

Obituary

Hermon-Taylor: *M. paratuberculosis* and Crohn's Disease—The Book of Revelation According to John

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Professor John Hermon-Taylor recently passed away on 16 October 2021. Prof. Hermon-Taylor was born in 1936, he received his B.A. degree in 1957 and his M.B. degree in 1960 from the Cambridge University. This London physician–scientist was an early elucidator of the zoonotic capacity of *Mycobacterium avium* ss. *paratuberculosis* (MAP). In 1998, John Hermon-Taylor (JHT) published an article in the British Medical Journal, a case report that featured a boy who, at seven years old, had cervical lymphadenitis. Five years later, when the same child presented with early Crohn's disease, the archived lymphadenitis tissue was tested for MAP. It was positive, and the child was successfully treated with surgery followed by anti-mycobacterial drugs rifabutin and clarithromycin [1]. JHT's work and advocacy continued to link MAP to Crohn's disease [2] and he emphasized that, while humans are broadly exposed to MAP in dairy products, they are secondarily exposed to environmental MAP [3]. He predicted increasing MAP-related human disease with his “doomsday” article, a notably prescient forecast [4].



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JHT's easy manner and approachability encouraged many scientists to explore MAP's contribution not only to Crohn's disease, but to several other inflammatory and autoimmune diseases. Largely due to his foundational contributions, MAP scientists from around the world generated a 2017 consensus article that emphasized the zoonotic impact of MAP on human health [5].

Though the link of MAP zoonosis to Crohn's disease has been a medical controversy for over one hundred years [6], validation of JHT's effort has come from numerous recent studies showing Crohn's disease resolution with anti-mycobacterial therapy targeted against MAP [7–10]. Moreover, MAP is now linked to an increasing list of inflammatory and autoimmune diseases [11]. To date, MAP has been causally associated with granulomatous diseases besides Crohn's: sarcoidosis [12,13] and Blau syndrome [14]. Through molecular mimicry from mycobacterial protein elements, MAP is found to induce autoantibodies in autoimmune diabetes (T1D) [15], multiple sclerosis [16], autoimmune thyroiditis [17], lupus [18] and rheumatoid arthritis [19,20].

This writer predicts that, in the future, JHT's contributions will be acknowledged throughout the world, perhaps securing him a commemorative place in Kensington Gardens beside the likes of Edward Jenner.

