



Specific biomarkers for various parasitic infections

Information Summary

Reference code:	ROIs 04028, 06014, 08065, 08066 and 08067
Technology overview:	A panel of biomarkers associated with parasitic infections.
Application:	A portfolio of unique and specific biomarkers to identify various infectious diseases such as Chagas, Babesia, Dengue, Leishmania, etc.
Validation:	Samples from different geographical areas. Accuracy and specificity of the biomarkers demonstrated with blind samples.
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Technology Summary

Researchers have identified a panel of sensitive and specific serum biomarkers that can be used in various combinations to render diagnosis for specific infections including Chagas, Babesia, Leishmania, Dengue and others. These biomarkers return to or trend toward normal levels upon treatment allowing, thereby permitting assessment of response to therapy. At the present time, there is no reliable serologic test for most of these infectious diseases and the diagnosis can only be made by invasive procedure (e.g. biopsy, aspiration, scraping) and either culture or molecular diagnostic (e.g. PCR). Except for Chagas, there is currently no FDA approved test available to screen blood supply or for sero-epidemiologic studies. However, the new ELISA

test manufactured by Ortho-Clinical Diagnostics and recently approved by the FDA to screen blood bank material for Chagas is not approved for diagnostic purpose.

Performance

The biomarkers are uniquely truncated host proteins or proteins secreted by the infectious parasite. A diagnostic kit based on such biomarkers would help identify the parasites and associated infection more accurately and before antibodies have been produced by the infected host. Furthermore, since the biomarkers are directly linked with the parasite presence, they could be used to identify the outcome of a therapeutic treatment. Researchers are interested to collaborate with diagnostic company to further develop this project.

Advantages

- Performance – Researchers has screened hundreds of blood samples and identified samples that were not detected with current diagnostic methods.
- Expertise – Inventors are key opinion leaders in the field of infectious diseases, external reference for several national blood services.
- Interest – Collaboration with diagnostic company to further develop these diagnostic kits. Collaboration with pharma/biotech/vaccine companies to screen drug candidates or develop research projects based on inventors' expertise.

Medical Need and Opportunity

Infectious diseases diagnostic market is not limited to developing countries. There is an urgent need to develop rapid and accurate diagnostic kits to screen blood banks in the industrialized world.



Dr. Brian Ward

MSc; MDCM; DTM&H; Associate Professor

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Research interests

The laboratory is currently active in three areas: 1) the immunologic evaluation of vaccines and vaccine safety, 2) the evaluation of micronutrient-microbial interactions, and 3) the development of novel therapeutic strategies for microbial pathogens. The laboratory is biased towards the discovery and implementation of practical solutions to microbial challenges but most projects are designed to examine problems mechanistically as well. Although a good deal of the work performed in the laboratory takes place in Montreal, many of the projects have significant or even predominant components overseas. There is a long-standing commitment in the laboratory to collaborative work with developing world researchers in Peru and Zimbabwe. During the last 10 years, projects have been carried out in these countries as well as the USA, Haiti, Sudan and Brazil.



Dr. Momar Ndao

Laboratory Director
National Reference Laboratory
for Parasitology

Research Focus:

The National Center for Parasitology (NRCP) is an external reference laboratory for Health Canada. The NRCP's activities include: 1) evaluation and development of assays for parasitic diseases, 2) provision of reference diagnostic tests for parasitic diseases, 3) epidemiological studies of human parasitoses and 4) parasite-related teaching and research.

The NRCP is actively involved in the development of novel treatments and vaccines for parasitic diseases such as *C. parvum*, *T. gondii*, *Leishmania spp.* and *T. cruzi*. The NRCP is at the forefront of proteomics research in parasitic diseases. Our centre is applying the surface-enhanced laser desorption/ionization-time of flight-mass spectrometry (SELDI-ToF-MS), using novel ProteinChip Arrays, to study biological fluids. ProteinChip Arrays are used to aid in the discovery of potential biomarkers for the diagnosis and discovery of potential vaccine candidates for parasitic diseases.