



MED • VET • NET NEWS

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March 2006

In this issue of the Med-Vet-Net news we begin the first of our overviews of the new Workpackages, starting with Workpackage 21 - Molecular Epidemiology of Salmonella Genomic Island 1 (SGI1).

We have updates from the Project Management Team and Administration Bureau, and a lighthearted story with a slightly more serious message about a dear species of our wildlife - the deer!

Finally, there's only a short time until the deadline for registration for our second general scientific meeting. Read the update on page 3 and register now!

Med-Vet-Net Communications Unit

Workpackage 21 Overview

Molecular Epidemiology of Salmonella Genomic Island 1 (SGI1)

Introduction

Salmonellae are rod-shaped, non-sporeforming Gram-negative motile bacteria. Their normal habitat is the intestinal tract of warm and cold blooded animals especially poultry and swine. Environmental sources of the organism include water, soil, insects, factory surfaces, kitchen surfaces, animal faeces, raw meats, raw poultry, and raw seafoods. *Salmonella* species are responsible for a number of infections in humans. If invasive, *Salmonella* infection can cause enteric fevers (e.g. Typhoid, caused by *Salmonella Typhi*), food poisoning (gastroenteritis - usually *Salmonella Typhimurium* or *Salmonella Enteridis*, the latter notorious for contamination of poultry) and occasionally septicaemia in non-intestinal tissues. The genus *Salmonella* is a member of the family *Enterobacteriaceae*, which includes *E. coli*, and *Shigella* as well as *Salmonella* - bacteria which are related to each other both phenotypically (by their physical characteristics) and genotypically (by their genome).

The SGI1 Gene Cluster and *S.*

Typhimurium DT104

SGI1 is a gene cluster (i.e. a set of closely related genes that are grouped together on the same chromosome) which is located in the genome of *Enterobacteriaceae*. This gene cluster was originally found in the strain *S. Typhimurium* DT104 (hereafter called DT104), but was recently also detected in other sub-species (or serovars) of *S. Typhimurium* (i.e. Agona, Albany, Newport, Java).

DT104 is zoonotic in origin and causes numerous infections in humans. One of the characteristics of DT104 is that

it is phenotypically resistant to streptomycin/spectinomycin, ampicillin, chloramphenicol/florfenicol, tetracycline and sulfonamide antibiotics. DT104 is associated with enhanced ability to cause disease (virulence) and multi-drug resistance. However, multi-drug resistant (MDR) DT104 is no more invasive than other serovars. MDR DT104 was detected for the first time in the UK in the early 1980s and in the USA in 1985 and its prevalence increased in the 1990s worldwide. It is thought that antimicrobial usage in food production animals has a key role in the development of resistance, although for one type of DT104 (R-type ACSSuT), SGI1 was probably present in the strain before its establishment in food production animals.

SGI1 was first characterised in 2000 as a 43 kb chromosomal region in a Canadian isolate of DT104 and it was sequenced in 2001. SGI1 has recently been detected in other, epidemic *Salmonella* serovars as well as the pandemic DT104, indicating that there may be a relationship between potentially enhanced virulence and multi-drug resistance and the presence of this gene cluster. SGI1 seems to spread horizontally so it poses a public health risk to the future treatment of *Salmonella* infections. Although horizontal transfer between *Salmonella* serovars may be the mechanism by which SGI1 spreads, a biological reservoir in other organisms cannot be excluded.

Until today, the enhanced virulence of DT104 is disputed and cannot be explained by genetic analysis of SGI1, unless the multi drug resistance region is the major factor involved. It is important for us to know the epidemiology of this gene cluster so that we can find out more about drug resistance of enteric bacteria.

Workpackage 21 aims and objectives

The aim of Workpackage 21 is to study the distribution and characteristics of SGI1 in enteric bacteria (i.e. *Salmonella*, *Shigella*, *E. coli*) in a collection of animal and human isolates. This will result in the formation of a database of well characterised strains harbouring the complete SGI1 or some of its variants. Furthermore, this project will be a solid basis for future European cooperation on virulence testing and risk analysis of strains harbouring SGI1. This project links directly with another Med-Vet-Net project, the Virulotyping project Workpackage 26 and members of Workpackage 26 will be invited to specific meetings. Moreover, Workpackages 21 and 26 will actively co-operate on SGI1-positive strains, which will be available for virulotyping by PCR and micro-array analysis.

