

# **The Paratuberculosis Newsletter**

**June 2016**



**An official publication of the  
International Association for Paratuberculosis**

**Table of Contents**

TABLE OF CONTENTS .....	15
1. IAP BUSINESS .....	16
IAP Board of Directors and Officers .....	16
Financial Report for 2015 .....	17
2. OPINIONS .....	18
Hypothetical liability from MAP causing Crohn’s Disease.....	18
3. LIST OF RECENT PUBLICATIONS.....	21

**DEADLINE FOR NEXT ISSUE: 15 August 2016**

All contributions should be sent to the new editor  
Kumudika de Silva [kumi.desilva@sydney.edu.au](mailto:kumi.desilva@sydney.edu.au)

## 1. IAP Business

### IAP Board of Directors and Officers

The IAP membership has elected the following for the **IAP Board of Directors**

Richard Whittington- Australia  
Jeroen DeBuck- Canada  
Gregers Jungersen- Denmark  
Christine Fourichon- France  
Heike Koehler- Germany  
Shoorvir Singh- India  
Peter Mallowney- Ireland  
Norma Arrigoni- Italy  
Victor Rutten- Netherlands  
Frank Griffin- New Zealand  
Joseba Garrido- Spain  
Karen Stevenson- United Kingdom  
Judy Stabel- United States  
Mike Collins- United States

The Board of Directors has appointed the following **officers**:

President: Ramon Juste  
Vice-President: Eiichi Momotani  
Editor-in-Chief: Kumudika de Silva  
Secretary-Treasurer: Ray Sweeney

## Financial Report for 2015



## International Association for Paratuberculosis

112 Barnview Road  
Kennett Square, PA 19348 USA

## Financial Report--December 31, 2015

	Checking	Money Market	PayPal	Total
Open (1/1/15)	\$10,779.62	\$13,884.76	\$ 337.50	\$ 25,001.88
Mid-Year (6/30/15)	\$36,164.59	\$13,888.20	\$ 480.75	\$ 50,533.54
Close (12/31/15)	\$35,385.77	\$13,891.70	\$ 1,412.63	\$ 50,690.10

## INCOME

	<u>1/1/15 to 6/30/15</u>	<u>7/1/15 to 12/31/15</u>	<u>Annual Total</u>
Dues	\$ 150.00	\$ 1,480.00	\$ 1,630.00
Interest	\$ 3.44	\$ 3.50	\$ 6.94
ICP Deposit	\$ 16,431.05	\$	\$ 16,431.05
ICP Proceeds	\$ 9,017.82		\$ 9,017.82
<b>Total</b>	<b>\$ 25,602.31</b>	<b>\$ 1,483.50</b>	<b>\$ 27,085.81</b>

## EXPENSES

	<u>1/1/15 to 6/30/15</u>	<u>7/1/15 to 12/31/15</u>	<u>Annual Total</u>
CreditCard/PayPal	\$ 70.65	\$ 48.12	\$ 118.77
12ICP travel reimbursement		\$ 1,278.82	\$ 1,278.82
<b>Total</b>	<b>\$ 70.65</b>	<b>\$ 1,326.94</b>	<b>\$ 1,397.59</b>

Respectfully Submitted,

Raymond W. Sweeney, VMD  
Secretary-Treasurer

## 2. Opinions

### **Hypothetical liability from MAP causing Crohn's Disease**

*Gilles R. G. Monif, M.D.*

When political reality catches up with the science in accepting that MAP is not just associated with MAP, but that MAP is the cause of Crohn's disease, the issue of liability will become of paramount interest (1,2).

Liability arising from the potential MAP contamination of milk and milk-based products is projected to reside with the United States government. In its attempt to insulate agribusiness from added cost, a policy of not identifying MAP status in an animal's health certificate was implemented, allowing infected animals to be shipped across state and national borders (3). USDA compounded the problem by licensing diagnostic tests that the tests identified animals at risk for Johne's disease rather than the serological status of the animals (4). The net result has been the widespread dissemination of MAP among milk-producing animals and the secondary shedding MAP into the milk bulk tank milk or for fecal contaminating previous unadulterated milk (5,6). In matters concerning food safety, The Rio Declaration on Food Safety's precautionary principle places the obligation to act to protect the public welfare squarely on government (6).

