

JDIP Receives USDA Approval of 2nd Year Funding

After a rigorous process of internal and external scientific and fiscal review, the USDA has approved JDIP's second-year funding request of \$1.5 million.

This approval allows JDIP to continue its six core activities (described in, "*JDIP Core Groups Provide Broad Array of Services and Support to Researchers*," page 3) and its four major projects: Epidemiology & Transmission of JD; Diagnostics & Strain Differentiation; *Map* Biology & Pathogenesis; and, *Map* Immunology & Vaccine Development.

In addition to continuing funding for the major projects and core activities, the approved funds include nearly \$100,000 for developmental projects – projects that hold particular promise in contributing to JDIP's goals.

The principal investigators for the developmental projects that will receive funding during year two include Torsten Eckstein, Colorado State University; Raymond Sweeney, University of Pennsylvania; Geoffrey Fosgate, Texas A&M University; Ynte Schukken, Cornell University; Elizabeth J.B. Manning, University of Wisconsin - Madison; and, Sangeeta Khare, Texas A&M University. Congratulations and welcome to all of these investigators into the Johne's Disease Integrated Program!

The table at the right presents more detailed funding information for each project and core.

The effective date of this funding period is retroactive to April 15, 2005 and runs through April 14, 2007. The necessary subcontracts will be in place within approximately four weeks.

PI	Institution	Title	Amount
Bannantine, John	NADC	Genomics, Antibodies and Proteomics Core	172,310
Collins, Michael	U. Wisc. Madison	Communications and Extension	77,018
Davis, William	Washington St. Univ.	Immunology & vaccine development	111,562
Eckstein, Torsten	Colorado State Univ.	Lipidomic Definition of B-cell antigens of <i>Mycobacterium avium</i> subspecies <i>paratuberculosis</i>	45,273
Fosgate, Geoffrey	Texas A&M Univ.	Tangential flow filtration and risk mapping of environmental contamination for Johne's disease in Texas beef ranches.	20,000
Gardner, Ian	UC Davis	Epidemiology and transmission	116,542
Grohn, Yrjo	Cornell Univ.	Epidemiology and Biostatistics Core	88,888
Kapur, Vivek	U. Minnesota	Administrative Core	115,075
Khare, Sangeeta	Texas A&M Univ.	Phagocytosis and persistence of <i>Mycobacterium avium</i> subsp. <i>Paratuberculosis</i> in phagocytic cells from beef and dairy cattle.	14,815
Manning, Elizabeth	U. Wisc. Madison	M. <i>paratuberculosis</i> antigens and antibodies: liquid crystal detection diagnostics	8,485
Payeur, Janet	NVSL	Diagnostics and Strain Differentiation	51,143
Schukken, Ynte	Cornell Univ.	Calf-to-calf transmission of <i>Mycobacterium avium</i> subspp. <i>paratuberculosis</i> (<i>Map</i>) on commercial dairy farms.	23,750*
Sreevatsan, Srinand	U. Minnesota	Identification and characterization of single nucleotide polymorphisms in <i>Mycobacterium avium</i> subsp. <i>Paratuberculosis</i> to enable strain differentiation and tracking.	75,425
Stabel, Judy	NADC	Animal Models & Facilities Core	82,584
Sweeney, Raymond	U. Penn.	Immune response to oral vaccination for Johne's disease in calves	28,978
Talaat, Adel	U. Wisc. Madison	Basic biology and Pathogenesis of <i>M. paratuberculosis</i>	167,202
Wells, Scott	U. Minnesota	Develop and validate efficient testing strategies for use in cattle and other species.	30,099
		JDIP Conference, travel & misc.	115,578
		Indirect costs	179,023
		Total Year 2 JDIP Funds:	1,500,000

* included in Epidemiology and transmission, 1st line; highlighted items are developmental projects