In European drug resistance monitoring programmes, standardisation of antibiotics panels and methods is not fully developed. Moreover, previous ring trials have

demonstrated that streptomycin, often used as indicator for the DT104-specific resistance profile is one of the antibiotics demonstrating most variation in susceptibility test results. One task of this Workpackage will be to describe the optimum selection method based on phenotypical profile. Another task is to design standard operating procedures for detection and genetic analysis of SGI1, including the MDR-region and other relevant regions of SGI1. This will enable us to discover the distribution and prevalence of SGI1 types in *Salmonella* spp. and other *Enterobacteriaceae*.



Salmonellae

Med-Vet-Net People

D.J. Mevius - Workpackage Leader for WP21

Dik is a Veterinary Microbiologist at the Department of Bacteriology and TSEs at the Central Institute for Animal Disease Control (CIDC-Lelystad), Lelystad, The Netherlands. He studied in Utrecht, at the Veterinary Faculty from 1973 – 1980. After three years working in large animal practice, he was employed at the Department of Large Animal Medicine of the Veterinary Faculty of Utrecht from 1983 – 1990. As well as training students in diagnostics and treatment of diseased farm animals, he began his research and defended his Thesis entitled: 'pharmacokinetic and microbiological aspects of flumequine in veal calves' in November 1989. From 1990 – 1993 he was head of the department of Bacteriology of the Animal Health Services in Gouda and Doorn, The Netherlands, a diagnostic institute now located in Deventer. In January 1994 he began working as head of the 'antibiotics laboratory' at ID-Lelystad and was responsible for research on antimicrobial activity and resistance. In 2002, his laboratory became part of the statutory tasks institute CIDC-Lelystad, responsible for the Monitoring Programme of Resistance in Animal Bacteria in The Netherlands. Since May 2003, he has Chaired the Dutch Working Party that coordinates monitoring of resistance in animal bacteria, VANTURES (Veterinary Antimicrobial Usage and Resistance Surveillance). His laboratory is the reference laboratory for susceptibility tests in veterinary diagnostic laboratories in The Netherlands where he and co-workers give guidance on agar diffusion- and dilution tests. His research is aimed at characterisation and transmission of multidrug resistance (MDR) in *Enterobacteriaceae*. Dik is a National Expert member of the Committee for Veterinary Medicinal Products (CVMPs) Scientific Advisory Group on Antimicrobial Resistance at the European Medicine Evaluation Agency in London, and he advises on licensing of antibiotics in veterinary practice. His Laboratory has been actively involved in the organisation of external quality control programmes for susceptibility tests performed by National *Salmonella* Reference laboratories and Veterinary Reference Laboratories in the EU in cooperation with RIVM-Bilthoven and DFVF in Copenhagen.



Dr Dik Mevius

Deer, Oh Deer

Today was a rare Saturday when I wasn't travelling (or preparing to travel) for Med-Vet-Net and was therefore able to take Jani, my dog, for a well-deserved walk. On returning home Jani raced into the small wooded area of the garden. A great deal of noise ensued, then a small Muntjac deer headed for a gap in the fence, hotly pursued by a determined dog. As I carefully mended the fence, to the barking accompaniment of both banished deer and disappointed dog, I mused over how close our lives are becoming intertwined with the surrounding wildlife.

There are between 1.25 and 2.6 million wild deer, living in the crowded lands of the UK. With a recent ban on deer hunting with dogs (I keep telling Jani he is breaking the law!), which primarily moved deer around and minimised breeding, this population density is bound to increase. They are very attractive, but very destructive to vegetation, and increasingly, harbingers of diseases constituting public health risks.