Principle 15 of the Rio Declaration states against " ... *the precautionary approach shall be widely applied by States according to their capacities. Where there are threats of serious or irreversible damage, lack of full knowledge shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation the precautionary principle embedded in food safety*" (7). Given the responsibility of oversight and governance, the cost of added steps to protect the public health by reducing the amount of MAP entering the human food chain will reside with government.

MAP receptors lining the entire small bowel (8). The scale of MAP's penetration of milk-based products makes it, more probable than not, that the majority of individuals within industrialized nations has been or will be infected by MAP. The presence of MAP DNA in the blood of health of healthy subjects incorporated into a number of clinical studies supports the postulate that MAP infection is widespread in the general population (9-11). If the assumption made is correct, the number of afflicted individuals is comparatively small in contrast to the number of individuals theoretically infected by MAP. This discrepancy has the potential of being advanced in support of the argument that, in the presence of both acquired and inherent immunity, MAP infection is of limited health consequences.

The economical importance of milk derived protein, coupled with the adverse economical fallout of attempting to remove MAP from food sources, and governmental reluctance to do anything contrary to the interests of influential third parties may influence FDA to limit the significance of human MAP infection to a situation where acquired immunity

is not complete and to rule that for individuals whose immune system is intact, consumption of dairy products containing MAP DNA is of limited biological significance.

To be compliant with the Rio Declaration, governments will be pressured to institute and fund surveillance and herd management schema aimed at reducing the prevalence of MAP in the production area. More likely than not, producers will be paid a set fee per animal to covered the added costs.

The good news is that finally dairy producers will have the opportunity (at the government's expense) to lessening the MAP Milk Tax resulting from reduced milk production, lower slaughter weight and possibly lower reproductive outcomes imposed by subclinically infected animals (13).

The manufacturers of infant formula stand to bear the consequences of their business practices and governmental screw ups. Once potential adulteration of infant formula by MAP had been documented and then confirmed, they were under legal obligation to have instituted measures consistent with the precautionary principles regarding food safety embedded in The Rio Declaration and Article 5.7 of The World Trade Organization' Agreement on Sanitary and Phytosanitary Measures (7,12). In the United States, infant formula manufacturers marketed their product in lieu of breastfeeding despite knowledge of the acceptance of the existence of a relationship between MAP and Crohn's disease and the well established fact that breastfeeding prevented Crohn's disease. The Federal Meat Inspection Act (21 U.S.C. 601 et seq.) the Poultry Protection Inspection Act (21m U.S.C. 451 et seq.) and the Federal Food, Drug, and Cosmetic Act (21 U.S.C 321 et seq.) are instruments of administrative law. They identify a food as being adulterated if it bears or contains any poisonous or deleterious substance which may render it injurious to health and is not neutralized by its subsequent processing. Products that are adulterated under these laws cannot enter into commerce for food consumption. The failure of infant formula labels to provide the information necessary for a pregnant woman to make an informed decision is projected a decisive point within courts of law.

## References

1. Nacy C, Buckley M, 2008. *Mycobacterium avium paratuberculosis*: Infrequent human pathogen or public health threat? Report from the American Academy of Microbiology 2008. p. 1-37.
2. Monif GRG, 2015. The Hruska Postulate of Crohn's disease. Med. Hypoth. 85, 878-881.
3. Momotani E, 2012. Epidemiological situation and control strategies for paratuberculosis in Japan. Jpn J Vet Res. 60: 19s-29s.
4. Monif GRG, Williams JE, 2013. The significance of a negative MAP ELISA test or *Mycobacterium avium* subspecies *paratuberculosis*. Intern J Appl Res Vet Med, 11: 1117-22.