Editors

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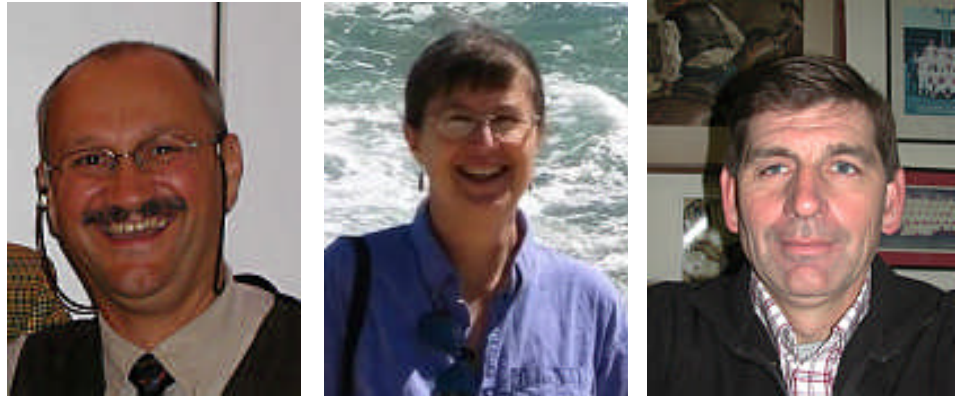
Bob Schroeder
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JDIP News is published periodically to enhance intramural communications and ensure that JDIP participants and stakeholders are updated on news of relevance to our community.

Suggestions, comments and contributions should be directed via email to Bob Schroeder at schro488@umn.edu.

JDIP News Updates

Congratulations to the following investigators, whose projects were among those selected to be funded as developmental projects by JDIP.



Three of our investigators who recently received JDIP Year 2 development project funding.

(left to right: Torsten Eckstein, Becky Manning, Ray Sweeney). Photos not available: Geoffrey Fosgate, Sangeeta Khare, Ynte Schukken.

Other

On November 14, 2005, Bob Schroeder joined the John's Disease Integrated Program as Associate Administrator.

In his new role, Bob is responsible for grants and subcontract administration, problem identification and resolution, and the development of communications to aid in overall program effectiveness.

Bob brings a varied background to his position, including purchasing and personnel experience gained at the Field Servicing Office of USDA's Animal and Plant Health Inspection Service in Minneapolis.

With a degree in personnel management, Bob spent 20 years in human resources management in organizations as diverse as a consortium of rural electric cooperatives, and with Battelle - Pacific Northwest Laboratories, the organization that managed research and development activities at the Hanford Nuclear Waste Site in Washington state. He also spent several years as a Senior Consultant with a major national CPA/consulting firm.

Bob comes to us from the Tumor Vaccine Group at the University of Washington, where he was responsible for administrative coordination of project and core activities of an immunologic monitoring consortium that included numerous universities and private companies. His areas of responsibility included grants administration, purchasing, human resources, computer network administration, and internal and external communications programs, including website development and maintenance.

Bob Schroeder, JDIP Associate Administrator, can be reached at (612) 624-6681, or via email at schro488@umn.edu.



JDIP Core Groups Provide Broad Array of Services and Support to Researchers

Since its inception, JDIP has operated on the premise that Johne's Disease researchers need to be able to work collaboratively, and that resources need to be effectively leveraged to provide the greatest benefit to those researchers.

A key element to accomplish this was the creation of the core groups within JDIP. There are four scientific cores, an Extension and Communications Core, and an Administrative Core, and each core is charged with a specific goal and includes members across disciplines and institutions.

The core groups ensure economies of scale by providing broad-based community access to key enabling technologies and research facilities, standardized reagents and resources, as well as extension, education, communication and oversight.

The state-of-the-art scientific core groups and their goals include:

- **Core 1**, Epidemiological & Biostatistical Consulting, provides the community with consulting services and training programs for JD-related bio-statistics and epidemiological study design. As an example of its activities, this core recently made itself available to assist investigators with study design issues as they completed their applications for NRI grants.

Contacts:

Yrjo Grohn, Cornell University, (607) 253-4394, ytg1@cornell.edu;

Ian Gardner, University of California – Davis, (530) 752-6992, iagardner@ucdavis.edu

- **Core 2**, Diagnostics & Strain Differentiation, provides services, reagents, and standardized protocols for diagnosis and strain differentiation of *Map*.

