



MED • VET • NET NEWS

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April 2006

In this issue of the Med-Vet-Net news we have the second of our overviews of the new Workpackages, Workpackage 30 - Towards a combined microbiological and epidemiological approach for investigating host-microbe interactions of *Campylobacter jejuni* - CAMPYNET III

We have updates from the Project Management Team and Administration Bureau.

We also have an update of international meetings which will be of interest to our members and stakeholders alike.

Med-Vet-Net Communications Unit

CampyNet III Overview

Workpackage 30 - Towards a combined microbiological and epidemiological approach for investigating host-microbe interactions of *Campylobacter jejuni* - CAMPYNET III

Workpackage Leader: Eva Olsson Engvall

Introduction

Campylobacters are Gram-negative, nonsporeforming, spiral- or curved rod-shaped bacteria. Most species require a microaerobic (containing 3-10% oxygen) atmosphere for growth. Presently, the genus *Campylobacter* consists of 17 species and of these, four are further divided into two subspecies each. Most of the *Campylobacter* species are pathogenic and cause a range of diseases in humans and/or animals. The so called thermophilic *Campylobacter* spp. (growth optimum 42- 43°C) are generally regarded as the most common bacterial cause of gastroenteritis in humans and are widely distributed among different food animals. Poultry, cattle, pigs, sheep, and even shellfish are all known reservoirs of infection and thermophilic campylobacters have also been found in dogs and cats. Campylobacters are therefore considered zoonotic with the main route of transmission being foodborne.

Of the thermophilic campylobacters, *C. jejuni* is estimated to cause approximately 95% of the infections in the developed world, with *C. coli* responsible for 3-4%. Other species, notably *C. fetus*, *C. lari*, and *C. upsaliensis* also cause infections in humans.

Several factors make the accurate identification of infectious sources and routes

of transmission of this organism difficult. This is true for both humans and animals, where better information concerning infection control procedures is needed. The bacteria are widely distributed in animals and the environment, and most human cases are reported sporadically, with no obvious source of infection. Therefore, there is a need to use effective, standardised typing methods to improve our understanding of *Campylobacter* epidemiology and the CampyNet series of projects aim to achieve this goal.

CampyNet

The main aim of the initial CampyNet project was to provide standardised molecular methods of typing (classifying the strains according to their molecular properties) for the major foodborne pathogens *Campylobacter jejuni* and *Campylobacter coli*, thereby greatly facilitating epidemiological studies of these bacteria.

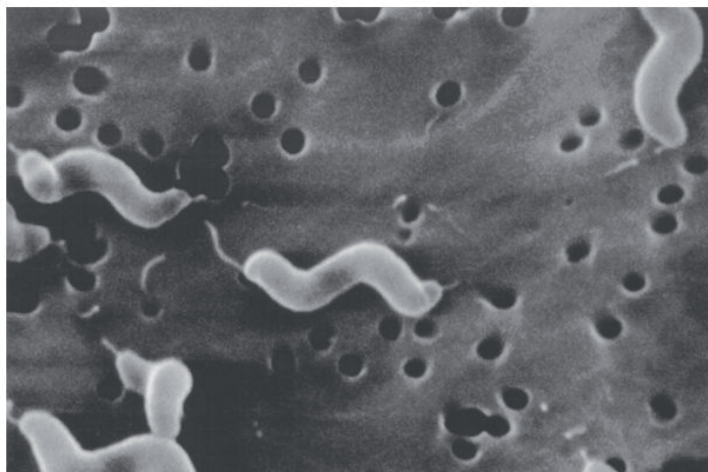
The typing sections of the project were undertaken in two phases. First, the standardisation and recommendation phase, whereby standard methods for the performance of each of the named typing methods were developed and recommended. Secondly, the evaluation phase, whereby these methods were distributed to a wide range of participating laboratories to ascertain the practicality and reliability of the

methods.

The CampyNet web site (<http://campynet.vetinst.dk/CONTENTS.HTM>) was also formed as part of this project. Its principal purpose was to provide information concerning progress of the main project and, ultimately, to provide access to databases of molecular types based upon a standard set of approximately 100 strains.

CampyNet II (MVN Workpackage 8)

The overall objective of this project was to extend the remit of CampyNet in typing *Campylobacter jejuni* to include virulence-related properties (the ability of the bacteria to cause disease) using the established CampyNet strain set. In the first instance, a subset of the CampyNet strains were used to find the most suitable and reproducible methods with which to test (assay) invasiveness and toxin activity. The CampyNet strains (with additional controls) were tested for virulence potential using these assay systems. In addition, the strains were screened for putative virulence genes (genes which are commonly thought to be associated with the virulence of the organism), to establish the distribution of these potential markers of pathogenicity (ability of the organism to cause damage to the host) in relation to invasion and toxin production. The strain set was also tested for antimicrobial susceptibility using an established panel of antimicrobials. The appropriate technologies were made available to other laboratories and a web-based database has been developed to encourage data sharing amongst participants. This project was completed in March 2006 and available procedures and information are on the Med-Vet-Net private website (<https://www.medvetnet.org/membersite/templates/doc.php?id=29>).



