio and a photo for the workshop documentation.

Outcome of the Workshop
The workshop is aimed at the drafting of some preliminary One Health research and implementation proposals, and the formation of international teams interested to further develop the proposals. In addition, a paper on the future research and implementation goals in One Health shall be prepared by the workshop participants and submitted to a peer-reviewed journal.
### 2\textsuperscript{nd} GRF One Health Summit

#### Post-Conference Workshop

to develop an International Research and Implementation Strategy

**Workshop Programme Thursday, 21 Nov. 2013**

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| 20:00h     | **Dinner**
with a Typical Swiss Cheese Fondue                                        |
|            | **Walter AMMANN**, President and CEO, Global Risk Forum GRF Davos, Davos, Switzerland|
|            | **Ian GRAY**, Michigan State University, East Lansing, USA                |
|            | Welcome and introduction to the workshop                                 |

**Thursday, 21 November 2013**

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<td>08:00h</td>
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| 08:30h     | **Session I: Outcomes of the 2\textsuperscript{nd} GRF One Health Summit –**
Presentation and moderated discussion                                      |
<p>|            | <strong>Chair:</strong> Reza NASSIRI, Associate Dean of Global Health Programs, Director of the Institute of International Health, and Professor of Clinical Pharmacology in MSU’s College of Osteopathic Medicine, East Lansing, USA |
|            | <strong>Presenters:</strong> David LONG, Geological Sciences, Michigan State University, East Lansing, USA |
|            | Tom VOICE, Professor, Civil and Environmental Engineering, Michigan State University, East Lansing, USA |
|            | <strong>Moderator:</strong> Walter AMMANN, President and CEO, Global Risk Forum GRF Davos, Davos, Switzerland |
|            | Each Plenary Session will be briefly presented with a few slides (research, technology, implementation needs). |
|            | Each participant will provide 3 – 5 priority issues                       |
|            | General discussion                                                         |
| 10:00h     | <strong>Coffee Break</strong>                                                          |
| 10:15      | <strong>Group Discussions I</strong>                                                   |
|            | Participants will be split into 3 working groups and discuss and define ways on how to achieve the priority goals set for the next 5 years and on what can be contributed to the post 2015 process. |
|            | <strong>Group Discussion Leaders:</strong>                                             |
|            | Group 1: Steve PUEPPKE, Professor, Michigan State University, East Lansing, USA |
|            | Group 2: Cezmi AKDIS, Director, Swiss Institute for Allergy and Asthma Research SIAF and Director, CK Care AG, Davos, Switzerland |
|            | Group 3: Andreas RECHKEMMER, Professor and American Humane Endowed Chair, University of Denver, and Chief Science and Policy Advisor, GRF Davos, Denver, USA |</p>
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<td>11:45h</td>
<td>Presentation of the group discussions</td>
<td>Chair: Walter AMMANN, Global Risk Forum GRF Davos, Davos, Switzerland</td>
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<td>Goal 2: a) clear picture about needs in research and implementation. b) Priorities for the next 5 years. Contributions to the post 2015 process (SDG, HFA2, etc.), c) potential contributions for a paper in a peer-reviewed journal</td>
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<tr>
<td>12:30h</td>
<td>Short Lunch Break</td>
<td>Short Presentation on the Phsikalisch-Meteorologisches Observatorium/ World Radiation Center PMOD/WRC</td>
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<td>Werner SCHMUTZ, Director, Phsikalisch-Meteorologisches Observatorium/ World Radiation Center PMOD/WRC, Davos, Switzerland</td>
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<tr>
<td>13:15h</td>
<td>Group Discussions II</td>
<td>Continuation of the discussions in the three working groups. Elaboration of concrete research and implementation programmes and projects based on the priorities agreed upon in discussion I.</td>
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<tr>
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<td>Group Discussion Leaders:</td>
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<td>Group 1: Steve PUEPPKE, Professor, Michigan State University, East Lansing, USA</td>
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<td>14:45h</td>
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<td>Goal 3: a) formation of international research and implementation teams with concrete project ideas and clear minds on how to proceed, b) table of content for the paper defined and agreed on.</td>
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<td>Ian GRAY, Michigan State University, East Lansing, USA</td>
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- Walter J. Ammann, Chairman
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- Tobias Ellenberger, IT Support
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“From Thoughts to Action”

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Through a variety of activities, GRF Davos aims at serving as a Centre of Excellence in knowledge and know-how generation, exchange and transfer for the application of timely and appropriate risk reduction and disaster management strategies, tools and practical solutions. In doing so, GRF Davos helps to reduce vulnerability to all types of risks and disasters and protect life, property, the environment, critical infrastructures and services and all means of businesses on a sustainable basis.

GRF Davos Main Purposes:
- To bridge the gaps between science and practice;
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- To promote solutions in integrative risk management;
- To harmonise risk reduction with climate change adaptation, land degradation, public health and food security;
- To provide a network for decision-makers, practitioners and experts from politics, governments, IGOs, the private sector, science, NGOs and the public;
- To contribute to the UN Hyogo Framework for Action and the UN Millennium Development Goals.

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Pharmacy:
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Police (Emergency call number)
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user: participant
password: onehealth

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3rd GRF One Health Summit 2014
05–08 October 2014 • Davos • Switzerland
GRF ONE HEALTH SUMMIT 2013 PROCEEDINGS

2nd GRF One Health Summit 2013
17–20 November 2013 • Davos • Switzerland

Short Abstracts Collection

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Edited by
Marc Stal
Jill Portmann
Andrea Roth
Walter J. Ammann

Global Risk Forum GRF Davos, Switzerland
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Concentrated Poverty and its Correlates: A Case Example of Social Development Informing One Health

BRISSON, Daniel
University of Denver, United States of America

In urban areas around the world poverty is concentrated into low-income neighborhoods. The precise causes of concentrated poverty vary from city to city. However, we know that common to all neighborhoods of concentrated disadvantage are that low-income families have settled there in part because of a lack of housing and neighborhood choice. We also know that neighborhoods of concentrated disadvantage, neighborhoods that millions of families call home, experience extreme levels of disinvestment that result in lower-educational attainment, higher crime, and poor health. By itself, concentrated poverty is not a problem. It is not problematic to make a stock of housing in a neighborhood affordable for low-income families. However, the correlates of concentrating poverty—low-resourced schools, absence of transportation systems, absence of quality goods and services, increased crime and poor safety, exploitation of the physical environment by polluting industries—are major threats to the goals of One Health. Concentrated poverty is often the result of careful planning and well-intentioned policy by governmental and non-governmental organizations to increase the quantity of affordable housing. However, these just and charitable plans and intentions have often resulted in the creation of communities that over time are neglected and have proven to be major risks for the health and well-being of resident families and to our environment.

Setting the Stage: Moving Forward on One Health

BUTLER-JONES, David Alexander
Public Health Agency of Canada, Canada

One Health is an approach that can help us make sense of complex animal, human and environmental health issues globally and locally. It opens up new vistas, helps us ask new questions and think holistically and ‘outside the box,’ about the health of all populations. Dr. David Butler-Jones, Canada’s Chief Public Health Officer, will help set the context for moving forward on One Health. From a Canadian perspective, he will provide practical considerations for how One Health approaches could help to provide needed structure and context to better understand complex health issues that affect multiple populations and regions. He will discuss current trends, challenges and opportunities, and potential ways forward for the One Health community.
Wastewater, Ecosystems and Health: Risks and Opportunities
GUÉLADIO, Cissé
Swiss Tropical and Public Health Institute (Swiss TPH), Switzerland

The One Health approach pleads for considering human, animal and ecosystem health together. Among these three areas the ecosystem health is far less getting enough consideration and action. However a number of human health problems result from degraded ecosystems and poorly managed environments contribute to the majority of all diseases. The wastes discharges particularly into aquatic ecosystems (rivers, standing water bodies, coastal areas) are on rise, affecting the water quality, the aquatic products, the biodiversity and consequently the health and wellbeing of communities. Globally, some studies estimate that two million tons of sewage, industrial and agricultural waste is discharged into the world’s waterways every year. Other estimates indicate that global wastewater production is around 1,500 km3 per year worldwide. This offers in many contexts considerable opportunities for a cost effective reuse of wastewater in various processes (agriculture, industries) as an alternative to an unnecessary use of higher quality of water. Nevertheless, there are a number of risks linked to the potential high-level of contamination, the huge variety of sources, combined with the large volume of wastewater discharged, the common non-controlled use practices, and the diverse characteristics of the receiving ecosystems, linked to the levels of human exposure. This is particularly challenging in urban and rural interfaces in the context of the huge urbanization process underway in many parts of the world and the low rate of wastewater treatment. In developing countries, over 80-90% of urban wastewater is improperly discharged, insufficiently treated, and directly or indirectly reused. Therefore the issue of wastewater global challenges needs more attention than before. It entails looking at a wide spectrum of interlinkages affecting risks for human, animal and ecosystems health.

The Intersection of One Health and WASH
HERING, Janet
Swiss Federal Institute of Aquatic Science & Technology EAWAG, Switzerland

As early as 400 BCE, Hippocrates recognized that “water contributes much towards health” and correctly linked dysentery and diarrhea to consumption of “unwholesome” water. Today, the term “environmental health” is often mentioned in the context of the One Health Initiative. In practice, however, the environmental aspects of One Health, and sanitation in particular, are not the focus of significant effort. This is an important deficit because inadequate sanitation and hygiene are strongly implicated not only in the direct transmission of human disease but also in maintaining cycles of zoonotic disease transmission. Improving sanitation and hygiene practices, however, is a complex undertaking that requires as much attention to socio-economic aspects as to technical aspects. The psychological aspects of changing hygiene practices and the development of economic incentives for sustainable sanitation systems will be discussed

Keynote III
Mon 18.11.2013 • 10:30-11:00 • Room: Aspen

Promoting Healthy Child and Adolescent Development: Prevention and the One Health Paradigm
JENSON, Jeff
Keck School of Medicine, USC, United States of America

In the United States, a public health framework based on risk and protective factors for child and adolescent problems has emerged as a model to guide the design, implementation, and evaluation of prevention programs in schools, neighborhoods, and communities. The evolution and current status of American public health approaches to prevention is discussed in the context of the One Health paradigm. Implications for advancing prevention as a universal policy approach to promoting healthy development in young people are noted.
The Economics of One Health: Effectiveness and Efficiency
JONAS, Olga B
World Bank, United States of America

Pandemics are a top global catastrophic threat. The economic losses from a severe influenza pandemic could be $3 trillion, or 4.8 percent of global GDP. Human health and economies benefit when zoonotic disease outbreaks are averted so that epidemics and pandemics do not develop. Moreover, control of endemic zoonoses and animal diseases more broadly would benefit some of the poorest people in developing countries. According to ILRI, some 2.3 billion infections with zoonotic pathogens occur in developing countries every year. This is a formidable burden.

Control of a zoonosis requires early, effective, rapid actions. Rapid effective action is only possible if the public veterinary and human health capacities exist, are equipped, and are prepared to respond effectively. Since surveillance and zoonotic disease control occur at the animal-human interface, veterinary and human health systems have to communicate and coordinate. The need for a coherent system comprising the veterinary and human public health components, with robust bridges between them, cannot be overemphasized. It is needed at country, regional, and global levels. Any gaps may lead to failures.

One Health approaches ensure that interdisciplinary collaboration occurs and that gaps between institutions and disciplines are reduced, so as to avoid costly delays, and even failures, in disease detection, diagnosis, and control. One Health means “the collaborative efforts of multiple disciplines working locally, nationally and globally to attain optimal health for people, animals and our environment.” One Health approaches are not only highly effective, but they will often be more efficient as they entail sharing of some costs and capacities among the services involved; evidence is presented in the People Pathogens and Our Planet – Economics of One Health report from the World Bank (2012). Prevention of costly pandemics and other disease outbreaks requires systematic building of animal and human public health systems up to international standards and sustaining their operation in the medium and long-term.

Conflict, Migration and Environmental Degradation in Dadaab Refugee Camp in Northeastern Kenya
KUMSSA, Asfaw
United Nations Centre for Regional Development, Kenya

The Somali civil war of 1991 and the subsequent political instability and environmental degradation forced a number of refugees to neighboring countries, mainly Kenya. Most of the Somali refugees are housed in Dadaab refugee camp which is home to about 463,422 refugees, making it the largest in the world. This paper discusses environmental degradation as one of the causes of conflict between refugees and the host community in the region. The paper argues that conflict between the host community and refugees in Dadaab area is mainly triggered by environmental degradation and competition over scarce resources rather than by ethnic animosity since both the refugees and the host community are predominately Somalis with the same religion and cultural background. Therefore the policy prescription to deal with conflict in this region should focus on capacity building and sensitization programs to improve the knowledge and skills of the host community and the refugees in conflict prevention, management, and peace building techniques as well as supporting both communities with alternative source of energy to reduce environmental degradation and the destruction of vegetation and consequently bring sustainable peace and development.

The Social Dimensions of One Health - Toward an Agenda for Social-Ecological Justice

Plenary VI Implementation of a Global One Health Approach – The Way Forward
Tue 19.11.2013 • 17:00-18:30 • Room: Aspen

Conflict, Migration and Environmental Degradation in Dadaab Refugee Camp in Northeastern Kenya
KUMSSA, Asfaw
United Nations Centre for Regional Development, Kenya

The Somali civil war of 1991 and the subsequent political instability and environmental degradation forced a number of refugees to neighboring countries, mainly Kenya. Most of the Somali refugees are housed in Dadaab refugee camp which is home to about 463,422 refugees, making it the largest in the world. This paper discusses environmental degradation as one of the causes of conflict between refugees and the host community in the region. The paper argues that conflict between the host community and refugees in Dadaab area is mainly triggered by environmental degradation and competition over scarce resources rather than by ethnic animosity since both the refugees and the host community are predominately Somalis with the same religion and cultural background. Therefore the policy prescription to deal with conflict in this region should focus on capacity building and sensitization programs to improve the knowledge and skills of the host community and the refugees in conflict prevention, management, and peace building techniques as well as supporting both communities with alternative source of energy to reduce environmental degradation and the destruction of vegetation and consequently bring sustainable peace and development.

Plenary II The Social Dimensions of One Health - Toward an Agenda for Social-Ecological Justice
Mon 18.11.2013 • 08:30-10:00 • Room: Aspen
Addressing Health and Environmental Linkages: Key to Sustainable Development
Prof. Dr. Her Royal Highness Princess Chulabhorn MAHIDOL
Chulabhorn Research Institute, Thailand

Development, which is the key driving force for all human activities, can be accomplished only with human resources. Thus, for development to be sustainable, the maintenance and improvement of health of the people is extremely important, otherwise the foundation for development is weakened and that development cannot be sustained. Public health is seriously threatened by a lack of access to safe and nutritious food, as well as clean water and sanitation, and by poor air quality and environmental deterioration, including climate change, all of which is compounded by unhealthy lifestyles. All of these factors contribute to an unprecedented burden of disease, of which chronic, non-communicable diseases are an increasing concern, both in developed, as well as developing, countries. Certain environmental and lifestyle factors contributing to cancer development will be presented with scientific evidence to illustrate how these factors can affect health and disease outcomes. With a concerted effort to pool resources, a break through in both cancer diagnosis and therapy can be made, and the burden on public health lessened.

Honorary Lecture
Sun 17.11.2013 • 16:35-17:15 • Room: Aspen

The Pandora’s Box of One Health
MANFREDO, Michael James
Colorado State University, United States of America

Zoonotic disease emerges as the result of complex social-ecological interaction. Human behavior has been described as the key to “pandora’s box” of this process. It is not well understood as a driving factor. Findings suggest that 1) cultural custom can produce dramatic unpredictable, unintended effects in zoonotic disease emergence and transfer, 2) we are in the midst of a relatively rapid global cultural value shift that is changing human-animal-environmental interaction creating new disease pathways and opportunities for spillover, and 3) individual human decisions to take risks must be viewed in an institutional, social and cultural context. Reductionist rational models of decision-making underestimate the contextual influences on human behavior. Onehealth might best serve as a common sense guide that urges scientists and practitioners to broaden their field of vision about the drivers and consequences of zoonosis. To be effective in that regard, considerable attention needs to be given to the multi-level complex social component of the One Health triangle.

Plenary V Emerging and Zoonotic Diseases – Strengthening Global Surveillance Systems
Tue 19.11.2013 • 11:00-12:30 • Room: Aspen

One Health Approach Roadmap: A University Perspective
NASSIRI, Reza
Michigan State University, United States of America

The human population continues to grow and increases it interconnectedness. Through a sustainable global collaboration among stakeholders and disciplines, we can efficiently address the current problems of the human – animal – ecosystem – food security – water quality interface. Although the concept of One Health (OH) goes back many decades ago, its vision, approach and implementation faces numerous complexities due to the diversity of perspectives; therefore, considerable challenges exist including development of a viable and sustainable “strategic roadmap,” which provides direction for OH implementation.

The initial One World One Health Symposium held in New York in September 2004 first formulated the concepts that came to be known as the Manhattan Principles, which “... urged world leaders, civil society, the global health
community, and institutions of science to holistically approach prevention of epidemic/epizootic disease and the maintenance of the ecosystem integrity.” A workshop on operationalizing OH was held at Stone Mountain, Georgia, USA in May 2010 with the theme “One Health: a Policy Perspective – Taking Stock and Shaping an Implementation Road Map.” The meeting attempted to identify the principle concepts of OH from vision to implementation with emphasis on advocacy, networking, proof of concept and country level needs assessment, capacity building, planning, methods and training. Now, OH features on many global agenda, including the facilitating efforts made by the GRF-Davos and its role in furthering OH approaches and implementation in an attempt to mitigate the risks and exposure facing humans, animals, and the ecosystem, including food and water security.

There must be an international response to the need for a structured, coordinated and collaborative approach to OH. The framework of such an initiative must be validated through various stakeholders’ levels particularly for its academic approach, compatibility, applicability, reliability, policy, administrative and governmental partnership. A successful strategic OH roadmap will require improving health outcomes for the people, especially in resource- and infrastructure-limited regions of the world, and for animals and the environment. There must also be identification and recognition of the multiplicity of interplay factors related to humans, animals and the ecosystem. Such a framework necessitates application of multidisciplinary approaches in solving OH problems. Establishing benchmarks of best OH practice is dependent upon long-term engagement and commitment. Therefore, multi-sectoral engagement, legislation, and communication to engage partners at community, local, national and international levels are also some challenges that the OH platform is currently facing. To achieve the goals, we must also invest in various resources and technology, including information technology. The approach must be introduced gradually through existing opportunities, bridges, resources, and economic logic. A fundamental touchstone for OH vision is applied research, which provides the key evidence that enables stakeholders to effectively address OH problems and to offer evidence-based solutions vis-à-vis the human, animal and ecosystem interface. The results of research should be published in an OH-relevant peer-reviewed journal not only for advancing OH new knowledge, but also, to empower stakeholders, and to thus increase availability of funds to invest wisely on OH issues. Enhancing the OH research agenda through a network of international collaborative research programming with well-defined aims can generate an achievable outcome. We must also enable and encourage the ownership of OH implementation through a partnership among governments, funding agencies, industry, NGOs, and universities that have existing knowledge of OH research, education and track record for global health development projects.

Our shared vision of OH for designing, developing, and constructing a strong but flexible, maintainable, and amendable strategic roadmap, in order to be prepared to anticipate future needs and realities, should include vital elements, such as articulating a vision for appropriateness of integration, identifying existing opportunities, bridges, barriers and gaps, which align with global health issues, identifying areas where integration exists and is practical, fostering financial commitment, political leadership, and societal engagement and support, and most importantly, scaling up, and being open to, creativity and innovation.

In conclusion, One Health could and must serve to illustrate the complex interplay of understanding the science of the human, animal and ecosystem interface and suggest the medical basis for addressing any future problems, politics, and psychological, cultural, and economic factors. The spirit of “collaboration” should prevail and support the further investment on OH which is already a growing trend that continues to transform the vision of many institutions and agencies for not only one planet and one future, but also for the species of the planet.

Plenary VII University Initiatives in One Health: A Global Perspective
Wed 20.11.2013 • 10:30-12:00 • Room: Aspen
The Resilience of Social and Ecological Systems: An Agenda for Justice
RECHKEMMER, Andreas
University of Denver, GRF Davos, United States of America

The field of social work adds tangible value to society by reducing the vulnerability of social groups and populations and by promoting social and economic justice. Thus social work strives for the resilience of communities and seeks to foster sustainable societies. The phenomenology of global change - environmental degradation, climate change, loss of biodiversity and ecosystem services, unsustainable and inequitable development trajectories, new diseases etc. - adds new and additional risks for society, as Hurricane Katrina has shown. Therefore, it seems promising to integrate aspects of environmental sustainability and the well-being of ecosystems and diverse species with the more traditional areas of social work theory and practice. Many new and emerging variations and permutations of social vulnerability are best addressed within the context of larger systemic risks, especially those related to environmental changes and global development challenges.

A truly holistic approach to resilience will aim to connect the well-being and adaptive capacity of humans and social groups with that of animals, plants and ecosystems, include relevant aspects of public, economic and international affairs, and seek to identify sustainable solutions for the larger, complex systems our societies are part of. The emerging concept of One Health can become a key element of this new agenda in research and education for enhanced local and global practice in humane attitudes and social work, and trigger a broad dialogue about true social-ecological justice.

Global Issues in Water Quality: Implications to One Health
ROSE, Joan B.
Michigan State University, United States of America

Water is one of the most critical of all the world’s life support systems on which the Blue Planet depends upon. Water quantity and quality (access and management) are interlinked with our global biohealth servicing a sustainable plant, animal and human network and it is clear that water security also influences food security. In the last 60 years we have seen a great acceleration of population growth (in people and animals), landuse change, use of fertilizers, and water use as well as the global transport of humans and animals. This has led us into the anthropocene where continued water quality degradation as demonstrated by increased eutrophication and fecal contamination associated with microbial hazards and antibiotic resistance is a global phenomenon. This is exacerbated by climate change and extreme events. Despite our investment in infrastructure and better environmental protection policies, water pollution shows a continual and dramatic impact on health in the developed world and devastates communities in the developing world. Waterborne diseases in humans are characterized by pathogens which are persistent, potent, excreted at high numbers and zoonotic. Recent water outbreaks of Clostridium difficile and Gullian Bare Syndrome in Europe and the US are emerging. Rare amoeba associated with high mortality in children are showing up in association with tap water. Waterborne poliovirus and cholera have not been controlled and zoonotic diseases including E.coli 0157H7, Campylobacter and Salmonella, parasites like Giardia and Cryptosporidium and emerging viruses like Cyclovirus remain global threats to animal and human health. Through the use of a quantitative microbial risk assessment (QMRA) framework and molecular tools, point and diffuses sources and specific hazards are now identifiable (through microbial source tracking); animal and human health can be addressed through targeted monitoring and management strategies. It will be more im-
important than ever to implement these key approaches in order to effectively and efficiently mitigate the impacts of an aging infrastructure (or lack thereof) and the global changes that are now occurring to improve the BioHealth of the planet in the future.

Keynote IV
Mon 18.11.2013 • 11:00-11:30 • Room: Aspen

**One Health Initiative and Educational Programs at Seoul National University**

**RYU, Pan Dong**

**Seoul National University - College of Veterinary Medicine, Korea, Republic of (South Korea)**

After recent outbreaks of FMD and HPAI in Korea, the need for One Health approaches has been widely accepted and the need for One Health education and research in the university are rapidly increasing. In 2012, the College of Veterinary Medicine of Seoul National University (SNU CVM) set One Health competencies as one of the core educational goals to meet societal needs and global standards in veterinary education. The faculty council of the College established a provisional One Health Committee to seek educational implication of One Health. The Committee recommended an international meeting for the spread of One Health concept among the related fields in Korea. In December, 2012, under the initiative of SNU CVM, One Health Forum Korea 2012 was held in Seoul in collaboration with Korea Center for Disease Control and Prevention, Animal Plant and Fisheries Quarantine and Inspection Agency, and National Institute of Environmental Research. Thanks to the success of One Health Forum Korea 2012, College got the opportunity to draw public attention to One Health and to collaborate with major partners of One Health in Korea.

Another and more important recommendation of the Committee was to introduce One Health educational programs to the veterinary curriculum at SNU. The curriculum includes One Health strategy and case studies for prevet students, vet-students and postgraduate students. One Health degree program and international exchange programs are also under discussion. Continuing education program for One Health will be established as 3-6 months certificate programs for veterinarians. Outreach One Health program for kids and public lecture on One Health will be given to promote public understanding of One Health. To overcome the limitations in the educational resources in One Health, the College aims to establish rather flexible curriculum for DVM students to accommodate the One Health resources (experts and externship) in other colleges within SNU including the College of Medicine, and Graduate Schools of Public Health, and Environment, and those outside SNU including the international organizations in One Health.

Plenary VII University Initiatives in One Health: A Global Perspective
Wed 20.11.2013 • 10:30-12:00 • Room: Aspen

**Climate Change and Poverty Alleviation: Two Problems, One Intervention**

**SKOLE, David L.**

**Michigan State University, United States of America**

Two of the most significant threats to global peace and prosperity are rural poverty and climate change. They can be addressed through a single intervention – greener and more productive agriculture and forestry that provides both climate mitigation potentials and enhancements of livelihoods. Poverty is an important factor that undercuts many health efforts and interventions. Although global development goals have decrease poverty, infant mortality, and malnutrition in many parts of the world, there remains a significant fraction of the world’s population that has not benefited from these trends. Approximately 3 billion people, half of the world’s population, live below the ethical poverty level (EPL). Currently, the global EPL is around $2.70/day. A vast majority of these individuals depend for their survival on the 400 million small-farms that are found throughout the developing world, but subsist on marginal and degraded lands of low fertility and productivity. Global climate change is increasingly recognized as a global threat, but as is often the case the rural poor will bear the heaviest burden of a changing climate, and often work in landscapes that
are most vulnerable and least resilient to climate change adaptation. For the majority of the world’s rural population, the persistent problems of food insecurity, poverty, and the struggle to develop and sustain new sources of economic growth must now be considered against a backdrop of uncertainty and change in historical climatic patterns. Governments and international organizations need to continue responding to the immediate concerns of extreme poverty, environmental degradation and social unrest, but must also prepare communities and entire regions to adapt to uncertain future climatic regimes, as well as to make tangible contributions in lowering greenhouse gas emissions at a planetary scale. Under mounting time pressures, there is an urgent need to evolve win-win solutions that address both these immediate local and long-term global threats. This paper presents one such solution through the Carbon2Markets model, which aims to develop community-based agro-forestry carbon systems in the poorest of rural communities in Africa, Asia and Latin America that simultaneously sequester carbon and enhances livelihoods, while promoting interventions that are both mitigation and adaption oriented. Such low emission development strategies (LEDS) that link tree planting with near-term payments through the emerging carbon markets, with additional payments from high value tree products coming on-line in subsequent years, have the potential to positively impact millions of lives by enhancing incomes and livelihoods, reducing poverty and mitigating climate impacts.

Plenary VI Implementation of a Global One Health Approach – The Way Forward
Tue 19.11.2013 • 17:00-18:30 • Room: Aspen

*Ecoepidemiology of West Nile virus transmission in urban areas: Processes and Predictions of Disease Outbreaks*

WALKER, Edward D
*Michigan State University, United States of America*

The invasion, establishment, and spread of West Nile virus (a mosquito borne flavivirus) into North America from 1999 to present has resulted in epizootic and epidemic outbreaks that vary in intensity and attributes. It represents a classic emergence process of an exotic pathogen of formerly confined geographic distribution to a much wider geographic extent with much greater impact on human and animal health; and it provides a model for surveillance, analysis, and prediction of epizootic and epidemic processes. This presentation analyzes the biotic and abiotic factors furthering outbreaks of West Nile virus leading to human disease across a large urban landscape of the upper Midwestern United States – the Chicago metropolitan area. Field studies show that annual, summertime amplification of virus in the mosquito population depends upon very few bird species as key virus hosts, with the American robin being the primary “super spreader” bird species. The mosquito Culex pipiens is identified as the sole epizootic and epidemic vector, and the diverse molecular genetic population structure of this species permits feeding on birds and humans. An autoregression model based on degree-week temperature accumulation in the spring-summer time period accurately predicts amplification of virus infection in the mosquito population and human cases, and supports the utilization of mosquito surveillance as a tool for monitoring epidemic outbreaks.

Plenary V Emerging and Zoonotic Diseases – Strengthening Global Surveillance Systems
Tue 19.11.2013 • 11:00-12:30 • Room: Aspen

*Climate Change and Food Security: Insights from Infectious Disease Control*

WU, Felicia
*Michigan State University, United States of America*

Elimination of microorganisms (including fungi) and the toxins and diseases they produce is virtually impossible today. It may become even more difficult in the future, with climate scenarios leading to greater microbial growth, plant infection, and subsequent food contamination. However, the damage these microorganisms cause in human society can be substantially reduced. This lecture draws on examples from global public health and ef-
forts to control infectious disease, and links these to efforts in controlling mycotoxins: toxins produced by fungi in foods. I will draw analogies between types of interventions to reduce infectious disease and types of interventions to reduce mycotoxins. A case study will be presented of one specific successful effort to eradicate an infectious disease in the global human population: smallpox. Additionally, I will describe what has worked in infectious disease control but has no analogy in mycotoxin control yet, and will give examples of public health failures to illustrate mistakes we wish to avoid in attempting to control mycotoxins. The summary is of lessons learned from public health efforts at infectious disease control, to apply to mycotoxin control worldwide.

Keynote II
Sun 17.11.2013 • 18:00-18:30 • Room: Aspen
Perception And Support For Uncontrolled Diabetes Mellitus Patients: Study Among The Population At Rural Setting In Malaysia
A RAHMAN, Zairina
UNIVERSITI SAINS ISLAM MALAYSIA, Malaysia
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Introduction: In Malaysia report from National Health and Morbidity Survey showed the increasing diabetic prevalence in 1986, 1996 and 2006 study that was 6.3%, 8.3% and 14.9% respectively. Study also shown that only around 14.3% patient has controlled HbA1c status. Methods: Face to face interview, blood HbA1c result and patients’ medical record were used to get the information needed. Respondents were uncontrolled diabetes mellitus patients (HbA1c of ≥6.5) who attended government health clinics at Tampin, Negeri Sembilan. Results: Total of 346 respondents were interviewed of which 64.5% were female and 85.8% aged more than 50 years old. Mean (SD) of age was 59.2(8.9). Majority (84.4%) was married and staying with family. There was a significant positive correlation between HbA1c level and duration of suffering from diabetes (r=0.27, p<0.001). Perception about diabetic control showed that, 78.6% agreed they knew the importance of diabetic medication, 50.3% agreed they knew how to prevent from getting hyperglycemia and 72.0% agreed they knew about diabetic diet. In term of family support, 84.7% agreed that they got family support for diabetic diet, 81.6% agreed their family reminded on medication intake, 87.8% agreed their family support their emotional status and 83.6% agreed their family accompany them to clinic. Only 2.6% agreed that clinic doctors do show concern about their diseases condition. Majority agreed that their spouses (64.5%) and son/daughter (30.6%) who were concern about their diseases. Conclusion: There is a need for holistic approach with family and community participation. Long duration of illness may increase ignorance that worsens uncontrolled diabetic state. Patients, family and their community need to be educated together and empowered to support patients to have greater control and effort for their health.
Approaching human and animal welfare holistically is vital to many disease control efforts. For example, rabies kills an estimated 55,000 humans annually and in more than 99% of all human rabies cases, the virus is transmitted from dogs (WHO, 2005). Misconceptions of the best methods to control the disease can, and often do, result in animal suffering, such as inhumane dog culling. Not only is animal welfare compromised, but such methods are not supported by evidence. In 2005, the WHO stated that “there is no evidence that removal of dogs alone has ever had a significant impact on dog population densities or the spread of rabies”.

However, mass canine vaccination campaigns, achieving over 70% herd immunity have, in numerous cases, been the most effective and cost efficient measure for controlling rabies in the dog population and hence the main risk to humans. To ensure this is achieved, programmes will require political support that actively integrates public health, as well as animal health and welfare agencies.

By way of example, in Bangladesh canine rabies is a pressing health concern. Culling dogs has failed to prevent people as well as animals dying from rabies. After supporting the government with a pilot canine vaccination programme in the southern beach resort of Cox’s Bazar in 2011, WSPA recently contributed to a government led workshop to help them develop a coordinated national action plan against rabies. Work is on-going, but crucially, various ministries such as health, livestock and local government – plus academics and representatives from international organisations including the WHO and FAO are involved. This integrated approach to human and animal disease puts mass canine vaccination at the heart of control efforts, and whilst implementation is at an early stage, the prospect of longer term elimination of the disease is now an achievable goal.

**Keywords:** Canine Rabies Control, One Health

**Session:** WED5.2 Wildlife diseases

Wed 20.11.2013 • 13:00-14:30 • Room: Pischa

Accurate and rapid detection of pathogens are vital for disease control. Methods such as culturing of pathogens are time-consuming. Some pathogens are non-culturable. Specific DNA-based detection methods target a few pathogens and are sometimes inconclusive. Diagnostic microarrays (DNA chips) comprising spotted DNA sequences of various lengths – depending on the purpose of the study – offer wide-spectrum detection with the capability of discovery of unknown/non-sequenced pathogens.

Pathogen detection DNA-based microarrays have been used in research for a decade. The majority of the studies focused mainly on human pathogens of clinical importance. Diagnostic chips were used for simultaneous detection of multiple pathogens, typing, antibiotic resistance and for genetic analysis (resequencing microarrays). Other areas covered included food-borne pathogens, environmental samples and biodefence/bioterrorism. Veterinary/zoonotic pathogens received less attention among others for diagnostic microarrays, with a few pathogens covered.