Contacts:

Janet Payeur, NVSL, (515) 663-7676, Janet.B.Payeur@aphis.usda.gov

Becky Manning, University of Wisconsin, (608) 265-4958, emanning@wisc.edu

- **Core 3**, Genomics, Antibodies & Proteomics, provides state-of-the-art genomics and proteomics reagents and resources, as well as services and facilities for the production of antibodies and other immunological reagents for *Map* and JD research.

Contact:

John Bannantine, NADC, (515) 663-7340, jbannant@nadc.ars.usda.gov

- **Core 4**, Animal Models & Facilities, develops and provides access to standardized animal models and provides access to state-of-the-art animal facilities for JD research.

Contact:

Judy Stabel, NADC, (515) 663-7304, jstabel@nadc.ars.usda.gov

In addition to these cores, **Core 5**, Extension & Communications, develops and implements a strong communications, training, and outreach plan designed to promote linkages with public and private stakeholders.

Contact:

Jeannette McDonald, University of Wisconsin, (608) 263-5170, mcdonal7@facstaff.wisc.edu

Michael Collins, University of Wisconsin, (608) 262-8457, mcollin5@wisc.edu

JDIP Sponsors Students at Workshop in Denmark

JDIP Scientific Advisory Group

John Bannantine
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Bill Davis
(WASH. STATE U)

Ian Gardner
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Yrjo Grohn
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Adel Talaat
(U. WISC. MADISON)

Scott Wells
(U. MINNESOTA)

Application of state-of-the-art methods in the design and analysis of test evaluation studies for paratuberculosis was the central theme of a workshop held at the Royal Veterinary and Agricultural University (RVAU), Copenhagen on August 19-20, 2005.

JDIP sponsored the attendance of seven PhD and Masters students at the workshop. Lectures and discussion sessions considered situations where a "gold standard" test (e.g. fecal culture) was available and situations where estimation of sensitivity and specificity was necessary in the absence of a gold standard. Participants also analyzed data from a recently published test evaluation study authored by three JDIP members: Michael Collins, Robert Whitlock, and Scott Wells.

Lecturers and discussion leaders at the workshop were Ian Gardner, a JDIP member; Matthias Greiner, Danish Food and Veterinary Research Institute; and Niels Toft, RVAU. Soren Nielsen, one of the main organizers of the 8th International Colloquium on Paratuberculosis, also assisted with local arrangements.



JDIP-sponsored students. (left to right: Sanjeev Gumber, Polychronis Kostoulas, Suelee Robbe-Austerman, Juliana Ruzante, Natalia Cernicchiaro, Nicole Gollnick, Navneet Dhand)



Upcoming Meetings and Conferences that may be of Interest

JDIP External Advisory Board

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(U. OF MINNESOTA)



- **JDIP 2nd Annual Conference, Davis, CA January 26 – 29, 2006.**
<http://www.jdip.org>
- American Society for Microbiology 106th General Meeting.
Orlando, FL May 21 - 25, 2006.
<http://gm.asm.org/>
- American Veterinary Medical Association 143rd Annual Convention.
Honolulu, HI July 15 - 19, 2006.
<http://avmaconvention.org/>
- University of Wisconsin School of Veterinary Medicine and USDA Animal and Plant Health Inspection Service 4th Biennial Foreign Animal Diseases Training Course.
Madison, WI July 30 - August 4, 2006.
<http://www.vetmed.wisc.edu/pbs/courses/FAD2006>
- 11th International Symposium on Veterinary Epidemiology and Economics (ISVEE XI).
Queensland, Australia, August 6 - 11, 2006.
<http://www.isveexi.org/>
- American Association of Bovine Practitioners 39th Annual Convention.
St. Paul, MN Sept. 21 - 23, 2006.
<http://www.aabp.org/meeting/default.asp>
- 46th Annual Interscience Conference on Antimicrobial Agents and Chemotherapy.
San Francisco, CA September 27 - 30, 2006.
<http://www.icaac.org/>
- Infectious Diseases Society of America 44th Annual Meeting.
Toronto, Ontario, Canada October 12-15, 2006.
<http://www.idsociety.org/Template.cfm?Section=Meetings>
- United States Animal Health Association 110th Annual Meeting.
Minneapolis, MN October, 12 - 19, 2006.
<http://www.usaha.org/meetings/>
- Conference of Research Workers in Animal Diseases.
Chicago, IL December 3 - 5, 2006.
<http://www.cvmbs.colostate.edu/microbiology/crwad/index.htm>

