The Paratuberculosis Newsletter

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All contributions should be sent to ssn@life.ku.dk

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Editor

1. IAP Business

11ICP Update

The 11th International Colloquium on Paratuberculosis 2012

Cosmopolitan Sydney is Australia's largest and most exciting city, the perfect destination for a colloquium as significant as this. Sydney is one of the world's most beautiful cities, known for its famous harbour, beaches and national parks and boasts a stunning location, temperate climate, world-leading facilities and infrastructure, a robust economy and friendly locals. Sydney is simply unforgettable.

Over 200 abstracts have been received which promises an innovative and exciting program...

The Scientific Program highlights Include:

- 3rd ParaTB Forum (by invitation)
- Diagnostics and detection of MAP
- Host response and immunology
- Control Programs
- Pathogenomics
- Mycobacterial diseases of wildlife
- Genotyping and MAP diversity
- Industry forum
- Epidemiology
- Public Health and MAP in the environment
- International initiatives
- Synopsis and future directions

There are plenty of opportunities to catch up with old friends and meet new ones whilst enjoying the beauty of Sydney and it's surrounds during a Welcome reception, Harbour cruise, Taronga Zoo excursion and the highlight Colloquium dinner.

Register before 1 December 2011, to receive the discounted Early Bird registration rates.

We are delighted to announce the following speakers;

- Douwe Bakker, Central Veterinary Institute, The Netherlands
- John Bannantine, National Animal Disease Centre, USA
- Marcel Behr, McGill University, Canada
- Jeroen de Buck, University of Calgary, Canada
- Lorna Citer, Animal Health Australia
- Mike Collins, University of Wisconsin, USA
- Ian Gardner, University of Prince Edward Island, Canada
- Jayne Hope, Institute for Animal Health, UK
- Vivek Kapur, The Pennsylvania State University, USA
- David Kennedy, Ausvet Animal Health Services, Australia
- Ad Koets, Utrecht University, The Netherlands
- Polychronis Kostoulas, University of Thessaly, Greece
- Kaylene Larking, Beef + Lamb New Zealand
- Eiichi Momotani, National Institute of Animal Health, Japan
- Søren Nielsen, University of Copenhagen, Denmark
- Ingrid Olsen, National Veterinary Institute, Norway
- Evan Sergeant, Ausvet Animal Health Services, Australia
- Srinand Srivatsan, University of Minnesota, USA

- Karen Stevenson, Moredun Research Institute, Scotland

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JDIP Student Travel Scholarship

A funding opportunity from the Johne's Disease Integrated Program (JDIP) of the United States.
Scholarships will be available to postdoctoral and graduate students who submit abstracts to the 11th ICP meeting. The scholarship provides student registration fees for the meeting and $1,000 USD toward travel expenses. Selection of scholarship recipient will be based on potential for future contributions to the field, and scientific merit of a submitted abstract. Up to eight (8) scholarships will be awarded.

2. Short Scientific Reports

Johne's Disease: Passive MAP shedding in Dairy Cattle

R. H. Whitlock, TL Fyock, M. Fecteau, RW Sweeney

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Passive MAP shedding, defined as the identification of MAP in feces from cows that are not infective (i.e. not "actively" shedding the organism, has been a recognized biological phenomenon for over 20 yrs (Sweeney, 1992). Few reports exist concerning the frequency of fecal culture positive samples or culture positive cows as passive shedders. However a recent report documented that 9/9 (100%) of yearling steers grazing MAP contaminated pasture grass fit the criterion as passive MAP shedders (Fecteau, 2010). The purpose of this report is to initiate scientific exchanges concerning the importance and recognition that passive MAP shedding in cattle is an important biological phenomenon. Over the years a positive fecal culture has been accepted as the Gold Standard diagnostic test for Johne's disease in cattle and in other species. Many investigators consider the specificity of fecal culture to be 100% (Buergelt, 1977, Chiodini, 1984, Sockett, 1992) or near unity (Kostoulos, 2006).

The USA National Academy of Sciences reported, "fecal culture by itself has been erroneously regarded as a gold-standard procedure for determining an animal's infection status. Although the specificity of fecal culture is high, it is not absolute because of the potential for pass-through of orally ingested organisms by uninfected cattle (Sweeney-1992) and because of laboratory errors, such as sample misidentification or cross-contamination." (The National Academy of Sciences report on Johne's disease, page 48)

A special study on the consensus recommendations on diagnostic testing of paratuberculosis in cattle reported the specificity of bacterial culture for JD in cattle to be 99.9 +/- 0.1% (Collins, 2006). More recent reviews of JD diagnostic tests suggest 98% specificity to be more realistic allowing for the occasional false positive (Norten, 2010).

