

PHRI is a 73-year-old biomedical research organization with a mission to help eliminate worldwide infectious diseases through research excellence. PHRI has evolved through the decades as a leading translational research organization in global infectious diseases that emphasizes fundamental, applied and clinical research. PHRI's 23 laboratories work on a wide range of infectious diseases issues including TB, HIV/AIDS and other viruses, hospital and community acquired bacterial infections, fungal infections, biodefense and drug resistance. Fundamental knowledge of the disease process is used to develop a new generation of diagnostics, therapeutics and vaccines. For more than 7 decades, PHRI's culture of research innovation and excellence has led to important new discoveries in science and medicine.

Seven decades of TB research

The PHRI was formed in 1941, as an offshoot of the Bureau of Laboratories of the New York City Department of Health. The Bureau did much work on infectious diseases, including the testing of the population for TB, the pasteurization and grading of milk as a means of combating tuberculosis, then a major killer of children, as well as the testing of tuberculosis vaccines. When the PHRI was formed several eminent scientists joined its staff, including Dr. Jules Freund who did pioneering work on the stimulation of the immune system and was the creator of Freund's Adjuvant, a well known and still used preparation made from *Mycobacterium bovis* BCG that is used to boost immune responses in vaccinated individuals. Subsequently, in the late 1940's and 1950's, much work on TB vaccine development and on the physiology of *M. tuberculosis* grown in animal models was performed by the group of Hubert Bloch in the Division of Tuberculosis at PHRI. Dr. Bloch also discovered the well known "cord factor", an important immunomodulatory component of *M. tuberculosis* cell envelopes, while at PHRI.

Starting in the early 1990's, PHRI has continued this distinguished legacy. At this time, Dr. Barry Kreiswirth established the PHRI TB Center, and there are now 9 independent laboratories that are engaged in TB research. These multidisciplinary studies, encompassing immunology, physiology, biochemistry, epidemiology and genetics, are providing valuable information about the TB bacterium and its interaction with the host immune system. This knowledge is enabling researchers to interfere with the processes and conditions that enable the bacterium to grow or reactivate in the infected host. As a result of some of these studies, PHRI researchers have developed new ways of diagnosing and treating TB, including more sensitive and rapid tests to diagnose infected individuals, new immunomodulatory compounds that can improve the efficacy of anti tubercular drugs, as well as new attenuated vaccine strains. In addition to these fundamental and translational research approaches, PHRI faculty and staff has been deeply involved in clinical and public health studies in Russia, South Africa, China and Thailand.