Special Notice

The Joint ADSA/ASAS Annual Meeting, which is being held July 9-13 in Minneapolis, will include a specific section for oral presentations on John's work this year. Dr. Ken Olson will be coordinating the section. Poster presentations are also welcome, but they will be included in the broader poster sections. The meeting, which normally has over 3,000 in attendance, provides an excellent opportunity to get your work in front of animal and dairy science professionals. The call for abstracts and links to the abstract submission site is included below. Please indicate that your abstract is for "Animal Health" to help assure that it is placed in the John's section.

Questions can be directed to Ken Olson at keolson@prodigy.net.

Abstracts are due February 1, 2006.

2006 ADSA-ASAS Call for Abstracts Mailing -- Save this Email!

This email is your 2006 ADSA ASAS Call for Abstracts Mailing. This is our way of continuing to provide online services to our members. All the information you need to submit an abstract is posted at <http://adsa.asas.org/meetings/2006/call.asp>. Save this URL -- bookmark the page today to access at a later date. And don't forget to highlight February 1, 2006 on your calendars -- the deadline for abstracts.

Other important deadlines:

Special Events Request Forms: December 15, 2005

Early Registration: June 7, 2006

Housing: June 7, 2006

If you prefer to have the call for abstracts information mailed to you, please request via email to abstract@assoqh.org or call 217-356-3182.

The 2006 ADSA ASAS Housing Form printable version is available at <http://adsa.asas.org/meetings/2006/HousingForm.pdf> or visit <http://adsa.asas.org/2006> to make your reservations online.

Visit the meeting web site, <http://adsa.asas.org/2006>, often for the latest meeting information.

The submission of abstracts by our members points to the success of our meeting!

Thank you!

2006 ADSA ASAS Program Committee

Johne's Disease-Related Publications – August through December, 2005

- **Aly, S. S., and M. C. Thurmond.** 2005. Evaluation of *Mycobacterium avium* subsp. *paratuberculosis* infection of dairy cows attributable to infection status of the dam. *J Am Vet Med Assoc* **227**:450-4.
- **Begg, D. J., and J. F. Griffin.** 2005. Vaccination of sheep against *M. paratuberculosis*: immune parameters and protective efficacy. *Vaccine* **23**:4999-5008.
- **Begg, D. J., R. O'Brien, C. G. Mackintosh, and J. F. Griffin.** 2005. Experimental infection model for Johne's disease in sheep. *Infect Immun* **73**:5603-11.
- **Berghaus, R. D., J. E. Lombard, I. A. Gardner, and T. B. Farver.** 2005. Factor analysis of a Johne's disease risk assessment questionnaire with evaluation of factor scores and a subset of original questions as predictors of observed clinical paratuberculosis. *Prev Vet Med* **72**:291-309.
- **Bielanski, A., J. Algire, G. C. Randall, and O. Surujballi.** 2005. Risk of transmission of *Mycobacterium avium* ssp. *paratuberculosis* by embryo transfer of in vivo and in vitro fertilized bovine embryos. *Theriogenology*. Epublication ahead of print.
- **Brey, B. J., R. P. Radcliff, D. L. Clark, Jr., and J. L. Ellingson.** 2005. Design and development of an internal control plasmid for the detection of *Mycobacterium avium* subsp. *paratuberculosis* using real-time PCR. *Mol Cell Probes*. Epublication ahead of print.
- **Christian, M.** 2005. Johne's disease vaccine. *Vet Rec* **157**:327.
- **Corn, J. L., E. J. Manning, S. Sreevatsan, and J. R. Fischer.** 2005. Isolation of *Mycobacterium avium* subsp. *paratuberculosis* from free-ranging birds and mammals on livestock premises. *Appl Environ Microbiol* **71**:6963-7.
- **D'Haese, E., I. Dumon, H. Werbrouck, V. De Jonghe, and L. Herman.** 2005. Improved detection of *Mycobacterium paratuberculosis* in milk. *J Dairy Res* **72 Spec No**:125-8.
- **Dupont, C., K. Thompson, C. Heuer, B. Gicquel, and A. Murray.** 2005. Identification and characterization of an immunogenic 22 kDa exported protein of *Mycobacterium avium* subspecies *paratuberculosis*. *J Med Microbiol* **54**:1083-92.
- **Eckstein, T. M., S. Chandrasekaran, S. Mahapatra, M. R. McNeil, D. Chatterjee, C. D. Rithner, P. W. Ryan, J. T. Belisle, and J. M. Inamine.** 2005. A major cell wall lipopeptide of *Mycobacterium avium* subspecies *paratuberculosis*. *J Biol Chem*. Epublication ahead of print.
- **Eda, S., B. Elliott, M. C. Scott, W. R. Waters, J. P. Bannantine, R. H. Whitlock, and C. A. Speer.** 2005. New method of serological testing for *Mycobacterium avium* subsp. *paratuberculosis* (Johne's disease) by flow cytometry. *Foodborne Pathog Dis* **2**:250-62.
- **Eppleston, J., L. Reddacliff, P. Windsor, I. Links, and R. Whittington.** 2005. Preliminary observations on the prevalence of sheep shedding *Mycobacterium avium* subsp. *paratuberculosis* after 3 years of a vaccination program for ovine Johne's disease. *Aust Vet J* **83**:637-8.
- **Ezanno, P., G. van Schaik, M. F. Weber, and J. A. Heesterbeek.** 2005. A modeling study on the sustainability of a certification-and-monitoring program for paratuberculosis in cattle. *Vet Res* **36**:811-26.
- **Fischer, O. A., L. Matlova, L. Dvorska, P. Svastova, M. Bartos, R. T. Weston, M. Kopečna, I. Trcka, and I. Pavlik.** 2005. Potential risk of *Mycobacterium avium* subspecies *paratuberculosis* spread by syrphid flies in infected cattle farms. *Med Vet Entomol* **19**:360-6.

