



One Health

–Message from Africa–

Date: 13:30-17:00, November 26 (Mon), 2012

Venue: Lecture Hall, Graduate School of Veterinary
Medicine, Hokkaido University



The 3rd International Symposium
Program for Leading Graduate Schools

One Health – Messages from Africa –

Date: 13:30-17:00, November 26 (Mon), 2012

Venue: Lecture Hall, Graduate School of Veterinary Medicine, Hokkaido University

13:30 - 13:35 *Welcoming address*

Dr. Shigeo Ito

Dean, Professor, Graduate School of Veterinary Medicine, Hokkaido University

Session I: One health approach for controlling sleeping sickness

Chair parson: Dr. Kohei Makita, Rakuno Gakuen University, Japan

13:35 - 14:35 ***A historical overview of sleeping sickness in Africa***

Dr. Ian Maudlin

Professor, University of Edinburgh, UK

Director, UK Department for International Development (DFID) Research into Use Programme

14:35 - 15:05 ***A one health approach to controlling sleeping sickness in Uganda***

Dr. Sue Welburn

Professor, University of Edinburgh, UK

15:05 - 15:25 Coffee break

Session II One health approach: Messages from Africa and FMD

Chair parson: Dr. Motohiro Horiuchi, Hokkaido University, Japan

15:25 - 15:55 ***A one Health response against 2010 FMD outbreak in Japan on mental health***

Dr. Kohei Makita

Associate Professor, Rakuno Gakuen University, Japan

15:55 - 16:55 ***One Health - Messages from Africa***

Dr. Sue Welburn

Professor, University of Edinburgh, UK

16:55 -17: 00 *Closing remarks*

Dr. Motohiro Horiuchi

Professor, Graduate School of Veterinary Medicine, Hokkaido University

The 3rd International Symposium is co-organized by Rakuno Gakuen University (Invitation Fellowship Programs for Research in Japan, supported by JSPS) and by Hokkaido University (The Program for Leading Graduate Schools “Fostering Global Leaders in Veterinary Science for contributing to One Health” supported by MEXT).

This symposium is also supported by the following organizations:

Research Center for Food Safety, The University of Tokyo,
Japanese Society of Veterinary Epidemiology,
Ministry of Agriculture, Forestry, and Fisheries of Japan,
Ministry of Health, Labour and Welfare of Japan,
Food and Agriculture Organization of the United Nations, Liaison Office in Japan

Welcome message

Professor Hiroyuki Taniyama

President, Rakuno Gakuen University, Japan

It is a great pleasure to invite you to this international symposium on One Health together with distinguished co-organizing institutions in Japan.

Although Japan has achieved to have a high standard public health and animal health systems, we are always surrounded by the threats of zoonotic and potentially zoonotic infectious pathogens such as highly pathogenic avian influenza and emerging bacteria with antimicrobial resistance.

In order to have a better preparedness and response against such threats, the concept, 'One Health' can be a great hope to us. One Health is not necessarily a new concept- Hippocrates described an importance of environmental consideration in public health, and ancient Mesopotamians had a law that the owner of a rabid dog is responsible for the containment of that animal. The founder of Rakuno Gakuen University, Torizo Kurosawa left a teaching to the university, which still remains within us vividly – Love God, People and Soil. He advocated the importance of the health of environments and livestock for public health; this was exactly a One Health concept. However while we developed a systemized health systems apart into public health, veterinary medicine and environment disciplines in Japan, the coordination has become a challenge.

In the present symposium, we invite three distinguished speakers from UK and Japan who have worked on One Health concepts for problems in Africa as well as the other parts of developing world. It is such a precious chance to learn about One Health from their experiences. Please have a great time and I look forward that you will receive useful take-home messages from the talks and discussions to improve our actions to realize One Health in Japan and in the world.

Welcome address

Motohiro HORIUCHI, DVM, Ph.D.