5. USDA-APHIS. Johne's Disease in U.S. Dairies 1991-2007.  
[http://nahms.aphis.usda.gov/dairy/dairyo7/Dairy\\_2007-Johnes.pdf](http://nahms.aphis.usda.gov/dairy/dairyo7/Dairy_2007-Johnes.pdf)
6. Pinedo PJ, Williams JE, Monif GRG, Rae DO, Buergelt CD, 2008. *Mycobacterium paratuberculosis* shedding into milk; association of ELISA reactivity with DNA detection in milk. Intern J Appl Res Vet, 6:137-44.
7. United Nations Environmental Program, 1992. Rio Declaration on Environment and Development.  
<http://www.unep.org/documents.multilingual/default.asp?documentid=78&articleid=1163>
8. Schleig PM, Buergelt CD, Davis JK, Williams E, Monif GRG, Davidson MK, 2005. Attachment of *Mycobacterium avium* subspecies *paratuberculosis* to bovine intestinal organ cultures; method development and strain differences. Vet Microbiol, 108: 271-9.
9. Naser SA, Ghobrial G, Romero C, Valentine JF, 2004. Culture of *Mycobacterium avium* subspecies *paratuberculosis* (MAP) from the blood of Crohn's disease patients. Lancet 364: 1039-44.
10. Naser SA, Collins MT, Crawford JT, Valentine JF, 2009. Culture of *Mycobacterium avium* subspecies *paratuberculosis* (MAP) from the blood of patients with Crohn's disease: A follow-up blind multi-center investigation. The Open Inflam J. 2:22-24.
11. Juste RA, Elguezabal N, Pavon A, Garrido JM, Sevilla I, Cabtiada JL, Tejada A, Garcia-Campos F, Casado R, Ochotorena I, Izeta A, 2009. Association of *Mycobacterium avium* subspecies *paratuberculosis* DNA in blood and cellular and humeral immune response in inflammatory bowel disease patents and controls. Intern J Infect Dis, 13:247-254
12. The WTO Agreement on the Application of Sanitary and Phytosanitary Measures (SPS Agreement). [https://www.wto.org/english/tratop\\_e/sps\\_e/spsagr\\_e.htm](https://www.wto.org/english/tratop_e/sps_e/spsagr_e.htm)
13. Monif GRG, 2014. The MAP Milk Tax. Paratb. Newsletter June 2014 pp. 19-22.

### **3. List of Recent Publications**

- Arrazuria R, Elguezabal N, Juste RA, Derakhshani H, Khafipour E. [Mycobacterium avium subspecies paratuberculosis infection modifies gut microbiota under different dietary conditions in a rabbit model](#). Front Microbiol. 7:446.
- Arru G, Caggiu E, Paulus K, Sechi GP, Mameli G, Sechi LA. [Is there a role for Mycobacterium avium subspecies paratuberculosis in Parkinson's disease?](#) J Neuroimmunol. 293:86-90.
- Bannantine JP, Lingle CK, Adam PR, Ramyar KX, McWhorter WJ, Stabel JR, Picking WD, Geisbrecht BV. [NlpC/P60 domain-containing proteins of Mycobacterium avium subspecies paratuberculosis that differentially bind and hydrolyze peptidoglycan](#). Protein Sci. 25:840-51.
- Bauman CA, Jones-Bitton A, Menzies P, Jansen J, Kelton D. [Paratuberculosis on small ruminant dairy farms in Ontario, Canada: A survey of management practices](#). Can Vet J. 57:523-30.
- Blaiotta G, Di Cerbo A, Murru N, Coppola R, Aponte M. [Persistence of bacterial indicators and zoonotic pathogens in contaminated cattle wastes](#). BMC Microbiol. 16:87.
- Britton LE, Cassidy JP, O'Donovan J, Gordon SV, Markey B. [Potential application of emerging diagnostic techniques to the diagnosis of bovine Johne's disease \(paratuberculosis\)](#). Vet J. 209:32-9.
- Capsel RT, Thoen CO, Reinhardt TA, Lippolis JD, Olsen R, Stabel JR, Bannantine JP. [Composition and potency characterization of Mycobacterium avium subsp. paratuberculosis Purified Protein Derivatives](#). PLoS One. 11:e0154685.
- Colavecchia SB, Fernández B, Jolly A, Minatel L, Hajos SE, Paolicchi FA, Mundo SL. [Immunological findings associated with Argentinean strains of Mycobacterium avium subsp. paratuberculosis in bovine models](#). Vet Immunol Immunopathol. 2016 Apr 26. [Epub ahead of print].
- Correa-Valencia NM, Ramírez NF, Olivera M, Fernández-Silva JA. [Milk yield and lactation stage are associated with positive results to ELISA for Mycobacterium avium subsp. paratuberculosis in dairy cows from Northern Antioquia, Colombia: a preliminary study](#). Trop Anim Health Prod. 2016 May 10. [Epub ahead of print].
- Derakhshani H, De Buck J, Mortier R, Barkema HW, Krause DO, Khafipour E. [The features of fecal and ileal mucosa-associated microbiota in dairy calves during early infection with Mycobacterium avium subspecies paratuberculosis](#). Front Microbiol. 7:426.
- Donat K, Schmidt M, Köhler H, Sauter-Louis C. [Management of the calving pen is a crucial factor for paratuberculosis control in large dairy herds](#). J Dairy Sci. 99:3744-52.
- Donnellan S, Tran L, Johnston H, McLuckie J, Stevenson K, Stone V. [A rapid screening assay for identifying mycobacteria targeted nanoparticle antibiotics](#). Nanotoxicology. 10:761-9.