Following disease outbreaks with emerging/re-emerging nature and/or zoonotic impact, microarrays have been developed recently to detect emerging and zoonotic infections in livestock and wildlife. The experience of an EU-funded research consortium (WildTech)
with the first veterinary diagnostic chips containing selected DNA probes derived from sequences of viruses, bacteria and parasites will be detailed. These chips are being evaluated for use with different clinical and field samples from different host species and for screening and surveillance for molecular epidemiology. Pathogens such as Mycobacteria, Francisella and bluetongue virus will be presented as models for evaluation. The chips are designed in a portable format suitable for non-specialised laboratory settings. New pathogens are expected to be discovered in new host species, including humans, allowing further risk assessments.

Keywords: Wildlife, Detection, Microarrays, Zoonotic, Discovery

Session: TUE5.1 Diagnosis and surveillance of infectious diseases in wildlife (WildTech) - Session 1

An analysis of Newcastle disease reporting data from African Union member countries in the context of Highly Pathogenic Avian Influenza H5N1

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Objectives: Newcastle disease is an endemic and devastating disease in African countries, and is a differential diagnosis for Highly Pathogenic Avian Influenza (HPAI) subtype H5N1 (hereafter HPAI). The objective of this study was to analyze the reporting data from African Union member countries of Newcastle disease to OIE’s World Animal Health Information Database (WAHID), and to characterize the data within the context of Avian Influenza H5N1.

Materials/methods: Data was gathered from the WAHID database on 54 African Union member countries from January 2000-December 2011. Paired t-tests were performed on reported Newcastle disease outbreaks pre- and post- HPAI introduction to the African continent (defined as Jan 1 2006 for ease of data classification), both for countries with historical reports of HPAI, and for countries with no historical cases of HPAI.

Main Results: Of the 54 countries included, almost 50% had at some point during the study period been listed by the OIE as having no information available for cases or outbreaks of Newcastle disease. There was no significant difference in the number of reported outbreaks of Newcastle disease over the 6 years before, and 6 years after HPAI in Africa for countries with historical reports of HPAI (p=0.974), and among countries historically free of HPAI (p=0.409).

Conclusions: Surveillance for Newcastle disease in Africa has not improved despite responses, including strengthening diagnostic infrastructure, to outbreaks of HPAI subtype H5N1 in a number of African countries. An analysis and evaluation of Newcastle disease surveillance in Africa would aid in determining how to improve the control of an economically important disease of poultry in addition to facilitating the rapid detection of HPAI. Improving Newcastle disease surveillance would benefit the farmers and families who rely on poultry for nutrition and livelihood. It would also benefit the global vigil against emerging infectious diseases.

Keywords: Newcastle disease, avian influenza, disease surveillance

Session: MON5.1 Livestock risks and opportunities

Using a One Health Approach to Promote Food and Nutrition Security in Tanzania and Zambia

ALDERS, Robyn Gwen (1,3); AONGOLA, Agnes (2); BAGNOL, Brigitte (3); KIMBOKA, Sabas (4); KOCK, Richard (5); LI, Mu (1); MAULAGA, Wende (6); MCCONCHIE, Robyn (1); MOR, Siobhan (1); MSAMI, Halifa (6); MULENGA, Francis (7); MWALA, Mick (8); MWALE, Shadreck (7); RUSHTON, Jonathan
Food security is a global priority requiring a multi-pronged approach. In Tanzania and Zambia stunting in children under five, a major determinant of individual development, is estimated to be 42% and 45% respectively, despite years of agricultural research and development. Multilateral agencies have been supporting micronutrient fortification and supplementation and yet, the long-term sustainability of these interventions is being questioned, because many of the rural poor are not able to access fortified foods. Both countries are seeking sustainable solutions to the food security challenge that will improve human nutrition through improved household income and dietary diversification. Local initiatives, such as enhancing traditional livestock-crop systems can provide a sustainable solution to the ongoing demographic challenges in Africa which are driving the need for more food.

The aim of this project is to reduce childhood stunting by analysing and testing opportunities to enhance the key role that women play in improving poultry and crop integration and efficiency to strengthen household nutrition in an ecologically sustainable manner. Family poultry have a special place in food and nutrition security as they are owned by the majority of households and are frequently the only livestock under the control of women. Newcastle disease is considered the most important poultry disease worldwide and a model for its sustainable control in family poultry is now available. Crops such as sunflower, millet and sorghum are often under women's control and provide flexibility in the face of variable climate, a broader range of nutrients and a way of managing farmer risk.

A One Health approach is being employed by the project in support of increased poultry and crop value chain efficiency and household food and nutrition security by bringing together animal, crop and human health specialists, economists, ecologists and social scientists to work with participating communities.

Keywords: Family poultry, sustainable agriculture, secondary crops, gender

Session: MON6.2 One Health for food safety and food security
Mon 18.11.2013 • 15:15 - 16:45 Room: Pischa

Transdisciplinary Institutional and Individual Capacity Building for One Health and Global Health Research: A Call to Action

ALLEN-SCOTT, Lisa K (1); BUNTAINT, Bonnie J (2); MEISSER, Andrea (3); HATFIELD, Jennifer M (1); THOMAS, Chris J (4)
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Institutions of research and learning often have barriers to implementing collaborative research. In order to address complex global health challenges, the art and science of applying transdisciplinary (TD) approaches is emerging. Our work investigates the advantages to knowing when and how to apply TD approaches in global health and one health research as well as the barriers to utilizing such TD approaches. Our proposed solutions...
include a call to action for top institutional leaders to develop integrative centers or units to create a new cadre of leaders and researchers who understand and can apply TD approaches. Based on our work, we believe that institutional capacity building includes but is not limited to: (1) providing seed funding and grant writing assistance for projects that build relationships and support over long timeframes; (2) creating Departments/Units that include the key disciplines required to conduct global/one health research; (3) establishing a goal that TD is an institutional practice for all department and unit heads; (4) providing graduate courses on TD tools and their application to global health research; (5) creating undergraduate, graduate and post graduate pathways that create TD global and one health “translators”; (6) supporting work on the added value (economic and otherwise) of research programs that apply TD tools; (7) hiring leaders who are not jonly disciplinary expert researchers but have extensive experience and success with project management skills and working with multiple disciplines and sectors; (8) rewarding global and one health researchers who are using TD tools; and (9) purposefully incorporating human-animal-ecosystem interactions under an innovative research umbrella. This presentation will discuss examples of building TD institutional and individual capacity to better address global and one health research.

Keywords: Transdisciplinary, Institutional, Research, One Health, Global Health

Session: TUE6.2 One Health capacity building approaches
Tue 19.11.2013 • 15:15-16:45 • Room: PIscha

One Health: Nano-assembly based biosensor for rapid detection of infectious diseases
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The successful control of tuberculosis (TB) will depend on identifying and treating individuals who progress to disease as well as culling infected animals with Mycobacterium bovis. This is of renewed concern to those living at the human-animal interface. Globally, one third of the world population carries an asymptomatic infection with Mycobacterium tuberculosis, which results in 8 million new cases of TB and 2 million deaths annually. Although bovine tuberculosis has essentially been reduced to a disease of economic importance in some countries, non-industrialized nations are still facing a multifaceted impact which potentially affects the health of livestock, human and ecosystem. The human-animal TB challenge is made more complex in the presence of debilitating diseases, such as HIV/AIDS, and drug resistance. Current diagnostic techniques are inadequate to achieve TB control and none of the tests for active TB, latent TB and or bovine tuberculosis is sufficiently accurate, timely and appropriate for low-income and low technology settings. On the other hand, nanotechnology is impacting all sectors of the economy. It promises to bring about efficiency, sensitivity, specificity, reliability, speed, and simplicity to detection and diagnosis of threat agents at affordable cost in resource limited settings. This paper will present the design and performance of a handheld biosensor based on nano-assembly for rapid detection of infectious pathogens. Result is completed in less about 40 min from sample preparation to detection. Preliminary results show that the nano-assembled biosensor could detect bacterial cells as low as 6-10 colony forming units per milliliter (cfu/ml) with a dynamic detection range of $10^1 - 10^6$ cfu/ml. Signal-to-noise ratio ranges from 1.8 to 3.7, showing robustness of the system. Furthermore, the biosensor is simple to operate, robust, and inexpensive (<$1/test). Based on these results, the biosensor has great potential as a tool in addressing One Health issues.

Keywords: biosensor, rapid diagnostic, tuberculosis

Session: TUE1.2 One Health approaches for early warning and detection
Tue 19.11.2013 • 08:30 - 10:00 Room: PIscha
Disease risk mapping from surveillance of zoonotic pathogens in Norway rats; a survey in France (2010 – 2012)

AYRAL, Florence (1); GILES, Tim (2); BICOUT, Dominique J (3); ZILBER, Anne-Laure (4); WIDEN, Frederik (5); POUNDER, Kieran (6); AUBERT, Dominique (7); DJELOUADJI, Zorée (4); BERNY, Philippe (8); MCEHLINNEY, Lorraine (6); KODJO, Angeli (4); ABUMEDIAN, Abu-Bakr (2); YON, Lisa (2); ARTOIS, Marc (1)

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At the interface of environment, animal health and human health, the wild rat (the Norway rat, Rattus norvegicus mainly) living in urban areas is a reservoir of known and probably unknown pathogens.

Among the known pathogens, Leptospira, Hantaviruses, Hepatitis E Virus and Toxoplasma gondii are of increasing concern for public health in Europe. They are responsible for potentially life-threatening human infections and some of them are currently emerging or re-emerging in Europe. Appropriate surveillance of these pathogens is required in Norway rats to assess and mitigate their role in the spread of zoonotic diseases; nonetheless, reliable epidemiological data are lacking because of sampling and test accuracy limits.

A wild rat survey was conducted in the city of Lyon (France) to estimate prevalence of Leptospira, Hantaviruses, Hepatitis E Virus and Toxoplasma gondii, to evaluate environmental and socio-economic risk factors and to produce a disease risk map for human exposure. A combination of results from conventional approaches (Q-PCR, ELISA), and from a novel technology (WildTech NA-array) developed to detect emerging and re-emerging pathogens through amplification of nucleic acids and a multiplex detection approach were used for the purpose of the study.

The combination of screening methods provided reliable estimates of pathogen prevalence by increasing test accuracies. Assessment of risk factors could be a valuable strategy for risk-based surveillance and control of disease transmission to humans. By assessing and mapping such risk factors (e.g. urban and rural, distance from water features, household incomes), disease surveillance can move towards proactive health hazard surveillance as a more cost-effective tool for directing public health interventions.

Keywords: Surveillance, Zoonosis, Rattus norvegicus

Why Animal Health And Welfare Matters to Human Health

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Human health is closely linked to animal health and welfare. Consequently, the development of integrated responses to global public health challenges is required. These include; working to control the transmission of canine rabies to people through sustainable mass dog vaccination programmes; integrating humane and sustainable livestock production; addressing the role that better welfare standards for wildlife plays in the spread of zoonotic diseases; and preparing communities for disasters so that both their own and their animals’ welfare is protected. Here we will demonstrate how improvements in animal welfare globally will have a positive impact on a range of human health and environmental issues.

Around a billion of the world’s poorest people depend on animals for food production and livelihoods. Original research commissioned
for WSPA reveals how humane and sustainable agriculture can deliver effective solutions for food production: evidence and real examples will show that ensuring the welfare and responsible use of animals can be a highly effective tool in achieving sustainable development, safeguarding food and water security, delivering poverty alleviation, enhancing nutritional security and human well-being and also produces significant positive outcomes for the major global concerns of climate change and public health.

WSPA believes that global adherence to animal welfare principles will be instrumental in preventing emerging infectious diseases, including inter alia, zoonotic diseases from occurring and thus help stop these diseases from inflicting serious resource strains on national and international health services. We work with governments at all levels, IGOs, NGOs and communities to ensure positive solutions are being put in place for animals and people alike.

Keywords: animal welfare, zoonoses, livelihoods, rabies

Session: MON6.1 Why Animal Health and Welfare Matters To Human Health
Mon 18.11.2013 • 15:15-16:45 • Room: Jakobshorn

Nucleic Acid and Protein Microarray Technology for Pathogen and Serological Surveillance
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Although genome sequencing is not a prerequisite for the development and successful use of microarrays for disease surveillance it has accelerated the extent to which they can be used and the breadth of pathogens that can be covered. The need for DNA-based arrays stems from the still limited extent to which PCR reactions can be multiplexed, although this is improving. Gene expression studies over many years involving the use of arrays are also increasing the confidence with which results generated by arrays are interpreted and this will continue. Technological improvements have also improved the data quality produced. One additional extension of microarray technology is their application using proteins and peptides for the multiplexing of serological screening reactions. Preliminary work from the Wildtech consortium has shown the strength of this application.

Keywords: nucleic acid microarray; serological protein array; serology; microarray; multiplex assays

Session: TUE5.1 Diagnosis and surveillance of infectious diseases in wildlife (WildTech) - Session 1
Tue 19.11.2013 • 13:30-15:00 • Room: Jakobshorn

Can human incidence of Leptospirosis be reduced through implementing ecologically-based rodent management?
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Experts recognise that rodents are fundamental in perpetuating leptospirosis in the environment and in promoting human cases. The dynamics of rodent populations and their density is closely linked to rainfall and habitat availability, and research is desperately needed to correlate the seasonal dynamics of rodent abundance with leptospira prevalence/incidence. The general assumption explaining leptospirosis outbreaks with rainfall need to be put in context of rodent breeding (seasonality of infection in chronic annual outbreaks) and rodent migration (extreme climatic events such as flooding that increase rodent density), both pathways leading to increased rodent-human interactions. Highly effective tools and strategies exist for managing rodent pest populations. However, more often than not, these tools are poorly applied, adapted and monitored which leads to treatment failure and widespread apathy among the people who are suffering rodent problems. Often people come to believe that “rodents are too clever to control”. The new paradigm of Ecologically-Based
Rodent Management (EBRM) has made significant strides in overcoming these misguided beliefs and the inherent problems of implementing effective rodent control, particularly in developing countries. EBRM has been applied in the context of agricultural pest management where significant cost-benefits have been demonstrated and adopted by farmers and policy makers. However, despite rodents transmitting more than 60 different diseases, there has been no similar research to indicate the impacts of fewer rodent pests in the environment on human disease incidence. Demonstrating the benefits of fewer rodent pests and their proximity to people will be relevant to many serious diseases including leptospirosis. The cost-benefits of fewer rodent pests is even more significant when considering the multiple impacts of rodents on crop production and food security. Thus, improving rodent management could be one of the most important interventions of the 21st century across the Tropics to reduce poverty and improve people’s livelihoods.

Keywords: Leptospirosis, rodent management

Session: TUE1.1 An Unrecognized One Health Threat: Leptospirosis
Tue 19.11.2013 • 08:30 - 10:00 Room: Jakobshorn

Generic action plan in case of emerging disease in wildlife in Europe, a WildTech perspective
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Université de Lyon, VetAgro Sup, Wildtech, F-69280, MARCY L’ETOILE
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In recent years, several animal diseases caused major crisis within the European Union, for example: Foot and mouth disease, Avian Influenza, Bluetongue. Over the years and crisis, the European Union and their member states set up several management tools, including surveillance, notification process, diagnostics and contingency planning in order to contain, control and eradicate animal diseases. Wildlife plays a growing role in the origin of zoonotic and livestock diseases. In wild populations the setting up of similar management tools can be complicated because of the difficulties to collect information on wild animal, to know the government structure in charge of wildlife and to follow the evolution of the disease in the population. Nevertheless an emergent or re-emergent disease in wildlife could have dramatic consequences threatening the domestic animal or the human health.

Tools and organizations already in place for the containment, control and eradication of diseases should be adapted and organized for wildlife in a generic action plan. We present a tentative generic plan taking in account European and International institutions’ recommendations, bringing together the legal surroundings, the financial resources, the governance system, the material resources, the procedures and methods required, the instructions of the coordination, cooperation and communication. This action plan is designed to be functional, easy to read and use; it should allow in time of crisis to quickly know things to do and contact people. The success in the disease control and eradication will rely on the consultation and the coordination of different bodies concerned by wildlife management in Europe. Then the existence of such a tool should be a real progress in case of emergent disease outbreak in wildlife.

Keywords: wildlife, emerging disease, European Union, action plan

Session: TUE6.1 Diagnosis and surveillance of infectious diseases in wildlife (WildTech) - Session 2
Tue 19.11.2013 • 15:15-16:45 • Room: Jakobshorn

Social Media For One Health: From Early Warning To Prevention
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The threat of a global pandemic posed by outbreaks of zoonotic diseases such as influenza H5N1 (1997) and Severe Acute Respiratory Syndrome (SARS) (2002) piqued interest in improving early warning systems and underscored the need for combining data from different sources. It led to novel ideas such as the use of search query data from Google or data streams from Twitter as an indicator of when and where influenza was occurring.

A scoping review assessed the current state of knowledge regarding the use of social media for surveillance of infectious diseases from 2002-2011. Most authors of relevant primary research articles (n=21 of 32 articles, 66%) reported good correlation of a social media program in comparison to an existing surveillance program and most (n=24, 75%) recommended that they should primarily be used to support existing surveillance programs. The most commonly reported strengths of social media surveillance included effectiveness (n=21, 66%) and rapid detection of disease (n=21, 66%). Commonly reported weaknesses were the potential for false positive (n=16, 50%) and false negative (n=11, 34%) results.

In addition to providing passive streams of data, social media users can also be actively engaged in or even instigate disease outbreak investigations. With respect to chronic disease, people are increasingly using social media to monitor their personal wellbeing (glucose, exercise, sleep patterns, etc.) and that of their environment (air, water, climate).

Social media has garnered attention for its utility in disease surveillance and emergency response (including toppling governments), however, its greatest potential lies in strengthening civil society, increasing the accessibility of knowledge and education, and promoting good governance through transparent and open systems. The resulting big data and data visualization can play an important role in the quest for one health and a resilient planet.

**Keywords:** disease, surveillance, social media, review

**Session:** WED5.3 One Health approaches and trends

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**The Global Leptospirosis Environmental Action Network: Leptospirosis From A One Health Perspective**

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In 2006, the Leptospirosis Burden Epidemiology Reference Group, a World Health Organization partnership was established to determine the disease burden of leptospirosis. The second step was to revise and improve the control strategy of the disease. This involves a comprehensive overview of the disease to understand the relationships between humans, animals, and the environment; the role of domestic animals and agricultural practices; the association between disease burden and human behaviour; and the impact of climate.

In response to the many unanswered questions surrounding leptospirosis, WHO and the Health Climate Foundation developed a new approach whereby the knowledge and expertise of the public health challenges and risk factors are integrated through a multi-disciplinary, technical framework. Launched in 2010, the Global Leptospirosis Environmental Action Network gathers representatives from international organizations and foundations as well as researchers. It offers an opportunity to strengthen current public health strategies and mitigate the risk and impact of leptospirosis outbreaks in populations at high risk. It also creates a forum to develop new advocacy and funding opportunities for leptospirosis, and offers further support for capacity building, training and technology transfer, as needed.

**Keywords:** leptospirosis

**Session:** TUE1.1 An Unrecognized One Health Threat: Leptospirosis

Tue 19.11.2013 • 08:30-10:00 • Room: Jakobshorn
Genetic Analysis and Molecular Epidemiology of European Brown Hare Syndrome across Europe from 1982 to 2012

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European brown hare syndrome (EBHS) affects wild and farmed hares of the species Lepus europaeus and Lepus timidus. The disease was first reported during 1980s, and occurred simultaneously in many European countries. We report the molecular epidemiology and genetic diversity of EBHSV infection across Europe. A total of 1127 liver samples from hares found dead or hunter-harvested in 17 countries (Greece, Denmark, Switzerland, Austria, Bulgaria, Germany, United Kingdom, Serbia, Croatia, Poland, France, Netherlands, Italy, Spain, Turkey, Sweden and Israel) between 1982 and 2012 were submitted to our lab and tested by RT-PCR for EBHSV. Furthermore, phylogenetic analysis was performed in order to study the molecular epidemiology of the syndrome in Europe for the past 31 years. Sequencing analysis was performed on 212 nt of a 265bp RT-PCR fragment of the region coding for VP60. EBHSV was detected in 281 of the hare samples tested. Alignments were performed on 190 EBHSV isolates including the 169 isolates described in this study. Phylogenetic analysis demonstrates the genetic similarity of isolated strains according to temporal and spatial characteristics, but at the same time suggests of a possible southwards dispersion pattern in Europe as well as local evolutionary processes of various strains in different regions.

Keywords: European Brown Hare Syndrome, Europe, molecular epidemiology

Session: TUE6.1 Diagnosis and surveillance of infectious diseases in wildlife (WildTech) - Session 2
Tue 19.11.2013 • 15:15 - 16:45 Room: Jakobshorn

Samples: Priority pathogens for the project, SOP for sample processing, usage in the project, numbers received and characteristics.

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This is an introductory presentation that will inform the audience on the basic procedures regarding the samples used in the WildTech project. The selection of priority wildlife hosts (wild boar, cervids, hares, urban rodents) and
priority pathogens, depending on the risk of spreading to humans and livestock, was the first step to take in order to determine which samples we would process in the project. Samples were used either for validation of the new array techniques or for epidemiological analysis and surveillance, depending on their infection status.

An SOP was developed for sample preparation and shipment to the testing laboratories, as well as an SOP for ethical collection of additional incidental samples for further validation. Selection of appropriate packaging material and the collection of detailed and supporting information relating to the samples were issues of great importance that demanded a close cooperation between WildTech researchers and the Associate Partners (APs) who provided the samples from both EU and non-EU locations. Coordination of technology transfer from the WildTech labs to APs, including hands-on wet-lab activities were important aspects of this project and these will be briefly summarised. In conclusion, it will be emphasised how a reliable and robust system for collection, processing and dispatching of fully-identified and recorded samples were key activities in the success of the WildTech project and provided the basis for development of a powerful system for pan European wildlife disease surveillance.

The speaker is a registered participant and WorkPackage Leader for European Wildlife Disease Surveillance within the WildTech project.

Keywords: Veterinary medicine, Wildlife, pathogens

Session: TUE5.1 Diagnosis and surveillance of infectious diseases in wildlife (WildTech) - Session 1 Tue 19.11.2013 • 13:30-15:00 • Room: Jakobshorn

A New Definition of Health Based on Biological and Anthropological Principles

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Health is a leading global concern that touches on all aspects of life. For this reason efforts to assure and promote health are of vital importance. In view of the complex nature of health all initiatives require concerted interdisciplinary and intersectoral efforts. Although with the help of modern science important advances have been realized, success has remained limited by the fact that nobody can truly state what health is. In most instances only factors contributing to health or damaging health are discussed. Therefore a new definition of health, which describes its very nature, is urgently needed. The Meikirch Model proposes to fulfill this gap.

Fundamental biological and anthropological principles were analyzed and applied to develop a new definition of health. Its components were informally tested in conferences related to health care. The Meikirch Model reads: “Health is a dynamic state of wellbeing characterized by a biologically given and a personally acquired potential which together satisfy the vital demands of a life commensurate with age, culture, and personal responsibility. If the two potentials are insufficient to satisfy these demands the state is disease.” Exploration of the relationships among the three determinants of health – the two potentials and the demands of life - provides important new insights into dynamic factors which influence health. This analysis also reveals that health should be viewed as a complex dynamic system.

The Meikirch Model gives healthy individuals, patients, health care workers, health systems and other interested persons a new vision to strive for. It also is suitable to serve as definition of health for mutual interdisciplinary and intersectoral understanding as a basis for effective cooperation and for the creation of a culture of health.

Keywords: Definition of health, health care, culture of health, health maintenance

Session: WED6.1 Global and national directions and approaches for One Health Wed 20.11.2013 • 14:45-16:15 • Room: Jakobshorn
Sustainable Development and Global Practice: Educating Professionals for the Social Dimensions of One Health

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It has become increasingly important for graduate level professionals in the health and social sciences to understand the complexities of practice in a global environment. The need for skills has moved beyond those of working with colleagues and clients with different cultural norms, expectations and skills. Now, professionals need to be prepared to practice effectively with consideration of the complexities of vastly different ecological environments—considering both assets and threats. In the fall of 2014, the University of Denver will launch a curriculum designed to prepare students for these challenges. The curriculum is named sustainable development and global practice (SDGP) and students will complete the curriculum as part of their requirement for a master’s degree in social work.

The SDGP curriculum will require a minimum of 10 three credit courses (students will take a minimum of 90 credits to earn a masters degree in social work). SDGP course work will include: a theory for practice course focused on social ecology and one health; three methods/skills courses that include topics such as social and environmental impact assessment, human security, community economic development, program development, and community trauma and interventions; one course focused on policies for social and economic justice; two research courses, a values for practice course, and a professional development course. A wide range of electives are offered to support the development of professional skills for specific substantive areas of focus.

Social care and public health educators have found themselves training professionals who are increasingly confronted with the complexity of social problems within a highly interconnected global reality. Social care and public health professionals, more and more, are engaging with international partners to address social problems affecting health and well-being. We know there is a high correlation between education, health, crime and safety, poverty, equality and justice, human rights, and the environment. Therefore, policies and programs designed to address any one of these issues also needs to attend to the others. As educators with this knowledge, we must build curricula that prepare professionals to meet this complex reality. The SDGP curriculum is working toward this goal, and plans to be a leader in the field for years to come.”

Keywords: sustainable development and global practice

Session: MON6.3 Integrative One Health Risk Management
Mon 18.11.2013 • 15:15 - 16:45 Room: Parsenn

An Integrative Study of Measles Outbreaks in the City of Cape Town, South Africa: 2000-2011

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Measles is viewed mainly as a public health concern constituting an object of study through epidemiological methods. However, the complexity of the risk factors that drive measles outbreaks suggests the need for wider and more inclusive conceptualisation beyond conventional biomedical methods. This prompted the application of a more integrative research approach to measles outbreaks in Cape Town.

The study employed a mixed-methods approach, including an epidemiological analysis of measles cases to identify and characterise measles outbreaks. Qualitative methods were used to identify and differentiate key health sector shortcomings as well as risk governance deficit areas associated with the progression of measles risk.

Results underlined the value of an integrated epidemiological and risk governance framework. These included multi-scaler institutional shortcomings that revealed systemic issues in the management of measles outbreaks.
These were wide-ranging, and indicated system-wide issues related to monitoring and early detection, reflected at national, provincial and health worker levels.

The research identified recurrent shortcomings at Provincial level. These included a focus/investment on mass rather than routine vaccination; as well as, poor mass immunisation planning due to systemic under-estimation of the exposed population (due to use of live births statistics and exclusion of in-migration data, which artificially inflated vaccination coverage). A further limitation was indicated by difficulties in involving key stakeholders in Outbreak Response Immunisation (ORI) and Supplementary Immunisation Activities (especially the Education Department). At health worker level, poor completion of case investigation forms was a recurrent deficit, constraining accurate characterisation of specific outbreaks. An emergent shortcoming following the 2009-2011 outbreak was the failure/delayed diagnosis of the index measles case, which critically delayed intervention, limiting effectiveness of ORI. These findings underline the value of applying an integrative risk lens to the understanding of epidemic risk in urban settings with high levels of population mobility/migration, where public health services face multiple pressures.

Keywords: measles, risk governance, transdisciplinary, multi-scalar institutional shortcomings

Session: MON6.3 Integrative One Health Risk Management
Mon 18.11.2013 • 15:15-16:45 • Room: Parsenn

Urban Health and Waste Management in Nepalgunj city, Nepal
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Background: Nepalgunj municipality in the Mid-West region with 72,503 inhabitants in 15,180 households (National Census 2011) produces around 18 tons of waste every day (based on survey in 2004). Only 12 tons are collected and disposed to dumping sites each day. Particular the waste in public places and from small lanes remains uncollected. Furthermore open defecation in the drains is a regular habit. In order to address these public health and environmental hazards, the Swiss Red Cross supported the Nepal Red Cross Society Banke chapter in a public-private partnership approach to improve the situation in the five most affected communities, so-called ‘toles’, in the city.

Intervention: 620 households situated in 5 communities were capacitaced to address the waste and sanitation situation in Nepalgunj city e.g. through public cleaning campaigns, recycling, composting and re-use of plastic for income generation. 13 Tole Lane Organisations were trained to be a true partner and lobbyist of the municipality at community level in issues also beyond waste management and sanitation. Besides, communities learned about

Results: The toles are much cleaner than before the project intervention. Committees were successful to lobby for regular waste management with the municipality. Inhabitants and visitors of these toles state that the quality of living in these areas has much increased: open defecation is zero, diarrhoea outbreaks are reduced and less waste is generated. Besides human health improvements, it is estimated that also animal health improved because of less waste and plastic in the streets.

Conclusion: Private-public partnership with municipality and various other stakeholders in waste management and sanitation brings about effective change in the communities with minimum costs. The immediately visible results of a good waste management, as well as concept of turning ‘waste into money’ through recycling changes communities’ attitudes towards waste and stimulates their continuous engagement beyond the direct input of the project.

Keywords: Public Health, Waste Management, Private-public partnership, Sanitation

Session: TUE5.3 The urban environment and
Prioritisation Of Wildlife Potential Infections To Be Targeted In Future European Surveillance Programmes: Expert-Based Risk Analysis In The Frame Of The WildTech Project (2009-2013)

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The WildTech project (www.wildtechproject.com) aims at supplying the European Union (EU) with tools enabling surveillance of emerging or re-emerging infections in European wildlife. In this frame, prioritisation of wildlife potential infections turned out to be necessary so that priority ones can be targeted in the field.

Members of the WildTech consortium initially established a list of 136 pathogenic agents of concern. This initial list was reduced to a smaller one consisting of 65 infections likely to affect ruminants (i.e. the most costly animal group for UE over the last 15 years). These 65 potential infections underwent a two-step, expert-based risk analysis: 92 experts (out of 523 solicited ones) graded these 65 potential infections as regards to their global importance in terms of animal welfare, species conservation, trade/economic impacts and public health. Sixty-nine experts out of the 92 participants in first step then evaluated the 15 potential infections that got the greatest total by considering seven thoroughly chosen epidemiological criteria (previously weighted by another panel of experts) for which four options were possible.


These results are discussed in the light of uncertainty and variability associated to each potential infection, professional profile of and geographical information given by respondents. This work shows that preparedness to disease emergence must not only rely on setting such lists (which are useful in certain conditions but remain subjective), but also on elaboration of emergency plans and development of early detection techniques.

Keywords: surveillance, wildlife, risk analysis, disease, prioritisation

Probabilistic Supply Chain Risk Model for Food Safety

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Food safety is a complex issue for the worldwide population. Over the last decade foodborne outbreaks have shown an increasing trend.

Here we propose a model for the assessment of the potential health risk of food commodities based on the food supply chain (FSC). The model integrates concepts of network science in the supply chain and risk factors related to the food life-cycle that occurs along the FSC. We evaluate 12 food categories, 77 food commodities, and 187 exporting countries to the USA. We consider the food-pathogen risk from the production to the distribution, screening and manufacturing flaw risks, transportation and intermediary country risks, country and manufacturer risks. The model integrates network variables and risk factors related to the food life-cycle along the FSC. Considering the safety of each country and network variables we introduce a global safety index (GSI) for...
characterizing the riskiness of each country. Policies that act on both the supply chain variables and the safety index by means of the GSI reduce of 44 % the average health risk. This reduction is much larger than the reduction of policies focused on individual risk factors of the food life-cycle.

The FSC model here presented is scalable to any level of the global food system and offers a novel perspective in which the global public health is conceived, monitored and regulated. In particular we envision its use for: (i) potential early identification of food contamination/counterfeiting/adulteration sources and paths; (ii) information about surveillance of critical countries and trades; (iii) information on the critically unsafe food commodities to monitor; and (iv) food policies based on quantitative planning at any scale, from the international to the local scale.

Keywords: food safety, food supply chain, risk, pathogens, network, trade, public health

Session: MON6.2 One Health for food safety and food security
Mon 18.11.2013 • 15:15 - 16:45 Room: Pischa

What Can Be Done to Manage Catastrophic Human Disease Threats from Farmed Animals?

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Society might expect that animals farmed to meet the food security needs of people globally won’t pose a serious public health threat. Experience indicates the situation is otherwise. The Nipah virus outbreak in Malaysia was incomprehensible at the time. Farm workers became sick and died with a case fatality rate of 50% from a disease caught from the pigs on farms; a risk unheard of previously. Fortunately Nipah was not contagious among people. Analyses of pandemic H1N1 2009 influenza in people indicate that it too arose in intensively farmed animals, and it did spread quickly among people globally. Fortunately infections were not usually lethal. The bird flu, H5N1 and H7N9, have high human case fatality rates but are not contagious. None-the-less, intensively farmed animals are building up quite a record as a source of undesirable human diseases. The emergence of the next outbreak is unpredictable, as are its essential characteristics: pathogenicity and transmissibility.

The animal health sector should deliver systems of diagnosis, surveillance and control of infections in animal populations. Farming businesses should recognize and understand responsibilities to monitor and know the infection status of their animal populations with respect to disease threats to food security, farming profitability and human health. This would be good risk management. However routine surveillance of farmed animal populations for any such infections does not occur. Usually investigations start in response to outbreaks. Real time monitoring is not part of the farming business model. The technical capacity exists and is getting cheaper but there is perceived to be an unwillingness to undertake comprehensive surveillance. A better understanding throughout the whole of society – political, scientific and popular – is needed. Farmers, traders, industry managers, regulators, consumers all have to want to manage the threat of infections on farms, to value it and to pay for it.

Keywords: pandemic threats, surveillance, human behaviour, business model change

Session: MON5.1 Livestock risks and opportunities
Mon 18.11.2013 • 13:30-15:00 • Room: Jakob-shorn

21st Century Environmental Technology Incorporates The Social Ecological Perspective Creating Solutions For Physical And Economic Resilience To Desertification, Land Degradation and Drought

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This paper addresses water resources and its
management as central to the cause and solution of Desertification, Land Degradation and Drought and consequently introduces ionising technology, offering a variety of proven solutions to critical challenges being faced within the Humanitarian and Environmental Disaster Reduction and Sustainability sectors relating to DLDD. Statistics produced by international bodies are reviewed, raising concerns identifying potential causations and social ecological perspectives influencing changes within the environment, generating adverse affects, such as soil moisture depletion and land abandonment, resulting in a critical increase in dust movement with dire adverse consequences upon rural production and sustainability. Emphasis centres on rural communities requiring financial support in order to reverse economic migration, a major contributory factor to land abandonment and consequent degradation.