Professor, Graduate School of Veterinary Medicine, Hokkaido University
Coordinator, Program for Leading Graduate Schools “Fostering global leaders in
Veterinary Science for contributing to One Health”

Due to the huge socioeconomic problem as well as animal and human health, the emerging and re-emerging infectious diseases and their causative agents, for instance, swine derived H1N1 influenza virus, SARS, ebola hemorrhagic fever, multi-drug resistant bacteria, and so on, are big concern worldwide. For many years, the three most devastating diseases, HIV/AIDS, malaria, and tuberculosis (TB) have received most of the world's attention; however, neglected infectious diseases including infections with different types of worms and parasites, cholera, sleeping sickness, and so on, seriously impact on health outcomes in every region of the world. Many of these diseases are zoonoses that are caused by the agents transmissible from animals to humans and vice versa. Ideally we understand a more interdisciplinary and cross-sectoral approach is required to preventing epidemic or epizootic disease and for maintaining ecosystem integrity. Exactly, “One World – One Health” concept.

Civilization provided many benefits to our life, however, during the civilization history, humankind also experienced and are experiencing many severe health damages with chemicals including persistent organic substances, pesticides, heavy metals, and other environmental chemicals all over the world. To avoid repeating such miserable histories by chemical hazards, more attention should be paid to control the hazardous chemicals to maintain healthy human-animal ecosystem. Handing sustainable environment over to the next generation is obligatory our mission.

Because maintaining the soundness of life environment is the most important mission of veterinary science, contribution of veterinary science is strongly urged to adopt “One-World, One-Health” approach all over the world. However, we often wonder how and what can we do for One-Health?

Considering the situation above, it is timely and great honor to hold an International Symposium, “One Health – *Message from Africa* –”, co-organized by Rakuno Gakuen University and Graduate School of Veterinary Medicine, Hokkaido University. It is good opportunity for all the participants to realize “One Health” concept from the long-term practical activity on the controlling sleeping sickness in Africa. In this symposium we will also be notified that there are many types “One Health” approach from the examples of mental health care after the FMD outbreak in Japan. Hopefully this symposium facilitates all the participants to cultivate a better understanding of “One Health”.

Professor IAN MAUDLIN

Centre for Infectious Diseases,
College of Medicine and Veterinary Medicine,
The University of Edinburgh



PERSONAL DETAILS

Date of birth 20th April, 1943
Nationality British
Email Email: ian.maudlin@ed.ac.uk

APPOINTMENTS AT THE UNIVERSITY OF EDINBURGH

01/08/2000 to 2008 Director, Centre for Tropical Veterinary Medicine, Royal Dick School of Veterinary Studies, The University of Edinburgh
01/04/1999 to 2005 Manager, DFID Animal Health Research Programme

PRESENT APPOINTMENT

April 2009 to present Director, DFID Research into Use Programme

UNIVERSITY EDUCATION

First-degree

1966 B.Sc. Hons. Zoology, 2nd class, Division I
University of Newcastle

Higher degrees

1971 M.Sc. Applied Genetics, University of Birmingham
1976 Ph.D. London School of Hygiene and Tropical Medicine, University of London. Ph.D.

Membership of Societies

Fellow Royal Society of Tropical Medicine.
Fellow Royal Entomological Society

Career Since Graduation

2009 onwards Director, DFID funded *Research into Use* programme
<http://www.researchintouse.com/>

2000 - 2008	Director, Centre for Tropical Veterinary Medicine, Royal (Dick) School of Veterinary Studies, The University of Edinburgh
1999 - 2005	Manager, DFID Animal Health Programme, Centre for Tropical Veterinary Medicine, Royal (Dick) School of Veterinary Studies, The University of Edinburgh
1997 - 2000	Professor, Division of Molecular Genetics, Institute of Biomedical Life Sciences, University of Glasgow
1996 – 1997	Reader, Division of Molecular Genetics, Institute of Biomedical Life Sciences, University of Glasgow.
1993 - 1996	Head, Tsetse Research Laboratory, Department of Clinical Veterinary Science, University of Bristol
1979 -1993	Senior Research Fellow, Tsetse Research Laboratory, Department of Clinical Veterinary Science, University of Bristol
1977-1979	Principal Research Officer, Nigerian Institute for Trypanosomiasis Research, Kaduna, Nigeria
1975-1977	Scientist, Medical Research Council, Clinical Research Centre, Harrow, UK
1971-1975	Research Assistant, Department of Entomology, London School of Hygiene and Tropical Medicine, UK
1968-1970	Research Officer, East African Trypanosomiasis Research Organisation, Tororo, Uganda
1966-1968	Technical Assistant, ICI, UK

