Pathogen that causes disease in cattle also associated with Crohn's disease

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People with Crohn's disease (CD) are seven-fold more likely to have in their gut tissues the bacterium that causes a digestive-tract disease in cattle called Johne's disease. The role this bacterium may or may not play in causing CD is a top research priority, according to a new report released by the American Academy of Microbiology. The reports points out that the cause of CD is unknown, and the possible role of this bacterium—which could conceivably be passed up the food chain to people—has received too little attention from the research community.

The report, *Mycobacterium avium paratuberculosis*: Incidental Human Pathogen or Public Health Threat?, summarizes conclusions and recommendations from a colloquium convened by the American Academy of Microbiology in June 2007 that brought together experts in microbiology, medicine, veterinary pathology, epidemiology, infectious diseases, and food safety. Colloquium participants described the state of knowledge about the relationship between *Mycobacterium avium* subspecies paratuberculosis (MAP) and CD and developed a research agenda to move the field forward.

Scientists largely agree that multiple factors cause CD, including an environmental stimulus, a genetic propensity, and an overactive inflammatory and immune system triggered by an unknown event. There is mounting evidence that the unknown trigger may be infectious in origin, with several bacteria currently under consideration. "This complicated network of causation has confounded efforts to understand CD, says Carol Nacy, Ph.D., CEO of Sequella, Inc., who chaired the

colloquium and is the report's co-author. "MAP may be one of the causes of CD," Nacy adds, "since, among other things, multiple studies identified the pathogen in tissues of CD patients. Treating some of these patients with antibiotics that target Mycobacteria provided relief from symptoms."

Johne's disease is a severe and fatal bacterial infection that strikes cattle, sheep, and other livestock. MAP has long been identified as the cause of Johne's disease. Despite efforts to limit the spread of MAP, roughly 68% of cattle herds in this country are infected, meaning one or more animals in the herd carry the bacterium and may develop Johne's disease or spread the infection to other animals. MAP has been found in some dairy products—milk and cheese—and beef on supermarket shelves.

The critical steps for research now, according to the report, are to determine whether humans are exposed and infected with MAP by eating infected meat and dairy products and whether MAP causes or incites CD or whether it is only incidentally present in those afflicted with the disease. The prospect that MAP could play a role in the incitement or development of CD is a sobering one, and, once the situation becomes clearer through research, there could be important changes in store for agriculture, food safety, and public health. It is in the best interest of the public that the possible connection between MAP and CD be explored exhaustively, according to the report.

The research agenda, however, is seriously hampered by the lack of reliable methods for isolating and indentifying MAP and for diagnosing people with MAP infection. Public health laboratories and U.S. Centers for Disease Control and Prevention laboratories have made it clear they cannot grow MAP in the laboratory—an inability that hinders diagnosis and screening. The report recommends establishment of a task force to develop a specific road map for improved methods for MAP detection and diagnosis.

Source: American Society for Microbiology