The paper advocates for multiple stakeholder collaborative contributions from all disciplines including technology R&D, engineering construction, social economic, environmental and ecological sectors, if long term resilience to DLDD is to be achieved.

Technology is outlined offering alternative approaches to water and agriculture water resource management, minimising the affects of environmental crisis being generated by climate change and trends in human social economic and agricultural activity, specifically to: desalinate contaminated ground; modify brackish saline water for use in irrigation; enhance agricultural production; disperse water pollution within rivers and static waters; ‘Influence Local Atmospheric Processes’ generating rain clouds targeting catchment and storage facilities for irrigation and hydroelectric systems; This same ILAP technology is used for shielding and dispersing pollution and dust storm movements; all potentially contributing to the curtailment of DLDD. In summary, the paper recommends an holistic approach to water resource management, incorporating new technologies which integrate previously un-useable waters and provide enhanced rain supplies along with developing new irrigation infrastructure applications, whilst maximising benefits to health and food production and enabling DLDD to be effectively managed.

Keywords: Land, Degradation, Salinity, Abandonment, Rain

Session: TUE5.2 Environmental degradation and health issues
Tue 19.11.2013 • 13:30 - 15:00 Room: Pischa

Potential of Social Media to Determine Hay Fever Seasons and Drug Efficacy
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Hay fever or seasonal allergic rhinitis is a common allergic condition (Emberlin, 2010), defined as an Immunoglobulin E (IgE) mediated inflammatory response of the nasal lining following exposure to an allergen (Bousquet et al., 2008). The current UK hay fever prevalence is between 20-25% of the population, projected to rise to 39% by 2030 (Emberlin, 2010). Surges in incidence of allergic rhinitis in spring and summer are commonly know as the hay fever season.

Currently, the Meteorological Office provide weekly pollen forecasts and the Royal College of General Practitioners (RCGP) produce weekly service reports. However the former is predicative and the latter is dependent on sufferers reporting to their GP. For researchers and sufferers of hay fever, there is currently no method for identifying real-time, geolocated hay fever incidence.

A promising approach in the related field of Epidemiological Intelligence to detect seasonal illnesses is the use of Social Media (de Quincey & Kostkova, 2009). By collecting incidences of users self reporting illnesses on twitter, it has been shown that outbreaks can be predicted 1-2 weeks before RCGP data indicates (Szomszor et al, 2012). Although attempts have been made by companies such as Kimberly Clarke to take advantage of Social Media in this way, they have relied on users utilising specific, non-natural phrases within
tweets and consequently have received little uptake.

This paper describes a study that has collected and analysed over 130,000, UK geolocated tweets from June 2012 to April 2013, that contained instances of the words “hayfever” and “hay fever”. Preliminary results indicate that the temporal and geographical distribution of tweets correlates with expected seasons and locations but allows for a finer level of granularity than currently available data sets. We also discuss common phrases that are being used and in particular complaints relating to drug efficacy.

*Keywords: Hay fever, Hayfever, allergic rhinitis, Social Media, twitter, eHealth*

Session: TUE1.2 One Health approaches for early warning and detection
Tue 19.11.2013 • 08:30-10:00 • Room: Pischad

**Overview On Human Vaccines Against Leptospirosis**

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Human vaccines against leptospirosis has been developed and used in different countries: some of them are no longer available, while others are still used in very various epidemiological contexts (high or low endemicity areas) and targeted populations (small or large scale / adult and children or adult only). This presentation will shortly describe the differences and similarities between all these vaccines, focusing on the available clinical datas. The safety and efficacy evidences will be analyzed, mainly based on datas from the vaccines used in France and Cuba. Finally, the contribution of human vaccination, among the different identified means to prevent human leptospirosis, will be discussed.

*Keywords: LEPTOSPIROSIS PREVENTION, LEPTOSPIROSIS HUMAN VACCINE*

Session: TUE1.1 An Unrecognized One Health Threat: Leptospirosis
Tue 19.11.2013 • 08:30-10:00 • Room: Jakobshorn

**New Non-Invasive Methods To Control And Eradicate Transboundary Animal Diseases In The Back Yard And Free Ranging Pig Sector**

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Transboundary animal diseases (TAD) are those diseases that are of significant economic, trade and/or food security importance on a global scale and which can easily spread to other countries reaching epidemic proportions. Particularly classical swine fever (CSF), African swine fever (ASF) and Food and mouth disease (FMD) are important swine diseases with a significant effect on the profitability of commercial pig farming as well as on the livelihoods of farmers engaged in small scale pig production leading to tremendous socio-economic consequences.

Backyard holdings can play a significant role in the dynamics of epizootic diseases despite their average small size and pig density and therefore their apparent unimportance. Large proportions of the global pig population are kept in diverse and rather unstructured small scale production systems with low biosecurity and little interaction with veterinary services. Despite available tools to effectively control TAD’s, many countries struggle in their efforts to reduce the disease burden on the pig sector. Often the implemented control measures are based on concepts derived from the success stories used in the commercial pig sector but not appropriate to address the peculiarities of the backyard pigs. This calls to explore and validate new strategies particularly designed for the back yard sector including free ranging production systems as well as for wild boar and feral pigs. One major handicap is to reach those pigs for a systematic sampling, treatment and vaccination. This paper is discussing the prospects of improved disease control in backyard pigs and free ranging pigs through the use of non-invasive methods like oral vac-
Dengue Transmission and Risk Factors in Dhaka, Bangladesh

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Introduction: Globally, as many as 1 in 100 people are infected each year by dengue virus (DENV), a mosquito borne flavivirus. Human activities, along with climate and ecosystem change, and their impact on local abundance of dengue vector are important to understand DENV transmission. Southeast Asian countries including Bangladesh have remained hyperendemic for DENV. In recognition of the need for a multidisciplinary research on this problem, we applied an “Ecohealth Approach” to understand and identify dengue virus (DENV) transmission and social-ecological risk factors in Dhaka, Bangladesh.

Methods: To develop a suitable research design, we considered variation in: socio-economic status among the city-zones, gender inequality, population density, housing, and water supply, waste disposal and sewage systems. Multiple disciplinary aspects were encapsulated by examination of: i) rates of human exposure to DENV by identifying individuals (via a serosurvey in 1200 households and 47 clinical samples) with IgM and IgG antibodies to DENV; ii) abundance of dengue vector during monsoon and dry seasons in the same households; iii) self-risk perception by the community members; and iv) human organizations responsible for interventions.

Results: Competent dengue vectors were detected in >40% and 12% of households during the monsoon and dry seasons respectively. 80% IgG and 17% IgM were positive during pre monsoon serosurvey. Among the IgM positives, in-house PRNTs are being carried out. There are significant variations in dengue risk perception between lower (low and medium) and higher socioeconomic groups. Also, experts ranked dengue risk at a much lower level than lay persons and experts emphasized the need for stronger institutional measures to control dengue outbreaks.

Conclusions: The overall findings of the study will contribute to the advancement of DENV transmission knowledge, forecast the disease burden as well as socioeconomic burden in the City of Dhaka, and will further the global knowledge of DENV transmission.

Keywords: dengue, ecohealth, bangladesh, disease transmission, Aedes aegypti

Session: TUE6.3 Emerging diseases
Tue 19.11.2013 • 15:15 - 16:45 Room: Parsenn

Smoking Cessation Programs In Primary Health Care – An Approach For Reducing Health-Related Behavioral Risk Factors

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Smoking is a serious medical and social problem and one of the major preventable causes of death in the world. According to the World Health Organization (WHO), each year more than 5.6 million people worldwide die prematurely from tobacco related diseases. Bulgaria is among the countries with high smoke prevalence in Europe. Male regular smokers in Bulgaria are 40% of the population and occupy third position in the EU. Smoking is a major factor for current high incidence and mortality rates from non-communicable diseases. The indicators will continue to deteriorate if necessary measures will not be taken.

Urgent actions are needed in order to reduce smoking prevalence in Bulgaria. It is recom-
mended tobacco control, including prevention, quitting smoking, and therapeutic measures to be integrated into primary health care. In Bulgaria smoking cessation programs in primary health care are in the process of preparation and further implementation. We present our guidance prepared with the support of Operational Program “Human Resources Development” financed by the Europe Social Fund of the European Union. Training courses with general practitioners and other medical specialists in regional health inspectorates are envisaged. Algorithm of the organization of medical care for smoking patients is presented, which consists of identification of the persons who smoke, and also those who are regularly exposed to tobacco smoke; identification and evaluation of the risk of diseases related to tobacco, creating target groups for treatment; establishment of smoking status, degree of nicotine dependence, readiness to quit; targeted motivational support for prevention or smoking cessation, using the strategy of brief intervention; intensive behavioral counseling and/or medication, if there is willingness of the patient to proceed with the treatment of nicotine dependence. Effectiveness of the implemented approaches and methods of quitting will be evaluated.

**Keywords:** smoking, cessation programs, primary health care, behavioral risk factors

Session: WED6.2 Lifestyle Diseases
Wed 20.11.2013 • 14:45-16:15 • Room: Pischa

**How To Integrate Risk Perception Findings In Spatial And Temporal Risk Models? The Hanta Virus Case.**

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Cooperation between modelers working on temporal and spatial modeling of vectors and diseases and social scientist working with qualitative data on risk perception of the very same vectors and diseases obviously is a challenging task. The challenge is even higher when these two disciplines meet to create a joint approach to serve Public Health purposes: C.P. Snows seminal book on ‘The Two Cultures’ (1959) – sciences and humanities – and the idea to overcome the divide came to our mind when we started to do this as part of the EU-funded EDENext project on vectors and its implications. The case we studied and used was the hanta virus. Whereas EDENext modelers produce findings in order to explain the uneven distribution of the hanta virus in Europe, identify environmental factors of presence of the hanta virus, or try to develop predictive models for the hanta virus; the social scientists in the same project compare how the public in different European countries perceive the hanta virus risk and identify ways how public health authorities could develop strategies upon the different risk perception in order to improve risk communication in endemic areas. Exchanging the different findings on the hanta virus from the various disciplines has not only enriched what we know about the disease, it also lead to address different aspects within the respective own discipline, and last but not least it can assist the provision of more comprehensive and complete advise to Public and One Health authorities on this vector and the disease.

**Keywords:** Hanta Virus, risk perception, temporal risk models

Session: WED1.3 Improving Public Health Risk Governance by Integrating Modelling with Concern Assessment
Wed 20.11.2013 • 08:30 - 10:00 Room: Parsenn

“**The Implications of Drought and Food Security in the Arab Region**”

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Most of the Arab Region falls within the hyperarid, arid and semi-arid zones. It is the most water scarce region in the world, with arable land per capita around 0.2 ha. today, and 70% of the food imported. At the same time, the region is witnessing the severe adverse impacts of climate change. Droughts are increasing in frequency, intensity and duration. Agricultural yields are expected to fluctuate more widely
over time and lead to lower, long-term averages. All four dimensions of food security are to be affected: availability, accessibility, stability, utilization.

The situation is the more intense, because the major food exporting countries are also facing severe droughts. This means that the high risks from climate change and extreme weather not only increase exposure and vulnerability where they occur, but affect people beyond the places where they happen (raise commodity prices, cause shortages and disrupt supply chains and export markets).

The Arab region is at particular risk, with prevailing conditions of water and food insecurity. Learning to “live with drought” is the real challenge for the Arab Region. How to find possible viable affordable solutions to solve the equation how with less water, less land and fragile ecosystems more food can be produced and the people of the region can have a decent healthy living.

Keywords: Drought and food security implications, consequences and solutions

Session: MON6.2 One Health for food safety and food security
Mon 18.11.2013 • 15:15-16:45 • Room: Pischach

Regulating for One Health: A Comment on Ethics and Justice
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Addressing threats posed by emerging zoonotic diseases (EZDs) is a key initiative of the One Health movement. Experiences with SARS, the Ebola virus and the Nipah virus highlight potentially deadly consequences of interactions between humans, animals and the environment. In addition, contact between wildlife and humans and/or animals has been identified as playing a central role in the emergence of novel diseases. Thus, addressing the root causes of EZDs will require regulatory interventions that promote wildlife health generally. More importantly, however, limiting contact between wildlife and humans and/or animals has been identified as a way to reduce disease transmission.

Using poaching for the bushmeat trade as a case study, this presentation will explore key ethical issues and understandings of justice associated with restricting hunting wildlife for food consumption as a means of reducing the threat of EZDs. While it is true that it is the poor, the landless and the most oppressed who will continue to bear a disproportionate share of the burden of EZDs, it is also true that increasingly their last sources of sustenance are targeted by regulations in the name of conservation and health.

Keywords: justice, emerging zoonotic diseases, bushmeat, wildlife

Session: WED5.3 One Health approaches and trends
Wed 20.11.2013 • 13:00 - 14:30 Room: Parsenn

The Challenges of Urbanisation: The Need for Integration in Community Resilience to Disasters and Disease
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By 2050, over 70% of the world’s population will live in cities (WHO, 2013). Increasing urbanisation brings with it many challenges for human and animal health, including the threat of disease. The trend for animal owners to bring their animals with them into urban and peri-urban environments calls for greater pooling of government resources pre- and post-disaster (IFRC, 2010).

While animal-based livelihood practices have largely adapted to the urban context, development programming has not always responded by considering how animals should be incorporated into emergency responses and capacity building. Avoidable economic and human health disease burdens arise because of a lack of integrated healthcare and emergency response (IFRC, 2010). WSPA works in partnership with local and national governments, NGOs and IGOs to support the inclusion and roll out of various cross-cutting solutions which work towards building stronger, more
resilient communities.

WSPA has developed practical tailored solutions: from proving that a humane response to canine rabies works best for animals and people, to preparing communities for disaster so that both human and animal welfare is protected.

Tangible examples of our work demonstrate that cost-effective solutions exist that facilitate saving the lives of animals and people as part of an integrated approach. In the context of the challenges posed by disease in an urbanised setting, on-going holistic efforts will be required to make sure the needs of the community are met in a rapidly-changing environment.

Keywords: Animal welfare; urbanisation; disaster management; rabies; resilience

Session: TUE5.3 The urban environment and health
Tue 19.11.2013 • 13:30-15:00 • Room: Parsenn

Disability Inclusive Disaster Risk Reduction

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The Council of Europe’s EUR-OPA Major Hazards Agreement acts as a platform for co-operation in the field of major natural and technological disasters between Europe and the South of the Mediterranean. The main objectives of the EUR-OPA Major Hazards Agreement are to reinforce and to promote co-operation between Member States in a multi-disciplinary context to ensure better prevention, protection against risks and better preparation in the event of major natural or technological disasters.

On the basis of the Ethical Principles on Disaster Risk Reduction and People’s Resilience, endorsed by the EUR-OPA Committee of Permanent Correspondents in 2011, it was agreed to focus the work in 2013 on guidance for a more operative practice targeting vulnerable groups and, in particular, people with disabilities and disaster risk reduction, a topic which has so far not been fully addressed. The aim is to concentrate on reducing the risks within the disaster cycle, to become aware of risks to people with disabilities, adapting alerts to people with disabilities, enabling people with disabilities to be prepared for emergencies (training, definition of needs) and take into account their special needs in contingency plans.

Taking into account the UN Convention on the Rights of Persons with Disabilities and the Council of Europe Disability Action Plan 2006-2015, a Report with Guidelines on Disability Inclusive Disaster Risk Reduction will be prepared and presented at a Conference in Paris on 22-23 October 2013. The objective will be to sensitise stakeholders; increase public awareness and the political profile, thus promoting politics and strategies which address the needs of people with disabilities.

Keywords: natural and technological disasters, risk management; ethical principles on disaster risk reduction and people’s resilience, preparedness for emergencies, persons with disabilities

Session: MON6.3 Integrative One Health Risk Management
Mon 18.11.2013 • 15:15-16:45 • Room: Parsenn

Signalling and risk assessment of emerging zoonoses in The Netherlands

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In the last decade The Netherlands has encountered some outbreaks related to (emerging) zoonoses. After the avian influenza outbreak in 2003 causing conjunctivitis amongst cullers and the emergence of livestock-associated MRSA in 2004, the world’s largest outbreak of Q fever among people took place. These events emphasised the need for a more systematic approach of sharing and assessing signals for (emerging) zoonotic infections. A zoonoses risk analysis
GRF Davos One Health Summit 2013

structure was developed and implemented consisting of several steps covering signalling, response (including upscaling), outbreak management and decision-making at the governmental level. Important is that at each stage in all teams experts from both human and veterinary health are involved. In the ‘signalling forum zoonoses’ a risk assessment is performed on the zoonotic signals that are brought in by the participants. This signalling forum is the basis of the structure and there is a regular meeting every month, and if necessary ad hoc meetings can be organised in case of an urgent signal. Experts from the key veterinary institutes (Animal Health Service, Central Veterinary Institute, Faculty of Veterinary Medicine, Dutch Wildlife and Health Center), the Netherlands Food and Consumer Product Safety Authority and the National Institute for Public Health and the Environment assess the risk and determine whether a follow-up action is desired. In this example of a One Health strategy next to the actual assessment of signals, the signalling forum strengthens the relationship, collaboration and communication between the human and veterinary health partners in The Netherlands.

Keywords: zoonoses risk analysis, signalling forum zoonoses, One Health strategy

Session: WED1.2 Zoonotic Diseases
Wed 20.11.2013 • 08:30-10:00 • Room: Pischa

Development of a DNA based Microarray for the Detection of Zoonotic Pathogens in Rodent Species

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Emerging infectious diseases are, and have always been, an important threat to human health, animal health and the global economy. Emerging and re-emerging pathogens are opportunists, responding to changes in the host or environment. As such, diagnostic tests used for the detection of pathogens either of animal or human origin, must be just as adaptable in utilising new technology.

In complex biological situations where multiple pathogens may be present or when using wildlife samples that may be rare or precious, DNA microarray technology is particularly valuable as thousands of targets can be screened simultaneously in a single sample.

A diagnostic DNA based microarray chip was designed at the School of Veterinary Medicine and Science, University of Nottingham as part of WildTech, an FP7 EU funded project (www.wildtechproject.com). The chip (Alere Technologies) comprises sequences from 18 different pathogens. The pathogens included zoonotic viruses, bacteria and parasite species. Publicly available software (OligoWiz and Unique Probe Selector) was used for design of oligonucleotides for the array. Evaluation of the oligonucleotides was carried out by using reference samples from a variety of sources and using optimised PCR protocols. Several different rodent species were screened including the principal commensal species Rattus rattus, Rattus norvegicus and Mus musculus.

It is likely that, over the next several years, diagnostic microarrays will become relatively inexpensive research tools. Molecular testing for emerging pathogens is increasingly being utilised and use of this technology will result in timely, accurate and inexpensive diagnosis to enable effective control of these infectious diseases with important implications for human health.

Keywords: Zoonoses, Emerging, Disease, Rodents, Microarrays

Session: TUE5.1 Diagnosis and surveillance of infectious diseases in wildlife (WildTech) - Session 1
Tue 19.11.2013 • 13:30 - 15:00 Room: Jakobshorn

Misconceptions of Pediatric Eye Care in Orissa, India

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An epidemiological, economic, and humanitarian issue, reduction of pediatric blindness and impaired vision has become a global public health priority. A literature review sug-
gested that misconceptions of eye care may be preventing the reduction of visual impairment. This study was conducted to gain insight into local residents’ knowledge of pediatric eye issues and determine patterns of family eye care and treatment behavior in rural India. A non-randomized 20-question survey of 154 patients visiting Kalinga Eye Hospital & Research Centre (KEHRC) was conducted in Dhenkanal, Orissa. This study hypothesizes that families in rural Orissa have misconceptions regarding childhood cataracts, child eyeglass usage, and warning symptoms of pediatric refractive error and ophthalmic issues. Although half of childhood blindness is preventable with proper prenatal care, eyeglasses, and treatment, less than 6% of individuals surveyed thought that children could require eye glasses; more than 56% thought consistent squinting was not a warning sign of an eye-related issue; 59.7% thought children could not have cataracts; and only 32% considered an annual or semiannual eye exam beneficial for a child. To combat these misconceptions and improve families’ understanding of triggers of and importance of treating pediatric visual impairment, this study suggests development and implementation of a comprehensive family health education program. This health education program targeted at rural families could focus on the warning signs of refractive error, visual assistance and benefits offered by eye glasses, triggers of pediatric cataracts, and the regularity with which families should seek eye exams for their children.

Keywords: pediatric, eye care, health education, rural India, sunglasses, misconceptions

Session: WED1.1 Disease detection and prevention technologies

Wed 20.11.2013 • 08:30 - 10:00 Room: Jakobshorn

One Health Literacy: Concepts and Measurement

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With the adoption of One Health initiatives across health sectors, it is becoming increas-ingly important to understand how communities and individuals perceive, create, and act on information when engaged in the resolution of One Health issues and problems. In this presentation, the differences between functional, interactive, and critical One Health literacy are explored as well as the measurements needed for evaluating the impact of One Health Literacy on public perceptions, attitudes, and behaviors.

Keywords: health literacy, education, community, perception, attitudes, behavior

Session: MON6.3 Integrative One Health Risk Management

Mon 18.11.2013 • 15:15-16:45 • Room: Parsenn

Soils and Planetary Health

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Soils provide a host of ecosystem services, the most important of which is their role in the production of the majority of the food and fibers consumed by the global human population. However, soils are also essential for the provision of clean water; the storage of carbon and the conservation of both belowground and aboveground biodiversity. Threats to soils health are very real: it is estimated that approximately 30 Pg of agricultural topsoil is eroded every year, thereby exceeding soil formation rates by at least an order of magnitude. Furthermore, soils have lost a significant amount of their organic carbon reserve since the onset of farming and they also suffer from compaction and salinization.

Several issues emerge when soil health needs to be assessed. First, the variables used to define soil health or soil health are not all well defined and some concepts definitely need further development. Second, the relationship between the status of these variables and soil health, e.g. in terms of its capacity to produce food, is often poorly or wrongly understood. Finally, soil health is often considered at the local scale only, thereby neglecting the effects
local soil management may have on the broader system and on soils elsewhere.

While there is clearly a need for more scientific underpinning of soil management practices, current scientific knowledge does allow to develop a vision on how the global soil resource can be managed more sustainably and how soil health may be improved. We propose concrete guidelines that may contribute to the development of such a vision whereby we do not only consider the point scale, but we use a systems view. We discuss the implications of various alternatives and reflect on economic costs and benefits of more sustainable soil management.

Keywords: soils, soil degradation, soil management, crop productivity, ecosystem services, soil carbon

Session: TUE5.2 Environmental degradation and health issues
Tue 19.11.2013 • 13:30-15:00 • Room: Pischa

Show Malnutrition Your Green Tongue!
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"Famines lay waste to countries: bad diets cripple them silently"
Economist, March 26th, 2011, p. 18

It is a silent, insidious massacre that needs our full attention to stop it as fast as possible: malnutrition. If it can not be combated within early childhood the life long negative impacts upon the individual’s life are devastating leading to a negative spiral for the whole population.

The Copenhagen Consensus 2008 arrived at the conclusion that malnutrition is the number one problem of the world. Based on cost-benefit-analysis, the Copenhagen Consensus set priorities to address the global challenges. Five of the top ten solutions are related to malnutrition.

Spirulina, a spiral shaped green algae, is a rich and inexpensive source of protein, vitamin A and many other essential micro- and macro-nutrients. It is very easy to grow in brackish water and warm climate where it reproduces itself simply by dividing as a photosynthetic organism using ten times less water than vegetables. Furthermore, Spirulina grows without fertile soil or earth medium and needs no pesticides. It is thus very ecologically and saves the scarce resources. It has also a very high-demonstrated bioavailability and needs no cooking.

Studies proofed the effectiveness of Spirulina: only 1 to 3 grams a day over a period of three to six months lifted children under 5 years of age out of malnutrition! Cultivated locally in India by Self Help Group Women the Spirulina powder is then processed into Green Tongue Candies making Spirulina an attractive and tasteful treat for children. Eating two candies a day, children can step out of malnutrition and show malnutrition their green tongues!

Antenna Technologies aims for collaboration among all sectors and awareness campaigns to increase the dissemination of Spirulina - a sustainable, ecological, economical and natural solution to malnutrition.

Keywords: malnutrition, Spirulina, nutrient deficiencies, health, MDG

Session: MON6.2 One Health for food safety and food security
Mon 18.11.2013 • 15:15-16:45 • Room: Pischa

Animals, water, and public health in Vietnam.
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In rural Vietnam water related to livestock production, particularly waterfowl including ducks, has been identified as an important factor in the spread of emerging infectious diseases including avian influenza. Less is known about the role of public health perceptions of farmers engaged in integrated livestock and aquaculture production, particularly as it relates to mitigation practices (e.g., manure management). In order to investigate such water health and related public health perceptions in Vietnam, a pilot study questionnaire
and water samples were collected from 37 small-scale farms in Thai Thuy District, Thai Binh Province, Vietnam, from November 2012 to January 2013. Households met the following criteria for inclusion in the study: engaged in livestock and aquaculture, below the poverty level, and willing to engage in the study. Questionnaires gathered data addressing demographics, agri/aquaculture production, and health perceptions related to the interaction of water and animals. Water samples were analyzed for pH, turbidity, and levels of fecal and total coliforms.

Results indicated that more than 80% of the 134 samples tested did not meet the WHO guidelines for water quality based on fecal coliform content. In general, there was very low awareness of the public health risks of water that might contain fecal coliforms or other pathogens contributing to zoonotic disease. Nevertheless, perceptions of cleanliness of water were based on clarity and source, indicating some intuitive sense of public health related to zoonotic disease. Nearly half of all rural household participants felt that their water was not of acceptable quality, although most participants could not explain why. Most participants (85%) were not aware of the risk of coliforms or other bacterial pathogens from water containing livestock waste.

Follow-up work will expand this pilot study to 600 households in two districts of Vietnam. The study will begin in July 2013.

**Keywords:** water health, coliform bacteria, Vietnam, zoonoses, livestock management.

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**Monitoring and evaluation of One Health projects: lessons from eco-health in Asia.**

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The BECA project (Building Ecohealth Capacity in Asia) was a three year project to develop capacity in ecohealth research in Southeast Asia. The project was supported by the International Development Research Centre (IDRC) and the Australian Government Overseas Aid Program (AusAID). The project was facilitated by Veterinarians Without Borders Canada and implemented by the University of Calgary and other partners in Canada and Asia. This presentation reports on the monitoring and evaluation (M&E) end-of-project findings and suggests a process for M&E of One Health projects.

Methods for M&E included development of progress markers, use of pre- and post-workshop as well as on-line questionnaires, interviews, small group discussions, gap analysis, performance indicators, and SWOT analysis.

Key findings from the monitoring and evaluation activities revealed the following benefits of participating in BECA: participants gained knowledge and confidence about ecohealth; sharing of experiences and learning from others; inspiration to apply an ecohealth approach to problems; incorporating complexity in problem identification and solving; learning to develop a policy brief; understanding the importance of disseminating research findings beyond academic communities; and learning to work collaboratively with a transdisciplinary team.

Areas for Improvement were suggested as: strengthening the application component of the project (applying what was learned to the field); training for participants to seek their own project funding; case studies of policy implementation (not just research); and improved follow-up and communication.

Limitations of the M&E approach included selection processes for identifying M&E participants, lack of detail in questionnaire answers, respondent bias, and time needed to conduct and analyze one-on-one interviews.

The M&E process could have been improved by setting clearer indicators relating to specific outputs and clearly documenting their status over the course of the project, and by increased communication among participants during the project.
System Risk Research on Elderly Health

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China is facing the challenge of an aging society. This presentation suggests a system thinking approach. Use national-level network coverage to collect elderly health data and modeling the aging people health systems. This includes aging people system level risk assessment and pattern recognition. Applications are aimed at such as Alzheimer’s disease data analysis.

The indicators contain Physical Fitness, Psychological Measurements, Living area and Living habits (diet, alcohol and tobacco, rhythm), and Working Experiences. The aforementioned indicators are treated with principal component analysis for further analysis with decision trees and artificial neural networks. Policy recommendations based on analysis of the indicator data modeling is the output of this research.

A Chinese famous state-owned food company is examined as a case study. They have been practicing their corporate social responsibility to contribute to the food security in the industry. Their implementations of circular economy with the green, low-carbon, environmentally friendly achievements win them honors as well as profits that ranked number one in Chinese food industry for the consecutive 18 years. A win-win solution seems to be found.

Keywords: System Risk, Elderly Health, One Health

Session: MON5.3 Aging, Health and Environment: Coping with Challenges in the Framework of One Health  
Mon 18.11.2013 • 13:30-15:00 • Room: Parsenn

Diagnosis of Leptospirosis

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Leptospirosis is a major neglected infectious disease, controversially with a high public and veterinary burden.

Unawareness is due to the difficult diagnosis, both in the clinic and the laboratory. Antigen detection approaches include darkfield microscopy and isolation. These are either unreliable or too slow. The microscopic agglutination test (MAT) is the reference serological test while in many situations the IgM ELISA presents a feasible approach.

Numerous rapid serodiagnostic tests (RDT) are currently available. These are mostly based on lateral flow or latex agglutination formats. A recent prospective evaluation of three of such tests revealed the following: (i) the sensitivity is low at the early stage of the disease and increases only in the late acute phase, (ii) sensitivity increases markedly on paired samples, and (iii) the diagnostic accuracy of tests varies in time; this might present a production or performance quality challenge. Optimal performance of tests requires a laboratory with a well-functioning quality management system (QMS) complying with international standards, such as ISO 15189. The WHO Laboratory Quality Stepwise Implementation Tool facilitates implementation of a QMS, providing medical laboratories with roadmaps and support documents.

Early tests, which are different from rapid tests, are antigen detection-based. Conventional formats (e.g. antigen capture ELISA) have a sub-optimal sensitivity but could be improved by applying nanotechnology. Notably PCR on early acute blood samples is a promising approach. Prospective evaluation of real-time PCR has revealed a satisfying diagnostic accuracy. Battery driven thermocyclers make PCR increasingly feasible, whereas isothermal amplification requires even more simple and cheap devices.

It is possible to design molecular tests at an affordable and commercially interesting format.
Although the (underestimated) incidence of severe leptospirosis seems to warrant a market of 10 million tests per year, commercial interest could be promoted by designing multiplex tests for differential diagnosis, including more ‘common’ infectious diseases.

**Keywords:** Leptospirosis, diagnosis, diagnostics, outbreak alert, zoonoses

Session: TUE1.1 An Unrecognized One Health Threat: Leptospirosis
Tue 19.11.2013 • 08:30 - 10:00 Room: Jakobshorn

**Gene-Z and iDx: Hand-held Networkable Platforms for Low Cost, Multiplexed, and Decentralized Genetic Testing**

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Simplified analysis of nucleic acids-based markers at the lowest possible cost may play a critical role in accomplishing the goals envisioned by One Health. Nucleic acids-based approaches allow for screening of disease and pathogens, disease surveillance, selection of treatment, treatment effectiveness, differential diagnosis, risk assessment, staging, and prognosis. Hand-held, point of care (POC) or portable systems have the potential to provide all these capabilities in a simple, affordable, field deployable, rapid, multiplexed, and robust device without the need for electrical power or refrigerated reagents. Even the need for specific language can be eliminated by translatable or visual graphical user interface.

The presentation will introduce Gene-Z and iDx, two networkable platforms that are developed to provide simplified analysis of genetic markers. Gene-Z has Android/iPod based operation using BT and capable of carrying out quantitative isothermal amplification for 64 reactions in a disposable microfluidic chip. The self-digitizing microfluidic chip is flexible in design to allow for the analysis of 1-4 samples. Validated primer sets, determined by the use case scenario are pre-dispersed in the wells of the chip. The assay time is generally 6-40 minutes depending upon the abundance of the target. The device is battery operated and can be charged by solar panels integrated at the top of the device. Overall Gene-Z is approximately 7” x 5” x 1.5” and weighs ~ 2 lb. A smaller version (iDx) working as an attachment to cellphones, also with real time amplification and quantification capabilities, allows 8 reactions in parallel. Both these devices focus on the need for decentralized testing based on genetic markers. They are net-workable and currently being validated for a number of key applications important to humans, plants, industrial microbiology, and environmental protection. Successful implementation of such broad capabilities at the lowest possible cost has disruptive implications for global health.

**Keywords:** genetic testing, point of care, diagnostics, disease surveillance, cellphones

Session: TUE1.2 One Health approaches for early warning and detection
Tue 19.11.2013 • 08:30-10:00 • Room: Pisch
and processing capabilities, aging and health risk management basing on complex systems and network theory, using computer-aided decision support as a basic tool and experimental platform featuring with interactive visualization is the international research forefront. On the basis of literature research, this paper proposed a program for the establishment of a reasonable and practicable experimental platform dealing with major aging and health risk, and constructing the communication loop for requirements and standards between basic research work and decision support systems to prepare for the development of decision support systems research.