Johne's Disease-Related Publications – August through December, 2005 (cont'd)

- **Freeman, H., and M. Noble.** 2005. Lack of evidence for *Mycobacterium avium* subspecies paratuberculosis in Crohn's disease. *Inflamm Bowel Dis* **11**:782-3.
- **Gearry, R. B., J. M. Aitken, R. L. Roberts, S. Ismail, J. Keenan, and M. L. Barclay.** 2005. Images of interest. Gastrointestinal: *Mycobacterium avium* paratuberculosis and Crohn's disease. *J Gastroenterol Hepatol* **20**:1943.
- **Georgiadis, M. P., W. O. Johnson, and I. A. Gardner.** 2005. Sample size determination for estimation of the accuracy of two conditionally independent tests in the absence of a gold standard. *Prev Vet Med* **71**:1-10.
- **Godfroid, J., C. Delcorps, L. M. Irenghe, K. Walravens, S. Marche, and J. L. Gala.** 2005. Definitive differentiation between single and mixed mycobacterial infections in red deer (*Cervus elaphus*) by a combination of duplex amplification of p34 and f57 sequences and Hpy188I enzymatic restriction of duplex amplicons. *J Clin Microbiol* **43**:4640-8.
- **Gonzalez, J., M. V. Geijo, C. Garcia-Pariente, A. Verna, J. M. Corpa, L. E. Reyes, M. C. Ferreras, R. A. Juste, J. F. Garcia Marin, and V. Perez.** 2005. Histopathological classification of lesions associated with natural paratuberculosis infection in cattle. *J Comp Pathol* **133**:184-96.
- **Griffin, J. F., E. Spittle, C. R. Rodgers, S. Liggett, M. Cooper, D. Bakker, and J. P. Bannantine.** 2005. Immunoglobulin G1 enzyme-linked immunosorbent assay for diagnosis of Johne's Disease in red deer (*Cervus elaphus*). *Clin Diagn Lab Immunol* **12**:1401-9.
- **Hendrick, S. H., D. F. Kelton, K. E. Leslie, K. D. Lissemore, M. Archambault, and T. F. Duffield.** 2005. Effect of paratuberculosis on culling, milk production, and milk quality in dairy herds. *J Am Vet Med Assoc* **227**:1302-8.
- **Huntley, J. F., J. R. Stabel, M. L. Paustian, T. A. Reinhardt, and J. P. Bannantine.** 2005. Expression library immunization confers protection against *Mycobacterium avium* subsp. paratuberculosis infection. *Infect Immun* **73**:6877-84.
- **Ikonomopoulos, J., I. Pavlik, M. Bartos, P. Svastova, W. Y. Ayele, P. Roubal, J. Lukas, N. Cook, and M. Gazouli.** 2005. Detection of *Mycobacterium avium* subsp. paratuberculosis in retail cheeses from Greece and the Czech Republic. *Appl Environ Microbiol* **71**:8934-6.
- **Judge, J., I. Kyriazakis, A. Greig, D. J. Allcroft, and M. R. Hutchings.** 2005. Clustering of *Mycobacterium avium* subsp. paratuberculosis in rabbits and the environment: how hot is a hot spot? *Appl Environ Microbiol* **71**:6033-8.
- **Koo, H. C., Y. H. Park, J. Ahn, W. R. Waters, M. V. Palmer, M. J. Hamilton, G. Barrington, A. A. Mosaad, K. T. Park, W. K. Jung, I. Y. Hwang, S. N. Cho, S. J. Shin, and W. C. Davis.** 2005. Use of rMPB70 protein and ESAT-6 peptide as antigens for comparison of the enzyme-linked immunosorbent, immunochromatographic, and latex bead agglutination assays for serodiagnosis of bovine tuberculosis. *J Clin Microbiol* **43**:4498-506.
- **Lamhonwah, A. M., C. Ackerley, R. Onizuka, A. Tilups, D. Lamhonwah, C. Chung, K. S. Tao, R. Tellier, and I. Tein.** 2005. Epitope shared by functional variant of organic cation/carnitine transporter, OCTN1, *Campylobacter jejuni* and *Mycobacterium paratuberculosis* may underlie susceptibility to Crohn's disease at 5q31. *Biochem Biophys Res Commun* **337**:1165-75.