Mycobacterium bovis, a major problem in UK cattle, was first identified in Muntjac deer some 25 years ago and has since spread to five of the six species of deer found in the UK. Limited surveillance indicates that up to 15% of deer sampled in Great Britain might be infected with bovine tuberculosis. Similarly bovine tuberculosis has been identified in deer throughout Europe. Clearly in the UK this, along with infected badgers, constitutes an environmental reservoir, for

cattle infection. Moreover, the meat from between the 70-100 thousand wild deer culled every year in the UK, frequently enters the food chain without examination by qualified meat inspectors, so the risk to human health may be considered significant. Fortunately, despite this there is little, if any, evidence of an increase in domestically-acquired bovine tuberculosis in humans in the UK. This is good news because I quite like venison, especially with red current sauce.

Not so good news is the fact that deer carry an array of small arthropod passengers, in particular *Ixodes* species ticks. These ticks, in turn, can transmit *Borrelia burgdorferi*, the causative agent of Lyme Disease. This is not such a remote possibility. One of my elderly next-door neighbours, who rarely went beyond her garden, developed all the classical symptoms of Lyme Disease, including the characteristic ringed skin rash and relapsing fever. Every year I pick hundreds of these ticks off of my dog – very carefully of course.

Perhaps the most interesting recent zoonotic panic in the literature (ignoring Avian Flu and SARS) has been the identification of Chronic Wasting Disease (CWD) in deer. CWD is a transmissible spongiform encephalopathy (TSE) affecting cervids. Although, at the moment this disease, is confined to North America, considerable concern has been generated in Europe. Both captive and free-ranging cervids, especially

in the UK, may have been exposed to contaminated feed prior to the introduction of mammalian meat and bone meal bans. Mad deer running around my garden is a frightening thought. But don't panic, EFSA has concluded that although a theoretical possibility exists, there is no evidence that European cervids have become infected by a known (or even an unknown) TSE strain. However, currently, only a few European countries conduct surveillance programs on TSE in free-living or captive members of the deer family (cervids). So maybe venison is now off my favourite food list!

Many other zoonotic pathogens are potentially carried by deer including *Yersinia*, *Leptospira*, *Brucella*, *Pasteurella*, anthrax, paratuberculosis, *Salmonella* and West Nile Virus. Suddenly these endearing "bambi-like" animals no longer look so appealing - and I wish they would stay on their own side of the fence!

Diane Newell



Fawn in a forest

image courtesy of <http://en.wikipedia.org/wiki/Deer>

Annual Meeting Malta 2006

Over the last two weeks, the project management office has been even more manic than usual. We have now received over 130 abstracts for reviewers considerations and abstracts are still being received. All abstracts to date, have now gone out to the scientific committee for selection. As soon as our reviewers comments are returned we will put together the presenters programme, we know many of you have expressed interest in receiving more information about the scientific content of the conference. To that end, we want to announce the participation of the following Keynote Speakers:

Prof. Patricia Smith from the Laboratory of Bio-Anthropology and Ancient DNA, Faculty of Dental Medicine, The Hebrew University of Jerusalem, Israel will present a talk entitled 'The zoonotic revolution: the impact of domestication'.

Prof. Gadi Frankel from the Department of Biochemistry, Imperial College London, England will present a talk based around 'The use of current and developing molecular technology for investigating host-microbe interactions'.

Prof. Scott McEwan from the Department of Population Medicine, University of Guelph, Canada will present a talk based on 'Risk assessment and consumer perception'.

Prof. Jean-Pierre Kraehenbuhl from ISREC and Institute of biochemistry, Lausanne, Switzerland will present a talk based on 'The recent progress in mucosal vaccination and immunity with consideration of both veterinary and human aspects'.

It was hoped that Prof. Mark Woolhouse from

the Centre for Infectious Disease, University of Edinburgh, Scotland would present a talk based around 'Population biology of emerging zoonotic diseases'. At this stage Prof Woolhouse is unable to attend the meeting. Dr Eric Fevre has kindly accepted our invitation to present instead.