**Keywords:** One Health, Decision-Making Simulation, Risk Management, Aging

Session: MON5.3 Aging, Health and Environment: Coping with Challenges in the Framework of One Health

Mon 18.11.2013 • 13:30 - 15:00 Room: Parsenn

**Knowing Ahead Can Save Lives: How To Realize An Early Warning System For Cholera**

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According to the UN, the world has met the MDG target on safe drinking-water. But the same WHO/UNICEF report also pointed out, that in addition to 780 million people still lacking access, that this success is overshadowed by disparities of access with the poorest quintiles in the rural and urban areas of the world yet to enjoy sustainable access to safe water. It is therefore no surprise that cholera outbreaks still happen and it is one of the most severe water borne diarrhoeal diseases. Extreme weather events and natural calamities bring further plight to the vulnerable population. Climatic and environmental factors such as precipitation, temperature, soil moisture, evaporation and runoff impact the prevalence of the pathogen Vibrio cholera. The goal of the WHO project Global Information Management System on Health and Environment (GIMS) is to prevent water borne diseases through the provision of an information base for ensuring good environmental health modalities such as access to safe water and sanitation under changing environmental conditions. GIMS aims to contribute to an Early Warning System for diarrhoeal diseases by producing real-time maps predicting likely hotspots of vulnerable populations under given environmental conditions where a cholera outbreak could occur. GIMS will provide a comprehensive information system for adequate planning and targeted resource usage. Initially, GIMS will focus on cholera and will be tested in selected pilot countries where cholera is present.

The presentation will describe the WHO GIMS cholera Early Warning System and the planned contributions by NOAA and the EU FP7 project EO2HEAVEN (Earth Observation and ENVironmental modelling for the mitigation of HEalth risks, EU FP7 244100, www.eo2heaven.org). This multidisciplinary team has joined forces to take an integrated approach to aspects in the domains of health, earth observation, environmental modeling, microbiology, epidemiology and advancements in information and communications technology.

**Keywords:** early warning system, cholera, health and environment

Session: TUE1.2 One Health approaches for early warning and detection

Tue 19.11.2013 • 08:30-10:00 • Room: Pisch

**Idea of Aging and Health Risk Management Decision-Making Simulation Visualization Experimental Platform Based on Complex System**

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Aging and Health risk management is an important research direction in the field of aging study. To cope with different ranges of aging and health problems, policy-makers need better scientific tools to develop appropriate aging and health risk response measures. However, aging and health is a complex issue in the
social ecological system. Dealing with aging and health issues has been far from decision-makers can be handled by their own. With powerful tools of modern computer analysis and processing capabilities, aging and health risk management basing on complex systems and network theory, using computer-aided decision support as a basic tool and experimental platform featuring with interactive visualization is the international research forefront. On the basis of literature research, this paper proposed a program for the establishment of a reasonable and practicable experimental platform dealing with major aging and health risk, and constructing the communication loop for requirements and standards between basic research work and decision support systems to prepare for the development of decision support systems research.

Keywords: aging, decision-making simulation, visualization, one health

Session: MON5.3 Aging, Health and Environment: Coping with Challenges in the Framework of One Health
Mon 18.11.2013 • 13:30-15:00 • Room: Parsenn

Introduction: Epidemiological Tools For Disease Surveillance
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This is a brief introduction to the epidemiological tools that have been used for wildlife disease surveillance, mapping and action plans. The presentation will cover theoretical modelling approaches that underpin surveillance design and analytical tools to extract temporal trends from cross sectional data. How these techniques support pan-European frameworks of wildlife disease surveillance are discussed.

Keywords: Wildlife, Modelling

Session: TUE6.1 Diagnosis and surveillance of infectious diseases in wildlife (WildTech) - Session 2
Tue 19.11.2013 • 15:15-16:45 • Room: Jakobshorn

Role of Biotechnology in the Implementation of Food Safety Doctrine in Russian Federation
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Today the challenge of food safety of civilization among the global challenges holds a special place, and as the world’s population is growing the main problem that accompanies humanity throughout its history is the food. Especially important for food safety is the development of biotechnology, high-quality, technological transformations in the field of food production - the use of genetic advances in crop and livestock production, effective-governmental methods of food production, quality control, including technological advances and the formation of an effective system of transfer these advances in the broad practice of production, etc. Through biotechnology plants, animals, soil, various physiological processes, raw materials and finished products can be affected at the level of atoms and molecules in a controlled manner. The most common ways such an impact: at the gene level; cleaning products and the environment from the molecules and atoms of environmentally harmful substances; the impact on biological objects by light and electromagnetic signals (fields) for controlled change biostructure, production in the body of nutrients (vitamins, immune bodies, etc.), the separation of biological objects (seeds, cells, etc.) in the parameters viability; the creation of new materials and composite connections, medicines, artificial odors, bio-products; control on the atomic and molecular level of product quality, recognition of human, animal and plant damage and stress in animals, environmental cleanliness (contamination) of objects; control of the sore points of recognition and targeted delivery of drugs to the patient body.

Keywords: biosafety and biosecurity, biotechnology, molecular level
Using a One Health Approach to Control Zoonotic Diseases: Tuberculosis as an Example
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One health approach offers an excellent framework for controlling zoonotic diseases. The interplay between humans, livestock, wildlife, and ecology in the epidemiology of zoonotic diseases, including TB, makes control of the diseases complex, and an ideal target for the application of the One Health approach. The importance of ecology and climate to the epidemiology of zoonotic TB has been recognized. The Wildlife Conservation Society includes tuberculosis among its ‘deadly dozen’ – potentially lethal zoonoses that could spread around the world due to behavioral changes to compensate for the effects of global warming. Overall reductions in health (and immune systems) in humans and livestock due to water and food insecurity can contribute to the spread of zoonotic disease. The geographic distribution of different clonal complexes of BTB (e.g. Africa2, Af2) that infect both livestock and humans suggests that geographically distributed factors (e.g. wildlife habitats, climate, water availability) are integral to the transmission of these clones. Environmental/ecological conditions can promote contact between wildlife and livestock, which can increase transmission of TB at livestock–wildlife interfaces. Ecological change, both natural and anthropogenic, can increase or concentrate wildlife populations, which can promote the spread of BTB or increase competition between wildlife and livestock for water and food.

The presentation will discuss the One Health approach including the benefits and challenges. Zoonotic Tuberculosis will be used to illustrate the rationale of using the One Health approach to control important zoonotic disease.

Screening of Endocrine Disrupting Chemicals using Stem Cells
KANG, Kyung-Sun
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Endocrine disrupting chemicals (EDCs) are exogenous compounds thought to mimic the action of estrogen or other hormones and influence endocrine activity in the body. These chemicals have adverse effects not only in the reproductive system but also in the central nervous system during development and throughout life. Polychlorinated biphenyls (PCBs) are a class of environmentally persistent and widespread halogenated hydrocarbons. They have been implicated in the development of certain cancers. Some EDCs with estrogenic potential such as bisphenol-A (BPA) and estradiol (E2) have also been associated with cancer initiation and progression. Recently, “cancer stem cells” have been demonstrated to sustain the growth of tumors and are resistant to therapy. To test the hypothesis that metformin might reduce the risk of breast cancers, the human breast carcinoma cell line, MCF-7, grown in 3-dimensional mammospheres which represent human breast cancer stem cell population, were treated with various known and suspected carcinogenic EDCs with and without non-cytotoxic concentrations of metformin. The number and size of these cells were measured. Results demonstrated that TCDD (100 nM) and BPA (10 µM) increased the number and size of the mammospheres, as did E2 (10 nM). Stimulation by these chemicals was correlated with the increased expression of OCT4, a stem cell marker. On the other hand, metformin at 1 and 10 mM concentration dramatically reduced the size and number of mammospheres and decreased the expression of OCT4 in E2 & TCDD mammospheres but not in the BPA mammospheres, suggesting different mechanisms.
of action of BPA on human breast carcinoma cells. In addition, these results support the use of 3-dimensional human breast cancer stem cells as a means to screen for potential human breast tumor promoters and breast chemopreventive and chemotherapeutic agents.

**Keywords**: Endocrine Disrupting Chemical, Stem Cells

Session: WED5.1 Prenatal Exposure To Endocrine Disruptors And Its Impact On Adult Onset Disorders

Wed 20.11.2013 • 13:00 - 14:30 Room: Jakobshorn

**A Curriculum Development on Disaster Training Course: DITAC Project**

KAPTAN, Kubilay (1); KAVLAK, Uguar (1); YILMAZ, Onur (1); TIMURLENK CELIK, Ozden (1); KGORRAM_MANESH, A. (2); FISCHER, Philip (3); LUPESCU, Olivera (4); INGRASSIA, Pier L. (5); ASHKENZAI, Michael (6); ARCULEO, Christopher (7); KOMADINA, Radko (8); LECHNER, Konstanze (9); VON ARMIN, Götz (10); HRECKOVSKI, Boris (11)

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According to statistical data, natural disasters as well as the number of people affected by them are occurring with increasing frequency compared to the past. This situation is also seen in Europe Union; So, Strengthening the EU capacity to respond to Disasters is very important.

This paper provides an overview of the various aspects of disaster risk management and describes the development of a 5-day training curriculum in disaster management to improve the competency of first responders to prepare for, and respond to, both natural and human-caused disaster hazards. The training is conducted in a face-to-face setting and content is mapped to recognized disaster management competencies. The developed curriculum is composed of three levels; the fundamental course, the advanced course, and the expert course. The training materials are uniquely structured to the specific hazards, demographics, resources. This training program incorporates a series of challenging interactive scenarios that reinforce decision making in a disaster management. Pretesting and post testing are used to evaluate knowledge gained by participants. This interactive approach aligns with the principles of adult learning, and training evaluations indicate that this method is an effective integration of process and content.

The modules of the disaster training curriculum are based on the “Integrative Health Risk Management” concept and climate change, resource depletion, land degradation, urbanisation, food insecurity and development challenges are taken into consideration when designing the modules. DITAC Training Programme has been composed to be an unique course based on this knowledge.

The research leading to these results has received funding from the European Union’s Seventh Framework Programme (FP7/2007-2013) under grant agreement no285036.

**Keywords**: Disaster Training Curriculum, Disaster Training Course, Curriculum Development

Session: TUE6.2 One Health capacity building approaches

Tue 19.11.2013 • 15:15-16:45 • Room: Pischa

**Natural Disaster as Momentum for Political Action in Europe**

KAPTAN, Kubilay (1); KAVLAK, Uguar (1); YILMAZ, Onur (1); TIMURLENK CELIK, Ozden (1); KGORRAM_MANESH, A. (2); FISCHER, Philip (3); LUPESCU, Olivera (4); INGRASSIA, Pier L. (5); ASHKENZAI, Michael (6); ARCULEO, Christopher (7); KOMADINA,
Natural disasters occur in a political space. Although events beyond our control may trigger a disaster, the level of government preparedness and response greatly determines the extent of suffering incurred by the affected population. Perhaps surprisingly, there are similarities in the ways in which democratic and authoritarian regimes respond to disaster. Political leaders in both systems manipulate disaster recovery to enhance their popular legitimacy. Disasters also open political systems up to scrutiny. In this way events can become symbolically important for politically marginalized groups and can catalyse political organising and dissent, examples of this process include class and cast based, and regional protest.

Political responses are largely determined by pre-disaster social contracts. Suppressed values and associated forms of organisation can re-emerge, or predominant institutions can become further entrenched. In reconstruction, power asymmetries can lead to the manipulation of aid and subsequently the distribution of economic power. Where new forms of organisation become too effective, they may be perceived as a challenge to the state. It is here that democratic and authoritarian regimes tend to differ in their strategies for survival. After describing political background and conditions prior to disasters, this paper gives case studies about political manipulation and protest occur at local, municipal and national scales in Europe.

Political risks are also defined for “Integrative Health Risk Management” concept within climate change, resource depletion, land degradation, urbanisation, food insecurity and development challenges.

Keywords: Natural Disasters, Politic Impacts, Political Conditions

Session: WED6.1 Global and national directions and approaches for One Health
Wed 20.11.2013 • 14:45 - 16:15 Room: Jakobshorn

Rabies the One Health Model - Opportunities and Challenges of a Neglected Tropical Disease
KNOPF, Lea; MIRANDA, Mary E.; BRIGGS, Deborah J.

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Despite being an entirely preventable disease, canine-mediated rabies continues to kill tens of thousands of people every year, mostly children under the age of 15. Rabies is the perfect disease to put into practice a ‘one health’ approach to disease control: It is a disease affecting almost all mammals, the majority of human deaths are due to exposures to rabid dogs, the methods and tools for prevention and control are established, notably efficacious biologics for prevention and the need to involve several governmental departments for effective prevention. As dog rabies is eliminated, numbers of human deaths simultaneously dramatically decrease. So, why do other zoonotic diseases with far lower mortality rates receive more attention by the public and the governments than rabies?

Rabies is one of the 17 diseases classified by WHO as a ‘Neglected Tropical Disease’. Regardless of the nearly always fatal outcome once clinical signs are evident, and the high disease burden, control and elimination of rabies is not among the priorities of public health or agriculture ministries. Rabies deaths mostly occur in marginalized populations living in rural areas with limited access to health services. This is particularly the case in many
parts of Asia and Africa bearing the majority of the currently estimated global burden of rabies and governments having to prioritize over multiple infectious diseases with very scarce resources.

Nevertheless, encouraging progress has been made in slowly breaking the cycle of neglect through increased advocacy and enhanced collaboration of all stakeholders involved in rabies prevention and control. On the example of canine-mediated rabies, a neglected tropical disease, this paper will provide insights into opportunities and challenges of a one health approach put into practice at different scale, from a local, regional or even global perspective.

Keywords: canine rabies, neglected tropical diseases, policy, zoonosis

Session: WED5.2 Wildlife diseases
Wed 20.11.2013 • 13:00-14:30 • Room: Piscia

‘Leitbild’ and indicators of Socio-Environmental Health
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Indicators and a vision of socio-environmental health are identified and described as a management framework for socio-ecological systems. Health as an anthropocentric category of ecological state transports vital characteristics of socio-environmental systems. This ‘Leitbild’ is related to key properties such as sustainability, resilience, and minimal entropy of flows. The concept of socio-environmental health is described for the case of rural and urban societies of Rwanda and their respective environmental and resources management systems. The case of Rwanda is chosen as an example of a fast growing and developing society in a tropical climate depending vitally on social and environmental health for food and energy production.

Keywords: Environmental health, resources depletion, degradation, recovery

Session: TUE5.2 Environmental degradation and health issues
Tue 19.11.2013 • 13:30-15:00 • Room: Piscia

N A D I R, the European Network for Animal Diseases Infectiology Research Facilities
LANTIER, Frederic (1); STOCKHOFE, Norbert (2); BLANCO, Esther (3); SIMMONS, Hugh (4); WILLIAMS, John (5); WISSELINK, Henk (2); BALKEMA-BUSCHMANN, Anne (6); NADIR, Partners (7)
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NADIR, the European “Network for animal diseases and infectiology research » facilities, has get started 4 years ago. Aim of NADIR is to facilitate the development of Europe’s high level bio-containment facilities for which there is a strong demand from both the public and private sectors in the fields of medical and veterinarian research. Laboratories have to respond to upgraded ethical and safety regulations whilst providing reliable answers in term of physiopathology for emerging infectious diseases at risk for animal and/or human populations (diagnosis, transmission conditions, risk analysis, therapeutic targets) or for vaccines and therapeutic trials.

The project has intensified communication between the project partners both in terms of exchange of knowledge and know-how practices, and increased resources sharing between partners and other related projects, notably but not exclusively animal and cell lines, reagents specific for livestock species and high throughput molecular tools. Joint researches on animal models and development of infectious process monitoring tools have been performed to improve the services currently provided by the infrastructures of the project. NADIR has provided about 50 research projects from the public and private sectors with access to the 15 state-of-the-art facilities owned by the project partners.

Coordinating activities of NADIR benefit to the principal European animal infectiology platforms collaborating on most important
animal infectious diseases and zoonosis. Its action should be extended and connected to similar infrastructures worldwide to improve resource exchanges and biosafety/biosecurity regulations for a concerted improvement of our capacities to evaluate and prevent risks of transmission to human populations of highly transmissible animal pathogens. The aim is to reduce overlaps between infectiology infrastructures, thus enabling each partner to specialize and the community to address new scientific and technology issues.

Keywords: infectious diseases, livestock, animal facilities (level 3), Infrastructure Network.

Session: MON5.1 Livestock risks and opportunities Mon 18.11.2013 • 13:30-15:00 • Room: Jakob-shorn

“Student Translational Scholars”
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Michigan State University is developing a new role for students in research projects across disciplines. Called a “Translational Scholar,” this role prepares students to be agents of change in their field. As part of a research team, graduate students not only conduct research but also serve in a translational role, creating open knowledge for stakeholders of the research, and they play an innovation role in facilitating adoption and use of open knowledge. Students in these roles often create three outputs as part of their role on a research project or research internship: (1) publishable research such as a thesis or contribution to a paper; (2) a teaching case or example, including open data, in print or video designed for use in a specific curriculum; (3) training or information materials for the community or setting in which they are doing their research. Several MSU initiatives have incorporated similar forms of student Translational Scholar roles. The AgShare project, funded by the Bill & Melinda Gates Foundation, is working with RUFORUM (Regional Universities Forum for Capacity Building in Agriculture) to scale up the AgShare Method of Translational Scholars by embedding the model in their participatory action research teams. The National Institutes for Health has funded a conference grant for One-Health that piloted the concept of a Translational Scholar Corp to work with interdisciplinary research teams towards forging an agenda on the role of communication technology and behavior change. The scholars serve as content curators, disseminators, and internal communication experts for the project. Scholars received training on the basic structure and goals of the project, digital media capture, and interdisciplinary team science. Continued participation will provide Scholars with grant writing experience and possible co-authorship.

Keywords: translational scholar, interdisciplinary, students, research

Session: TUE6.2 One Health capacity building approaches Tue 19.11.2013 • 15:15 - 16:45 Room: Pischa

Emerging Communication Media and One Health: Reporting An Initial Research Agenda
LAPINSKI, Maria Knight; FUNK, Julie; MOCCIA, Lauren
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Using new and emerging communication technologies to promote health behavior change and facilitate decision making is fast becoming the norm among health practitioners. In communication science, however, there remain many unanswered questions about how and if new communication technologies can be used effectively to influence health attitudes or behaviors and facilitate decision-making. Drawing from the work by Hesse et al., 2010 and the CDC (2010), this paper reports the results of an interdisciplinary symposia designed to bring social and STEM scientists together to advance the science in 4 key substantive areas related to One Health and emerging communication technology. First, examination of how people conceive of their own health behaviors within a larger eco-system including animal and environmental health. Eco-
logical models of health behaviors (e.g., Street, 2003) address these issues to some extent by including the macro-level factors that drive behaviors (Trostle, 2005); the One Health concept is compatible with these models but the question remains as to whether there are ways to use these approaches to facilitated decision-making. Further, as communication technologies emerge, identification of the key characteristics of these technologies and how are they used globally for information seeking and sharing about One Health issues is critical (Hesse et al., 2010). Critical as well is identifying the diseases and issues for which new and emerging communication technologies are potentially appropriate and useful and aligning those with One Health priorities. Finally, scientists might better understand the nature and form of information about One Health related issues that people need when using new and emerging communication technologies and how it influences decisions and behaviors (Kahlor et al., 2006). This paper reports on the results of an NIH-funded symposium designed to frame a research agenda for the ways in which social and other emerging communication technologies can address One Health challenges.

Keywords: communication, technology, One Health, interdisciplinary

Session: WED5.3 One Health approaches and trends
Wed 20.11.2013 • 13:00-14:30 • Room: Parsenn

Enabling People With Disabilities To Access Health And Safety Assistance Via Mobile Technology: Research Specifically Focused On the Visually Impaired

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The usage of technology has increased for the general population over the past decade, and today there are approximately 6 billion mobile phones and an exponential growth in tablet adoption. These devices provide communication, entertainment, and, importantly, can provide assistance in maintaining health and safety. We see growing use of mobile devices and their apps used to deliver timely health and safety information, but there remains little focus on how to specifically ensure that such information is available and usable by people with disabilities, including those who may have low literacy or who lack knowledge of local languages. This paper will focus on the challenges faced by the visually impaired and blind in receiving information and the solutions for communicating in a non-visual manner that is currently under investigation. Though touch-screen mobile devices such as smartphones and tablets are seeing increased use by the visually impaired, usability and accessibility features may not be fully implemented across the apps and information sources. Access to health and safety information should not be restricted by poor design and non-implementation of accessibility. The challenge is how to make visual information accessible for the use of visually impaired or blind users of mobile technology, which can be achieved through a scientific understanding and application of the underlying perceptual and cognitive processes and principles relevant to information transfer.

This paper presents a user-centric design approach of bringing accessibility features for the new generation of mobile devices. Special requirements for designing accessible interfaces is covered both for visually impaired and blind users. A specific benefit of this approach is that mainstream consumer devices can potentially provide health related information to the visually impaired. The data supporting this effort was gathered from field tests carried out with students at a school for the blind and visually impaired.

Keywords: Technology, Accessibility, Visually Impaired, Research, Innovation

Session: MON6.3 Integrative One Health Risk Management
Mon 18.11.2013 • 15:15 - 16:45 Room: Parsenn
The Global Distribution and Burden of Melioidosis, an Overlooked Emerging Infectious Disease

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Melioidosis is an emerging infectious disease of humans and animals throughout South and East Asia, Southern China, Northern Australia, the Indian subcontinent, regions of South America, various Pacific and Indian Ocean islands, and some countries in Africa. The causative organism is the Tier 1 select agent and environmental Gram-negative bacillus Burkholderia pseudomallei. In northeast Thailand, melioidosis causes more than 1,000 deaths per year, which is now comparable to deaths from tuberculosis, and exceeds those from malaria, diarrheal illnesses and measles combined. There is a striking lack of accurate information on the worldwide burden of melioidosis. In this study, we undertook an exhaustive assembly of all available records of human and animal melioidosis and the presence of B. pseudomallei in the environment worldwide, and used a formal modelling framework to construct a global risk map of melioidosis. We then paired the resulting risk map with longitudinal information from melioidosis cohort and whole-population studies to infer the public health burden of melioidosis in 2012. We predict melioidosis to be ubiquitous throughout the tropics, with local spatial variations in risk influenced strongly by the presence of the organism in the environment, soil type, rainfall, temperature and the degree of sanitation and urbanization. Using geospatial statistical models, we predicted new areas and countries where melioidosis is probably endemic but under-diagnosed or never reported. This is probably due to a combination of the lack of specific clinical features of melioidosis, microbiology facilities and familiarity with the organism. Poor water sanitation is associated with a risk of melioidosis. We anticipate that this new risk map and burden estimates will provide a starting point for a wider discussion about the global impact of melioidosis and will help to guide improvements in disease diagnosis and preventive strategies and their economic evaluation.

Keywords: melioidosis, emerging infectious disease, Tier 1 select agent, Gram-negative bacillus Burkholderia pseudomallei

Impact of Agricultural Activities On Karstic Aquifer Integrity And Possible Influences On Human Health; Vratza Region, Bulgaria

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The geochemical state of karstic groundwater in the Vratza region of Bulgaria was assessed to determine the influence of agricultural practices on drinking water quality. Balkan endemic nephropathy occurs in selected villages in this region. Water quality varies as a function of source (wells, springs or taps). Piper plots, show cation trajectories along the Ca2+ – Mg2+ axis and anion trajectories along
the HCO$_3$- - SO$_4^{2-}$ axis. This is not typical for limestone aquifers which tend to cluster along the Ca$^{2+}$ – Na$^+$ and HCO$_3$- - Cl$^-$ axes, respectively. Factor analysis shows: an increasing importance of a Cl$^-$-Na$^+$-SO$_4^{2-}$-NO$_3^-$ association from taps to springs to wells, an association between Mg$^{2+}$ and U, and a lack of associations between Ca$^{2+}$ and Mg$^{2+}$ and between Ca$^{2+}$ and HCO$_3$-. The latter observation is also not typical for limestone aquifers. Modeling indicates that the groundwater is in geochemical equilibrium with the limestone, constraining Ca$^{2+}$ concentrations. Magnesium concentrations are conservative, thus no association between Ca$^{2+}$ and Mg$^{2+}$. Uranium concentrations are conservative, due to a redox state poised by NO$_3^-$ concentrations and the formation of - ion pairs with CO$_3^{2-}$ and PO$_4^{3-}$. Magnesium and uranium appear to be sourced from the dissolution of the limestone and which can account for their association (along with their conservative behaviors). Dissolution of the limestone is enhanced by increased ionic strengths from additions of chemicals associated with human activities on an agricultural landscape. Although cluster analysis shows that water quality in endemic areas differs from non-endemic areas (possibly related to geology), human activities have influenced aquifer integrity and drinking water quality in all areas both directly (e.g., elevated NO$_3^-$) and indirectly (aquifer dissolution and enhanced U). Such changes can adversity affect human health. Clearly, more work is needed to understand the details of anthropogenic influences on water quality in karstic terrains.

**Keywords:** rural groundwater quality, karst, multivariate statistics, uranium and magnesium, Piper Diagrams, geochemical modeling, Balkan endemic nephropathy

Session: TUE6.3 Emerging diseases
Tue 19.11.2013 • 15:15 - 16:45 Room: Parsenn

**Training Imams in Basic Mental Health Care: Capacity Building in Muslim Communities**

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Accessing mental health services in Arabic/Muslim communities in the United States is often difficult. Compared to the majority culture, there is more stigma attached to psychiatric disorders. Language can be a barrier. The often hierarchal structure of families requires elder approval, then Imam approval, after which family members might access care. Therefore, many individuals do not seek care or cannot access care. The Department of Psychiatry at Michigan State University developed relationships with Muslim communities and organizations in the state of Michigan and cooperatively developed a training program for Imams from Mosques in the communities. The overall goals of the program are to improve mental health in Muslim communities and decrease dissatisfaction by young people by improving Imam’s knowledge of psychiatric disorders, symptoms that require immediate intervention and a better understanding of referral resources. One to two day training programs include the following:

**Psychoeducation**

1) Creating awareness of stigma involved with psychiatric disorders. Understanding mental illness as phenomena other than spiritual weakness, “evil eye” or punishment from God.

2) Acceptance of psychiatric disorders as common in all communities. Since these are not punishments, prayer alone will not resolve disorders. Discussions of diabetes mellitus as an example of a disorder that is accepted and where the need for treatment and compliance is clear. How to assist patients and families cope with the shame often involved in acknowledging illness and accessing care.

**Skill training**

1) Access to Care Issues: identifying Barriers to Care
   a) cultural beliefs
   b) alternative treatments
   c) using religion/meditation to enhance coping skills
   d) language barriers
   e) community support through Islamic centr-
A human Q fever cluster linked to a sheep farm in Lavaux, Switzerland

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Q fever is a zoonosis caused by the bacterium Coxiella burnetii which has a nearly worldwide distribution. Humans acquire the infection mostly by inhaling infected aerosols generated through birth products from infected ruminants. The animal and public health importance of Q fever was emphasized following the large, unprecedented outbreak in the Netherlands in 2007-2011. In Switzerland, Q fever cases in humans have been sporadic, with the Val des Bagnes outbreak in 1983 being the largest ever reported. Between February and May 2012 a cluster of 10 cases of acute Q fever in humans was observed in the Canton Vaud. The clinical picture included prolonged fever, asthenia and mild hepatitis. The initial epidemiological investigations were based on patient’s interviews and led to the identification of sheep farm as a possible source of the outbreak. All environmental samples collected at the farm were found positive for C. burnetii DNA by real-time PCR. Furthermore 43% of 52 (out of ~1000) randomly selected sheep tested positive for C. burnetii DNA in vaginal swabs, whereas 30% of these animals exhibited antibodies against C. burnetii. Meanwhile, an official communication was distributed with the aim to improve detection of additional human cases and therefore prevent further chronic infections. This led to the identification of only four additional cases. Furthermore, 1345 blood donors were tested for C. burnetii DNA by PCR and no blood sample was found to be positive. Veterinary measures included movement restrictions, hygiene measures, vaccination of all sheep and follow-up samplings. Mandatory reporting of human Q fever cases was reintroduced in November 2012. This outbreak highlights the risk of transmission of zoonotic infections in residential areas in the vicinity of animal production units. The cooperation of veterinary and public health sector was crucial for the detection and control of this outbreak.

Keywords: Q fever, sheep, zoonosis, outbreak
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Recent disease outbreaks such as SARS, West Nile virus, Nipah and Hendra viruses, monkeypox and Highly Pathogenic Avian Influenza have forced governments to re-evaluate their approaches to detection and response to diseases at the animal/human interface. There is growing awareness that animal health and human health are inextricably linked and that cooperation between human and animal health professionals will be imperative to rational public health decision-making. There is also recognition that the majority of emerging infectious diseases (EID) have been caused by pathogens originating in wildlife. And yet, current measures for the detection and control of human and livestock EIDs are inadequate for the identification of similar threats in wildlife. These sessions will describe efforts to improve diagnostic abilities for wildlife disease surveillance using novel microarray technology, mapping of risk factors as a cost effective tool for directing public health interventions, the creation of a generic action plan that will facilitate rapid response to zoonotic threats of wildlife origin, epidemiology and phylogenetic analysis of several wildlife pathogens, and description of the pan-European WildTech project which will supply the European Union with tools enabling surveillance of emerging and re-emerging infections in European wildlife, enabling an integrated One health approach to diseases of wildlife origin.

Keywords: Human - Animal Interface

Session: TUE6.1 Diagnosis and surveillance of infectious diseases in wildlife (WildTech) - Session 2 Tue 19.11.2013 • 15:15-16:45 • Room: Jakobshorn

Prenatal Exposure to EDCs and its Effects on the Cardiovascular Function in Adulthood

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Endocrine disrupting chemicals (EDCs) developed by humans are known to significantly impact human and animal health. Although EDCs were considered to be “safe” based on toxicological studies earlier, more recent studies suggest that exposures to EDCs in utero can indeed affect the developing offspring and result in adult onset conditions such as obesity and hypertension. With the increasing incidence of obesity and metabolic disorders in the developing world, EDCs such as bisphenol-A (BPA) have to be re-evaluated for their ability to “program” offspring for these adult-onset disorders. Studies have shown that prenatal exposure to EDCs can affect body weight and BMI. It is very likely that the increased body weight, predisposes individuals to a “pro-inflammatory state” setting the stage for cardiovascular disease. Studies from our laboratory indicate that adult exposure of female rats to low levels of estrogens can increase blood pressure most probably by affecting specific neuronal circuits in the brain and brain stem. This was associated with an increase in superoxide levels in the brainstem and was reversed by the addition of antioxidants. More recently, we have found that prenatal exposure of sheep to EDCs can affect a variety of cardiovascular parameters in the female offspring resulting in elevations in blood pressure. In this model, we determined the effects of prenatal to EDC exposure alone or in combination with postnatal overfeeding of the female offspring. Cardiovascular parameters were measured using echocardiography. While overfeeding by itself increased blood pressure in the offspring, there was a significant interaction between prenatal BPA exposure and postnatal overfeeding. These results indicate that besides prenatal exposures, postnatal modifiers such as overfeeding or exposure to other EDCs can further enhance the effects of prenatal EDC exposures. Supported by NIH AG027697.

Keywords: Cardiovascular, Prenatal Exposure, Endocrine Disruptors And Its Impact On Adult Onset Disorders

Session: WED5.1 Prenatal Exposure To Endocrine Disruptors And Its Impact On Adult Onset Disorders

Wed 20.11.2013 • 13:00 - 14:30 Room: Jakobshorn
Prenatal Exposure To Bisphenol-A And Postnatal Overfeeding On Cardiovascular Function In A Sheep Model

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Metabolic syndrome is characterized by a group of risk factors that predispose individuals to cardiovascular diseases, stroke and type II diabetes. Obesity and metabolic syndrome are increasing to alarming proportions, and therefore, there is an urgent need for understanding the causes of metabolic syndrome in order to develop strategies for prevention and treatment. Recent studies suggest that exposure to endocrine disrupting chemicals in utero could contribute to the development of obesity and metabolic syndrome in adulthood.

The present study involves prenatal exposure to bisphenol A (BPA) and its interaction with postnatal overfeeding on cardiovascular function. Pregnant sheep were given daily subcutaneous injections of cottonseed oil (control) or BPA (0.5 mg/kg/day in cotton seed oil) from day 30 to 90 of gestation. Controls received vehicle. A subset of female offspring of these dams were overfed to increase bodyweight to ~30% over that of controls (OF group). Their cardiovascular function was assessed using non-invasive echocardiography at 21 months of age. Overfeeding in increased systolic, diastolic and mean blood pressure (SBP, DBP and MBP) significantly in control animals (p<0.05). Prenatal BPA-treatment prevented this increase. There was a significant BPA treatment and diet interaction in blood pressure parameters (p<0.05). A similar effect was observed in end systolic volume and left ventricular area during diastole (p<0.05). A significant diet effect was evident in interventricular septal thickness during systole (mm). This parameter was significantly higher in OF controls and OF-BPA animals compared to normal fed control and BPA treated animals (p<0.05). There was a similar effect on left atrial diameter and left ventricular area during diastole, which was significantly higher in OF control animals compared to the rest of the groups (p<0.05).

These data reveal that prenatal programming with BPA in combination with postnatal overfeeding can cause significant alterations in cardiovascular parameters in the offspring.

Keywords: Bisphenol-A, metabolic syndrome, Cardiovascular functions

Interaction Between Exposure To Concentrated Ambient Particles, Ozone And Diet On Stress Axis Functions

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Obesity and metabolic syndrome are affecting populations worldwide and stress is believed to be an important contributing factor to these conditions. Epidemiological evidence suggests that the prevalence of these conditions is more common in developing and developed nations that are highly industrialized. Industrialization has its own shortcomings, one of which is environmental pollution. Higher levels of ambient particles are present in the atmosphere in industrialized nations and their composition varies widely. Exposure to these ambient particles is associated with a variety of health risks ranging from allergic respiratory conditions, cardiovascular conditions and increased stress levels. Besides ambient particulate matter, ozone (O3) is also a serious pollutant at the ground level and is a component of photochemical smog. We have previous evidence to indicate that exposure to concentrated ambient particles (CAPs) and/or O3 can activate the stress axis in a rodent model. However, it is not clear if the stress axis will remain activated when obese individuals are exposed to CAPs or O3. We will present evidence
on how exposure to CAPs and/or O3 can alter stress axis activity by affecting specific parts of the brain that regulate stress related functions. We will demonstrate that there are interactions between stress hormones and other hormones related to obesity specifically in the context of obesity and CAPs and/or O3 exposures. We will also provide evidence that the stress axis may be resilient to the effects of these exposures in obese individuals. The effects of CAPs and O3 are not limited to humans alone, but extend to animals as well. Studies are needed to determine the health effects of ambient particle and/or O3 exposures in both pet and production animals. Supported by EPA RD83479701.