Few reports discuss the issue of passive shedding, nor the frequency of passive shedding. Positive fecal cultures for MAP have been reported as 'pass-through" shedding in MAP orally dosed neo-natal calves, (Sweeney, 2006, Van Roermund, 2007 Stabel, 2009). For this discussion, the focus is on pass-through MAP shedding by adult cattle where adequate concentrations of MAP may be present in the environment, as from a "Super-shedder" to result is passive shedding by herd-mates. One early report did document the technical feasibility of passive shedding in adult cattle after oral dosing variable volumes (0.14 ml/kg to 2.2 ml/kg bw) of manure obtained from a cow with clinical JD (Sweeney-1992). Each dose resulted in passive shedding for 3-6 days, with the peak shedding level proportional to the dose administered. Based on the doses administered, a few ml of manure from a super-shedder cow would easily result in passive shedding.

The current report is based on a prospective longitudinal study of three dairy herds in the Northeastern USA (Pradhan, 2008). Semi-annual whole herd fecal cultures were completed on more than 560 adult cows for four plus years of the study. Passive shedders were defined as cows with low to moderate numbers of MAP on the surface of HEY culture tubes with at least two subsequent negative fecal cultures, ELISA negative or no MAP in tissues at slaughter. Fecal and tissue samples (ileum, IC valve, and 2 ileo-cecal lnn) from selected cows followed to slaughter and tissues and fecal samples were cultured to

determine the extent of MAP tissue infection, so as to determine whether a cow was a passive shedder or an active shedder. Approximately 30% (360 cows) of the adult cattle in the three herds were followed to slaughter to collect tissues.

Results to date suggest more than 30% of the culture positive cows (95 cows) would be classified as passive shedders. Based on this observation, other investigators should evaluate their culture results to consider passive shedding as a more common event than previously appreciated. For those investigators developing mathematical models of Johne's disease, the commonly accepted specificity of fecal culture being close to 99%, perhaps we need to critically review other data and reassess the true positive predictive value of fecal culture which may be as low as 60% in some herds.

Your comments and input are welcome concerning this topic. Please send comments by E-mail to Robert Whitlock at rhw@vet.upenn.edu
If feasible, we will prepare a summary response for the next IAP newsletter.

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Concordance between *Mycobacterium avium* subsp. *paratuberculosis* ELISA results in paired sera and milk of dairy goats

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We estimated the concordance between *Mycobacterium avium* subsp. *paratuberculosis* (MAP) ELISA results in paired sera and milk samples obtained from Greek dairy goats four consecutive times: at kidding, 2 and 4 months later and at the end of their 7-month-long lactation period (Nielsen et al., 2002). All samples were from the animals (n=225) of a dairy goat flock with a history of clinical paratuberculosis and were tested with a commercial ELISA kit (Pourquierâ ELISA Paratuberculosis). For each lactation stage, results were grouped in two separate two-by-two tables, one using the recommended cut-offs (S/P ratio of 0.45 for sera and 0.2 for milk) and one using cut-offs at 50% (Kostoulas et al., 2006) of those recommended by the manufacturer and were evaluated for significance by Mc Nemar's $\chi 2$ test for symmetry. Additionally, for each stage of lactation, we estimated the concordance correlation coefficients (rccc) between the S/P ratios of the paired sera and milk samples. Only for the samples obtained in late lactation there was significant difference between the proportion of positive sera and milk at either cut-off (Mc Nemar's $\chi 2=12$, $p=0.0005$ and $\chi 2 =7.14$, $p=0.0129$ for manufacturer-recommended and 50% reduced cut-offs, respectively). At late lactation the proportion of positive milk samples was higher. The r_{CCC}'s were high in early (rccc=0.887), mid (r_{ccc}=0.805) and late (r_{ccc}=0.892) lactation but were low-to-moderate at kidding (rccc=0.409). In conclusion, ELISA testing of milk/colostrum samples may be as accurate as serological testing for the detection of MAP antibodies. Furthermore, at late lactation milk testing may outperform serological testing.

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3. List of Recent Publications

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