Our thanks to all our institute representatives who worked hard on our behalf to disseminate details of the Malta meeting to their colleagues, we have now had a lot of interest from scientists outside of the Network. This interest has best been demonstrated by the high number of abstract submissions from external participants.

Currently, our formal registration list is registering 85 delegates but we know there are many of you out there within the network who have not registered yet. **Please take the opportunity to register as soon as possible** as we require final numbers to be confirmed very soon with the hotel. Please also consider booking your flights if you have not already done so as prices are escalating on a daily basis. AirMalta have given us a 10% discount if we book our flights directly with their outpost offices, details can be found at http://www.medvetnet.org/mvn_conf06/pages/travel.htm

Whilst visiting Malta recently, our thoughts turned to finalising the social side of the conference. As a consequence we have organised an ocean-side finger buffet and wine reception for the first evening. The second evening's entertainment will comprise a short tour around Mdina, Malta's medieval capital, followed by a champagne reception on the bastions overlooking the island culminating with a dinner at Bacchus, a reception venue located in chambers built by the Knights of Malta in 1657. A relaxed poolside barbeque is organised back at the hotel for the final evening.

Claire Cassar

Project Management

First Annual Report

Following the successful acceptance of our first Annual Report by the EC, we decided to develop a printed version for you to share with you customers. This version, with a jazzy colour cover, is now available and being sent out. Please take pleasure in the quality of the production and impress your stakeholders, friends and colleagues with copies.

Training and Workshops

This month saw the completion of the planned Workshops. This workshop on *Salmonella* in Poultry was held in Uppsala under the auspices of SVA and was locally (and very well) organised by Helene Wadstrom. There were 25 delegates; most of the partners were represented and there were a number of external scientists and stakeholders. Although it was warm inside, the weather outside was -10°C and with many centimetres of snow. Diane was glad to be attending the first day only and not going on the trip to a feed mill the next day.

Next Co-ordinating Forum Meeting

The Co-ordinating Forum (CF) is the committee responsible for delivering all aspects of the network activities. The next meeting is on 11 April 2006 in Madrid. This Forum comprises your Institute Representatives and the four Thematic Co-ordinators. The CF meeting is your opportunity to formally place any Workpackage issues in front of the network managers. Please ensure that you inform your Institute Representative as soon as possible if you want to raise any issues.

Playing with toys

As many of you are aware, communicating effectively among 16 institutes in 10 countries is difficult and generally requires a lot of telephone calls or train/plane trips. The overarching Workpackages are, therefore, constantly looking for new and improved ways of communicating. Most recently the Communications Unit has introduced us to Web Conferencing. We are really impressed. From the comfort of my computer, with the help of a webcam and pair of earphones, we could see and hear what was happening at five other locations and share computer files etc. This, along with other similar systems is now being considered in a "Electronics Tools" study currently ongoing but it seems a likely direction for the future. The only thing to remember is someone may be watching you!

Hello sunshine!

In the cause of science, you understand, your Project Management Team (Claire and Diane) journeyed to Malta two weeks ago to investigate the conference facilities. The weather was 10°C warmer than the UK and the sun shone – at least for the first day. The hotel is great, the local wine cheap, the staff friendly and there is even WiFi in the conference area. Of course, on your behalf, we had to try the spa area (don't forget to bring your swimming gear) and the massage facilities (heaven!). Then we had to experience the food at the gala dinner restaurant (we were too full to comment). All in all it is a lovely venue and we are confident you will have a great time. See you there!

Diane Newell



Bacchus Restaurant



MED • VET • NET

EXPRESSIONS OF INTEREST

SCIENCE COMMUNICATION INTERNSHIP

September - November 2006

As part of its overarching 'Spreading Excellence' Workpackage 3, Med-Vet-Net is offering four positions for a Science Communication Internship. The Internship is open to any current student, researcher or staff member of the Med-Vet-Net partner institutes. The Internship will consist of a 3-month period of full-time training / tutorials in various aspects science communication including:

- Communicating with government and industry
- Communicating with the media
- Presentation skills
- Internet and website design
- Writing skills and publications
- Communicating with the public and children
- Organising events and exhibitions

Following completion of the 3-month period, it is expected that participants will return to their Institute and apply the skills learnt by communicating the work of Med-Vet-Net in their country, as well as assisting the Med-Vet-Net Communications Unit with the dissemination of information throughout Europe.