Keywords: Concentrated ambient particles, ozone, stress

Session: WED6.2 Lifestyle Diseases  
Wed 20.11.2013 • 14:45-16:15 • Room: Pischa

Drivers of Leptospirosis Transmission at the Human-Animal Interface in Distinct Community Types

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Leptospira is transmitted within and between species through complex transmission cycles. Risk of transmission of Leptospiro to people is not only determined by abundance of animal hosts and/or prevalence of infection in hosts but also by the indirect transmission path to people. This path is largely controlled by climatic factors, ecosystem structure, landscape configuration, human behavior, knowledge and risk perception, and socio-economic conditions. Using an eco-epidemiological approach, we are attempting to understand how all of these components interact as drivers of infection risk in animals and in people. A case study carried out in farms, villages, and slums in Chile revealed an important presence of pathogenic Leptospira in the peri-domestic environment (28% of positive water samples) with distinct epidemiological and spatial significant predictors by community type. Leptospirosis in animals from the households showed to be active and widespread with seemingly increasing serovar diversity as host diversity and frequency increased. Despite ample evidence of environmental and animal infection and of people interacting closely with their environment and animals, human infection is sporadic. Nevertheless, evidence of prior exposure was observed in rural and urban communities. Overall, it was observed that even in a defined region, the ecology of leptospirosis seems to vary greatly between geographic locations. Consequently, risk factors in a location may be different from those in another location. Better understanding of the epidemiological and ecological thresholds of increased infection risk is needed. This highlights the importance of promoting site-specific and eco-epidemiological studies as well as public health control programs.

Keywords: Leptospirosis, zoonosis, human-animal interface, eco-epidemiology

Session: TUE1.1 An Unrecognized One Health Threat: Leptospirosis
Tue 19.11.2013 • 08:30 - 10:00 Room: Jakobshorn

Zoonotic Disease Unit Of Kenya: Blueprint For A National One Health Office

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A One Health (OH) approach that advocates for integrated human, animal, and environmental management of zoonotic diseases has gained momentum globally in recent years as a strategy to predict and prevent the occurrence of such diseases. Since 2006, the Government of Kenya has worked to institutionalize OH approaches in public health management. In 2011, the country established a OH office referred to as the Zoonotic Disease Unit (ZDU), which forms a link between its health and livestock ministries. The ZDU, nestled between the two ministries and with a senior epidemiologist deployed from each ministry, has the goal of establishing and
maintaining collaboration at the animal and human health interface towards better control and prevention of zoonoses. As a guide for the ZDU, Kenya has developed a 5-year strategic plan for the implementation of OH in the country. The objectives of the strategic plan are to establish structures and partnerships that promote OH in the country; strengthen surveillance, detection, prevention, and control of zoonoses in both humans and animals; and conduct research and training at the human-animal-ecosystem interfaces. Since its formation, ZDU has had several achievements which are: coordinating an investigation for African Human Trypanosomiasis in Masai Mara Game Reserve, coordinating Brucellosis surveillance in three counties in Kenya, overseeing investigation and response for rabies outbreak in western Kenya and coordinating development of zoonoses response guidelines. The ZDU is presently spearheading the development of control strategies for rabies, rift valley fever, brucellosis and anthrax. The ZDU is a new model of collaboration between human and animal health sectors, and may be an appropriate example for adoption by other countries.

*Keywords: Kenya, One Health, Zoonoses*

Session: MON6.1 Why Animal Health and Welfare Matters To Human Health
Mon 18.11.2013 • 15:15-16:45 • Room: Jakob-shorn

**Human-to-Bovine M. tuberculosis**

*Transmission – A Reverse Zoonosis*

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Mycobacterium tuberculosis and Mycobacterium bovis, which are the major causes of tuberculosis, are highly pathogenic, infect many animal species and thus are likely to be the source of infection in humans. Humans are the only reservoir hosts for M. tuberculosis. The human-to-human infection cycle rotates; however, tubercle bacilli have a wide host range and M. tuberculosis has been detected in fish, reptiles, birds, and mammals including marine animals. A total of 181 bovine milk samples and 123 pre-scapular lymph node biopsy samples were collected from teaching and research hospital (Madras Veterinary college, Chennai), University research farm (Kattupakkam), Slaughter house (Perambur, Chennai) and also from Dharmapuri and Thanjavur. All the samples were subjected for acid fast staining, fluorescent staining, isolation and identification, genus specific PCR to identify the Mycobacterium tuberculosis complex (MTBC) organism and multiplex PCR to differentiate M. tuberculosis and M. bovis. All the samples were negative for all the above mentioned tests except for one milk sample which was M. tuberculosis culture positive. Also four of the milk samples turned out to be positive for MTBC PCR and multiplex PCR, where all of them proved to be M. tuberculosis. The sequencing of these four samples revealed they were in close alignment with M. tuberculosis strain. Naturally, the first contamination of these animals with M. tuberculosis is caused by humans, and then infection occurs among animals, which become the source of infection in humans thus becomes reverse zoonosis. Hence the control strategies for human tuberculosis caused by M. tuberculosis should necessarily include control strategies in animals too.

*Keywords: Mycobacterium tuberculosis, Reverse Zoonosis, Bovine, Milk, PCR, Sequencing*

Session: WED1.2 Zoonotic Diseases
Wed 20.11.2013 • 08:30-10:00 • Room: Pischa

**Thinking Outside of the Silo: African University partnerships with the private sector**

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Western Universities and industry have been collaborating for over a century, but the rise of a global knowledge economy has intensified the need for strategic partnerships that go beyond the traditional funding of discrete research projects. World-class research universities are at the forefront of pioneering such partnerships. They are designed to run longer, invest more, look farther ahead and hone the competitiveness of companies, universities and regions. In short, they transform the role of the research university for the 21st century, anchoring it as a vital center of competence to help tackle social challenges and drive economic growth. This model of partnership and networking is not among the common practices of African Universities. They are only beginning to realize the value of professionally networking with the private sector in their countries and regions. The potential impact for organizational development in the educational system in Africa, made available through the development of such networks is enormous. Partnering with industry leaders opens resources for experiential learning, collaborate teaching, opportunities for funding of research and ultimately jobs for graduates. The inclusion of potential employers in curriculum development and experiential learning allows the faculty and administrators of any given institution to tailor their educational programming to meet the needs of the job market, and increase the possibility of sustainable development of the Continent. This presentation will discuss how African institutions can begin to shift their institutional paradigms to work with the private sector and build their capacity to prepare the next generation of leaders.

Keywords: African universities, public private partnerships, capacity building

Session: TUE6.2 One Health capacity building approaches
Tue 19.11.2013 • 15:15-16:45 • Room: Pischa

Improved Public Health by creating an interface between concern assessment and modeling.
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Important tasks of PH include the reaction on foreseeable trends, coping with upcoming risks, developing strategies to handle uncertainties and early warning. Modeling can provide important input for adequate PH risk management. An approach for improving the interaction between the Public Health (PH) and modeling is suggested that is based on the comparison of the analyses of previous disease cases and/or outbreak scenarios from both perspectives. Best and worst case scenarios will be developed in order to inform decision-making and the preparation of suitable PH measures. Moreover, the joint approach will help identifying suitable parameters to be used for developing a predictive model forecasting based on the best and worst case scenarios. Our collaborative way will allow the development of enhanced planning oriented, preventive or precautionary strategy to improve PH measures for future infectious disease events.

Keywords: public health, concern assessment

Session: WED1.3 Improving Public Health Risk Governance by Integrating Modelling with Concern Assessment
Wed 20.11.2013 • 08:30 - 10:00 Room: Parsenn

Sewage Analyses as an Early Detection System for Diseases and Indicator of Various Public Health Aspects
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If you were asked whether you had consumed illicit drugs recently, would you admit it? Maybe. If yes, could you precisely recall the types of drug, times and amounts consumed? Possibly. If you were the person commissioned with the task to objectively quantify drug use in your country, what approach would you use, given the social stigma attached with such behaviour? A complementary approach to traditional methods – including interview surveys, crime records, hospitalization data – is the analysis of sewage. Quantitative measurements of drug target residues in urban sewage deliver near-real-time data on the drug use of thousands of people that contributed to the sewage samples. For selected European cities, covering over 14 million people, weekly profiles and trends over the years 2011 to 2013 will be presented along with unique data from the United States, Australia, Germany and Switzerland. Sewage is not only an increasingly important resource – i.e. water reuse in regions suffering from water scarcity – it also contains a wealth of information. Therefore, sewage analysis will be further developed and applied to other excreted biomarkers of endogenous human metabolism. As such, it will serve as an early detection system (e.g. pandemics) and indicator of various public health aspects that goes far beyond illicit drugs only. At relatively low cost, it covers entire communities and it is thought to be faster than online data gathering techniques, such as quantifying individual Google searches from people checking online for symptoms of any kind of disease.

Keywords: population drug use, near-real-time, quantification

Session: TUE1.2 One Health approaches for early warning and detection
Tue 19.11.2013 • 08:30-10:00 • Room: Pischa
a basis for the developmental origin of adult reproductive and metabolic diseases. Future studies should focus on disease prevention using knowledge gained from various animal models testing such exposures and human population-based studies of exposure levels. Supported by NIH P01 HD44232 and ES016541.

Keywords: synthetic endocrine disrupting chemicals, EDCs, prenatal

Session: WED5.1 Prenatal Exposure To Endocrine Disruptors And Its Impact On Adult Onset Disorders
Wed 20.11.2013 • 13:00-14:30 • Room: Jakobshorn

The Integrated Participatory Watershed Rehabilitation Approach
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Combating of desertification is an extremely important but difficult task in affected developing countries, where the work usually involves hundreds and thousands of small farmers, herd owners and government manpower and resources are limited. Many of the degraded land rehabilitation projects or programs have been hampered or have failed because of the wrong or/and lack approach.

This approach has similar strategies with UNCCD Ten Year Strategies which are to create global benefits, to improve affected ecosystem, to improve the livelihood of affected populations and to mobilize resources. The strategies of this approach are a) degraded land rehabilitation, b) livelihood improvement, c) human resources improvement, d) participation at the all level and sustainability and e) integrated of the all strategies.

The outcomes of the approach of the integrated participatory watershed rehabilitation, seeking to develop a powerful tool for use by local communities/administrations and relevant bodies for a bottom to top approach, as quantified entity, means to direct, rehabilitated degraded land as range, forest and agriculture, the day and future land and water use decisions to be taken at each levels as planning, implementation and monitoring etc by the all related stake holders.

Keywords: integrated, participatory, land degradation, watershed, rehabilitation

Session: TUE5.2 Environmental degradation and health issues
Tue 19.11.2013 • 13:30 - 15:00 Room: Pischa

Morphological and Spectral Markers of Cervical Cancer Cells
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Background. Cervical cancer is the second most common cancer in women worldwide. Most cases of cervical cancer can be prevented through screening programs. One of most popular program based on Pap-test to reveal bulk properties of cancer cells. In present work we offer the new method to detect in first morphological signs of cancer cell membrane (morphomarkers), which detects precancerous lesions for treatment and second- to specify spectral properties of morphomarkers by using Synchrotron Based IR Microspectroscopy (SB FTIRM).

Results. A technique for revealing surface morphology of human cervical cancer cells has been developed to facilitate early diagnostics of a pre-cancer and cancer cells under reflected light microscopy. To measure spectral features of morphological markers of cervical cancer cells (so named disperse lightened particles (DLP)), we used (SB FTIRM) in the mid-IR range (2 to 25 mkm wavelength). We used point-by-point IR microspectroscopy analysis in confocal geometry for high resolution for cervical cancer cells.

Conclusion. We discovered morphological features of cervical cancer cell membrane (morphological markers) for early diagnostics cervical cancer instead of widespread Pap-test. Application of the reflected optical microscopy let us to clearly visualize quite impor-
tant morphological features of the malignized cells as aggregations of spherical multiple dispersed pathologic formations on the cell surface with high reflectance. In summary, shows that in comparison of Pap-test offered the new method have next advantages:

1. Better sensitivity (about 100%)
2. Two time cheaper in comparison with Pap-test
3. Much more express. To test one sample need 5-10 min (Pap-test take 0.5 day)
4. Easy-to-work. Two stage evaluate of sample. (Pap-test is many-stage treatment and evaluation (5-6 steps))
5. A little number of smears diagnostic signatures (3) against Pap-smear (8-10)

Keywords: cancer cells, prevention, early detection of cervical cancer, light microscopy

RESULT: The literature suggests animal-to-human transmission of MTB is associated with handling or training of animals and with performing necropsies on animals with MTB, situations in which there is direct close contact between infected animal and human. However, MTB has also been transmitted in the absence of close animal-human contact, to people performing aerosol-generating work activities (e.g. high pressure hosing) in areas where an animal with MTB is housed. The mechanism by which aerosol-generating work activities lead to transmission are unclear; however, it is hypothesised that MTB bacteria are excreted by diseased animals into the environment (e.g. in sputum, faeces), then aerosolised during work activities and inhaled by humans.

CONCLUSION: Further research is required to clarify the role of environmental sources in animal-to-human transmission of MTB; however, the available literature suggests environmental contamination may have a greater role in animal-to-human transmission than it does in human-to-human transmission.

Keywords: zoonoses, public health, tuberculosis

Animal-to-human transmission of Mycobacterium tuberculosis
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BACKGROUND: Tuberculosis caused by Mycobacterium tuberculosis (MTB) causes 1.5 million human deaths each year. MTB has also been identified in a range of animal species, and animal-to-human transmission of MTB is an emerging public health issue. In humans, MTB is transmitted almost entirely through direct close contact with a person with MTB. Little is known about the routes of animal-to-human transmission.

METHOD: We conducted a systematic literature review and identified seven published reports of animal-to-human transmission of MTB. The reports described transmission in animal facilities such as zoos and animal refuges.
ample of the One Health paradigm, in several ways: First, it illustrates the interconnectedness of human, animal and environmental health. MTB is predominantly a human disease, but is occasionally transmitted to animals, which can then re-infect humans. This interconnectedness creates a feedback loop of disease transmission. Transmission is also influenced by environmental factors: in the context of human population growth and animal habitat destruction, there are increasing opportunities for animal-human interactions.

Second, whereas much of the study of zoonoses focuses on animal diseases that can infect humans, zoonotic transmission of MTB challenges us to consider humans not only as potential “victims” of animal-to-human transmission, but as a source of human-to-animal transmission. Third, it illustrates the importance of collaboration between human, animal and environmental experts for disease control. Interdisciplinary research is needed to better understand the extent of zoonotic transmission of MTB and the routes of transmission, and collaboration is required to develop policies and strategies to control MTB at the animal-human interface. Lessons learned from the study of zoonotic transmission of MTB may provide innovative approaches for controlling other diseases that affect humans and animals.

Keywords: zoonoses, public health, tuberculosis

Session: WED1.2 Zoonotic Diseases
Wed 20.11.2013 • 08:30-10:00 • Room: Pisccha

Environmental Drivers of West Nile Virus Endemization in Europe
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West Nile Virus (WNV) is a vector-borne pathogen of global importance. It is widely distributed throughout the tropical and temperate regions of the world where it infects birds, humans, horses and other mammals. The transmission cycle occurs in rural ecosystems, involving wild birds as the principal hosts as well as mosquitoes, largely bird-feeding species, as the primary vectors. Another cycle exists in urban ecosystems where mosquitoes breed in organic-rich water in artificial containers.

WNV recently became established in southeastern Europe with a large outbreak in the summer of 2010 and recurrent outbreaks in 2011 and 2012.

Abiotic and biotic ecologic factors have both contributed to the endemization of WNV in Europe. These include favorable climatic conditions (such as ambient temperature, humidity, rainfall); hospitable habitats for high densities of competent mosquitoes; infected migratory birds for the dispersion of WNV; local birds for WNV amplification; presence of competent bridge vectors for the transmission to humans and susceptible human and equines populations.

In particular, elevated temperatures due to climate change can increase mosquito population densities, shift the patterns of seasonal mosquito activity, and accelerate the reproduction rate of WNV in these vectors as discussed. Therefore, it is very possible that climate change have a significant bearing on WNV transmission, exemplified by climate variability events such as the 2010 heat wave in Southeast Europe in 2010.

Moreover, global warming may also indirectly impact WNV transmission. Indeed, birds are migrating earlier in recent years, largely due to increases in mean spring temperatures. This may impact the timing of the disease appearance.

A critical component of a vector control program is concurrent public education and health promotion to prevent and reduce risk of exposure. A better understanding of the environmental drivers of the WNF epidemiology in Europe will help guide these public health efforts.

Keywords: West Nile virus; West Nile fever; Europe; environmental drivers; epidemiology; climatic factors; climate change; bird migration; land use.

Session: TUE6.3 Emerging diseases
Tue 19.11.2013 • 15:15-16:45 • Room: Parsenn
An “Ideal” Database for an “Ideal” Surveillance in Wild Animals at a European Scale

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Among the needs for a common scheme of surveillance in Europe, there is a need to have a support to share data. Over the long-term, some of the data generated in each country should ideally be stored in a common base (for instance, after notification). To achieve that goal, there is a necessity to develop a frame allowing data on various aspects of surveillance to be collected and analysed. Yet, in Europe many countries are collecting data on wildlife health for different purposes, leading to various databases formats.

In this context, we collected data from random samples of real data from several European countries with surveillance systems in order to detect potential biases and to design a base expertise for the simplest but efficient way of storing general surveillance at the European scale.

As a result, we know with precision that to overcome the differences in the data collection, the data have to be simple and standardised. Time will come where the accuracy of pathological findings will be advantageously replaced by generic Topography/ Morphology/ Etiology categories. This means that, the use of data will rely on risk surveyed and to design a base expertise for the simplest but efficient way of storing general surveillance at the European scale.

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Keywords: Surveillance, Database, Wildlife, Europe
Session: WED5.2 Wildlife diseases
Wed 20.11.2013 • 13:00 - 14:30 Room: Pischa

Multiplex Diagnostic Technologies for Detection of Selected Pathogens in Wild Life in Europe

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Most emerging and re-emerging infectious diseases are zoonotic with a complex interface of host-pathogen-environment interaction. Wild life constitutes a large and often unknown reservoir of these infectious diseases. The discovery of zoonotic infections is often related to better diagnostic tools. WildTech (www.wildtechproject.com) is an EU-funded, multi- partner project established specifically to address this issue and develop multiplex technologies that may be exploited for high throughput detection of exposure to pathogens in wildlife in Europe. One aspect of WildTech is the development of a protein array which can be used to screen a single serological sample for evidence of exposure to multiple pathogens. This study describes development and application...
of a multiplex serology microarray for the investigation of exposure to bacterial, viral and parasitic agents in wild life sera samples from across Europe.

Keywords: multiplex detection, protein microarray, infectious disease, surveillance, seroprevalence

Session: TUE5.1 Diagnosis and surveillance of infectious diseases in wildlife (WildTech) - Session 1
Tue 19.11.2013 • 13:30-15:00 • Room: Jakobshorn

Peptide Arrays for Antibody Detection:
Performance and Brief Summary of Pathogens tested
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AHVLA Weybridge, United Kingdom
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This is an introductory presentation that will inform the audience on the development of protein microarrays for detection of exposure of wild life to different pathogens. Protein arrays can be a powerful alternative to conduct “multi-dimensional” serological analysis. The various versions of the serology array carried native antigen preparations (whole-cell antigen, protein fractions, LPS fractions) and also recombinant proteins and peptides. Extensive work of each Wildtech partner (AHVLA, FLI and CVI) led to a jointly developed protocol based on the Protein Binding Kit (Alere Technologies). Using this protocol, the partners confirmed reproducibility of the serology array in a tripartite ring trial. Performance of each of the antigens was tested using hyper-immune sera and the non-reacting and non-specifically reacting antigens were omitted on the following version of the array. From those antigens that had been spotted in two different concentrations, the one performing best in terms of specificity and sensitivity was selected for the next version. The latest serology array version 03 contained 133 spotted antigens that covered 34 bacterial, viral and parasitic pathogens

The validation process included samples with known infection status provided by the associate partners. The performance of Brucella, Mycoplasma, Francisella, Mycobacterium Avium subsp. Paratuberculosis (MAP), Salmonella, Leptospira, Campylobacter and Mycobacterium bovis antigens were compared to ELISA, MAT and immunoblotting. In some cases the lack of true positive and true negative control sera made the validation of antigens more difficult. Developed array was used to screen over 3000 sera samples from wild life in Europe.

The speaker is the WorkPackage Leader for European Wildlife Disease Surveillance within the WildTech project.

Keywords: Wildlife disease surveillance, MAP, protein microarrays, detection

Session: TUE5.1 Diagnosis and surveillance of infectious diseases in wildlife (WildTech) - Session 1
Tue 19.11.2013 • 13:30 - 15:00 Room: Jakobshorn

Leptospirosis in Fiji: A Review of the Situation in 2012
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Presenting author: REID, Simon Andrew
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Leptospirosis is a significant cause of morbidity and mortality in Fiji. The annual incidence of leptospirosis has been increasing over the past 5-6 years. In 2012 Fiji experienced a severe outbreak of leptospirosis in the Western Division that was associated with severe weather events that resulted in widespread flooding. A total of 525 confirmed cases (IgM-positive) and 52 deaths were reported in the whole country, of which over half were reported in the Western Division. An analysis of data from suspected and confirmed cases of leptospirosis in 2012 was performed to determine the demographic, spatial and temporal factors associated with the disease in order to develop strategies to reduce the impact of the disease in future wet seasons. The results showed that there are likely to be multiple heterogeneous cycles of transmission of leptospires involving different reservoir hosts, serovars and risk factors. This is likely to complicate control ef-
forts and additional information is required to inform the national strategy for leptospirosis, which is currently under development.

**Keywords:** Leptospirosis, flooding, zoonosis,

Session: WED6.1 Global and national directions and approaches for One Health
Wed 20.11.2013 • 14:45-16:15 • Room: Jakob-shorn

**Human and Environmental Wellbeing - Streamlining the Policy Approach**

RISKU-NORJA, Helmi (1); KURPPA, Sirpa (1); OVASKAINEN, Marja-Lleena (2); NUMMELA, Olli (2); HELAKORPI, Satu (2); RAUHANEN, Timo (3)


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The presentation examines Finnish policy goals regarding health promotion, citizens’ food choices and physical activity, their clarity and mutual consistency, and their linkage to sustainability strivings. The cross-sectorial research featured a qualitative content analysis of 28 relevant national policy documents from the past decennium; these deal either specifically with physical activity, nutrition and sustainable development or they are more comprehensive and address both the sustainability and health topics. Published literature and experiences from domestic interventions were used to evaluate efficiency of the health promotion policy. Attention was paid especially to the differences between the socio-economic groups.

The policy document analysis revealed only few direct contradictions. The synergy advantages are, however, poorly exploited, because the documents suffer from narrow perspective and from overly general expressions. Health promotion is looked in terms of either nutrition or physical activity or inequity, and the sustainability concept has remained abstract, concrete expressions dealing mostly with environmental impacts. Citizens’ own responsibility both for own health and for the environment is emphasized. Social issues deal with equal opportunities, equity and cohesion, but these are not identified as elements of sustainability, the reference is latent. Economic growth is presented as the necessary precondition for a democratic welfare society.

Health promotion may gain benefits from combining the sustainability approach in the policy goals. Sustainability is to be understood comprehensively as human and environmental wellbeing so that fair life and societal participation is secured for all citizens within the ecosystem’s carrying capacity. More attention needs to be paid to the public space and everyday operational environment, to long-term benefits of healthy lifestyle for national health and economy, and to effective use of price as steering instrument so as to make healthy choices attractive, affordable and accessible to all. Regarding the citizens’ needs, their own voices should be heard.

**Keywords:** food policy, policy integration, sustainability, health promotion, environmental concerns

Session: MON6.2 One Health for food safety and food security
Mon 18.11.2013 • 15:15-16:45 • Room: Pischa

**EID2 Database: New Tools for One Health Research and Policy Development**

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Presenting author: RISLEY, Claire Louise clr@liv.ac.uk

What are all the species of pathogen that affect our livestock? This is likely to be important for human health because animals, and disproportionately livestock species, are the source of 6/10 human pathogens. Ten years ago, the first comparative pathogen list was compiled for humans but we still have no equivalent for animals. The ENHanCED Infectious Diseases database (EID2) hosted by Liverpool University (UoL) is a free, novel online knowledge and research tool collating for the first time information on large numbers of pathogens.
with associated host and location data. The EID2 automatically extracts and analyses material contained in the metadata of millions of nucleotide sequences and publications, from which information we conclude that a certain pathogen infects a certain host, within a certain country. It currently stores data on over 200,000 species across taxa from viruses to vertebrates involved in 25,000 host-pathogen interactions; and of 50 common mammalian and avian livestock/companion animal hosts, plus humans, we have 2-3000 pathogens. It can be used to: list all known hosts of a pathogen (or vice-versa) in a country; visualise spatial distributions; and, by evolutionary machine learning analysis of those distributions, produce climate envelopes of hosts and pathogens. A UoL study using EID2 data was able to detect signals of phylogenetic relatedness, physical proximity and trophic interactions between hosts purely from EID2 pathogen-sharing data. EID2 has also been used to prepare policy documents, for example, to assess the disease threat to Rwandan livestock. With recent improvements to geographic precision, the sensitivity and specificity of host-pathogen relationship detection, ecological niche modelling facilitation and the addition of disease-name searching capability, we believe EID2 is now ready to take its place as a unique resource for researchers and institutions concerned with infectious diseases, from veterinary, medical and overall One Health perspectives.

Keywords: Zoonosis, Database, Tool, Pathogen, Surveillance

Session: WED5.3 One Health approaches and trends
Wed 20.11.2013 • 13:00-14:30 • Room: Parsenn

The Watasol Approach For A Sustainable Access To Safe Water
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Antenna Technologies, Switzerland
Presenting author: ROBLES, Reyna
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1) The technology is only a part of the solution
2) It needs to be integrated in a more global approach

Chlorine is one of the most efficient means of treating water both at household level and in small, medium and large scale water supply systems. Chlorine neutralises the pathogens present in water and prevents against recontamination. However, existing supply chains do not always reach all communities, most of all in isolated areas. The ability to produce chlorine at a decentralised level offers a simple, reliable and low cost alternative to increase access to safe water.

The WATA range of devices were developed to provide a 6g/L active chlorine through a process of electrolysis of a solution of salt and water.

Antenna has developed WATASOL to integrate the WATA technology in a comprehensive and sustainable approach which is tested through our field partners and a network of international and local organisations.

Based on a market-based approach for the distribution of chlorine, WATASOL development programmes aim at making the production and sale of chlorine a profitable activity for communities.

The WATASOL approach for a sustainable access to safe water includes:
- Social marketing (health and hygiene education)
- Improving infrastructure (sanitation)
- Providing training on WATA or other water treatment method
- Establishing a profitable supply chain for the active chlorine.

Antenna has been testing the WATASOL approach in 13 countries and is now documenting the promising models. Chlorine produced can be used to treat water in water supply systems (Mali), at household level (Guinea, India, Nepal), through chlorination service (DRC, Haiti), chlorinated bottled water (India), and also for disinfection purposes in health facilities (Burkina Faso, Mozambique) and prisons (DRC, Rwanda).

Keywords: Technology, Global approach, Partnerships, Water Treatment, Sustainability
The Dutch Q fever situation - lessons learned?
ROEST, Hendrik-Jan
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In the years 2007-2010 the Netherlands faced an unprecedented human Q fever outbreak with in total 4000 cases. Slightly ahead of the human outbreak Q fever problems started in 2005 in the dairy goat and dairy sheep population with abortion rates up to 80 % per herd. With goat numbers of 600 up to 7000 per herd huge amounts of Coxiella burnetii were spread in the environment during abortion and early birth. These bacteria could be transported to the neighbouring human population by the prevailing north east winds in pretty dry spring periods. All this took place in the south east part of the Netherlands which is highly populated and has a dense dairy goat industry.

The connection between dairy goats and humans was primary based on epidemiological findings. This connection was confirmed by preliminary genotyping data showing one predominant MLVA type in aborted goats which was also found in diseased humans. Additional analyses showed also one predominant genotype in humans which was the same as in goats. As goats were the suspects increasingly strong measures were imposed to prevent the spreading of C. burnetii in the lambing season leading to a decline in human cases in 2010. This also confirms goats as the origin of the human Q fever epidemic.

What lessons can be learned from this outbreak?
• Endemic diseases can emerge, so be aware of what is already existing within your boundaries.
• Disease outbreak information should be shared up and down in the veterinary medicine chain as well as in the human medicine chain and between these chains.
• Close cooperation between the human and veterinary field, between practitioners, policymakers and researchers increases the effectiveness of response and research
• Genotyping systems are essential to confirm epidemiological findings and play a role source finding and justifying (strong) measures.

Keywords: Q fever, outbreak management, one health

Session: TUE6.3 Emerging diseases
Tue 19.11.2013 • 15:15-16:45 • Room: Parsenn

Relationship between children’s environment and organophosphate pesticide exposures among children living in agricultural area, Thailand
ROHITRATTANA, Juthasiri (1); SIRIWONG, Wattasit (1,2); TUNSARINGKARN, Tanasorn (1); ROBSON, Mark G. (2,3,4); FIEDLER, Nancy (4)
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Organophosphate pesticides (OP) are heavily used in agricultural area in central Thailand. Unlike developed countries, farms and residential areas are not totally separated. Child who lives near the agricultural area can be exposed to the pesticides via their daily activities. The objective of this study was to determine the relationship between children’s environment and activities with pesticide exposure among children living in agricultural areas. Children aged between 6 to 8 years old were recruited in October 2011, at high pesticide application period. The random sampling was used to select 24 children who living near rice farms (high OP application) and 29 children who living near aquaculture areas (low OP application), Pathum Thani Province, Thailand. The first morning void urine samples were collected from children. Dialkylphosphates (DAPs) were analysed for OP exposures. The exposure questionnaires were used...
to interview the parents about their child’s activities. All participants from rice area were from farmer’s families and their houses had less than 500 meters proximately from farms. Children from rice area were often played in farm while their parents were working. The medians of DAPs in urine of children living near rice farms were 10.71 µg/g creatinine (range 3.57-375.05 µg/g creatinine) and children living near aquaculture farms were 6.68 µg/g creatinine (range 1.38-33.71 µg/g creatinine). Children living near rice farms had significant (p<0.05) higher DAPs concentrations than whom living near aquaculture area. Linear regression analysis was performed by adjusted for age, gender, body mass index, parent education, and family income. Children from farmer family tended to more expose to OP than children from non-farmer family (β=0.32, p = 0.02). This related to the parents who used organophosphate pesticides in farm. Summary, children living proximately to rice farm had higher chance to expose OP enhanced by their environment and activities.

**Keywords:** Organophosphate pesticides (OP), dialkylphosphates (DAPs), children’s environment and activities

Session: MON6.3 Integrative One Health Risk Management
Mon 18.11.2013 • 15:15 - 16:45 Room: Parsenn

**The Benefits Of Farm Animal Welfare For Sustainable Food Production**

LAMBERT, Lesley Anne; ROMANOWICZ, Basia; HIRD, Vicki

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Humane and sustainable livestock production is integral to achieving socially and environmentally responsible outcomes for the future of food production, poverty eradication and sustainable development. The UN Rio+20 Conference in June 2012 formally recognised the importance of promoting sustainable livestock production and enhancing livestock health. This paper will outline the contribution animal welfare makes to sustainable productive livestock production now and in the future.

Original research commissioned for WSPA reveals the extent to which livestock contribute to food security and livelihoods and how improvements in animal welfare can benefit productivity. In contrast, there are significant risks posed by unsustainable production methods and consumption patterns of livestock products, for both the global environment and societies. Increasing animal feed demand has diverted grain and protein from human needs, influencing food price volatility. Increasing demand for animal feed potentially decreases self sufficiency of newly emerging and developing countries, particularly in Asia. Industrial style livestock production also places a significantly larger burden globally on ‘blue’ water resources, which would otherwise be available for human use. Industrial scale intensification also brings a range of animal welfare problems: systems that prevent natural animal behaviours, lead to animal health problems and disease.

Solutions are needed now to ensure the ability of livestock production to meet our needs for food, income and social safety. Humane sustainable agriculture can deliver effective solutions: efficient food production, resilient farming systems, nurturing livelihoods and managing environmental pollution. Evidence and real examples presented here will show that ensuring the welfare and responsible use of animals can be a highly effective tool to achieve sustainable development, safeguard food and water security, deliver poverty alleviation, enhance nutritional security and human well-being and also produce significant positive outcomes in terms of major global concerns of climate change and public health.

**Keywords:** agriculture, food security, sustainable development, resource efficiency

Session: MON5.1 Livestock risks and opportunities
Mon 18.11.2013 • 13:30-15:00 • Room: Jakobs-shorn

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LAMBERT, Lesley Anne; ROMANOWICZ, Basia; HIRD, Vicki

*World Society for the Protection of Animals International, United Kingdom*

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**Keywords:** agriculture, food security, sustainable development, resource efficiency

Session: MON5.1 Livestock risks and opportunities
Mon 18.11.2013 • 13:30-15:00 • Room: Jakobs-shorn
Integrative Therapies in the Prevention and Treatment of Type 2 Diabetes

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Type 2 diabetes is a world-wide epidemic, with the incidence increasing rapidly in Mexico as well as Central and South America. While commonly prescribed medications can help treat type 2 diabetes and associated secondary health problems, due to a variety of economic and cultural factors, many people in these regions, especially those members of the indigenous population, are not able to avail themselves of these medications. There are however, a number of behavioral changes as well as low-cost supplements and indigenous herbal remedies that can both prevent and treat type 2 diabetes. In this presentation, Dr. Rosick will present the latest data on the type 2 diabetes epidemic in Mexico and Central/South America as well as integrative strategies that could help stem the tide of this significant world-wide health issue.