Johne's Disease-Related Publications – August through December, 2005 (cont'd)

- **Langelaar, M. F., C. N. Weber, M. B. Overdijk, K. E. Muller, A. P. Koets, and V. P. Rutten.** 2005. Cytokine gene expression profiles of bovine dendritic cells after interaction with *Mycobacterium avium* ssp. paratuberculosis (M.a.p.), *Escherichia coli* (E. coli) or recombinant M.a.p. heat shock protein 70. *Vet Immunol Immunopathol* **107**:153-61.
- **Li, L., J. P. Bannantine, Q. Zhang, A. Amonsin, B. J. May, D. Alt, N. Banerji, S. Kanjilal, and V. Kapur.** 2005. The complete genome sequence of *Mycobacterium avium* subspecies paratuberculosis. *Proc Natl Acad Sci U S A* **102**:12344-9.
- **Lombard, J. E., F. B. Garry, B. J. McCluskey, and B. A. Wagner.** 2005. Risk of removal and effects on milk production associated with paratuberculosis status in dairy cows. *J Am Vet Med Assoc* **227**:1975-81.
- **Mackintosh, C. G., R. E. Labes, and J. F. Griffin.** 2005. The effect of Johne's vaccination on tuberculin testing in farmed red deer (*Cervus elaphus*). *N Z Vet J* **53**:216-22.
- **Marsh, I. B., and R. J. Whittington.** 2005. Deletion of an *mmpL* gene and multiple associated genes from the genome of the S strain of *Mycobacterium avium* subsp. paratuberculosis identified by representational difference analysis and in silico analysis. *Mol Cell Probes* **19**:371-84.
- **McKenna, S. L., G. P. Keefe, H. W. Barkema, and D. C. Sockett.** 2005. Evaluation of three ELISAs for *Mycobacterium avium* subsp. paratuberculosis using tissue and fecal culture as comparison standards. *Vet Microbiol* **110**:105-11.
- **McKenna, S. L., D. C. Sockett, G. P. Keefe, J. McClure, J. A. VanLeeuwen, and H. W. Barkema.** 2005. Comparison of two enzyme-linked immunosorbent assays for diagnosis of *Mycobacterium avium* subsp. paratuberculosis. *J Vet Diagn Invest* **17**:463-6.
- **Naser, S. A., and M. T. Collins.** 2005. Debate on the lack of evidence of *Mycobacterium avium* subsp. paratuberculosis in Crohn's disease. *Inflamm Bowel Dis* **11**:1123.
- **Olsen, I., P. Boysen, S. Kulberg, J. C. Hope, G. Jungersen, and A. K. Storset.** 2005. Bovine NK cells can produce gamma interferon in response to the secreted mycobacterial proteins ESAT-6 and MPP14 but not in response to MPB70. *Infect Immun* **73**:5628-35.
- **Osterstock, J. B., J. L. Mansell, and A. J. Rousel, Jr.** 2005. Protothecal enteritis as a cause of protein-losing enteropathy in a bull. *J Am Vet Med Assoc* **227**:1476-9, 1418.
- **Ravva, S. V., and L. H. Stanker.** 2005. Real-time quantitative PCR detection of *Mycobacterium avium* subsp. paratuberculosis and differentiation from other mycobacteria using SYBR Green and TaqMan assays. *J Microbiol Methods* **63**:305-17.
- **Romano, M. I., A. Amadio, F. Bigi, L. Klepp, I. Etchehoury, M. N. Llana, C. Morsella, F. Paolicchi, I. Pavlik, M. Bartos, S. C. Leao, and A. Cataldi.** 2005. Further analysis of VNTR and MIRU in the genome of *Mycobacterium avium* complex, and application to molecular epidemiology of isolates from South America. *Vet Microbiol* **110**:221-37.
- **Sajid, M. S., Z. Iqbal, G. Muhammad, and M. U. Iqbal.** 2005. Immunomodulatory effect of various anti-parasitics: a review. *Parasitology*:1-13.
- **Sechi, L. A., M. Gazouli, J. Ikonomopoulos, J. C. Lukas, A. M. Scanu, N. Ahmed, G. Fadda, and S. Zanetti.** 2005. *Mycobacterium avium* subsp. paratuberculosis, genetic susceptibility to Crohn's disease, and Sardinians: the way ahead. *J Clin Microbiol* **43**:5275-7.

Johne's Disease-Related Publications – August through December, 2005 (cont'd)

