



“Applying recombinant technology to define the secretome of *Mycobacterium avium* subsp. *paratuberculosis* for the discovery of novel immunogens and diagnostic reagents”

IMPROVED UNDERSTANDING OF JOHNE’S DISEASE

PROJECT NO.: 0008-010

RESEARCH INSTITUTION: University of Guelph

LEAD RESEARCHER: Dr. Lucy Mutharia

Objectives: To use new genetic tools that will specifically identify the bacteria causing Johne’s disease.

Background: The organism that causes Johne’s disease (*Mycobacterium avium* subspecies *paratuberculosis*, or MAP) is difficult to diagnose accurately. Attempts to culture MAP from manure are often unsuccessful, and blood and milk tests often miss animals that are in the early stages of the disease. This results in a high rate of “false negatives”, which means that the diagnostic test says the animal is not infected even though it is infected. Johne’s vaccines have been developed. These vaccines do not prevent infection, but they may reduce the amount of MAP that is shed into the environment. These vaccines can also interfere with blood and milk-based diagnostic tests.

Both diagnostic tests and vaccines are based on antigen proteins that are produced by bacteria. A better understanding of which antigens are specific to MAP, and what role they play in causing Johne’s disease will help researchers to develop improved diagnostic tests and vaccines. Similar work has helped to differentiate vaccinated from infected animals for human and bovine tuberculosis.

These researchers are using new DNA technologies to better understand the expression and role of MAP antigens. This

project is scheduled to be completed in 2011.

Implications of the Research: Finding antigens that are specific for MAP should help to develop better diagnostic tests and more effective vaccines.



www.albertabeef.org