Keywords: Diabetes, Supplements, Herbs, Mexico

Hayfever As Christmas Gift - By Man-planted Imported Alder Tree Pollen Of Alnus Spaethii

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We realized that an alley of 96 trees of A. spaethii species had been planted in 1995-2000. This imported alder begins to flourish in December, before the indigenous species. Thus the time of pollen counts was extended already to December, starting in 2011 and we found relevant amount of Alder pollen, due to this newly planted and man made species (Alnus spaethii: A. japonica x A. subcordata). This observation shows that newly introduced plant species are able to become a relevant inhalant allergen within a short period in hitherto unusual seasons. This effect is even more worrying as children seem to be at special risk.

Keywords: Alder tree - Allergy - Pollen - Climate change

Participatory, Dynamic Models: Tools for Thinking

SCHMITT OLABSI, Laura Kathryn (1); BLYTHE, Stuart (1); LEVINE, Ralph (1); CAMERON, Lorraine (2); BEAULAC, Michael (3)
1: Michigan State University, United States
The dynamic impacts of climate change on the environment and human health will necessitate the use of tools that represent the ways in which the components of a human-natural system interact, and that foster dialogue among scientists, decision-makers, and affected populations. Participatory system dynamics modeling promises to accomplish both of these goals. While participatory scenario development and scoping models have been applied in a variety of natural resource contexts, such approaches have not been widely adopted in the human health arena. Our multidisciplinary and multi-institutional research team developed a system dynamics modeling framework, called the Mid-Michigan Heat Model (MMHM) that depicts the dynamics of hospitalizations and deaths over the course of a heat event in Detroit. Extreme heat events are responsible for more annual deaths in the United States than other natural disasters, and global and regional climate models have indicated that more severe and longer lasting heat events are likely to occur in the upper Midwest under climate change. The model produced some important insights around the limitations of cooling centers as a means to reduce heat deaths and hospitalizations, and around the sensitivity of heat-vulnerable populations to brownouts which would prevent access to air-conditioning. Participants in the model-building and model-testing processes liked having the ability to use the model to think through the consequences of decisions. Based on our experience with the MMHM model, we believe that participatory modeling tools are uniquely able to synthesize local information about a climate-related health problem; represent the dynamics of that information (how it is likely to change over time); and facilitate dialogue about responses to human health problems in a way that challenges deeply-held assumptions.

Keywords: extreme heat, participatory modeling, system dynamics, climate change

Leptospirosis is an epidemic-prone zoonotic disease that occurs worldwide. In Central America, leptospirosis outbreaks have been reported in almost all countries; Nicaragua in particular has faced several outbreaks. The objective of this study is to stratify the risk and identify “critical areas” for leptospirosis outbreaks in Nicaragua, and to perform an exploratory analysis of potential “drivers”. This ecological study includes the entire country (153 municipalities). Cases from 2004 to 2010 were obtained from the country’s health information system, demographic and socioeconomic variables from its Census, and environmental data from external sources. Criteria for risk stratification of leptospirosis were defined. Nicaragua reported 1980 cases of leptospirosis during this period, with the highest percentage of cases (26.36%) in León, followed by Chinandega (15.35%). 48 municipalities were considered critical areas, 85 were endemic and 20 silent. Using spatial and statistical analysis, the variable presenting the most evident pattern of association with critical areas defined by top quintile of incidence rate is the percentage of municipal surface occupied by the soil combination of Cambisol...
Where Does Human Plague Still Persist in Latin America?

SCHNEIDER, Maria Cristina (1); NAJERA, Patricia (1); ALDIGHIERI, Sylvain (1); GALAN, Deise (1); BETHERAT, Eric (2); RUIZ, Alfonso (3); DUMIT, Elsy (1); GABASTOU, Jean Marc (1); ESPINAL, Marcos A. (1)

1: Pan American Health Organization, United States of America; 2: World Health Organization; 3: University of South Florida

Presenting author: SCHNEIDER, Maria Cristina

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Plague is an epidemic prone zoonotic disease with a high case-fatality, which could impact public health, international trade and tourism. It has a potential to emerge and reemerge after decades of epidemiological silence. Today in the Americas, human cases and also natural foci are present in Bolivia, Brazil, Ecuador and Peru. The objective of this study is to identify where in Latin America cases of human plague still persist and map areas that may be at risk for emergence or reemergence. This could provide evidence-based information for countries to prioritize areas to prevent, detect and respond to possible outbreaks. Evidence of the presence of plague was done using existing official information from WHO, PAHO and Ministries of Health. A geo-referenced database was created and mapped the historical presence of plague by country since the first registered case from 1899 to 2012. Areas where plague still persists were mapped by second subnational level (municipalities) and a “proxy” of risk mapping was developed. Selected demographic, socioeconomic and environmental variables were described. The presence of plague for one or more years was found in 14 out of 25 countries in Latin America. Foci persist in six countries, two of which have no report of current cases. Peru shows a cluster of municipalities with cases involving three departments. There is evidence that human cases of plague still persist in 18 municipalities in four countries. A demographic and poverty pattern was observed in 11/18 municipalities. Five types of biomes are present and three of them are a more common. A small scale environmental characterization is suggested. A further disaggregated risk evaluation is recommended for each country, including identification of active foci and possible interactions among areas that could increase the risk of outbreaks. The One Health framework could be used for a Regional Plan.

Keywords: Plague, Human, Yersinia pestis, Latin America, South America

Risk Characterization and Quantification: An Operational Perspective on Concepts, Needs and Opportunities for the Developing World

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Objective, comparative risk assessment is an essential requirement in strategic policy formulation that seeks to address cost-effective risk reduction and mitigation strategies. This paper offers a conceptual framework and risk assessment approach to integrate the biophysical and socio-economic considerations and complexities from a spatial and temporal perspective, with emphasis on the developing world. It is suggested that this framework is not only useful in the identification of relative risk scenarios given principal public policy and quality-of-life concerns such as food secu-
rity and safety, or environmental impacts and associated health risks, but also can be used to communicate long-term risk factors, and identify effective risk prevention and mitigation strategies. As such, major relative needs and intervention opportunities are identified associated with principal risk themes. With emphasis on the developing world, they include: food security and health impacts exacerbated by global warming; the need for generating local energy and the potential use of biomass as a supplemental and safer energy source in food preparation using clean combustion; the need to reduce environmental impacts and associated health risks in resource extraction; and the need to preserve biodiversity and environmental capital to promote eco-tourism and sustainable economic development, and preserve both genetic diversity and medicinal potential.

**Keywords:** Risk Assessment, Environmental Quality, Public Health, Community Sustainability

Session: MON6.3 Integrative One Health Risk Management
Mon 18.11.2013 • 15:15-16:45 • Room: Parsenn

**Methodologists in Sandals: the teaching/learning of research methodologies to ground community action**

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This presentation considers an effort to teach research methodologies of the social sciences (specifically Popular Education and Participatory Action Research) to community members in a remote Nicaraguan village for the purpose of creating a foundation for action in the area of water quality. The overall goal of the project was to establish a reliable system of remediation of contaminated water through the stabilization of chlorinated slow sand filtration barrel systems, and a testing/monitoring protocol susceptible to independent community control.

Popular Education was employed to explore key concepts (pollution/contamination, etiology, sickness, and consequences for human health) with 11 residents participating in the project along with an interdisciplinary social scientist and an environmental chemist from the US. Participatory Action Research grounded the community epidemiology and mapping that, along with semi-structured interviews of community members, comprised the data gathering phase, and continued to guide the questioning of theory and practice through the data analysis and the subsequent implementation and evaluation phases.

The project incorporated several innovative features in its approach to teaching/learning and in the artifacts and methods employed in its technical aspects. In teaching, the facilitator used responsive questioning, both to assist the participants in using what they already knew to construct new knowledge and to judge the level of assimilation of new concepts. The “learner” was defined as the collective, rather than the individuals, allowing for more rapid movement toward the action phase in a time limited project. Technically, among the accomplishments of the project were the first field test of a phase change incubator that needs no electricity and modification of the H2S test that built on the extensive work of the IDRC. The project accomplished its major goals, returning the following year to replicate it, employing the participant research team as leaders.

**Keywords:** Nicaragua, water quality, community participation, research methodologies

Session: TUE6.2 One Health capacity building approaches
Tue 19.11.2013 • 15:15 - 16:45 Room: Pischa

**Development and application of a mini DNA microarray for the screening of wild bird populations in Europe for viral pathogens**

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The emergence of new viruses from wild animal reservoirs contains the likelihood of zoonotic diseases and subsequent risk of global spread where migrating species are involved. Prediction, detection, and control of such diseases often demand collaboration at national and international level. Infectious diseases of wild bird populations in Europe are of major concern regarding possible risks on other species, particularly poultry and humans.

In many circumstances, further development and invention of diagnostic technologies are sought. The most imminent one is achieving higher sensitivity and specificity in the shortest possible period. However, other applications, such as multiplexing, ease of use and cost, are coming into consideration. This is to address wider availability of such assays to timely facilitate investigation of syndromes, not only to rule out known notifiable and zoonotic viruses but also to investigate re-emerging and novel viruses.

This study describes development and application of a multiplex avian mini DNA microarray for the investigation of viral agents in wild bird samples from across Europe. The viral array consists of oligonucleotide probes designed on conserved genomic regions of avian viruses. To process the samples for analysis, nucleic acid was extracted, amplified and labelled using a combination of random and specific primers before being hybridised on to the array. The sensitivity and performance of the array was successfully verified using several known clinical samples and virus isolates. Currently, the array is being used to investigate several disease outbreaks in the UK and to screen samples collected from birds in Sweden and Greece.

The promising design of the array, its low cost and short turnaround time indicate its potential as a frontline tool in the investigation of suspected avian viral disease syndromes. This would facilitate timely implementation of comprehensive control measures to prevent the impact of such infections on human and animal health.

Keywords: multiplex detection, microarray, infectious disease, avian viruses, screening

Session: WED5.2 Wildlife diseases
Wed 20.11.2013 • 13:00-14:30 • Room: Pischa

Prediction of Biological Risk Factors of Human and Animal Tuberculosis at the Regional Level

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Tuberculosis is a zoonotic disease affecting farm and wild animals as well as humans. Biological factors play an important role in the spread of this disease at the territorial level. Control of occurrence and spread of tuberculosis at the territorial level requires the use of modern diagnostic technologies providing express identify the causative agent of tuberculosis followed by application of anti-epizootic measures to eradicate the disease. Our study in conjunction with «Enfer Scientific», Ireland, aimed at searching the most highly effective tools for diagnosis of tuberculosis in different animal species. Different animal species produce antibodies to different mycobacterial antigens that do not allow creating a unique single antigen test system. In addition, at different stages of the disease animals react differently to the secreted and cell antigens of tuberculosis pathogen. It becomes apparent creation of multiplex test systems that allow to analyse of biological fluids to multiple antigens simultaneously. We used the multiplex test system on cattle, goats, farm and wild deer, alpaca, badgers and other species. The multiplex serological immunoassay allows to explore of different animal species for tuberculosis and to detect the disease at different stages. The use of the
multiplex test system will allow tuberculosis control at the regional level, with the possibility of exploring a variety of animals and promptly identify the pathogen reservoirs, potential risk factors of the disease.

**Keywords:** tuberculosis, wildlife, multiplex immunoassay, mycobacterial antigens

**Session:** WED5.2 Wildlife diseases

**Wed 20.11.2013 • 13:00 - 14:30 Room: Pischa**

**Spatial and Temporal Pattern of Rift Valley Fever Outbreaks in Tanzania; 1930 To 2007**

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It is now over eight decades since Rift Valley fever (RVF)-like disease was reported for the first time and six years since last outbreak occurred in Tanzania. Nonetheless, the spatial and temporal pattern of the outbreaks in the country remains poorly documented. This paper describes the spatial and temporal pattern of RVF outbreaks at village and monthly resolutions and examines the potential presence of clustering of outbreaks over the past 80 years. A retrospective study was carried out involving villages and streets in the country. The sources of data were the Ministry of Livestock and Fisheries Development, Zonal Veterinary Investigation Centres and Ministry of Health and Social Welfare in Tanzania. A descriptive statistical analysis was carried out using STATA 12. The spatial distribution of outbreaks was mapped using ArcGIS 10. Space-time permutation model available in the SatScan software was used to identify clustering of cases. Since 1930 when RVF-like disease was reported for the first time in the country, outbreaks have been reported in 1947, 1957, 1960, 1963, 1968, 1977/1978, 1989, 1997/1998 and 2006/2007 with inter-epidemic periods ranging from 3 to 17 years. All human and animal RVF cases were reported between December and June. The space-time permutation model identified most likely and secondary clusters of cases. Once villages had been involved in an outbreak, they were likely to be involved in future outbreaks. As a result outbreaks increased the geographical areas covered within the country, in particular spatial spread of outbreaks from northern to southern Tanzania was observed. These observations demand for concerted one health inter-sectoral efforts to implement risk-based surveillance and strategic control initiatives within the country and across the wider region.

**Keywords:** Rift Valley fever, distribution, domestic ruminant and humans, Tanzania

**Session:** TUE6.3 Emerging diseases

**Tue 19.11.2013 • 15:15-16:45 • Room: Parsenn**

**Leaching Behavior of Mercury from Spent Fluorescent Lamps Solidified with Cement**

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It is well known the extremely harmful effects of mercury and its compounds on the human health. Elemental mercury and some of its organic compounds affects the central and peripheral nervous system. Inorganic compounds of mercury also affect eyes, skin and gastrointestinal tract. There are still many human activities that generate mercury in the environment either indirectly, such as burning of fossil fuels or waste incineration, or directly
in mining activities, health care and a lot of manufacturing processes such as pesticides, mirrors and medical equipments, industrial leaks, lighting, etc. Mercury is widely used in manufacturing technology of fluorescent lamps. At the end-of-life of these lamps, mercury may still be in elemental form or could be incorporated as oxide into fluorescent layer called „phosphors“. Due to high mercury content, the spent fluorescent lamps are considered hazardous waste that requires a proper management.

Therefore, the objective of this paper is to establish experimentally and using mathematical modeling if the solidification of spent fluorescent lamps glass with cement is a proper treatment technology through can get an environmental friendly cement-based waste material in terms of mercury leachability. In this respect, the solidified samples were tested for leaching of mercury and the results were compared with those of broken glass of spent fluorescent lamps. According with the European standard on waste leaching behavior, the amount of mercury leached from solidified samples was two orders of magnitude less than the maximum accepted by standard (0.2 mg/kg dry weight material). The spent glass samples showed a leachability of mercury up to an order of magnitude greater than the standard value. These results are consistent with those obtained by Toxicity Characteristic Leaching Test (TCLP). The leaching indexes (LI) derived from mathematical modeling also highlighted that the mercury has a low leachability in the solidified samples.

Keywords: mercury, leachability, solidification, health, waste

Session: WED1.1 Disease detection and prevention technologies
Wed 20.11.2013 • 08:30 - 10:00 Room: Jakobshorn

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**Playful HIV/AIDS prevention- does that work out?**

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Play to break taboos!

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taboobreaker GmbH addresses tabooed topics as HIV/AIDS by developing playful tools to foster knowledge and responsible behavior.

HIV is still one of the most tabooed global topics with enormous bad consequences for health, society and economy.

More than 33 million worldwide are affected by HIV/Aids, and there are 2.7 million new infections annually. With more than 30% South Africa is among the most affected countries.

Effective HIV/Aids prevention can only be achieved if the target audience is reached on its emotional and cognitive level. Our taboobreaker number 1 Love Land is an interactive game adapted to youths’ sexual realm of experience and provides the necessary know-how for the responsible and self-paced handling of sexuality. We are convinced that every teenager in this world deserves this knowledge and we achieve Love Land to become a global HIV/Aids prevention program in order to minimize the number of infected people. Love Land is easy adaptable to the target groups need, and is a readymade tool, that does not need any preparation time. Teachers get an easy to handle tool, which makes it easy to talk about delicate topics Love Land is successfully tested and used in Switzerland and Indonesia.

As our experiences in a further pilot test with over 400 students in South African countries showed, there is an urgent need of sustainable prevention.

In cooperation with international professional snowboard athletes, taboobreaker plans a further large-scale pilot in RSA schools. With the support and the positive influence of snowboard athletes in the rule of ambassadors, our program will be the perfect mix of seriousness and breaking the taboo in a playful way.

Keywords: prevention, young adults, HIV, sexuality, responsible behavior

Session: TUE6.2 One Health capacity building approaches
Tue 19.11.2013 • 15:15-16:45 • Room: Pischa

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**Global Health Crises Caused By The Collision Of Biological And Cultural Evolution: Pre-Natal Influences On**
Acute And Chronic Diseases Later In Life
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In the context of finite global resources for sustained healthy human survival, population explosion, increased environmental pollution, decreased clean air, water, food distribution, diminishing opportunities for human self-esteem, increased median life span, and interconnected causes of acute infectious and chronic diseases, the need to understand the factors leading to human diseases will be necessary for both the long term prevention and for managing short-term crises health problems. The transition of our pre-human nutritional requirements for survival to our current unequal and culturally-shaped diet has created a biologically mis-matched human dietary experience. While genetic, gender, and developmental stage factors contribute to human diseases, various environmental and culturally-determined factors are now contributing to both acute and chronic diseases. The transition from the hunter-gatherer to an agricultural-dependent human being has brought about a global crisis in human health. Initially, early humans ate seasonally-dependent and calorically-restricted foods, during the day, in a “feast or famine” manner. Today, modern humans eat diets of caloric abundance, at all times of the day, with foods of all seasons and from all parts of the world, that have been processed and which have been contaminated by all kinds of factors. No longer can one view, as distinct, infectious agent-related human acute diseases from chronic diseases. Given the predicted increase in the number of new births before the end of this century, a serious effort must be made to provide a healthy in utero environment for the most vulnerable stage of human development in order to prevent alterations in organ-specific adult stem cell numbers and stem cell-based diseases later in life. This new concept provides a mechanistic explanation for how pre-natal maternal environmental or dietary exposures can now affect diseases later in life (Barker Hypothesis). Studies of the atomic bomb survivors should illustrate this insight.

Keywords: Human stem cells, Nutritional Modulation of Health, Evolutionary Health Effects, Pollution; Prevention of Human Diseases
Session: WED6.2 Lifestyle Diseases
Wed 20.11.2013 • 14:45-16:15 • Room: Pischa

Feline Bartonellosis and its Zoonotic Potential
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Bartonella infection is caused by gram-negative bacteria commonly isolated from domestic cats. Cats are the major reservoir of Bartonella henselae, B. claridgeiae and B. koehlerae which are transmitted to humans, while they may function as accidental host of B. quintana, B. bovis and B. vinsonii subsp. berkhoffii. The pathogen is transmitted among cats mainly by fleas while other vectors are also suspicious for transmission since the bacteria have been isolated from ticks and flies. The bacterial pathogenicity may be emphasized by the strain of the bacterium and the immune status of the infected host. Most of the infected cats remain asymptomatic. In the natural occurring cases of feline bartonellosis, uveitis, chronic gingivostomatitis and endocarditis have been reported. Mild anemia and leucocy-
tosis in the early phase of the infection have been also reported. Diagnosis is based on the detection of the specific anti-bartonella antibodies by the indirect immunofluorescence test, ELISA and Western blot assays. Molecular biology techniques mainly PCR, cytology, histopathology and blood culture have also been employed for the direct detection of the pathogen. Prolonged antimicrobial therapy results to the reduction of bacterial burden without total elimination of the pathogen. B. henselae is the causative agent of cat scratch disease; a human infectious disease usually characterized by persistent regional lymphadenopathy and less frequently by low fever while, angiomatosis or hepatic peliosis have been reported mainly in immunocompromised patients. It is transmitted to humans by cat scratches or bites. The most effective means of protection is regular flea control. Additionally, common sense precautions and hygiene such as washing hands after handling pets and clean any cuts and bites or scratches promptly are recommended especially in population at great risk.

Keywords: Bartonella, cat-scratch disease, cat, zoonosis

Session: WED1.2 Zoonotic Diseases
Wed 20.11.2013 • 08:30-10:00 • Room: Pische

The reoccurrence of Rabies in Greece: Application of GIS analysis in wildlife oral vaccination programs, public health significance
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Rabies (Lyssavirus, Rabdoviridae) continues to be an important zoonotic disease present on almost all continents with more than 95% of human deaths occurring in Asia and Africa. Rabies has not been detected in Greece since 1987; however, from 19 October 2012 to the present, twenty-seven (27) laboratory-confirmed animal rabies cases have been detected in the regions of Macedonia and Thessaly. Twenty-three red foxes (n=23), 3 dogs and 1 domestic cat rabies cases were reported. The main reservoir of the rabies virus in Greece is the red fox. Animal case data was analyzed using Geographical Information Systems (GIS). According to national legislation, a 50 km buffer zone is established around each reported case as a “rabies-infected” area, and preventive measures, such as domestic animal movements or wildlife oral vaccination, are instituted. The analysis showed that 7 regional units from the 74 total in Greece are affected and considered “rabies-infected”. All cases of rabies occurred in low altitudes and the primary land use at the reported case sites is for agriculture. Utilising data from reported rabies cases, including GIS data (Corine 2000-land cover, altitude, habitat types, river network structure, human population density, livestock density etc.), ecological studies of red foxes (feeding habits, habitat preferences, etc.), as well as environmental criteria on vaccination methodology (distances from towns
and villages, water presence etc.) suitable vaccination sites were determined that can be prioritized in an oral vaccination program, in order to minimize the cost while achieving satisfactory coverage in wildlife immunization.

*Keywords: rabies, zoonosis, Greece, GIS*

Session: TUE6.1 Diagnosis and surveillance of infectious diseases in wildlife (WildTech) - Session 2
Tue 19.11.2013 • 15:15 - 16:45 Room: Jakobshorn

**RECARE - Preventing and remediating degradation of soils in Europe through landcare**

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There is a large body of knowledge available on soil threats in Europe, but this knowledge is fragmented and incomplete, in particular regarding the complexity and functioning of soil systems and their interaction with human activities. A new EU-FP7 project called RECARE aims to develop effective prevention, remediation and restoration measures using an innovative transdisciplinary approach, actively integrating and advancing knowledge of stakeholders and scientists in 17 case studies, covering a range of soil threats in different bio-physical and socio-economic environments across Europe. Within these case study-sites

i) the current state of degradation and conservation will be assessed using a new methodology, based on the WOCAT-mapping procedure,

ii) impacts of degradation and conservation on soil functions and ecosystem services will be quantified in a harmonized, spatially explicit way, accounting for costs and benefits, and possible trade-offs,

iii) prevention, remediation-and restoration measures selected and implemented by stakeholders will be evaluated, and

iv) the applicability and impact of these measures at the European level will be assessed using a new integrated biophysical and socio-economic model.

National and EU policies will be reviewed and compared to identify potential (in)coherence, contradictions and synergies. Policy messages will be formulated based on the case study results and their integration at European level.

A comprehensive dissemination and communication strategy, including a web-based Dissemination-and Communication Hub, will accompany the other activities to ensure that project results are disseminated to a variety of stakeholders at the right time and in the appropriate formats.

RECARE is coordinated by Alterra - Wageningen UR (Soil Physics & Land Management Department) and brings together 28 partners from 17 European countries.

*Keywords: Soil threats Europe, Land Degradation, Sustainable Land Management, Landcare*

Session: TUES.2 Environmental degradation and health issues
Tue 19.11.2013 • 13:30-15:00 • Room: Pischa

**Intensive Animal Husbandry: A Societal Concern?**

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Intensive Animal Production Systems/Animal Husbandry (IAPS) is becoming more and more a matter of debate and concern in society and policy making in The Netherlands.

Advantages like economic growth, efficient use of resources are balanced in the debate against disadvantages like increased (public) health risks, compromised animal welfare. Also, the debate is characterized by a large number of different stakeholders that make use of a high variety of arguments, leading to Bable-like confusion.

Our aim is to identify key elements, uncertainties and ambiguities in the debate.

Concern assessment
We screened several framing models to assess societal concerns. Some were judged useful to understand the discussions about IAPS (and health). Next, a stakeholder analysis was performed. Preliminary analysis of stakeholder concerns differentiated between concerns related to the risks, the activity causing the risks and the process to control the risks. The concept ‘trust’ and ‘scientific uncertainty’ appear to be important themes in the current discussions.

Structuring
To better understand the concept of IAPS we will use models and methods from behavioral decision analysis to analyze and structure multi-dimensional, hence complex, concepts like IAPS. This will start with a content analysis of the concept of IAPS by as many relevant different disciplines (stakeholders) as necessary. Structuring and modeling these content analyses will yield a common multi-dimensional representation of the concept of IAPS. This provides a common base for the development of a transdisciplinary research agenda, the societal and policy debate.

It is likely that further assessment of societal concern and stakeholders’ perception of the concept of IAPS can positively contribute to the governance of the many aspects related to IAPS in the Netherlands. In the paper we will present some preliminary results on the concern assessment and the content analysis.

Keywords: Integrated risk governance animal husbandry

Urban Environmental Stressors: Extend Of Annoyance, Sleep Disturbance And Residential Satisfaction In The Netherlands
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Urban environmental stressors like noise, malodour or light are chronic, global conditions of the environment that, in a general sense, represent noxious stimulation, and which, as stressors, place demands upon an individual to adapt to or cope with (ambient stressors).

We performed a survey to assess the prevalence of annoyance and sleep disturbance due to these ambient stressors among residents in the Netherlands. In addition we assessed their impact on perceived environmental quality.

The survey was an inventory of nuisance due to a variety of urban environmental (ambient) stressors in the living environment e.g. noise, malodour, vibrations, light and external safety risks. 1250 residents participated in the survey, which was performed by means of a face-to-face, structured interview. Altogether, residents evaluated 4 different types of ambient stressors: noise, malodour, vibrations and light. More than 40 different sources (e.g., traffic, industries, agricultural, construction, drilling, sport parks), were evaluated.

Most people appear to be (very) satisfied with their residential situation in general (about 80%). Most annoying urban environmental stressor appeared to be a noise source: ‘mopeds’ (17% annoyed, 6% severely annoyed). ‘Hearths/fireplaces’ appeared to be most annoying sources of malodour (7% and 2% respectively). Vibrations due to ‘road traffic’ appear to be the most annoying (8% and 3% respectively). ‘Street lights’ was the most annoying light source (5% annoyed, 2% severely annoyed).

Residential satisfaction is fairly high in the Netherlands and has increased the past few years. Still a fairly large number of residents is annoyed. Despite the government’s policy effort to abate severe annoyance, people still suffer from (severe) annoyance from various sources due to noise, malodour, vibrations and/or light.

Keywords: annoyance, noise malodour, vibration light
One Health As A Tool to Strengthen Interactions Between Risk Modelling And Veterinary And Human Public Health

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As public/veterinary health and modeling experts often originate from diverse backgrounds, interactions and exchanges between them can sometimes be hindered by the lack of a common framework. On the one hand, complex data sets and gradually more complex modeling methods result in modeling outputs that require caution in interpretation, or advanced understanding of the technical aspects of modeling. These outputs can be of very diverse nature (e.g. focusing on diseases, or reservoir hosts, or vectors, or else on presence vs. abundance or incidence). On the other hand, public and veterinary health practitioners also have developed complex approaches to risk management that involve social, cultural or economic principles that may not be familiar to modellers. With the need to exploit fully the public/veterinary health potential of current modeling techniques, enhanced with ever richer data sets, and more and more accessible modeling tools, there is a crucial need for more intense interactions among experts. A conceptual framework understood by and unambiguous to all is needed in order to facilitate the expression of specific needs by public/veterinary health experts, and the provision of model outputs of direct relevance to public and veterinary health issues. The One Health concept is an integrative, multidisciplinary conceptual framework that can help in this issue, for example by recognizing that environmental factors are important in the context of emerging diseases. In this talk, we will review the potential and use of the One Health concept for facilitating interactions amongst experts from the modeling and the public/veterinary health fields.

Keywords: public/veterinary health, risk modelling, OneHealth Framwork, Multidisciplinarity

Global Challenges, Sustainable Development, And Their Implications For Organization Performance

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This paper presents an overview model of organization performance which embeds corporate social responsibility (CSR), corporate governance (CG), and sustainability concepts at the strategic level. It is built upon previous research which reported the following suppositions: (a) external factors are as equally important as internal ones in shaping and driving an organization’s direction; (b) external factors include the world’s limited natural resources, over utilization of natural resources, unbalanced ecological systems and climate change, harm from toxic products and waste, population increase, and issues in technological advancement – all of which have been identified by the United Nations as ‘global challenges’; (c) sustainable development (SD) is a concept proposed by global thinkers to address the challenges the world is facing; (d) CSR, CG, and sustainability are responses to those external factors; and (e) the desired outcome of embedding CSR, CG, and sustainability concepts at the strategic level is to make organizations sustainable. This paper also proposes that, due to the strong impact of external factors, effective monitoring and reporting of their performance in four domains - business, CSR, CG, and sustainability - be common practices so as to benefit organizations, big or small, in the long run.

Keywords: Sustainable Development, Organizational Performance, Corporate Social Responsibility (CSR), Corporate Governance (CG), Sustainability of Organization.

Session: WED6.1 Global and national directions and approaches for One Health
Environmental Partitioning and Its Role in Human Exposure to Aristolochic Acids, Plant-Derived Toxins Suspected of Causing Balkan Endemic Nephropathy

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Balkan endemic nephropathy (BEN) is a kidney disease that occurs in certain rural villages in Bosnia, Bulgaria, Croatia, Romania and Serbia and is likely linked to an unknown environmental toxin. In 1969, Professor Ivić of the University of Niš, suggested that BEN could be caused by the plant Aristotlochia clematitis, which is commonly found growing in wheat fields, with exposure occurring via contamination of flour by seeds that are similar in size to the wheat grain. A growing body of work is providing persuasive evidence that compounds found in this plant species, termed aristolochic acids (AAs), exhibit both nephrotoxicity and carcinogenicity consistent with BEN. However, there are a number of reasons to suspect the plausibility of Ivic's suggested exposure pathway. In this investigation, we explore the alternative hypothesis that exposure could occur as a result of release of AAs to the soil environment, either as root exudates or through decomposition after the growing season. The released AA could be taken up by food crops, but transport would likely be affected by soil sorption/desorption processes.

To evaluate the feasibility of this hypothesis, we measured the octanol-water partition coefficient because this reflects the hydrophobicity of contaminants and typically correlates with several important environmental partitioning processes. We also directly measured soil sorption using soils with different organic matter and clay contents. We found that AA I and II were relatively hydrophylic above pH 5 and hydrophobic below pH 2, such that we would expect significant aqueous transport under typical conditions found in the soil environment. However, we also found significant sorption to soils that correlated with the soil organic content, suggesting a hydrophobic bonding mechanism. We interpret these preliminary findings to suggest that plant uptake of AA is possible, but that additional work is necessary in order to produce quantitative estimates of exposure.

Keywords: sorption, aristolochic acid, Balkan endemic nephropathy, octanol-water partition coefficient, plant uptake

Session: TUE6.3 Emerging diseases
Tue 19.11.2013 • 15:15-16:45 • Room: Parsenn

A Morbillivirus Vaccine Vector Expressing Influenza HA and NP Proteins Induces Robust Humoral and Cellular Immune Responses

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Influenza A viruses continue to cause annual epidemics which are associated with considerable morbidity and economic losses, as well as occasional pandemics with world-wide impact. Even though the available vaccines protect against antigenetically matched strains, the high genetic plasticity of these viruses makes it challenging to accurately predict emerging viruses, leaving the population unprotected. We have previously observed that a natural infection with influenza confers protection from re-infection with the same and in some cases heterologous strains. Here we investigated if this protection can be reproduced by presentation of influenza proteins in the context of a viral vaccine vector that also targets the respiratory tract. Towards this, we produced a replication-competent canine distemper virus vaccine strain carrying the nucleo- and hemagglutinin proteins of a seasonal H1N1 influenza strain and assessed its ability to confer protection against homologous or...
heterologous H1N1 and H3N2 strains. After intranasal infection, the ferrets immunized with the influenza protein-carrying virus mounted CDV and influenza-specific humoral and cellular immune responses. However, the CDV-specific responses were weaker than those seen in animals immunized with the parental CDV strain. When challenged with the homologous and to a lesser extent heterologous influenza strains, the animals experienced a shortened period of virus replication and fever. This morbidity reduction may be sufficient to alleviate the disease severity of a highly pathogenic influenza strain and thus provide a first line of defense against a future pandemic.

Keywords: Influenza, vaccine development, correlates of protection

Session: WED1.1 Disease detection and prevention technologies
Wed 20.11.2013 • 08:30-10:00 • Room: Jakobshorn

Case Study: Aging, Health and Environment Issue in China
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The presentation will give a brief introduction on recent aging-related management in China from following four aspects: international cooperation, communities of practice, scientific research, and technology development. Each aspect will be described by a case-study, which including the collaboration between China National Committee on Ageing and World Health Organization on construction of livable communities for the aged and age-friendly city, research on community-based healthy lifestyle management for the aged in Shanghai, research on long-term care and nursing institution for disabled elderly, as well as the construction of information system for home care services. While these works have achieved positive results and social repercussions, some of which also had a significant political impact. The study in aging, health and environment is still lacking of systematic theoretical research in China. This presentation will investigate how to work based on existing strengths and multidisciplinary approach to cope with the Chinese characterized aging problem under the framework of One Health.