- **Sechi, L. A., L. Mara, P. Cappai, R. Frothingam, S. Ortu, A. Leoni, N. Ahmed, and S. Zanetti.** 2006. Immunization with DNA vaccines encoding different mycobacterial antigens elicits a Th1 type immune response in lambs and protects against *Mycobacterium avium* subspecies paratuberculosis infection. *Vaccine* **24**:229-235.
- **Semret, M., D. C. Alexander, C. Y. Turenne, P. de Haas, P. Overduin, D. van Soolingen, D. Cousins, and M. A. Behr.** 2005. Genomic polymorphisms for *Mycobacterium avium* subsp. paratuberculosis diagnostics. *J Clin Microbiol* **43**:3704-12.
- **Shin, S. J., C. F. Chang, C. D. Chang, S. P. McDonough, B. Thompson, H. S. Yoo, and Y. F. Chang.** 2005. In vitro cellular immune responses to recombinant antigens of *Mycobacterium avium* subsp. paratuberculosis. *Infect Immun* **73**:5074-85.
- **Stabel, J. R., and J. P. Bannantine.** 2005. Development of a nested PCR method targeting a unique multicopy element, ISMap02, for detection of *Mycobacterium avium* subsp. paratuberculosis in fecal samples. *J Clin Microbiol* **43**:4744-50.
- **Stewart, D. J., J. A. Vaughan, P. L. Stiles, P. J. Noske, M. L. Tizard, S. J. Prowse, W. P. Michalski, K. L. Butler, and S. L. Jones.** 2005. A long-term study in Angora goats experimentally infected with *Mycobacterium avium* subsp. paratuberculosis: Clinical disease, faecal culture and immunological studies. *Vet Microbiol.* Epublication ahead of print.
- **Stewart, W. C., K. G. Pollock, L. M. Browning, D. Young, A. Smith-Palmer, and W. J. Reilly.** 2005. Survey of zoonoses recorded in Scotland between 1993 and 2002. *Vet Rec* **157**:697-702.
- **Storset, A. K., I. Berg, and B. Djonne.** 2005. Evaluation of the gamma interferon test for diagnosis of paratuberculosis in goats. *Vet Immunol Immunopathol* **107**:87-94.
- **Sweeney, R. W., J. Uzonna, R. H. Whitlock, P. L. Habecker, P. Chilton, and P. Scott.** 2005. Tissue predilection sites and effect of dose on *Mycobacterium avium* subs. paratuberculosis organism recovery in a short-term bovine experimental oral infection model. *Res Vet Sci.* Epublication ahead of print.
- **Tanaka, S., M. Sato, T. Onitsuka, H. Kamata, and Y. Yokomizo.** 2005. Inflammatory cytokine gene expression in different types of granulomatous lesions during asymptomatic stages of bovine paratuberculosis. *Vet Pathol* **42**:579-88.
- **Tasara, T., L. E. Hoelzle, and R. Stephan.** 2005. Development and evaluation of a *Mycobacterium avium* subspecies paratuberculosis (MAP) specific multiplex PCR assay. *Int J Food Microbiol* **104**:279-87.