References

1. Hermon-Taylor, J.; Barnes, N.; Clarke, C.; Finlayson, C. Mycobacterium paratuberculosis cervical lymphadenitis, followed five years later by terminal ileitis similar to Crohn's disease. *BMJ* **1998**, *316*, 449–453. [[CrossRef](#)] [[PubMed](#)]
2. Bull, T.J.; McMinn, E.J.; Sidi-Boumedine, K.; Skull, A.; Durkin, D.; Neild, P.; Rhodes, G.; Pickup, R.; Hermon-Taylor, J. Detection and verification of Mycobacterium avium subsp. paratuberculosis in fresh ileocolonic mucosal biopsy specimens from individuals with and without Crohn's disease. *J. Clin. Microbiol.* **2003**, *41*, 2915–2923. [[CrossRef](#)] [[PubMed](#)]
3. Pickup, R.W.; Rhodes, G.; Arnott, S.; Sidi-Boumedine, K.; Bull, T.J.; Weightman, A.; Hurley, M.; Hermon-Taylor, J. Mycobacterium avium subsp. paratuberculosis in the catchment area and water of the River Taff in South Wales, United Kingdom, and its potential relationship to clustering of Crohn's disease cases in the city of Cardiff. *Appl. Environ. Microbiol.* **2005**, *71*, 2130–2139. [[CrossRef](#)] [[PubMed](#)]
4. Hermon-Taylor, J. Mycobacterium avium subspecies paratuberculosis, Crohn's disease and the Domsday scenario. *Gut Pathog.* **2009**, *1*, 15. [[CrossRef](#)] [[PubMed](#)]
5. Kuenstner, J.T.; Naser, S.; Chamberlin, W.; Borody, T.; Graham, D.Y.; McNeese, A.; Hermon-Taylor, J.; Hermon-Taylor, A.; Dow, C.T.; Thayer, W.; et al. The Consensus from the Mycobacterium avium ssp. paratuberculosis (MAP) Conference 2017. *Front. Public Health* **2017**, *5*, 208. [[CrossRef](#)] [[PubMed](#)]
6. Sechi, L.A.; Dow, C.T. Mycobacterium avium ss. paratuberculosis zoonosis-The hundred Year War-Beyond Crohn's disease. *Front. Immunol.* **2015**, *6*, 96. [[CrossRef](#)] [[PubMed](#)]
7. Ekundayo, T.C.; Okoh, A.I. Systematic assessment of Mycobacterium avium subspecies Paratuberculosis infections from 1911–2019: A growth analysis of association with human autoimmune diseases. *Microorganisms* **2020**, *8*, 1212. [[CrossRef](#)] [[PubMed](#)]
8. Agrawal, G.; Clancy, A.; Huynh, R.; Borody, T. Profound remission in Crohn's disease requiring no further treatment for 3–23 years: A case series. *Gut Pathog.* **2020**, *12*, 16. [[CrossRef](#)] [[PubMed](#)]
9. Borody, T.J.; Bilkey, S.; Wettstein, A.R.; Leis, S.; Pang, G.; Tye, S. Anti-mycobacterial therapy in Crohn's disease heals mucosa with longitudinal scars. *Dig. Liver Dis.* **2007**, *39*, 438–444. [[CrossRef](#)] [[PubMed](#)]
10. Savarino, E.; Bertani, L.; Ceccarelli, L.; Bodini, G.; Zingone, F.; Buda, A.; Facchin, S.; Lorenzon, G.; Marchi, S.; Marabotto, E.; et al. Antimicrobial treatment with the fixed-dose antibiotic combination RHB-104 for Mycobacterium avium subspecies paratuberculosis in Crohn's disease: Pharmacological and clinical implications. *Expert. Opin. Biol. Ther.* **2019**, *19*, 79–88. [[CrossRef](#)] [[PubMed](#)]
11. Dow, C.T.; Sechi, L.A. Cows get Crohn's disease and they're giving us diabetes. *Microorganisms* **2019**, *7*, 466. [[CrossRef](#)] [[PubMed](#)]
12. Celler, B.G. Case Study: Cardiac sarcoidosis resolved with Mycobacterium avium paratuberculosis antibiotics (MAP). *Sarcoidosis Vasc. Diffus. Lung Dis.* **2018**, *35*, 171–177.
13. Reid, J.D.; Chiodini, R.J. Serologic reactivity against Mycobacterium paratuberculosis antigens in patients with sarcoidosis. *Sarcoidosis* **1993**, *10*, 32–35. [[PubMed](#)]
14. Dow, C.T.; Ellingson, J.L. Detection of Mycobacterium avium ss. Paratuberculosis in blau syndrome tissues. *Autoimmune Dis.* **2010**, *2011*, 127692. [[PubMed](#)]
15. Noli, M.; Meloni, G.; Manca, P.; Cossu, D.; Palermo, M.; Sechi, L.A. HERV-W and Mycobacterium avium subspecies paratuberculosis are at play in pediatric patients at onset of type 1 diabetes. *Pathogens* **2021**, *10*, 1135. [[CrossRef](#)] [[PubMed](#)]
16. Cossu, D.; Masala, S.; Sechi, L.A. A Sardinian map for multiple sclerosis. *Future Microbiol.* **2013**, *8*, 223–232. [[CrossRef](#)] [[PubMed](#)]
17. Sisto, M.; Cucci, L.; D'Amore, M.; Dow, T.C.; Mitolo, V.; Lisi, S. Proposing a Relationship Between Mycobacterium Avium Subspecies Paratuberculosis Infection and Hashimoto's Thyroiditis. *Scand. J. Infect. Dis.* **2010**, *42*, 787–790. [[CrossRef](#)] [[PubMed](#)]
18. Dow, C.T. Detection of M. Paratuberculosis Bacteremia in a child with lupus erythematosus and Sjogren's syndrome. *Autoimmun Infect. Dis.* **2016**, *2*, 2470-1025. [[CrossRef](#)]
19. Bo, M.; Erre, G.L.; Bach, H.; Slavin, Y.N.; Manchia, P.A.; Passiu, G.; Sechi, L.A. PtpA and PknG Proteins Secreted by Mycobacterium avium subsp. paratuberculosis are recognized by sera from patients with rheumatoid arthritis: A case-control study. *J. Inflamm. Res.* **2019**, *12*, 301–308. [[PubMed](#)]
20. Bo, M.; Erre, G.L.; Niegowska, M.; Piras, M.; Taras, L.; Longu, M.G.; Passiu, G.; Sechi, L.A. Interferon regulatory factor 5 is a potential target of autoimmune response triggered by Epstein-barr virus and Mycobacterium avium subsp. paratuberculosis in rheumatoid arthritis: Investigating a mechanism of molecular mimicry. *Clin. Exp. Rheumatol.* **2018**, *36*, 376–381. [[PubMed](#)]