An historical overview of sleeping sickness in Africa

Professor Ian Maudlin
The University of Edinburgh

Sleeping sickness was considered a serious threat to the development of sub-Saharan Africa by the European powers involved in 'the scramble for Africa' that followed the Congress of Berlin (1884-1885). The colonial authorities had cause to be concerned about this apparently new, fatal disease that was responsible for the deaths of thousands of Africans recruited as labourers; a healthy workforce was central to their plans to rapidly commercialise and profit from agriculture in their new African possessions. The Belgian, French and British authorities were particularly affected by the sleeping sickness epidemics that swept across the Congo and Uganda threatening their investment in rubber and cotton respectively. Because of this economic interest, this fatal disease came to dominate colonial medicine becoming *the* Colonial disease at the turn of the 20th C. Research was initially directed at discovery of the infectious organism involved, followed by drug development and then disease control strategies.

Differences in approach to disease control taken by Francophone and Anglophone countries reflected the underlying epidemiological divergence of the disease between East and West Africa; differences that are ancient in origin, pre-dating the colonial period, and continuing to the present day. In West Africa, epidemics of chronic Gambian sleeping sickness were controlled by military style campaigns aimed at the chemoprophylactic treatment of whole populations. In East and southern Africa, Rhodesian sleeping sickness was shown to be a zoonotic disease control required not only diagnosis and treatment but also vector (i.e. tsetse) control to prevent spread of parasites from the animal reservoir to humans.

Available data for sleeping sickness incidence from 1900 show new cases reaching a peak of 70,000 in the 1930s and, following sustained control, falling to very low levels in 1960. The post-colonial period saw a surge in incidence up to the 1990s with 40,000 cases per annum. Since then the incidence of *T. b. gambiense* has declined, the number of cases in 2009 dropped below 10,000 for the first time in 50 years; this trend has been maintained with 7139 new cases reported in 2010 (WHO estimate that the number of cases is currently 30,000; <http://www.who.int/mediacentre/factsheets/fs259/en/>). The period between 1997 and 2006 showed a much smaller change in the number of cases of *T. b. rhodesiense* (21% reduction) compared with *T. b. gambiense*; this is attributed to the major role of the animal reservoir in transmission of this acute disease.

Control of *T. b. gambiense* sleeping sickness still relies on active case finding by mass population screening for which diagnostic confirmation and disease staging (I or II - indicating CNS involvement) are essential. However the methods used for sleeping sickness confirmation remain cumbersome and inaccurate due to poor sensitivity; more sensitive molecular methods are rarely used during field surveys.

T. b. rhodesiense sleeping sickness is a zoonosis with the main reservoir in domestic livestock. Recent vector research has produced control solutions targeting flies feeding on cattle; these cattle treatments are effective, affordable and sustainable by smallholder farmers and can be integrated into agricultural practice.

Professor Sue WELBURN

**Medical and Veterinary Molecular Epidemiology,
The University of Edinburgh**



Education:

1991, Ph.D. Faculty of Medicine, University of Bristol

1984, B.Sc. University of the West of England, Bristol

Recent academic appointments:

2011 – present Assistant Principal, Global Health, The University of Edinburgh

2009 – present Director, Global Health Academy, The University of Edinburgh

2006 – present Professor, Medical and Veterinary Molecular Epidemiology, The University of
Edinburgh

Profile of Prof. Sue Welburn:

Dr. Sue Welburn is Professor of Medical and Veterinary Molecular Epidemiology, in the Division of Pathway Medicine, University of Edinburgh, and group leader of the sleeping sickness research group. She has more than 20 years experience working on human sleeping sickness and zoonotic trypanosomiasis in domestic wild and animal populations. Her research concentrates on the design and use of molecular diagnostic tools for the study and management of sleeping sickness and animal trypanosomiasis, which encompasses research ranging from 'grass-roots' fieldwork in Africa to laboratory-based dissection of the problem of trypanosomiasis at the gene level. She has also published over 135 peer reviewed scientific articles, reviews and book chapters.

She currently has projects in Uganda, Kenya, Nigeria, Zambia and Tanzania, focusing on medical and veterinary sector interventions for disease control (in partnership with the National Institute of Medical Research, Ministries of Health, Ministries of Agriculture) and supported by funding from World Health Organization/DFID/Wellcome Trust/Leverhulme Trust, Cunningham Trust and NTI, Global Health and Security Initiative.