- **Tasara, T., and R. Stephan.** 2005. Development of an F57 sequence-based real-time PCR assay for detection of *Mycobacterium avium* subsp. paratuberculosis in milk. *Appl Environ Microbiol* **71**:5957-68.
- **Tiwari, A., J. A. VanLeeuwen, I. R. Dohoo, H. Stryhn, G. P. Keefe, and J. P. Haddad.** 2005. Effects of seropositivity for bovine leukemia virus, bovine viral diarrhoea virus, *Mycobacterium avium* subspecies paratuberculosis, and *Neospora caninum* on culling in dairy cattle in four Canadian provinces. *Vet Microbiol* **109**:147-58.
- **Toft, N., S. S. Nielsen, and E. Jorgensen.** 2005. Continuous-data diagnostic tests for paratuberculosis as a multistage disease. *J Dairy Sci* **88**:3923-31.
- **van Schaik, G., S. M. Stehman, R. H. Jacobson, Y. H. Schukken, S. J. Shin, and D. H. Lein.** 2005. Cow-level evaluation of a kinetics ELISA with multiple cutoff values to detect fecal shedding of *Mycobacterium avium* subspecies paratuberculosis in New York State dairy cows. *Prev Vet Med* **72**:221-36.

Johne's Disease-Related Publications – August through December, 2005 (cont'd)

- **Vansnick, E., F. Vercammen, L. Bauwens, E. D'Haese, H. Nelis, and D. Geysen.** 2005. A survey for *Mycobacterium avium* subspecies paratuberculosis in the Royal Zoological Society of Antwerp. *Vet J* **170**:249-56.
- **Vinh, D. C., and C. N. Bernstein.** 2005. Crohn's disease and *M. paratuberculosis*: where's the beef? *Inflamm Bowel Dis* **11**:1025-7.
- **Waldner, C. L.** 2005. Serological status for *N. caninum*, bovine viral diarrhea virus, and infectious bovine rhinotracheitis virus at pregnancy testing and reproductive performance in beef herds. *Anim Reprod Sci* **90**:219-42.
- **Whan, L., H. J. Ball, I. R. Grant, and M. T. Rowe.** 2005. Occurrence of *Mycobacterium avium* subsp. paratuberculosis in untreated water in Northern Ireland. *Appl Environ Microbiol* **71**:7107-12.
- **Whittington, R. J., I. B. Marsh, and L. A. Reddacliff.** 2005. Survival of *Mycobacterium avium* subsp. paratuberculosis in dam water and sediment. *Appl Environ Microbiol* **71**:5304-8.
- **Woo, S. R., J. Sotos, A. P. Hart, R. G. Barletta, and C. J. Czuprynski.** 2005. Bovine monocytes and a macrophage cell line differ in their ability to phagocytose and support the intracellular survival of *Mycobacterium avium* subsp. paratuberculosis. *Vet Immunol Immunopathol.* Epublication ahead of print.