- Dow CT. [Detection of \*M. paratuberculosis\* bacteremia in a child with Lupus Erythematosus and Sjogren's Syndrome](#). *Autoimmun Infec Dis* 2(1): 1-4.
- Garcia-Ispuerto I, López-Gatius F. [Early foetal loss correlates positively with seroconversion against \*Mycobacterium avium paratuberculosis\* in high-producing dairy cows](#). *Reprod Domest Anim.* 51:227-31.
- Gilardoni LR, Fernández B, Morsella C, Mendez L, Jar AM, Paolicchi FA, Mundo SL. [Mycobacterium paratuberculosis detection in cow's milk in Argentina by immunomagnetic separation-PCR](#). *Braz J Microbiol.* 47:506-12.
- Hempel RJ, Bannantine JP, Stabel JR. [Transcriptional profiling of ileocecal valve of Holstein dairy cows infected with \*Mycobacterium avium\* subsp. \*paratuberculosis\*](#). *PLoS One* 11:e0153932.
- Kaevska M, Videnska P, Sedlar K, Bartejsova I, Kralova A, Slana I. [Faecal bacterial composition in dairy cows shedding \*Mycobacterium avium\* subsp. \*paratuberculosis\* in faeces in comparison with nonshedding cows](#). *Can J Microbiol.* 2016 Feb 29 [Epub ahead of print].
- Kennedy AE, Byrne N, Garcia AB, O'Mahony J, Sayers RG. [Analysis of Johne's disease ELISA status and associated performance parameters in Irish dairy cows](#). *BMC Vet Res.* 12:43.
- Khan IA, Pilli S, A S, Rampal R, Chauhan SK, Tiwari V, Mouli VP, Kedia S, Nayak B, Das P, Makharia GK, Ahuja V. [Prevalence and association of \*Mycobacterium avium\* subspecies \*paratuberculosis\* with disease course in patients with ulcero-constrictive ileocolonic disease](#). *PLoS One.* 11:e0152063.
- Klawonn W, Einax E, Pützschel R, Schmidt M, Donat K. [Johne's disease: reliability of environmental sampling to characterize \*Mycobacterium avium\* subspecies \*paratuberculosis\* \(MAP\) infection in beef cow-calf herds](#). *Epidemiol Infect.* 2016 Apr 20:1-9. [Epub ahead of print].
- Krueger LA, Reinhardt TA, Beitz DC, Stuart RL, Stabel JR. [Effects of fractionated colostrum replacer and vitamins A, D, and E on haptoglobin and clinical health in neonatal Holstein calves challenged with \*Mycobacterium avium\* ssp. \*paratuberculosis\*](#). *J Dairy Sci.* 99:2884-95.
- Leão C, Goldstone RJ, Bryant J, McLuckie J, Inácio J, Smith DG, Stevenson K. [Novel single nucleotide polymorphism-based assay for genotyping \*Mycobacterium avium\* subsp. \*paratuberculosis\*](#). *J Clin Microbiol.* 54:556-64.
- Li Z, You Q, Ossa F, Mead P, Quinton M, Karrow NA. [Assessment of yeast \*Saccharomyces cerevisiae\* component binding to \*Mycobacterium avium\* subspecies \*paratuberculosis\* using bovine epithelial cells](#). *BMC Vet Res.* 12:42.
- Liang G, Malmuthuge N, Guan Y, Ren Y, Griebel PJ, Guan le L. [Altered microRNA expression and pre-mRNA splicing events reveal new mechanisms associated with](#)