Prof Welburn is a member of the World Health Organization/Foundation for Innovative New Diagnostics (FIND) Expert Advisory Panel on Drugs for Neglected Diseases (Trypanosomiasis). She has a strong commitment to capacity building in HEI and research institutions in the Global South and is a Director of the University of Edinburgh International Development Centre, and most recently has been appointed Director of the Edinburgh Global Health Academy and Assistant Principal Global Health.

A one health approach to controlling sleeping sickness in Uganda

Professor Sue Welburn
The University of Edinburgh

Intervening to control the forgotten zoonoses can be the catalyst to link the drivers for change that have evolved from a 'crisis response' to a long term strengthening of public health systems. Several large programmes are attempting to pull together Animal Health + Development + Human health to achieve the necessary impact for change including Integrated Control of Neglected Zoonoses (ICONZ), Dynamics of Diseases Drivers in Africa (DDDAC) and the SACIDS platform all targeted neglected, endemic and emerging zoonoses across Africa. The Stamp Out Sleeping Sickness programme in Uganda offers an example of how 'blue skies research' outputs have been put into use and providing the evidence base that underpins a One Health Platform for zoonotic disease control.

Sleeping sickness epidemics have ravaged the shores of Lake Victoria, SE Uganda for over a century with the loss of over a million lives. Today, sleeping sickness affects the poorest people who are being actively encouraged to keep livestock who cannot afford veterinary support and whole communities are at significant risk; in Uganda for every person seeking treatment for this disease die unreported, from this fatal disease. Research dissecting the dynamics of parasite/vector/host transmission that lead to epidemics of sleeping sickness and molecular characterization of parasite strains circulating during and between epidemics has shown that movements of infected domestic animals into a previously sleeping sickness free area are responsible for the most recent sleeping sickness outbreaks in Uganda. To reduce the public health burden of human sleeping sickness in SE Uganda it is essential to control the reservoir of disease in livestock. In some villages up to 85% of local cattle are infected with *T. brucei* of which up to 1/3 are human infective. Movements of cattle now threaten to contaminate the *T. b. gambiense* focus of chronic sleeping sickness in NW Uganda with animals carrying *T. b. rhodesiense*, the acute form and the disease; and the two disease are now less than 150 km apart presenting a huge public health problem. With colleagues in the private sector, and Makerere University, Uganda she has established a Public Private Partnership for the control of sleeping sickness in Uganda ([www/stampoutsleepingsickness.com](http://www.stampoutsleepingsickness.com)). Industrial Kapital, a Venture Capital Firm supported phase I of a 'roll back sleeping sickness campaign' in partnership with CEVA pharmaceuticals, WHO, University of Edinburgh and University of Makerere. Makerere Vet School provides their final year cohort of veterinarians to assist in this activity. Through the treatment all cattle in 5 districts of Uganda (>250,000 head) and implementing a campaign of ongoing cattle treatment and an epidemic of sleeping sickness was averted. Phase II extended service to 0.5 - 1m cattle in 7 districts of Uganda. Phase III plans to extend to all remaining affected districts using innovative funding models.

One Health -Messages from Africa-

Professor Sue Welburn
The University of Edinburgh

One Health in a changing world offers the opportunity to link people, animals and environment (physical, human and social). The 21st century of “health uncertainties” requires a “new culture of collaboration” that recognises the essential link between human, domestic animal and wildlife health and the threat disease poses to people, their food supplies and economies, and accepts that biodiversity is essential to maintaining health. This will demand effective integration of ecology including disease ecology with the social and health sciences for both detecting emerging threats and for their management.

This presents a challenge particularly for low resource countries that require improved human, livestock and ecosystem health that will link improvements in livestock production to better human and community health. What are the effects of landscape configurations on the spread of certain diseases, particularly those associated with animal vectors? What landscape and human settlement patterns mitigate disease spread? What strategies can keep systems from becoming pathological?

There are positive indications that national platforms established as a result of HPAI investments may lead to long term intersectoral collaboration for other zoonotic diseases e.g. rabies and brucellosis. After 5 years of cooperation on emerging diseases, One Health is evolving towards the federation of vet and health services. Recommendations that the *ad hoc* inter-ministerial task forces formed in zoonotic disease outbreaks e.g. anthrax and rift valley fever, be formalised into long-standing platforms for risk analysis and prevention for a range of endemic disease support this evolution and demand joined up platforms and technologies for diagnosis. PREDICT, aims to build a global early warning system for emerging diseases that move between wildlife and people in Africa and across other disease hot spots.