Keywords: Aging, CNCA, Health, Environment, One Health

Session: MON5.3 Aging, Health and Environment: Coping with Challenges in the Framework of One Health
Mon 18.11.2013 • 13:30 - 15:00 Room: Parsenn

Nexus of Aging, Health and Ecosystems from Risk Governance Perspective
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Aging is not only a pure medical issue; it is an emerging issue in the social ecological system. In the developed countries, such as EU and Japan, the policy makers already felt the increasing pressure. In emerging economy countries, such as China, combing with health threats due to environmental degradation, the complexity and potential risks of the nexus of aging, health and natural environment are even more severe in the next couple of decades if not dealing with timely and appropriate manner. In the past five years, the Integrated Risk Governance Project has been developed for the purpose of improving the management of new risks that exceed current human coping capacities, including aging and health risks. In this presentation, from risk governance perspectives, an integrative multi-disciplinary approach will be discussed to better understand the nexus under the framework of One Health.

Keywords: Aging, Health, Ecosystems, Risk Governance, One Health

Session: MON5.3 Aging, Health and Environment: Coping with Challenges in the Framework of One Health
Mon 18.11.2013 • 13:30-15:00 • Room: Parsenn
Effects of Home-Based Lifestyle Change Program on Quality of Life among elderly in Khonkean Province, Thailand

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Thailand is currently becoming to be “the aging society”. Khonkean province is the second highest of aging people in Northeast of Thailand. Previous studies found that aging people had moderate quality of life. This study aims to assess the effect of home-based lifestyle change intervention on quality of life among elderly in the rural of Khonkean province, Thailand. This quasi-experimental study was employed. A triple –E education (Exercise, Eating healthy food, and Emotional management) was implemented in the intervention village. 110 elderly participants (aged 60-75 years) were recruited from two selected villages in Khonkean province. One village was assigned as an intervention village and the other was the control village. The evaluations of the triple –E education were conducted at 6th month and 9th month after intervention. Quality of life was assessed using WHOQOL-OLD questionnaire with composed of 6 facets (SAB, AUT, PPF, SOP, DAD, and INT). Linear Mixed Model analysis was used to compare a mean difference of intervention at difference time. The results revealed that the score changed were found in five facets of WHOQOL-OLD at the 6th month intervention (AUT, PPF, SOP, DAD, and INT; p-value < 0.05). At 9th month of the intervention, the score changed were found in four facets of WHOQOL-OLD (AUT, PPF, SOP, and DAD; p-value < 0.05). The home-based lifestyle program was affected to elderly’s quality of life in some facets. For the further study should observe the long term of home-based lifestyle change program.

Keywords: Elderly, Quality of Life, Home-Based Lifestyle Change

The Importance of Wildlife Disease Surveillance for Domestic Animal and Human Health

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Of the 1415 known human pathogens, 61% are zoonotic, and infect multiple animal species (Taylor et al, 2001). Emerging Infectious diseases (EID) are diseases with new or changing epidemiological features. 71.8% of EID zoonoses are caused by pathogens of wildlife origin (Bengis et al, 2004). EID events caused by pathogens originating in wildlife has increased significantly over time, and represent the most significant growing threat to global health of all EID (Jones et al, 2008).

Examples of pathogens present in animals in Europe will be discussed in this presentation, as will the factors associated with increasing spread of these pathogens across the animal and human populations. Some specific examples will be given of the role wildlife in the spread of these pathogens.

Relatively little research has been conducted in Europe on the ecology of wildlife diseases. For many diseases, wildlife reservoirs have not yet been identified. Many aspects of the (co)-evolution of pathogens and their pathogenic and epidemiological implications have not yet been elucidated. Even basic information on disease prevalence indicated by seroconversion is unavailable for many high-profile pathogens and many wildlife species.

There is currently no formal EU level of coordinated wildlife disease surveillance and risk analysis. Long term proactive wildlife population and disease monitoring is critical to provide baseline data for epidemiological analyses and design of surveillance programmes. The establishment and maintenance of a sys-
tematic and comprehensive pan-European wildlife health surveillance program is crucial for the detection and risk assessment pathogens of importance to domestic animal and human health.

The EU funded WildTech project has developed a range of cutting edge tools to aid in the detection and monitoring of pathogens in wildlife, which will supply knowledge essential to identify and respond to many important emerging zoonotic infections threatening animal and human health across Europe and beyond.

Keywords: wildlife, zoonosis, pathogen, EID, disease surveillance

Session: TUE6.1 Diagnosis and surveillance of infectious diseases in wildlife (WildTech) - Session 2
Tue 19.11.2013 • 15:15-16:45 • Room: Jakobshorn

Metagenomic Applications for Environmental Health Surveillance

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The marine environment is the largest, most diverse and influential ecosystem on Earth. Still largely unexplored, the foundation for further ocean exploration begins with the most abundant and productive life forms in the ocean, the microbial community. Microbes are essential to all life and play an intimate role in ecosystem function and environmental health. Microbial community composition and function are important metrics that can be used to monitor and predict environmental changes highly relevant to global health. Standard lab techniques used for environmental microbial assessment are limited in scope and high-throughput, comprehensive approaches offer a tremendous opportunity to expand our estimates and monitoring of microbial diversity. Metagenomics in combination with 454-pyrosequencing, marine metadata and bioinformatics analysis offers a sensitive approach to evaluate intact community genomes for the novel detection and characterization of microbial populations. Metagenomic studies reveal community composition, functional potential and environmental preferences that suggest key species and roles necessary in sustaining a functioning, healthy environment. In addition to its ecological relevance, metagenomic profiling creates translational research opportunities for monitoring environmentally hosted, human health determinants. The objective of our study was to use gene-based, community level surveillance in an integrative approach that allows us to evaluate and monitor the intrinsic relationships between humans, animals and the marine environment. Our longitudinal based study used metagenomic profiling to characterize the surface water bacterial communities of the Puget Sound Estuary to determine community composition, functional potential and human health determinants. Our results revealed the high reproducibility and discriminatory capabilities of metagenomic profiling and a comparative analysis of metagenomes exposed significant differences in microbial diversity and antibiotic resistance determinants across a gradient of anthropogenic impact. Our results demonstrate the successful characterization of the Puget Sound Metagenome and build capacity toward future bioinformatic applications in environmental health monitoring, policy and global health impact and awareness.

Keywords: Metagenomics, Environmental Health, Antibiotic Resistance, Microbial Community, Marine Environment

Session: TUE1.2 One Health approaches for early warning and detection
Tue 19.11.2013 • 08:30 - 10:00 Room: Pischa

Aging and Health Challenges: Coping with AD

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Alzheimer’s disease (AD) is the most common cause of dementia and characterized by progressive loss of memory and other cogni-
tive functions. There were 36 million people living with dementia worldwide in 2010, the AD population is estimated increasing to 66 million by 2030. As the most populous country, China has the largest number of AD patients in the world. Since the progress of AD is irreversible, diagnosing and intervening AD at early stage will be critical for its treatment. Taijiquan, a widely spread Chinese Martial Arts, could delay and prevent the occurrence of dementia in elder people. Combined with Qigong, another Chinese traditional exercise, Taijiquan is able to ameliorate life quality of AD patients, and maintain the neuronal function in the brain. For people in early stage of AD, these interventions may become substitute for drug treatment. Some studies show, traditional Chinese game, such as Majiang, could improve thinking, memory and speed of response of AD patients. Besides, AD patient care is another important issue. In classic Chinese big family, the aged always lived with their son or daughter, even their grandson or granddaughter. Such specific framework makes many Chinese old people live in happiness and enthusiasm. These life styles were benefit for AD prevention and AD patients’ care.

**Keywords:** Alzheimer’s disease, AD, One Health

Session: MON5.3 Aging, Health and Environment: Coping with Challenges in the Framework of One Health

Mon 18.11.2013 • 13:30-15:00 • Room: Parsenn

**Detection Of Naturally Acquired Antibody To B. Anthracis Protective Antigen In Human And Cattle Serum Of Mongolia**

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Anthrax is a worldwide zoonosis in human and animal. In Mongolia, totally 276 human anthrax cases were reported in 1964-2011 and 78.9% of total human cases were reported during 2000-2011 with a 55% mortality rate. Due to the data what indicate current anthrax condition in Mongolia emerges us to improve special strategy in nomadic life style to prevent against the disease and to eliminate risk awareness in human. To control anthrax foci and to decrease infection risk is an important point of intersectoral collaboration and both sectors joint anthrax team was established to develop a national strategy to prevent anthrax and its control. The fundament of strategy development is to analyze historical data on anthrax and develop GIS based map of existing natural foci of anthrax pathogen and confirm the active foci by serological survey of human and animal by naturally acquired antibody to anthrax and bacteriology test of soil samples. In this study, B. anthracis recombinant PA (r-PA) were purified and used for ELISA to detect naturally acquired antibody to the specific antigen. Totally 90 human and 192 bovine sera were collected from 12 different anthrax foci and screened by ELISA, 29% and 11.9% are positive in human and cattle, respectively. The non anthrax foci area’s human and bovine sera were also screened, two of 36 human and two of 54 bovine sera had shown significant positive result comparing to negative control serum. The result shows that the indirect ELISA could be safe and effective method for surveillance of anthrax foci control. It is the first collaboration study in human and animal health sectors on anthrax in Mongolia and bacteriology of soil from anthrax foci should be done for further study.

**Keywords:** anthrax foci, naturally acquired antibody, B. anthracis PA

Session: WED1.1 Disease detection and prevention technologies

Wed 20.11.2013 • 08:30-10:00 • Room: Jakobshorn
The Impact of a Food Hygiene Training Program on Foodservice Staff in Saudi Arabian Hospitals
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Foodservice departments in hospitals are required to provide patients with meals prepared under strict hygiene conditions because patients have a weakened immune system. Foodservices staff must have adequate hygiene training and sufficient knowledge about good practices. Lack of training may cause cases of food poisoning which could have serious consequences for patients who are already ill. In Saudi Arabia, although training programs for foodservice staff is still limited, the Ministry of Health intends to implement HACCP systems in hospitals. It is likely that the current level of knowledge will need to be augmented before HACCP can be successfully implemented in all hospitals. The main aim was to assess the knowledge, practices and attitude of hospital food handlers Riyadh, to develop a bespoke training programme and to evaluate the effectiveness of this training. The study was a longitudinal study which assessed the staff knowledge at the pre training stage by using a multiple choice questionnaire. This data was analysed to identify the specific deficits in food safety knowledge and practices of staff and the training program was developed.
Incidence of zoonotic human leishmaniasis in Greece for the last decade is relatively stable with small fluctuations and an average of 8 cases per 100,000 children of 0-14 years of age as reported by paediatric hospitals in Athens. The earliest reports on dogs admitted at the Faculty of Veterinary Medicine, Aristotle University of Thessaloniki and researchers from the Hellenic Pasteur Institute refer to sporadic cases. During 80s and 90s seroprevalence of canine leishmaniasis in Greece ranged from 1.6% to 24%. The overall reported seroprevalence in Greece mainland was nearly 20% ranging from 2.05% in Florina to 30.12% in Attiki. Seroprevalence of canine leishmaniasis in Crete, has been reported as one of the highest in Europe (30%-40%) which has increased 2.4% per year while incidence has increased 2.2- to 3.8-fold over a 17-year period (1990-2006). Leishmania spp infection detected by polymerase chain reaction (PCR) in clinically healthy dogs living in Karditsa had a much higher prevalence of 61.9% and an incidence of 47.1%.

Unsuccessful measures taken to control Leishmaniasis by eliminating the infected dogs were abandoned for both ethical and economic reasons. Proven or probable vectors of Leishmania in Greece are P. perfiliewi, P. tobbi, P. neglectus and P. similis. The key role of vectors on the epidemiology of the disease indicated the importance of their control for the protection of both humans and dogs while the recently introduced in Greece vaccination of dogs needs further field evaluation.

Acknowledgments

This research has been co-financed by the European Union and Greek national funds through the Operational Program «Education and Lifelong Learning» of the NSRF - Research Funding Program: Thales. Investing in knowledge society through the European Social Fund.

Keywords: leishmaniasis, public health, Greece, update

Posterboard: PB06

A Scoping Review Identifying Key Competencies for Development and
Management of Transdisciplinary One Health Research Teams
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One Health is an approach to research that unites multiple disciplines working together to better animal, human and ecosystem health to meet global health challenges. However managing diverse teams of disciplinary experts and non-academic actors is inherently complex and difficult to maintain. There is no unified understanding or solution for overcoming the barriers of integrative research required for One Health. This poster will present the results of a scoping review to identify the aspects that are critical for the successful creation and maintenance of transdisciplinary teams in a One Health research environment. The results of 31 peer reviewed articles plus grey literature will be presented on the poster. Barriers of transdisciplinary endeavors as well as key individual and institutional key competencies will be presented.

Keywords: Transdisciplinary, Competencies, One Health research

Posterboard: PB01

A Risk Governance Approach to Contemporary Disasters & Diseases: Case study of measles outbreaks in the City of Cape Town, South Africa
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Contemporary studies on measles outbreaks acknowledge the accomplishments of global, national and district immunisation initiatives. However, they also note failures leading to global resurgences of measles outbreaks, and that suggest systemic constraints in the management of measles outbreak risks.

To investigate the value of reframing measles outbreaks as a risk governance rather than a public health concern, the study applied a disaster risk lens. By applying an explicit transdisciplinary lens, the study sought to determine whether a more inclusive and non-sectorally biased approach would generate strategic insights on the progression of measles outbreak risk within Cape Town. This re-conceptualisation of a public health problem incorporated use of concepts such as risk governance deficits and disaster risk reduction to respectively describe the progression of measles outbreak risk and its management.

The study employed a mixed-methods approach. To identify and characterise measles outbreaks, quantitative data on measles cases were examined. The researcher also employed qualitative methods to identify and differentiate key health sector shortcomings and risk governance deficits associated with the progression of measles risk and outbreak management.

The study revealed that the nature of measles outbreaks is evolving. This is because outbreaks were demonstrably shown to be increasingly protracted, extending beyond more sub-district boundaries and increasing in intensity of attack. This indicated an upward progression in measles outbreak risk, with associated demands for greater resources for outbreak response.

The study also revealed several emerging and recurring institutional and operational shortcomings that contributed to the changing nature of outbreaks; these were particularly evident in measles notification procedures, as well as routine and mass immunisation processes.

These research outcomes were situated and examined within recent literature related to risk governance (drawing on the concept of risk governance deficits advanced by the International Risk Governance Council(IRGC)) to develop a measles-specific outbreak risk reduction model.

Keywords: risk governance, measles, transdisciplinary research, disaster risk reduction

Posterboard: PB19
Public Health Scientists’ One Health Awareness and One Health Network building in Korea
CHUN, Myung-Sun; CHO, Je-Yoel; RYU, Pan-Dong
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Under the One Health umbrella, scientists in public health and medicine need to aware of their roles as One Health professionals. The first One Health Forum in Korea in December 2012 aimed to motivate public health scientists to join the One Health collaboration. After the meeting seventy four participants, about 30% of total participants, responded to a questionnaire. 34% of the respondents worked for government agencies and 51% were veterinarians. About 90% of respondents answered that the One Health Forum improved their understanding of One Health, even though 30% of them did not know the One Health concept before the event.

About 90% of them are aware of importance and imperativeness of One Health in health science and public health. Cost effectiveness and communication are considered as benefits of the One Health approach. They believed that the One Health strategy would contribute to preventing and controlling emerging diseases, securing food safety, conserving environment and evaluating health policies. However, some challenges were noted; communication among health professionals and domains, political support, evidence based approach of One Health as well as One Health education needed improvement. The respondents suggested that building an open network for researchers in in animal, human and ecosystem health is a priority. 89% of the respondents answered that they would join other upcoming One Health meetings. The One Health Forum Korea is expected to play a pivotal role in connecting the public health scientists nationally and globally, in response to the One Health action plan of 2012 Global Risk Forum, “network of network.”

Keywords: One Health Awareness, network building

How Can We Improve Foot and Mouth Disease Policy through One Health Approach; A Delphi Survey
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The foot and Mouth disease outbreak in South Korea in 2010-11 caused severe economic and social damage on the local communities. Several reports on lessons learned from the outbreak were published. However, they did not pay much attention to communication and psychosocial factors which are essential in the One Health approach. Eighteen experts in veterinary medicine, human medicine, livestock industry, public media, government agencies and a non-governmental organization were invited to participate in a Delphi survey to build a One Health strategy to control FMD. A questionnaire was sent to the participants by e-mail to identify main problems and find solutions of FMD prevention and control through the One Health approach. Their first responses were sorted in three categories of policies and rules, resources (technique and professional manpower) and psychosocial factors and the second questionnaire was sent to prioritize and reevaluate the survey results. According to the survey results, the failure to respond in a prompt manner against the FMD outbreak was caused by an inadequate surveillance system and poor communication and collaboration among the responsible agencies. Shortage of manpower and information, especially in epidemiology and vaccine preparation, was criticized. Lack of livestock farmers’ awareness and readiness to FMD, loss of trust in government policies and the inhumane culling process could have resulted in psychosocial issues. The participants agreed that the One Health strategy can improve the FMD policy, communication and information sharing, education and training health professional against FMD, which would develop a more systematic network for disease prevention, recover trust among related people and motivate rapid col-
laboration during the outbreak.

Keywords: Foot and Mouth Disease, One Health
Posterboard: PB15

**Nepal: a OneHealth pilot project for the early detection of avian influenza?**
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"Increase early detection of avian influenza in rural Districts in Nepal to prevent epidemics through the creation of a One Health Unit and community engagement to minimize economic losses and improve human and animal health"

In Nepal avian influenza health risk includes 31 recent H5N1 outbreaks (ECTAD, May 2013) with 42'653 cases of poultry (100% case-fatality rate). The response focuses on animal case-detection - limited human detection and no cross-mapping. In 2011, 79'681 animals were destroyed, impacting on the food production of households vulnerable to economic shocks (UNDP). The perspective of economic loss leads the population to hide H5N1 suspected cases (Kathmandu Post, January 2013).

Bordering China is reporting H7N9 cases and 37 deaths (WHO, May 2013). In Nepal, mechanisms to detect human avian influenza cases are weak along the Himalayan (1236 km) and Indian (1690 km) borders.

Nepal progressed towards MDG1: the proportion living below national poverty line decreased from 42% (1996) to 25.4% (2010) - with disparities across geographical and socio-economic status. 41% of children below five are stunted (NDHS, 2011). Despite the economic impact of poultry loss, there is neither government provision for financial compensation, nor a political will to develop a social safety net.

The project will pilot an OneHealth initiative in affected Districts, through a “One Health” community network, trained, supported and engaged with early detection and economic loss mitigation measures with key stakeholders. A District “One Health surveillance Unit” will detect, sample and map cases (animal & humans) involving Civil Society Organisations and private health Institutions. A Central Rapid Response Team (RRT) will be technically strengthened to support to Districts. New tools will include mobile phones for health & veterinary community workers; community reporting model for the “Ward committees” and District electronic surveillance tool including a GIS software to compile and analyse the data.

Keywords: Nepal, Avian Influenza, OneHealth, early detection, community, human health
Posterboard: PB21

**Global Eating Disorder**
OZAD, Ulvan (1); KAYIKCI, Cihan (2)
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Developments in communication technologies, especially the “cyber world” is the most influential factor on globalisation. This gave a great opportunity to processed food companies mainly initiated in developed countries to promote themselves “globally”; and, with their competitive prices, well-structured marketing strategies and appetite-increasing ingredients, global consumption is achieved. Personal, social, economical and psychological factors were greatly influential. A great outcome of this situation is creation of a global eating disorder manifested as metabolic syndrome, characterised with central obesity, diabetes, hypertension and hypercholesterolaemia. The aim of this study is to investigate the multifactorial globalisation process of metabolic syndrome which is addressed as a global eating disorder rather than a simple medical concept.

Keywords: Global, eating, disorder
Posterboard: PB16
A Preliminary Study On Pesticide Usage On Golf Courses In Northern Ireland And Potential Risks To Golfers And The Environment
KEARNS, Cathriona Ann; PRIOR, Lindsay
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The Pesticide hazards are well documented on their capacity to adversely affect public health and the environment. This paper presents information from a survey of pesticide usage practices on golf courses in Northern Ireland in 2008 and highlights the possible risks for golfers and for the environment from the use of the chemicals. The findings suggest that pesticides are being applied at high rates, on average 2.2kg/ha. The most heavily treated areas of courses are greens and tees, mainly treated with fungicides. The principal reasons for use are; to control fusarium, leatherjackets, earthworm casts and daisy. The principal pesticide types used overall are herbicides, with MCPA the most frequently used active ingredient. The most regularly used pesticides leach readily in soil and have been found in groundwater samples in Northern Ireland. The majority of compounds reported used are listed as being toxic to wildlife with some also being very toxic to the aquatic environment. Many of the pesticides used have the potential to adversely affect human health. Early removal of spraying notification found in the study may increase the risk of golfers coming into direct contact with pesticides.

Keywords: pesticide, risk, amenity, golf, herbicide

Epidemiology Of Mycobacterium Bovis In Humans And Cattle In Northern Ireland, 2000-2012.
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Mycobacterium bovis can cause TB in humans and is the principal cause of bovine TB. While M. bovis infection in animals and humans is relatively uncommon, it remains an important zoonotic infection.

Aim
Review epidemiology of M. bovis in human and cattle populations in Northern Ireland to examine evidence of transmission.

Method
Human TB cases caused by M.bovis reported to the Public Health Agency Enhanced Tuberculosis Surveillance scheme and animal disease statistics from DARDNI for Northern Ireland between 2000 and 2012 were reviewed.

Results
22 human cases of M. bovis reported 2000-2012 (≈3% of human TB cases), mean age 60 years (range 20-89 years), 50% of cases older than 60 years. 27% of cases lived on a farm with 27% also consuming unpasteurised products. Annual incidence of bovine TB in herds 7.32% (range 5-10%), annual animal incidence 0.66% (range 0.4-0.9%). Diagnostic disclosure in live cattle increased sharply (40%) in last 2 years following a significant decrease in previous 7 years. There were 1,386 new reactors herds in N. Ireland in 2011. No significant increase in disclosure of disease at post mortem examination of cattle for human consumption.

Conclusion
Eradication of TB in animals to control human infection remains a subject of discussion. Public health response for contacts of infected animals is based on a risk assessment (NICE TB Guidance). The human epidemiology of M. bovis does not indicate recent transmission from animals with current infection in N. Ireland suggesting that current public health approach is appropriate.

Keywords: Mycobacterium Bovis, Tuberculosis, Cattle, Humans

NADIR, European Network for Animal Diseases Infectiology Research
LANTIER, Frederic (1); STOCKHOFE, Norbert
NADIR, the European “Network for animal diseases and infectiology research » facilities, has got started 4 years ago. Aim of NADIR is to facilitate the development of Europe’s high level bio-containment facilities for which there is a strong demand from both the public and private sectors in the fields of medical and veterinary research. Laboratories have to respond to upgraded ethical and safety regulations whilst providing reliable answers in term of physiopathology for emerging infectious diseases at risk for animal and/or human populations (diagnosis, transmission conditions, risk analysis, therapeutic targets) or for vaccines and therapeutic trials.

The project has intensified communication between the project partners both in terms of exchange of knowledge and know-how practices, and increased resources sharing between partners and other related projects, notably but not exclusively animal and cell lines, reagents specific for livestock species and high throughput molecular tools. Joint researches on animal models and development of infectious process monitoring tools have been performed to improve the services currently provided by the infrastructures of the project. NADIR has provided about 50 research projects from the public and private sectors with access to the 15 state-of-the-art facilities owned by the project partners.

Coordinating activities of NADIR benefit to the principal European animal infectiology platforms collaborating on most important animal infectious diseases and zoonosis. Its action should be extended and connected to similar infrastructures worldwide to improve resource exchanges and biosafety/biosecurity regulations for a concerted improvement of our capacities to evaluate and prevent risks of transmission to human populations of highly transmissible animal pathogens. The aim is to reduce overlaps between infectiology infrastructures, thus enabling each partner to specialize and the community to address new scientific and technology issues.

Keywords: infectious diseases, livestock, animal facilities (level 3), Infrastructure Network,

Posterboard: PB20

Investigation Conducted to Determine the Total Levels of Arsenic (As) and Selenium (Se) and Other Trace Elements in Rice Purchased From supermarkets In North Africa and the Middle East (NA & MIDEA)

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Presents the results of a market basket investigation conducted to determine the total levels of Arsenic (As) and Selenium (Se) in rice purchased from supermarkets in NA & MIDEA. During October and November 2006, 280 samples of rice were collected from numerous large food supermarkets in towns and cities in NA & MIDEA. The average level of As in rice from NA & MIDEA is 0.22 mg/kg, comparable with average levels in Australia although not representative of the levels in rice from the USA. The differences in As levels in rice from the nine countries of origin were found to be significant. The rice with the lowest grain As concentration, 0.05 mg/kg, was a short grain variety from Egypt, while the highest, 0.22 mg/kg, was found in a long grain rice from Australia.

Keywords: Total Levels of Arsenic and Selenium, North Africa and the Middle East, rice

Posterboard: PB10
Disease Burden and Mental Health Systems Capacity: A WHO Atlas Study of 117 Low- and Middle-Income Countries

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Background. Mental disorders like depression and anxiety represent leading contributors to the global burden of disease. However, treatment coverage varies dramatically, ranging from less than 10% to more than 90% across low- and middle-income countries (LAMICs). Studies have yet to examine whether the capacity of mental health systems might be adversely affected by the burdens of unrelated conditions such as HIV/AIDS. Understanding the relationship between the treatment of mental and physical disorders has the potential to inform integrative approaches to care. In this study, we examine whether the magnitude of disease burden from communicable, perinatal, maternal and nutritional conditions—commonly referred to as Group 1 diseases—is inversely associated with mental health systems capacity in LAMICs.

Method. Multiple regression analyses were undertaken using data from 117 LAMICs included in the 2011 World Health Organization (WHO) Mental Health Atlas. Capacity was defined in terms of human resources and infrastructure. Regressions controlled for effects of political stability, government health expenditures, income inequality and neuropsychiatric disease burden.

Results. Higher Group 1 disease burden was associated with fewer psychiatrists, psychologists and nurses in the mental health sector; as well as reduced numbers of outpatient facilities and psychiatric beds in mental hospitals and general hospitals ($t = -2.06$ to $-7.68$, $P < 0.05$). The magnitude of these effects are substantial, whereby—for example—a country with half the Group 1 disease burden of another is expected to have twice as many psychiatrists.

Conclusion. Evidence suggests that mental health systems capacity in LAMICs may be adversely affected by the magnitude of their Group 1 disease burden, indicating a resource allocation dilemma in which Group 1 diseases are privileged. Implications are discussed, including the recommendation of an integrative approach in which treatment of mental disorders no longer competes for limited financial and human resources, but rather is blended into primary care.

Keywords: health systems, resource allocation
Posterboard: PB18

Bacterial diseases burden, antibiotic use and resistance in Zambia, Congo, Mozambique and Tanzania: An urgent need of sustainable surveillance system

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A review of the published and unpublished literature on bacterial resistance and antibiotic use both in human and animals was performed. Eighty eight articles/reports from Democratic Republic of Congo, Mozambique, Tanzania and Zambia were reviewed. Articles concerning use in humans were more than articles/reports describing use of antibiotics in animals. Generally, in these countries, bacterial diseases contribute significantly to the morbidity and mortality of humans and animals. There is an increasing trend in the incidence of antibiotics resistance. Of major concern is the increase in multidrug resistance Streptococcus pneumoniae, Escherichia coli, Klebsiella pneumoniae, Staphylococcus aureus, Vibrio cholera, Non-typhoid Salmonella and other pathogens responsible for nosocomial infections. In Tanzania more than 25% of Escherichia coli isolates from urine were found to be resistant to third generation cephalosporins while in Mozambique about 92% of Escherichia coli were multi-drug resistance (MDR).
In DRC Congo about 20% of Salmonella typhi were found to be MDR. The rate of resistance of Streptococcus pneumoniae to penicillin in these countries ranges as low as 14% in Mozambique to 67.8% in Tanzania. Staphylococcus aureus were found to be the commonest caused of skin and soft tissue infection and about 20% were found to be MRSA. Clinical microbiology services in these countries need to be strengthened in order to be able to conduct coordinated surveillance for antimicrobial resistance and provide data for local treatment guidelines and a national policy to control antimicrobial resistance. While the present study does not provide conclusive evidence to associate the increasing trend in antibiotic resistance in humans with the use of antibiotics in animals either as feed additives or veterinary prescription, we strongly recommend a one health approach of systematic surveillance across the public and animal health sectors as well as the adherence to the FAO-OIE-WHO recommendations for non-human antimicrobial usage.

Keywords: Antibiotic, Resistance, Congo, Mozambique, Tanzania and Zambia

Posterboard: PB11

Food Safety And Environment Protection Problems

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At the beginning of the 21st Century, we are facing some major problems: One is the environmental problems, such as the global warming, climate change, GMO and LMO’s, loss Agrobiodiversity and ozone layer depletion, acid rains and pollution. Providing Food testing work to monitor our food supply for hazardous chemicals and contaminants to ensure human and animal safety, and that often means testing hundreds of samples for hundreds of chemical compounds every day, and with a fast turnaround of results. To meet the steady demand of food supply, application of fertilizer is indispensable in modern agriculture. Role of fertilizers has already been proven by many countries with green revolution and by attaining food self-sufficiency within short period of time. Actually, application of synthetic/chemical fertilizers not only supplies essential nutrients to food crops but also provides them in an easily available manner. Therefore, these fertilizers can quickly enhance the growth and productivity of food crops and are quick to gain popularity. However, extensive use of such fertilizer leads to serious environmental concerns. Nitrate leaching and surface/ground water pollution due to increased use of fertilizer is directly related to human health problems. Similarly, freshwater contamination by chemical fertilizer/fertilizer residue is one of the major causes of eutrophication. Global agricultural production should focus on both food and nutrition security. Ensuring that, sufficient nutritious food is available and accessible, and produced in a sustainable manner, is a great challenge for the agricultural sector. Output will need to be increased while managing scarce natural resources, reducing carbon intensity and adverse environmental impacts throughout the food chain, enhancing the provision of environmental services such as carbon sequestration and flood and drought control, and conserving biodiversity. Agricultural intensification is the answer, but it must be economically, socially and environmentally sustainable.

Keywords: At the beginning of the 21st Century, we are facing some major problems: One is the environmental problems, such as the global warming, climate change, GMO and LMO’s, loss Agrobiodiversity and ozone layer depletion, acid rains and pollution. Providing Food

Posterboard: PB26


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The risk of occurrence of exotic, new (emerging), re-emerging as well as endemic diseases has increased substantially, particularly due to globalisation and intensification of animal production. While the need for effective animal health surveillance is widely recognised for the management of such threats, the currently used systems do not take optimal advantage of recent advances in epidemiological approaches, and investment is being constrained due to significant financial budget reductions in most countries. The overall aim of RISKSUR is to develop decision support tools for the design of cost-effective risk-based surveillance systems that integrate the most recent advances in epidemiological methodologies. Methods and tools for comparative epidemiological and economic evaluation of different surveillance system designs will be developed, and made available through a web-based decision support tool. The project will provide decision makers with such a validated tool tailored to their needs that allows the design of more cost-effective animal health surveillance and thereby reduces direct and indirect impact of animal disease on European citizens.

Keywords: animal surveillance, cost-effective, tools

Posterboard: PB24

The Effects of Injury and Illness Prevention Program to Improve Occupational Health Risk Perception and Safety Behaviors among Rice Farmers in Nakhon Nayok Province, Thailand
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Rice farmer is a main occupation of Thai agriculturists for the past until present. Rice farmers in Thailand still expose to unacceptable levels of occupational risks. Most of them do not change their behaviors regarding to occupational safety even they know that inappro-
Leptospirosis is a zoonotic disease of epidemic potential, especially after heavy rainfall. It occurs throughout the world and is emerging as an important public health problem, affecting mostly vulnerable populations. Humans usually acquire leptospirosis through direct contact with the urine of infected animals or a urine-contaminated environment. The change of weather patterns such as heavy rains and floods, increase the risk of occurrence of severe epidemics of leptospirosis. About ten million people are affected by natural disasters in the Region of the Americas annually, with the majority of them being floods (38%) and storms (38%). Since the implementation of the revised version of the International Health Regulations (IHR), which was enacted in June 2007, events considered as a potential public health emergency of international concern (PHEIC) are recorded by the Events Management System (EMS) that supports the IHR. Leptospirosis is among the “top 10 events of infectious hazard” reported in the EMS globally and for the Americas it is the third infectious hazard; confirming the importance of this disease as a potential threat to public health. For the Region of the Americas, a study conducted by the Pan American Health Organization (PAHO) shows that 70% of PHEIC occur in the animal/human health interface, which includes outbreaks of leptospirosis. Reviewing the HealthMap database that utilizes different online sources for real-time surveillance of emerging public health threats, 530 alerts for leptospirosis were found between 2010 and 2012 worldwide. More than half of them (341 alerts) were located in the Americas, particularly in Brazil (142 alerts), Nicaragua (45) and Argentina (43). In the framework of One Health and with the Global Leptospirosis Environmental Action Network (GLEAN) support, PAHO/WHO developed technical cooperation with the countries on this topic, including analysis of the priority areas for intervention, risk stratification and possible drivers.