- [early stage \*Mycobacterium avium\* subspecies \*paratuberculosis\* infection](#). Sci Rep. 6:24964.
- Mameli G, Cocco E, Frau J, Marrosu MG, Sechi LA. [Epstein Barr Virus and \*Mycobacterium avium\* subsp. \*paratuberculosis\* peptides are recognized in sera and cerebrospinal fluid of MS patients](#). Sci Rep. 6:22401.
- Matos AC, Andrade S, Figueira L, Matos M, Pires MA, Coelho AC, Pinto ML. [Mesenteric lymph node granulomatous lesions in naturally infected wild boar \(\*Sus scrofa\*\) in Portugal-Histological, immunohistochemical and molecular aspects](#). Vet Immunol Immunopathol. 173:21-6.
- McAloon CG, Doherty ML, Donlon J, Lorenz I, Meade J, O'Grady L, Whyte P. [Microbiological contamination of colostrum on Irish dairy farms](#). Vet Rec. 178:474.
- Mitachi K, Sharma Gautam LN, Rice JH, Eda K, Wadhwa A, Momotani E, Hlopak JP, Eda S, Kurosu M. [Structure determination of lipopeptides from \*Mycobacterium avium\* subspecies \*paratuberculosis\* and identification of antigenic lipopeptide probes](#). Anal Biochem. 505:29-35.
- Niegowska M, Rapini N, Piccinini S, Mameli G, Caggiu E, Manca Bitti ML, Sechi LA. [Type 1 Diabetes at-risk children highly recognize \*Mycobacterium avium\* subspecies \*paratuberculosis\* epitopes homologous to human Znt8 and Proinsulin](#). Sci Rep. 6:22266.
- Nielsen SS, Hansen KF, Kvist L, Kostoulas P. [Dam's infection progress and within-herd prevalence as predictors of \*Mycobacterium avium\* subsp. \*paratuberculosis\* ELISA response in Danish Holstein cattle](#). Prev Vet Med. 125:54-8.
- Orynbayev MB, Beauvais W, Sansyzbay AR, Rystaeva RA, Sultankulova KT, Kerimbaev AA, Kospanova MN, Kock RA. [Seroprevalence of infectious diseases in saiga antelope \(\*Saiga tatarica tatarica\*\) in Kazakhstan 2012-2014](#). Prev Vet Med. 127:100-4.
- Park HE, Shin MK, Park HT, Jung M, Cho YI, Yoo HS. [Gene expression profiles of putative biomarker candidates in \*Mycobacterium avium\* subsp. \*paratuberculosis\*-infected cattle](#). Pathog Dis. 74. pii: ftw022.
- Peterz M, Butot S, Jagadeesan B, Bakker D, Donaghy J. [Thermal inactivation of \*Mycobacterium avium\* subsp. \*paratuberculosis\* in artificially contaminated milk by direct steam injection](#). Appl Environ Microbiol. 82:2800-8.
- Qasem A, Abdel-Aty A, Abu-Suwa H, Naser SA. [Oxidative stress due to \*Mycobacterium avium\* subspecies \*paratuberculosis\* \(MAP\) infection upregulates selenium-dependent GPx activity](#). Gut Pathog. 8:12.
- Ricchi M, Savi R, Bolzoni L, Pongolini S, Grant IR, De Cicco C, Cerutti G, Cammi G, Garbarino CA, Arrigoni N. [Estimation of \*Mycobacterium avium\* subsp. \*paratuberculosis\* load in raw bulk tank milk in Emilia-Romagna Region \(Italy\) by qPCR](#). Microbiologyopen. 2016 Mar 17 [Epub ahead of print].