Dr. Kohei Makita

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School of Veterinary Medicine,
Rakuno Gakuen University**

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EDUCATION AND QUALIFICATIONS:

Sept 2004 – Nov 2008 Centre for Infectious Diseases, University of Edinburgh (PhD student)
April 1989 – Mar 1995 Faculty of Veterinary Medicine, Nippon Veterinary and Life Science University, (BVSc)

WORK EXPERIENCE:

April 2010 – Present Associate Professor of Veterinary Epidemiology, School of Veterinary Medicine, Rakuno Gakuen University
Joint Appointment Scientist (Veterinary Epidemiologist), at the Markets, Gender and Livelihoods, International Livestock Research Institute (ILRI)
Nov 2008 – Mar 2010 Post Doctoral Scientist (Veterinary Epidemiologist) in ILRI
April 2001 – Aug 2004 Chief veterinarian of Saitama Prefectural Government Chichibu Highland Farm, Japan
July 2000 – Mar 2001 Chief veterinarian of Infectious Disease Section, Saitama Prefectural Government Kawagoe Livestock Health and Hygiene Centre
April 1998 – July 2000 JICA / Japan Overseas Cooperation Volunteers (JOCV) volunteer
Instructor of animal husbandry and animal health at Jiri Technical School, Nepal
April 1995 – Mar 1998 Assistant veterinarian of Infectious Disease Section, Saitama Prefectural Government Kawagoe Livestock Health and Hygiene Centre, Japan

PROFESSIONAL INTEREST:

Epidemiology of livestock and zoonotic diseases
Alleviation of poverty
Participatory epidemiology
Risk analysis of food borne diseases in value chains and incentive study for risk mitigation
Interface between veterinary medicine, human medicine, socioeconomics and environment

A one Health response against 2010 FMD outbreak in Japan on mental health

Dr. Kohei Makita
Rakuno Gakuen University

In April 2010, Foot-and-mouth disease (FMD) outbreak occurred in Miyazaki, Japan. Culling on infected farms could not stop the outbreak and vaccination-to-kill policy was implemented. In total, more than 290 thousand animals were culled. Expressions on the damage by this disease usually focus on economics with quantitative measurements such as economic loss by culling animals and compensation to farmers. However, is the damage limited to economics? The answer is no. The outbreak and disease control caused deep sorrow to farmers and psychological shocks to those who culled animals. Veterinary schools do not teach students how to cope with such psychological shock, and medical schools do not about foot-and-mouth disease and livestock industries. There was a huge knowledge gap between veterinarians and medics. In such a situation, One Health concept was applied on mental health of farmers, veterinarians and the citizens lived in the affected areas.

In June 2010, during the outbreak, Miyazaki Prefecture Center for Mental Health and Welfare (MPCMH) conducted mental health monitoring of 1300 FMD-affected farmers using telephone. Questionnaires were sent to local citizens and those who participated in culling. In May 2011, One Health research team was voluntarily established between psychiatry and veterinary experts. The veterinary experts conducted participatory appraisals with veterinarians and farmers. Based on the qualitative descriptions, questionnaires were designed and administered to farmers. The data associated with psychology were analyzed by psychiatry epidemiologist and those associated with re-starting of farming by veterinary epidemiologists.

In 2010, nearly 20% of farmers had mental health problems and more female respondents were affected than males. Severe mental health status of farmers was associated with having problems before the outbreak. The tension and contents of mental stress for veterinarians and farmers changed dynamically with the outbreak situations. Low public mental health among citizens was associated with stagnant local economy due to the outbreak, which was still persisting in 2011.

Sixty percent of farmers restarted and the obstacle factors against restarting farming were being aged and low mental health status. The encouraging factors were having participated in helping culling, larger farm size and family-operated farm. The farmers who were not satisfied with the information provided by the government during outbreak tended to restart farming. Those who restarted were satisfied with the aids provided by the government.

One Health mental health team is now working on monitoring mental health status of veterinarians who were dispatched from outside prefectures. This research is showing an impact in the field of veterinary public health on raising awareness of the importance of One Health.