During the Internship, the candidates will be mainly located for 12 weeks at the offices of the Society for Applied Microbiology in Bedford, UK, with some additional travel throughout Europe to other partner institutes and Brussels. Accommodation, travel and associated expenses will be provided.

The exact timing and work structure of the course is currently being discussed, but it is anticipated that the course will be run from September to November 2006.



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Please send expressions of interest to **Teresa Belcher** (contact details at the end of this newsletter)

Admin Bureau Update

Legal Status study

A final validated report of the Legal Status Study has been provided by our consultant, Santexcel. This will now be submitted to the Co-ordinating Forum and Governing Board members for consideration at their next meetings. This report tackles the initial stages in assessment of the sustainability of Med-Vet-Net. The legal frameworks available to Med-Vet-Net and the parameters within which the Network would have to function are now clearly defined. Other aspects which remain to be investigated include:

- Expectations of the Partner Institutes
- Definition of the longer term aims of Med-Vet-Net
- Possible funding sources after the existing five years of European funding

All these issues will be addressed in the coming months by the Co-ordinating Forum and Governing Board. The sustainability of Med-Vet-Net is now the subject of considerable debate and we encourage all partners to contribute their ideas for the future of Med-Vet-Net.

Electronic tools study

The electronic tools study began at the beginning of this month and interviews with partner institutes are now being implemented. The initial results from these interviews have highlighted several aspects of remote collaboration between partners which require optimisation. A number of suggestions for improved working practises have been suggested. The results of this study will be delivered at the beginning of April 2006 and submitted to Co-ordinating Forum members for discussion at their next meeting in Madrid.

Next Co-ordinating Forum, Governing Board and Advisory Panel meetings

The next Co-ordinating Forum meeting will be hosted by ISCIII on 10-11 April 2006 at the National School of Health in Madrid.

The next Governing Board meeting will be hosted at BfR in Berlin and should take place in October 2006 to coincide with the submission of the Annual Report to the EC. The exact date is still to be confirmed.

The next Advisory Panel meeting will take place in a parallel session during the General Scientific Meeting in Malta (3 – 6 May 2006 – see pages 3 and 6). This will provide an opportunity for Advisory Panel members to discuss research activities with Med-Vet-Net scientists directly.

Admin Bureau

External Congress

4th International Veterinary Vaccines and Diagnostics Conference (IVVDC)

Oslo, Norway
25-26 June 2006

The conference provides an excellent opportunity to meet colleagues and be updated on recent progress and future perspectives in the fields of vaccinology and diagnostics.

The IVVDC has become an important meeting place for regulatory authorities, pharmaceutical companies and the scientific community.

Please visit: http://www.vetinst.no/inet_eng/index.asp?strUrl=1002147i&topExpand=&subExpand=

1st International Conference on Avian Influenza in humans: Latest advances on prevention, therapies and protective measures

Pasteur Institute - Paris
29-30 June 2006

The conference will provide sessions on the following aspects of avian influenza:

- Focus on H5N1
- Treatments and Perspectives
- Prevention

- Alternative Solutions and Pathways in Influenza Prevention and Treatments
- Disaster Management Response
Please visit: <http://www.isanh.com/avian-influenza/>

7th International Workshop on Pathogenesis and Host Response in Helicobacter Infection.

LO-skolen, Helsingør, Denmark.
1-4 July 2006

The European study group on pathogenesis and immunology in helicobacter infections and the European *Helicobacter* study group would like to invite you this meeting. The 2006 workshop in Helsingør will also deal with:

- new *Helicobacter* species;
- experimental animal models;
- molecular genetics, pathogenesis;
- virulence factors;
- molecular mechanisms and inflammation;
- basic mechanisms of helicobacters and probiotics;
- humoral and cellular immune responses in gastric and extragastric *Helicobacter* infections.