- Roussey JA, Oliveira LJ, Langohr IM, Sledge DG, Coussens PM. [Regulatory T cells and immune profiling in johnes disease lesions](#). Vet Immunol Immunopathol. 2016 Mar 10. [Epub ahead of print].
- Rónai Z, Cservincsik Á, Dán Á, Gyuranecz M. [Molecular analysis and MIRU-VNTR typing of \*Mycobacterium avium\* subsp. \*avium\*, 'hominissuis' and \*silvaticum\* strains of veterinary origin](#). Infect Genet Evol. 40:192-9.
- Salgado M, Sevilla I, Rios C, Crossley J, Tejada C, Manning E. [Presence of \*Mycobacterium avium\* subsp. \*paratuberculosis\* in alpacas \(\*Lama pacos\*\) inhabiting the Chilean Altiplano](#). J Zoo Wildl Med. 47:12-6.
- Slater N, Mitchell RM, Whitlock RH, Fyock T, Pradhan AK, Knupfer E, Schukken YH, Louzoun Y. [Impact of the shedding level on transmission of persistent infections in \*Mycobacterium avium\* subspecies \*paratuberculosis\* \(MAP\)](#). Vet Res. 47:38.
- Smith RL, Schukken YH, Gröhn YT. [Corrigendum to "A new compartmental model of \*Mycobacterium avium\* subsp. \*paratuberculosis\* infection dynamics in cattle" \[Prev. Vet. Med. 122: 298-305\]](#). Prev Vet Med. 2016 Apr 30 [Epub ahead of print].
- Sonawane GG, Narnaware SD, Tripathi BN. [Molecular epidemiology of \*Mycobacterium avium\* subspecies \*paratuberculosis\* in ruminants in different parts of India](#). Int J Mycobacteriol. 5:59-65.
- Swift BM, Convery TW, Rees CE. [Evidence of \*Mycobacterium tuberculosis\* Complex bacteraemia in intradermal skin test positive cattle detected using phage-RPA](#). Virulence. 2016 May 19. [Epub ahead of print].
- Thirunavukkarasu S, de Silva K, Plain KM, J Whittington R. [Role of host- and pathogen-associated lipids in directing the immune response in mycobacterial infections, with emphasis on \*Mycobacterium avium\* subsp. \*paratuberculosis\*](#). Crit Rev Microbiol. 42:262-75.
- Waddell LA, Rajić A, Stärk KD, McEwen SA. [The potential public health impact of \*Mycobacterium avium\* ssp. \*paratuberculosis\*: Global opinion survey of topic specialists](#). Zoonoses Public Health. 63:212-22.
- Wolf R, Barkema HW, De Buck J, Orsel K. [Dairy farms testing positive for \*Mycobacterium avium\* ssp. \*paratuberculosis\* have poorer hygiene practices and are less cautious when purchasing cattle than test-negative herds](#). J Dairy Sci. 99:4526-36.
- Wolf R, Orsel K, De Buck J, Kanevets U, Barkema HW. [Evaluation of sampling socks for detection of \*Mycobacterium avium\* ssp. \*paratuberculosis\* on dairy farms](#). J Dairy Sci. 99:2950-5.
- Yue R, Liu C, Barrow P, Liu F, Cui Y, Yang L, Zhao D, Zhou X. [The isolation and molecular characterization of \*Mycobacterium avium\* subsp. \*paratuberculosis\* in Shandong province, China](#). Gut Pathog. 8:9.