Keywords: Leptospirosis, Events, Americas, Outbreak, Flood

Averting The Extinction Of Experience

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One pervasive consequence of urbanisation is that the human population is becoming increasingly isolated from experiences of the natural world. This is an important public health issue because access to nature leads to benefits for many aspects of our lives including physical health, mental well-being, social cohesion and crime rates. This “extinction of experience” is also a major contemporary environmental issue because it fundamentally transforms how people value the natural world around them. However, we do not yet know which features of the natural environment deliver benefits to human well-being. We are addressing this issue in a new trans-disciplinary research program bringing together ecological, social and public health researchers to understand the dynamics of the extinction of experience and what can be done to avert it. We have conducted a foundational survey in Brisbane, Australia to understand what kinds of experiences people actually have with nature and to generate self-reported wellbeing measures. This survey will be replicated in other cities across the world. In parallel to deploying this survey we compiled ecological information on the biodiversity and ecosystems that exist across the city, allowing us to examine objectively the biodiversity experiences that people have when they visit different locations. This unique and powerful combination of datasets is allowing us to explore which features of the natural environment deliver human well-being benefits, and consequently how biodiversity conservation efforts might help maximise these benefits. This information is not only essential for public health policy development, but also for fo-
The Influence of Lead Speciation in Soil on Human Bioaccessibility

LEAD is a toxic element which is hazardous for human health by damaging brain and nervous system, causing anemia, increased blood pressure and slowed kidney function. When lead soil contamination is identified, an assessment of human relative bioaccessibility is therefore required. Nowadays, emerging methods are used for pollutants’ bioaccessibility assessment. They give good indication on human bioavailability of lead, being more accurate, but the effect of chemical speciation on contaminant bioaccessibility is scarcely considered. Tessier extraction procedure is a method which aims at releasing sequentially less labile metals from soil which can be mobilized under increasingly severe weather conditions. The hypothesis of this study was that the results of bioavailability extraction is closely related by the labile fractions extracted through Tessier procedure. To test this hypothesis, soil samples from a highly contaminated industrial area were investigated for determination of labile fractions of lead in soil which were correlated with its bioaccessibility. Results show that there is an visible interdependence between lead speciation and its bioaccessibility, therefore, we suggest that a combination of these methods should be taken into consideration in order to increase the confidence in bioaccessibility test results.

Keywords: lead, soil, bioaccessibility, Tessier, health

Wild Birds Serological Surveillance for West Nile virus, Greece 2009-2013

The present study deals with the successive application of two multivariate statistical techniques, namely Hasse diagram technique (HDT) and self-organizing map (SOM) for assessment of river water quality. The research scheme integrates pattern cognition capabilities of SOM, decision support abilities of HDT and expert water quality information. The proposed approach is carried out by using long-term water quality monitoring data from three river catchments in Bulgaria: Struma River, Mesta River and Matitsa River.

The Hasse diagram technique (HDT) is a multi-criteria application of partial order theory based on discrete mathematics. The ranking options of HDT in complex multi-dimensional environmentally derived data sets are still relatively rarely used compared to other multivariate techniques. As preliminary step for reduction of water quality parameters and sampling locations the SOM is used. Additionally, expert information as legislation norms is incorporated in order to create the background for environmetric expertise.

The proposed approach makes it possible the prioritization of water quality parameters, the detection of sampling locations patterns and their ranking. The results could be used for optimization of the monitoring scheme and water management decision making.

Keywords: Water quality assessment; Hasse diagram technique; Self-organizing maps
From 2010 until nowadays, the largest European West Nile virus (WNV) disease outbreak takes place in Greece with more than 524 laboratory confirmed cases. In these years, our team has performed a study to evaluate exposure of various avian species to WNV. A serological surveillance was performed in 620 serum samples from wild birds hunter-harvested, found dead and trapped since 2009 in mainland Greece.

Various interesting results were obtained and reported during the study: a) Positive sera were obtained from birds hunter-harvested up to 8 months prior to the human outbreak in 2010. b) Findings of past exposure of migratory birds to WNV upon their arrival in Greece during autumn migration suggested avian species with similar migration traits as candidates for the introduction of WNV into Greece. c) During the second year of the outbreak, avian sera were found positive in every area that human cases have been reported. In contrast, no avian sera were found positive from areas where no human cases were reported d) Distance from permanent water and altitude were recognized (two-step cluster analysis) as environmental factors associated with seropositive results, indicating high-risk areas. These areas were reported and human cases were later recognized in many of these, confirming the previous analysis.

These findings demonstrate the importance of wild bird surveillance for zoonotic diseases such as West Nile virus and that pre-emergence surveillance in wildlife can be a powerful tool as part of an effective pre-warning system to prevent and/or reduce the impact of emerging zoonotic diseases.

Acknowledgments

The research leading to these results received partial funding from 1) the European Union Seventh Framework Programme (2007-2013) under grant agreement no. 222633 (Wild-Tech) 2) “Integrated Surveillance and control programme for WNV and malaria in Greece (MALWEST)”, implemented through Operational Programme entitled “Human Resources Development” of NSRF 2007-2013

Keywords: West Nile virus, wild birds, early warning, Greece

Posterboard: PB05

One Health Collaboration Network In a Highly Populated Area of Livestock and Humans in the Netherlands

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The aim of the One Health network of medical, veterinary and environmental professionals, is to share knowledge of zoonoses, to initiate and stimulate research and to advice local and national authorities.

The network organises meetings and initiates collaborations and projects. The core group of the network consists of veterinarians with different specialities in companion animals and
livestock, GP’s, clinicians, public health and environmental professionals.

Activities

Education
- Excursions to farms
- Education about zoonoses for GP’s, occupational physicians, agricultural students and farmers
- Annual conference with a zoonotic theme

Research and projects
- Seroprevalence of zoonoses in veterinary students at the start and at the end of training
- Risk assessment of agricultural day care and developing educational materials
- Improve communication of livestock associated MRSA in Dutch hospitals

Policy
- Influencing policy authorities of One Health

Communication
- The network organises meetings three times a year
- Encourages conversations between farmers and citizens
- Interactive website. An interactive website has been developed for professionals to exchange scientific and actual information on zoonoses. Professionals receive an email when news is posted on the website.

Keywords: One Health, Network, Livestock, Humans, Netherlands

Posterboard: PB25

One Health collaboration network in a highly populated area of livestock and humans in the Netherlands

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Background

In the Netherlands, the province of Northern Brabant has a high density of livestock (6760/km2) and humans (500/km2). In 2007 the first visible side effects of this close encounter showed up: a large Q-fever outbreak. Zoonoses like LA-MRSA, Q-fever, Salmonella and influenza are prevalent in livestock. These zoonoses might pose a risk for occupationally exposed persons, but also for general public who are living nearby or visiting farms. During the Q-fever outbreak we discovered that medical doctors and veterinarians did not collaborate as much as needed and were not aware about their overlapping professions.

Methods

We started a One Health collaboration network in the province with veterinarians, public health and environmental officers, general practitioners and clinicians. The objective of the network is to share knowledge of zoonoses, to initiate and stimulate research and to advice local and national authorities. We started with a small group of professionals in 2010, which expanded to 23 persons with different expertise. This core group has three meetings per year.

Results

At present many projects and studies are initialized, like a seroprevalence study on several zoonoses, risk assessment of agricultural day care and communication about LA-MRSA in hospitals. Next to core group meetings the network provides information for a wider audience and organized excursions to veal, poultry, dairy cow, dairy goat and pig farms. An online platform has been developed for professionals to exchange scientific and actual information on zoonoses. Every year a conference is organized with a zoonotic theme. There is regular contact with local and national government to keep this topic on the agenda.

Conclusion

The network enhance and provides opportunities for collaboration between the human, animal and environmental interface. With the One Health approach the network is influenc-
ing policy and provides up to date information about zoonoses to professionals.

Keywords: Network, multidisciplinary, zoonosis, One Health, policy

Posterboard: PB02

The Bulgarian Swiss Joint-Research Project PhytoBalk – an example of application of biotechnological methods for the conservation of valuable medicinal plants germplasm and region independent biotechnological production of plant derived pharmaceuticals

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Medicinal plants are considered to be a group of special interest due to their importance for human survival and potential of overexploitation. According to the World Health Organization, today about 80% of the earth population still relies mainly on medicinal plants as traditional treatment method. Threats facing medicinal and aromatic plant species in Europe are very similar across the world: unmonitored trade, over-exploitation, destructive harvesting techniques, as well as habitat loss and habitat changes result in diminution of population sizes, genetic diversity and eventually lead to extinction of the species. In the countries of the former Eastern Bloc, the deregulation of state-controlled commerce resulted in the increase of wild collection which has a negative impact on biodiversity.

The PhytoBalk project, a Bulgarian-Swiss Joint Research Project financed by the Swiss National Foundation (SNF) from 2013 to 2016, strives for the development of standardized biotechnological protocols: on the one hand to serve the conservation of valuable medicinal plants by collecting systematically plant material outside their natural habitats (ex situ), and on the other hand to provide for the technology for production of pharmaceutically relevant plant raw material and secondary metabolites of standardized quality thereof in the laboratory (in vitro).

In order to illustrate the scientific approach of the project, intermediate results of biotechnological and phytopharmaceutical studies on Artemisia alba and Hypericum richeri, two less studied species than their famous relatives Annual Wormwood (treatment of Malaria) and St. John’s Wort (treatment of mild depression), are presented.

Biotechnological technologies open up opportunities for providing the basis for production of plant based, standardized and cost-effective phytopharmaceuticals to all countries, independent of their agricultural possibilities or wild natural resources. Thus the project contributes to build up opportunities for the use of nature’s pharmacy for countries around the globe.

Keywords: Conservation of biodiversity, valorization of medicinal plants, biotechnology of phytopharmaceuticals, plant tissue culture, bioactivity screening, Swiss enlargement contribution, Balkan region, Eastern Europe

Posterboard: PB17

Perspectives For Public-Private Partnership For Medical Home Care In Bulgaria

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The modern Bulgarian Health Care System is facing the challenges of both the worsened national economic environment and the need for new strategies for dealing with the full scope of resources spent and results achieved. Due to the fast process of population ageing, chronic disease and disability as well as the emigration of young people from the country, Bulgaria is fighting the headlong rise of ex-
penses for treatment and maintaining of the health state of its people. The lack and deficiency of suitable health care institutions for post-medical treatment and constant care, as well as the inefficient spending of financial resources from the healthcare installments are only part of the problems in the Health Care System. The decrease of medical care personnel (shortage of medical nurses, physicians, rehabilitation specialists etc.), particularly in small towns and remote populated areas restricts the access to medical help and quality healthcare services to patients in those areas. The provision of adequate care for the needing patients represents a great challenge to our Social System. The consecutive development of the Social and the Health Insurance Systems is of vital importance, as in the future, the problems connected to the need for home medical care will be on the rise.

In the present elaboration the possibilities for public-private partnership in the area of medical services at the patient’s home are being examined based on a study of the population’s needs and the medical specialists’ opinion, as well as on the current legislative system. The inquiries have been held among 300 bedridden patients in hospitals, who are directly related to the activity “Medical Home Care”, as they represent the main target group for this service. The second study has been held among 400 specialists working in the country’s medical institutions.

Keywords: Medical Home Care, Bulgaria, Public-private partnership

Posterboard: PB04
Why Animal Health and Welfare Matters To Human Health
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World Society for the Protection of Animals, United Kingdom
Chair: BAKER, Mike
There is no such thing as a single issue with a single solution. Human health is closely linked to animal health and welfare. Consequently, the development of integrated responses to global public health challenges is required. These include; working to control the transmission of canine rabies to people through sustainable mass dog vaccination programmes; integrating humane and sustainable livestock production; addressing the role that better welfare standards for wildlife plays in the spread of zoonotic diseases; and preparing communities for disasters so that
both their own and their animals’ welfare is protected. Here we will demonstrate how improvements in animal welfare globally will have a positive impact on a range of human health and environmental issues.

The mistreatment of animals through inhumane measures, such as culling, is proven in many settings not to effectively control rabies. Although a wholly preventable disease, rabies still kills an estimated 55,000 people every year (WHO, 2005). The vast majority of human cases are caused by dog bites, which often results in the unnecessary culling of dogs through shooting or poisoning. However, a growing evidence base demonstrates that the mass vaccination of dogs is the only scientifically proven and humane way to eliminate canine rabies and help to safeguard dogs and humans from this deadly disease. The response to rabies provides evidence of how protecting animals can contribute to saving human lives.

Around a billion of the world’s poorest people depend on animals for food production and livelihoods. Original research commissioned for WSPA reveals how humane and sustainable agriculture can deliver effective solutions for food production: evidence and real examples will show that ensuring the welfare and responsible use of animals can be a highly effective tool in achieving sustainable development, safeguarding food and water security, delivering poverty alleviation, enhancing nutritional security and human wellbeing and also produces significant positive outcomes for the major global concerns of climate change and public health. In contrast, further research demonstrates the risks posed to the global environment and societies from unsustainable production methods and increasing consumption patterns of livestock products. Development of these solutions requires multidisciplinary expertise and commitment, bringing together economists, nutritionists, welfare scientists and farming practitioners as well as business and civil society. Examples of these solutions will be presented here.

Wild animals play a complex and important role in the maintenance of endemic and emergent diseases, which represent a significant threat to human health. This raises challenges for the management of wild animal populations. Human-wild animal interactions represent a critical point for zoonotic disease emergence and transmission, which is continually influenced by socio-economic factors such as rapid globalisation, urbanisation and demand for live wild animals and their products. Strategies that integrate animal welfare into prevention and mitigation measures are more likely to prove successful in reducing the risks that zoonotic diseases pose to human health. Rather than solely attempting to eradicate the wild species that may harbour zoonoses, a practical approach focused on decreasing the contact rate among species and individuals at specific high risk interfaces would provide an effective sustainable solution. Furthermore, wild animals that are cared for appropriately and in accordance with acceptable welfare standards are more likely to be healthy, and less likely to contract or spread disease. Effective solutions will only come through a multi-disciplinary approach and in recent years there have been many calls for increased collaboration. Success will require reconciling ethics and values of multiple disparate disciplines (such as animal welfarists, economists, regulatory officials, conservationists, public health practitioners, and veterinarians).

Livestock are owned by 70 per cent of the world’s poor, who are also the group most vulnerable to the health impacts of disasters. As many aspects of their income and diet are derived from animals, the loss of livestock and working animals can leave whole communities facing a significant second disaster in the form of long-term malnutrition, food insecurity, debt and dependency.

WSPA’s development paper demonstrates how losing livestock can lead to decreased ability to access credit, reduced agricultural output and reduced nutritional intake. As a long term goal for this project, WSPA is engaging in pioneering research partnering with key global economists to develop a model to help calculate the economic loss of animals. This model will be the first of its kind and will support the movement in attempting to quantify the long term impact and / on resilience while identifying further solutions for health where com-
munities are reliant on livestock.

WSPA believes that global adherence to animal welfare principles will be instrumental in preventing emerging infectious diseases, including inter alia, zoonotic diseases from occurring and thus help stop these diseases from inflicting serious resource strains on national and international health services. We work with governments at all levels, IGOs, NGOs and communities to ensure positive solutions are being put in place for animals and people alike.

Keywords: animal welfare, zoonoses, nutrition, livelihoods, rabies

Session: MON6.1 Why Animal Health and Welfare Matters To Human Health
Mon 18.11.2013 • 15:15 - 16:45 • Room: Jakobshorn

Improving Public Health Risk Governance by Integrating Modelling with Concern Assessment

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Chair: DRESSEL, Kerstin Maja

Background

In the past decade, several (re-)emerging pathogens like H5N1 influenza, SARS, TBE, Dengue and Hantaviruses have come to the attention of Public Health professionals and have highlighted the need for focused and efficient risk assessment and management. The economic impact of the disease cases, and potential mortalities, on Public Health system and veterinary service are tremendous. Depending of the type of pathogen transmission, particular institutions (blood supplier; hospitals) or specific risk groups and at-risk professionals more likely to be affected and must be considered for further intervention and targeted public health measures.

In recent years, spatial and mathematical modelling techniques have become an important component of risk management in various fields and are increasingly an integral part of risk assessment for Public Health. The model outputs quantify disease risk in biologically and statistically meaningful and robust ways (see Figure of TBE risk in Sweden, below). They can therefore contribute to the evidence based planning of consolidated and efficient Public Health responses.

Similarly, social scientific findings of public risk perception or other concerns, including economic or financial aspects (‘concern assessment’) are increasingly considered to be important for designing an adequate risk management strategy (see for example: IRGC 2008, OIE 2011).

There is currently a wide and mutual gap in both perception and comprehension between the Public Health and modelling fraternities. To generate useful models for One Health risk management and risk communication, modellers need help from Public Health experts to tailor the outputs to Public Health needs, whilst Public Health professionals also need help to understand in more depth what relevant data the modellers can provide.

Within the EU-funded project ‘Biology and control of vector-borne infections in Europe’ (EDENext, www.edenext.eu) a new and innovative approach is being implemented to combine Public Health expertise with modelling skills and basic research on vector-borne infections caused by vectors such as ticks, sandflies, Culicoides biting midges, mosquitoes or rodents. Based on the experience from previous outbreaks, Public Health experts and modellers have joined forces to define and produce appropriate model outputs necessary to develop worst and best case scenarios and to use these to help propose improved risk management strategies including health and risk communication campaigns.

Objectives

The workshop aims to bring together scientists and Public Health practitioners concerned with the risk governance of Public
Health, particularly vector-borne diseases (VBD). These are of increasing global Public Health interest given ongoing changes in the environment, global trade and worldwide travel, and improved concepts of adequate risk and concern assessment are badly needed to enhance risk management. Innovative types of collaboration between Public health and modelling specialists will be presented and illustrated by current (social) scientific findings of ‘EDENext’. Workshop participants will discuss the experiences, challenges and possible solutions stemming from public perception of health risks and modelling aspects of Public Health risk governance. Targeted participants are Public and One Health management professionals and researchers from the fields of modelling, veterinary science, medical science, sociology, communication science and other relevant fields.

Based on these results two major themes will be addressed in a panel discussion:

1. Identifying new ways in which the One Health approach can help to define new areas of technical integration between Veterinary and Human Public Health and risk modelling.

2. Illustrating improved risk governance of Public Health by combining quantitative spatial and temporal risk assessment with the more qualitative social scientific knowledge of public risk perception.

For each topic, a brief introduction (approx. 5-10 Min.) will be presented to stimulate the discussion, which will be moderated and will involve both panel members (Public Health and One Health management professionals (CDC, ECDC, One Health, OIE, RIVM) and researchers. The audience will be actively encouraged to contribute their views and pose questions to the panel. The moderator will summarize the discussions to produce recommendations for future improvements for the risk governance of One Health issues.

Each theme will be allocated about 45 minutes so that the total workshop session will last approximately 90 minutes

Aims and Outcomes
The aim of the workshop is to illustrate how Public Health and modelling communities can effectively interact and to identify the steps needed to reach a common understanding of current findings, challenges and required solutions in the risk governance of Public Health in a trans-disciplinary discussion. Conclusions of the discussion will be taken, and key findings will be summarized in a workshop report to be published on the EDENext website and submitted for publication on the One Health Summit platform. In the long term, the results will provide a basis for interdisciplinary exchange on the interaction between modellers and Public Health and social scientific researchers to improve disease risk and emergency management strategies, preparedness and health communication.

**Keywords:** Public Health, Vector-borne diseases, modelling, risk perception, risk governance

Session: WED1.3 Improving Public Health Risk Governance by Integrating Modelling with Concern Assessment
Wed 20.11.2013 • 08:30 - 10:00 • Room: Parsenn

**Diagnosis and surveillance of infectious diseases in wildlife (WildTech)**
- **Session 1 & Session 2**

HANNANT, Duncan
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Chair: HANNANT, Duncan

Project background:
WildTech (Novel Technologies for Surveillance of Emerging and Re-emerging Infections of Wildlife) is supported by the European Commission under the 7th Framework Programme for Research and Technological Development and addresses the problem of the increasing prevalence of new and emerging diseases arising from wildlife.

The project aims to:
* Apply NA microarray technology and high throughput serological screening to detect known and novel infectious agents in wildlife populations. These technologies are used to assess the spread of selected priority diseases (proof of concept) using historical samples and those collected during the project.

* Monitor and model patterns of wildlife dis-
ease spread and the risks associated with them. Ultimately this epidemiology framework will be used to reduce the risk of further potential epidemics by producing a generic action plan in case of emerging epizootics among wildlife.

* Develop of a state of the art wildlife disease data management system with mapping capability for use in Europe and beyond.

**Project developments**

* Nucleic acid and serology arrays have been fabricated and tested to detect pathogens in wildlife. Non array-based technologies (e.g. proteomics, luminex arrays, next generation sequencing) are also being investigated. Validation requirements and potential applications of these new methods for wildlife disease surveillance are being analysed.

* Two technology transfer workshops have taken place to introduce the basic principles underlying the new technologies being developed by the WildTech project: the first was a theory-based workshop held at the joint EWDA/WDA conference in Lyon in July 2012. The second was a hands-on wet-lab workshop held at the AHVLA in October 2012, attended by 8 colleagues from our Associate and Collaborative Partners.

* Our pool of Associate and Collaborative Partners is growing and they, along with our Project Partners, continue to provide us with samples for surveillance and technology validation.

* We have developed the new technologies in our Partner laboratories and delivered the SOP for processing and transportation of tissue and serum samples. Large numbers of samples have been processed either for evaluating / validating the developed arrays, or for surveillance.

* The epidemiology aspect of the project is delivering the mathematical, statistical and epidemiological tools necessary for pan-European wildlife disease surveillance design, testing and support. Tasks undertaken and in progress include qualitative risk assessment for developing wildlife sampling strategies, epidemiological analysis of historic and new field data to quantify spatial and temporal patterns of disease incidence (prevalence and geographic distribution) and assessing the consequence of changing pathogen distributions using statistical and dynamic modeling. Finally, the evidence derived from these risk assessments will form the basis of recommendations for appropriate and proportionate management and policy actions.

* The WildTech database has been developed. The goal is to have sample data and array results stored and accessed for epidemiological analysis that can be further developed to form part of a pan-European surveillance system. Wildpro® (the open-access electronic encyclopaedia on the health and management of free-ranging and captive wild animals, and (re)-emerging infectious diseases), continues to be updated with new pathogens as part of the WildTech project.

**Keywords:** Wildlife, emerging disease, diagnosis, epidemiology, action plan

**Session:** TUES.1 Diagnosis and surveillance of infectious diseases in wildlife (WildTech) - Session 1

**Tue 19.11.2013 • 13:30 - 15:00 • Room: Jakob-shorn**

**An unrecognized one health threat: Leptospirosis**

JANCOLES, Michel F. (1); BERTHERAT, Eric (2); HARTSKEERL, Rudy (3); BELMAIN, Steve (4); MUNOZ-ZANZI, Claudia (5); DENIS, Jerome (6); ALDIGHIERI, Sylvain (7); SCHNEIDER, Cristina (7); DURSKI, Kara (2)


**Chair:** BERTHERAT, Eric

**Background**

Leptospirosis is likely the most widespread zoonotic disease in the world and among the ten top infectious human hazards. This global One Health risk is surprisingly neglected. Few operational guidelines exist because the transmission dynamics are badly understood, symptoms are not specific, and detection is
not made early enough. The diagnosis is complex (more than 250 different serovariants) and confirmation is often not available. This explains why Leptospirosis does not receive enough attention by public health authorities, the medical industry, and the research community.

Indeed, it is a serious public health concern because its global distribution, especially in warm and humid countries, its epidemic potential linked with climate change, its presence in animals and natural environment and its high mortality risks (fatality rate up to 25% if not properly treated). A WHO experts’ group estimated an annual incidence of 873,000 cases with 49,000 deaths, globally.

Most mammalian species are natural carriers of pathogenic leptospires. The risk of acquiring this bacterial infection is associated with direct contact with animals or through an infected environment such as surface water or sewage contaminated with urine of infected animals. Severe post disaster and floods outbreaks have occurred over the last decade affecting slums and subsistence farmers living in poor sanitation conditions. The disease is often recognized as an occupational disease affecting slaughterhouse and sewer workers, farmers, and veterinarians.

Leptospira-associated reproductive failure in livestock can have a significant economic impact on animal production and trade, as well as on the livelihood of subsistence farmers and their families.

To deal with this alarming challenge, an initiative involving more than fifteen institutions with complementary expertise was developed by WHO and the Health and Climate Foundation in 2011. A technical framework was designed as a foundation for a novel partnership, called the Global Leptospirosis Environmental Action Network: GLEAN. This initiative was developed along the lines of the conceptual policy framework of One Health i.e. to promote an integrative approach with a multi-sector and multi-stakeholder cooperation to prevent and control a public health problem common to animals and humans.

Objectives

Through a complementary set of presentations, this session aims at:
1) Advocating for a One Health approach to reduce the impact of Leptospirosis on communities, especially the most vulnerable.
2) Sharing experience and knowledge on the complex interface between animals, human communities and ecosystems.
3) Mobilizing new partnerships (especially with the medical industry, investors in new technologies, economists and disaster risk managers) for finding cost-effective, implementable and sustainable solutions against Leptospirosis.

Outcomes
- Participants, from both national or international institutions/organizations, are expected to receive a convincing illustration of a novel network model which could be applied, in its principles, to other common animal/human diseases.

For this purpose, information on GLEAN work and plan of actions will be made available.
- GLEAN is expected to receive expression of interest for its activities by potential partners and sponsors.
- Presentations and debate reports will be the subject of publications and a report of this session will be made at the next Global GLEAN Technical Meeting.
- Post session interviews with journalists will be the subject of advocacy stories

Organization of the session

Brief opening by the GLEAN co-chairmen: Dr Bertherat and Dr Jancloes

Five presentations will follow:
1) The Global Leptospirosis Environment Action Network, from a One Health Perspective
   By E. Bertherat (WHO), M. Jancloes (HCF), and K. Durski (WHO)

   This presentation will provide the current state of art on Leptospirosis and key strategies for prevention and control
2) Drivers of Leptospirosis transmission at the human/animal interface in distinct community types.
   By Prof. C. Munoz Zanzi (University of Minne-
This presentation will be a review of the current knowledge and gaps in our understanding of the main drivers of Leptospira transmission, within and between species including humans, and their predictive value.

3) Leptospirosis outbreaks in Nicaragua
By C. Schneider and S. Aldighieri (WHO PAHO Washington)
This presentation will identify critical high risk areas and explore drivers for evidence based planning.

4) Can the human incidence of Leptospirosis be reduced through implementing ecologically based rodent management?
By Prof. S. Belmain (Greenwich University)
This presentation will focus on evaluating the cost-effectiveness of ecologically based rodent control on human health outcomes, crop production, and food security.

5) Challenges for the Medical Industry: Diagnostic tests
By Prof. R Hartskeerl (KIT Amsterdam)
Overview of human vaccines against Leptospirosis
By J. Denis (IMAXIO SA, France)
These presentations will highlight the need for investing in the development of new diagnostics, therapeutic and preventive (vaccine) technologies.

After the presentations, the moderator will invite participants to raise questions and open the floor for answers by speakers and participants.

Discussions will be directed towards the interpretation and validity of research results and the translation of tests and experiments into policy formulation and capacity building.

**Keywords:** Leptospirosis, Public Health, One Health, Outbreaks, Risk Management, Zoonosis, Vaccine Development, Climate Change

**Session:** TUE1.1 An Unrecognized One Health Threat: Leptospirosis
Tue 19.11.2013 • 08:30 - 10:00 • Room: Jakobsorn

**One Health Perspectives on Protected Areas, Nature Conservation, and Human-Animal Connections**
Chair: Michael James MANFREDO, Colorado State University, Colorado, USA

An underlying premise of the One Health concept is the inextricable linkage between human and environmental well-being which has increasingly been recognized as a critical consideration in nature conservation. Conservation strategies that seek to promote the integrity of ecosystems through maintenance of protected area networks are often viewed as holding the future for wildlife and land health. The effectiveness of such networks is also increasingly being evaluated in relation to their impact on human livelihoods. This is especially true in underdeveloped or rapidly developing nations that hold a great extent of the world’s biodiversity and where human livelihoods are intertwined with natural landscapes. Communities near protected areas in these locations frequently bear a disproportionate share of costs associated with the protected area conservation strategy. Costs can include human health threats and poverty due to restricted access to subsistence resources as well as direct conflict with wildlife (e.g., livestock/crop losses and zoonotic disease transmission). Given the complexity and magnitude of these challenges, protected area borders have been described by some as being the “critical edge” – where the health of people, wildlife, and domestic animals blend together and are best addressed through a One Health approach. As such, these areas provide an interface that can help bridge the gap between disciplines and thereby foster benefits for both local people and protected area management.

This special session is intended, in a broad sense, to further the discourse on the growing demand for integrated approaches that draw upon social and ecological sciences to account for the interconnections among humans, animals, and the environment. More specifically, the session will result in greater clarity on the needs, opportunities, and future direction of innovations that can apply such approaches to enhance nature conservation and protected area management. A series of presentations
will center around broad topics of human and wildlife well-being in the protected area context, human-animal connections, and considerations of social welfare and social-ecological justice in One Health. The session will conclude with a brief, moderated discussion with the audience regarding challenges and opportunities for future research that can build upon the ideas presented and inform efforts reliant on protected areas and nature conservation as a mechanism of human-environment sustainability.

Session: MON5.2 One Health Perspectives on Protected Areas, Nature Conservation, and Human-Animal Connections
Mon 18.11.2013 • 13:30-15:00 • Room: Pischa

**Prenatal Exposure To Endocrine Disruptors And Its Impact On Adult Onset Disorders**

MOHANKUMAR, P. S. (1); PADMANABHAN, Vasantha (2); NASSIRI, Reza (1); MOHANKUMAR, Sheba (1)

1: Michigan State University, United States of America; 2: University of Michigan, United States of America

Chair: MOHANKUMAR, P. S.

Background: The prevalence of adverse developmental outcomes among children in developing nations is an important Global Health issue. Growth restriction and stunting in children from Eastern Africa and South Central Asia are generally attributed to poor nutrition of pregnant mothers and infants, and infections during pregnancy. However, effective intervention to improve maternal nutrition and infection was successful in decreasing the prevalence of stunting by only by 1/3rd indicating that there may be other important causes for this phenomenon. Exposure to endocrine disrupting chemicals (EDCs) in the environment could be one such possible cause. EDCs are used in the synthesis of plastics, medical tubing, toys, water bottles, and in plastic and resins used to line metal cans. Several billion pounds of EDCs are produced throughout the world and significant amounts are released into the environment. There is ample evidence that exposure to EDCs can cause reproductive, growth, metabolic, and cardiovascular deficits. This is especially significant in the case of women who are pregnant, as EDC exposure could be detrimental for normal pregnancies. Pregnant women who are constantly exposed to EDCs also face the risk of exposing their fetus to these chemicals. In fact, measurable levels of EDCs have been detected in the amniotic fluid, maternal and fetal plasma and placental tissues. Further, babies may also be exposed to EDCs after birth through breast milk of lactating mothers. This could precipitate changes in fetal growth and development and predispose the offspring to neurological, reproductive, metabolic and cardiovascular abnormalities. This possibility is receiving global attention as EDC-induced “fetal programming” can lead to adult onset disorders such as obesity, type II diabetes and cardiovascular disorders. The prevalence of these disorders have been increasing in epidemic proportions paralleling the increase in the environmental levels of EDCs. Therefore the association between EDC exposure and the onset of these disorders warrants further investigation.

Objectives: The rapid rise in industrialization, economic prosperity and increased use of plastics has produced an alarming increase in the environmental levels of EDCs. The objective of this session is to explore the role of EDCs in precipitating various abnormalities in the offspring. Childhood growth stunting is a major issue that is being addressed by various global organizations such as the WHO. Suboptimal nutrition and health conditions cause a deficit in linear growth (stunting) that interferes with the offspring’s ability to reach genetic potential. The lack of linear bone growth has been linked to decreased frequency of growth events, reduced amplitude of growth spurts or both. This leads to anthropometric deficits that predispose children to increased disease susceptibility, early mortality etc. The causes of stunting are multivariate, including intrauterine growth retardation (IUGR) due to poor nutrition and infection, and exposure to EDCs during pregnancy. The purpose of this special session is to explore whether such prenatal EDC exposure can cause “programming” of the fetal neuroendocrine systems. Presentations in this session will explore the possibil-
Aging is not only a pure medical issue; it is an emerging issue in the social ecological system. In the developed countries, such as EU and Japan, the government policy makers already feel the increasing pressure. In emerging economy countries, like China, combing with health threats due to environmental degradation, the complexity and potential risks of the nexus of aging, health and environment are even more severe in the next couple of decades if not dealing with timely and appropriately. In this session, we are inviting panelists to discuss issues related with aging, health and environment from various disciplines such as medicine, governance and technology.

Aims and Outcomes: This symposium will address significant human health problems for which the causes are incompletely understood. Prenatal EDC exposure could account for growth stunting in children not attributable to poor nutrition and infectious disease. Potential long term consequences of prenatal EDC exposure for children include neurological, reproductive, metabolic and cardiovascular dysfunction since it is well known that prenatal programming predisposes individuals to metabolic and other disorders in later life. The studies presented in this session will compare data from various animal models with human relevance to data obtained in human patients, thus providing a mechanistic, yet translational, ‘one health’ approach to understand the underlying causes of important human abnormalities. The conceptual and intellectual innovations presented in this session will help advance the field by elucidating the molecular mechanisms by which environmental exposures to EDCs produces its effects.

Keywords: Environment, prenatal programming, endocrine disrupting chemicals, one health

Session: WED5.1 Prenatal Exposure To Endocrine Disruptors And Its Impact On Adult Onset Disorders
Wed 20.11.2013 • 13:00 - 14:30 • Room: Jakobshorn

Aging, Health and Environment: Coping with Challenges in the Framework of One Health
YE, Qian; ZHANG, Wensheng; HAN, Zhangang; HU, Xiaobing; HE, Tao
Integrated Risk Governance Project (IRGP/IHDP), China, People’s Republic of
Chair: ZHANG, Wensheng

Through this panel, we hope to demonstrate that aging issue needs integrative approach in managing health risks. We also hope to show that through intensified collaboration among experts and practitioners from the different sectors and disciplines in the framework of One Health, we will provide significant added value to identify cost-effective measures for aging, health and environment.

Keywords: Aging, Health, Environment, Integrative Risk Governance

Session: MON5.3 Aging, Health and Environment: Coping with Challenges in the Framework of One Health
Mon 18.11.2013 • 13:30 - 15:00 • Room: Parsenn
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<tr>
<td>ZORIGT, Tuvshinzaya</td>
<td>56, 138</td>
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Notes
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