Living together: Polymicrobial Communities
Society for Applied Microbiology 75th Anniversary Summer Conference

Edinburgh, Scotland 3-6 July 2006

This conference has a packed scientific programme including sessions on:

- Physiology of polymicrobial communities
- Influencing polymicrobial communities
- Gut microflora
- Bioremediation

Poster and oral submissions welcome (not restricted to topic of meeting).

Abstracts should reach the Society office before 28 April 2006.

There will be a session dedicated to students on 'Making good use of your supervisor'.

There is also full social programme including a quiz night, trade show and conference dinner at the prestigious Hub restaurant on the Royal Mile.

To book online and for full programme details please visit: <http://www.sfam.org.uk/sumconf.php>

2nd European Veterinary Immunology Workshop Paris, France 4-6 September 2006

This workshop will run sessions on the following topics:

- From innate to adaptive immunity
- Infection & immunity
- Clinical immunology / Immunopathology

- Immunological tools
 - Immunomodulation
 - Comparative immunology (fish, avian)
 - Immunogenomics (Genomic approaches in veterinary immunology)
 - Leukocyte subsets and functions
 - The role of dendritic cell subsets in initiating immune responses
 - How many more?: Porcine CD8+ lymphocyte subsets and their functions
 - Mucosal immunology
 - Novel strategies of vaccine development (incl. probiotics etc)
- Please visit: <http://www.inra.fr/Internet/Projets/eviv/EN/index.php>

7th International Congress on Veterinary Virology (ESVV) Faculdade de Medicina Veterinária in Lisboa, Portugal, 24-27 September 2006

The scientific programme will consist of plenary invited lectures by renowned scientists, oral presentations and poster sessions selected by the Scientific Committee. Please visit: <http://www.esvv2006.org/welcome.php>

Nano and Microtechnology in the Food and Health Food Industries NH Grand Hotel Krasnapolsky, Amsterdam 25-26 October 2006

The conference will have sessions on:

- Nano and micro technologies in food processing, monitoring, labelling, storage, distribution and related issues
- Using nano and micro technologies to meet the challenges of food for nutrition and food for health
- New techniques and technologies for rapid safety testing, and prevention of food borne disease
- Safety and regulatory issues related to the use of new technology

Please visit: <http://www.nano.org.uk>



Med-Vet-Net Event

Priority setting of foodborne and zoonotic pathogens

19-21 July, Berlin, Germany

AN INTERNATIONAL CONFERENCE ORGANIZED JOINTLY BY THE EU MED-VET-NET NETWORK OF EXCELLENCE AND THE US FOOD SAFETY RESEARCH CONSORTIUM

To promote progress in food safety priority setting by identifying key scientific issues and opportunities and fostering international scientific collaboration

The conference will address:

- methods to integrate data on incidence of morbidity and mortality, on attribution to different sources of exposure and on social valuation
- the data availability for such studies, identify key data gaps and foster international collaboration
- the need for and possible approaches to priority setting
- incidence and outcomes of gastro-enteritis and other non-enteric foodborne disease
- attribution of foodborne illness to different sources
- integrated disease burden and economic indicators
- data integration and emerging infections
- research and data needs and possibilities for international collaboration

For more information please visit <http://www.medvetnet.org/priority>

Priority Setting of Foodborne and Zoonotic Pathogens 19-21 July, Berlin, Germany

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Visit <http://www.medvetnet.org>



3 - 6 May 2006
Dolmen Resort Hotel
St. Paul's Bay
Malta

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2nd Annual General Meeting on Zoonoses Research in Europe 3 - 6 May 2006, Malta

The aim of this meeting is to promote current and new findings on zoonotic research from clinical and veterinary perspectives.

Call for scientific abstracts:

Abstracts are invited on aspects of zoonoses in the following topic areas:

- Epidemiology & Risk Research
- Host-Pathogen Interactions & Microbial Ecology
 - Detection & Control
- Orphan/New & Emerging Zoonoses

Deadline for submission of abstracts: 15 March 2006

For more information visit: http://www.medvetnet.org/mvn_conf06/