Campylobacter jejuni

Image courtesy of www.cdc.gov/ncidod/d/d/vol15no1/altkruseG.htm

Aims and Objectives of CampyNet III (MVN Workpackage 30)

Campylobacters are highly diverse according to their phenotype (expressed properties such as surface antigens) and genotype (genomic properties), however little is known about their diversity in virulence. The host-pathogen interactions of campylobacters are poorly understood, largely resulting from absence of appropriate *in vivo* (animal-based) disease models. This knowledge gap hinders accurate risk assessment for campylobacters in the food chain. CampyNet II aimed to develop standard methods for measuring *in vitro* (laboratory-based) invasiveness, toxin activity and detection of putative virulence genes on a *C. jejuni* strain set previously collated for phenotypic and genotypic typing harmonisation (CampyNet). Current typing tools, however, have not brought the scientific community much closer to understanding human disease epidemiology. *Campylobacter* genome sequences are now becoming accessible, but clear genomic indicators for investigation of host-pathogen interaction, are not yet available. This project builds on CampyNet II with the aim of matching epidemiological requirements for investigating human campylobacteriosis with microbiological and molecular tools for investigating host-microbe interaction. The project will agree a strategy for combined epidemiological/microbiological investigation

of host-pathogen interactions. The project team will also agree a strain set to comprise human strains with comprehensive range of relevant epidemiologies to be used in further work proposed by the strategy. CampyNet III will broaden the scope of study from the bacterial site to the integration of microbiology and epidemiology, the ultimate level of microbe-host interaction.

Work plan

A discussion network between microbiologists and epidemiologists, with emphasis on host-pathogen interactions, with particular relevance to campylobacteriosis in humans, will be generated. At each of the three proposed meetings one or two recognised expert(s) in the field of host-pathogen interaction will be invited to give a lecture. The Workpackage 30 kick-off workshop held at the National Veterinary Institute (SVA) in Uppsala, Sweden, in March 2006 updated participants in the developments of previous CampyNet projects and established the new working group. This network forum initiated discussion on the suitability of currently available tools for the investigation of:

- (i) *Campylobacter* virulence characteristics
- (ii) the human host response
- (iii) the type of information epidemiologists need from microbiologists.

The project will agree, with the assistance of internationally recognised experts, a strategy

for microbiological and epidemiological investigation of human illness associated with *C. jejuni*. The CampyNet database will be maintained and expanded, and the CampyNet website updated, to provide:

- (i) information on new research of relevance to host microbe interaction
- (ii) the agreed combined microbiology/epidemiology strategy
- (iii) a set of recommendations for best-practice tools/methods for investigation of host-pathogen interaction.

A database has been developed at the Veterinary Laboratories Agency (VLA), UK, to maintain and update the existing CampyNet database and sharing of the genotype, antimicrobial susceptibility and virulotype data generated within CampyNet II. This database will be maintained and expanded to provide:

- (i) information on new research of relevance to the investigation of *Campylobacter* disease epidemiology with emphasis on host/microbe interactions
- (ii) the agreed combined microbiology/epidemiology strategy and
- (iii) a set of recommendations for appropriate tools for investigation of host-pathogen interaction.

The second workshop for Workpackage 30 is planned in Berlin, November 2006.

Lucy Harper



Participants in the Workpackage 30 kick-off workshop, National Veterinary Institute (SVA) in Uppsala, Sweden

Project Management

Final Reports of Workpackages 5 and 7-14

The final reports of the research Workpackages 5 and 7-14 were submitted to the Project Manager at the beginning of April. All completed milestones and deliverables for these workpackages either have been or are currently being placed on the website. The final reports are now being reviewed by the Project Manager and will be refereed by the Co-ordinating Forum before submission to the EC.

An overview of the Workpackage outputs were reviewed at the Co-ordinating Forum at its meeting in Madrid. The success of these research Workpackages was illustrated by the evidence including:

- One patent
- The preparation of several European Standardization (CEN) documents
- The organisation of two international meetings
- At least 25 peer reviewed papers published or submitted
- Collaboration in the successful submission to the EC of one Integrated Project and one Concerted Action.



Participants at the third Co-ordinating Forum meeting in Madrid

Third Co-ordinating Forum meeting

The Co-ordinating Forum met at the Institute of Health, Carlos III, National Centre of Microbiology, in Madrid, on 11 April 2006, for a packed agenda to review network progress. In the "Virtual Institute" Workpackage the Administration Bureau gave presentations on the financial status and two current projects on the "sustainability of the network" and "electronic tools".

In the "Strategic Scientific Integration" Workpackage, the work of the Thematic Representatives Group on the science

strategy, implementation plans and state of art reviews was presented by the Project Director. All these documents are on the website. In addition, there was a review of the Training and Personal Development Programme by DFVF and a presentation by ISS on the 2007 Annual Meeting planned in Pisa. The Communications Unit then gave a summary on the work in the "Spreading Excellence" Workpackage. Finally, the Project Director presented the ongoing progress of the research Workpackages including the final reports from WP5 and 7-14. The Forum recognised the successful outcomes of these projects and acknowledged the hard work of the Workpackage leaders and their teams.

Do you have a desire to travel and learn?

One issue raised at the Co-ordinating Forum meeting was the generally poor uptake by Med-Vet-Net associated scientists of the funded opportunities to travel to other institutes in the network. We would particularly welcome applications for short term missions lasting several weeks to learn new techniques or develop new skills. Submissions to gain skills in European institutes outside of Med-Vet-Net will also be considered. The information to submit an application is on the members website at <https://www.medvetnet.org/membersite/templates/doc.php?id=36>

Hello sunshine

The sun and sea is now not far away. This time next week we shall be in Malta – working hard of course. At the time of going to press, we have 184 delegates registered of whom 43 are external to the network, including several from the USA and Canada. We have been very fortunate to receive support from several sources including the FAO and Pfizer which will help to support the attendance of PhD students, experts in food safety and guests from non-European countries. As I look out my window in the United Kingdom, it is raining and cold – so the thought of sun and sea is a welcome incentive to finish this newsletter and start packing!



Dolmen Resort Hotel, Malta



Oracle conference centre at the Dolmen Resort Hotel, Malta



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 of 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.



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

Admin Bureau Update

Co-ordinating Forum Meeting

The third Co-ordinating Forum meeting took place at ISCIII, Madrid, on 10-11 April 2006. Participants met for a meal at the hotel on the evening of 10 April and the meeting itself was held the following day at the National School of Sanitation, the Head Quarters of ISCIII. Members of the Administration Bureau who assisted in the organisation of this meeting were welcomed by the people of ISCIII, and the Project Manager (also Chairperson of the Co-ordinating Forum) praised the quality of local organisation.

Workpackage contracts

Workpackage contracts for the second round of Workpackages are currently making their way to all Partners for signature. The contracts have been redrafted and were reviewed by the Project Manager and the Administration Bureau, to ensure that implementation of activities and financial management of work remains consistent.

Deadlines for the delivery of reports were reviewed and set at a more appropriate time in relation to the schedule of the project. The breakdown of the two payments from the Co-ordinator to Partners was also reviewed and validated by the Governing Board. The percentage of each payment is now a more realistic reflection of progress of the work and the funding requirements of partners. With such a breakdown, it is hoped that partners will always have cashflow available for Med-Vet-Net activities. Workpackage contracts should have been signed and returned to the Administration Bureau by the week beginning 24 April 2006 (week 17). After this date the process of payment from the Co-ordinator to partners will begin.

EC second grant funds

On 18 April 2006 we received notice that the amount of the second grant has been calculated and agreed by the EC. The transfer of money has now begun and the Co-ordinator should receive this money during the next couple of weeks. It now seems likely that these funds will reach Partner Institutes at the end of May 2006.

Admin Bureau

Short Term Missions

Do any of your scientists wish to visit other institutes to promote technology transfer and assist in your collaborative approach to research? The Med-Vet-Net exchange programme allows Med-Vet-Net members to apply for short-term exchange visits - usually between one week and two months in length - to facilitate the sharing of skills and experience between institutions. These programmes will strengthen the network by building relations among members and will also allow members the opportunity for personal development, presentation of data and sharing of knowledge.

For more information, including detailed information about the application process please visit: <https://www.medvetnet.org/members/doc/templates/doc.php?id=36>



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=&su bExpand=

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).

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>

Priority Setting of Foodborne and Zoonotic Pathogens

19-21 July, Berlin, Germany

An international conference organised jointly by Med-Vet-Net and the US Food safety 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>

20th ICFMH on Food Safety and Food Biotechnology: Diversity and Global impact

Bologna, Italy

29 August to 2 September 2006

This congress is a great opportunity for food microbiologist, technologists and student involved in food industries as well as regulatory agencies to improve their understanding and discuss topics related to food safety and new-emerging challenges that the scientists have to cope with in order to ensure a safe, secure, nutritious and appealing food supply to a wide range of different consumers.

If you are interested in this event, please check our web site <http://www.foodmicro2006.org>

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/eviw/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 Mircotechnology 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>

CONTACT US

Med-Vet-Net News is published monthly by the Med-Vet-Net Communications Unit.
Editor: Lucy Harper
Email:
communications@medvetnet.org
Ph: +44 (0)1234 271020
Fax: +44 (0)1234 271025
Postal Address:
**Society for Applied Microbiology,
The Blore Tower,
The Harpur Centre,
Bedford, MK20 1TQ, UK**
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