Worldwide new infectious diseases and old diseases with increased virulence and drug resistance emerge each year as public health threats. These diseases are known as emerging infectious diseases (EIDs). Many EIDs are transmitted in nature from animals to humans, either by direct contact or through the bite of infected ticks or mosquitoes. This group of EIDs is referred to as zoonotic diseases.

Researchers at Marshfield Clinic have a long history of studying and identifying infectious diseases. The first National Institutes of Health award to Marshfield Clinic was to Dr. Dean Emanuel in 1959 for his microbiological studies on the role of thermophilic actinomycetes in farmer's lung disease. Marshfield Clinic has also been actively involved in many successful infectious disease vaccination trials.

In the summer of 2003, Drs. Kurt Reed, John Melski, and Eric Stratman received international recognition when they quickly and successfully identified the first cases of monkeypox virus ever documented in the Western Hemisphere. Technicians were able to safely handle the virus thanks to state-of-the-art high containment laboratory facilities housed in the Marshfield Clinic Research Foundation (MCRF). Prior to the monkeypox outbreak, Marshfield Clinic leadership identified a need for a high-containment laboratory to respond to the growing threat of EIDs and also to assist state and federal agencies in preparing for potential biological terrorism threats. Construction of this laboratory, which is built to Biological Safety Level-3 (BSL-3) specifications, began in the fall of 2001 and was completed by the spring of 2002. In 2004, it was registered by the Centers for Disease Control and Prevention (CDC) as part of its Select Agent Program, and MCRF was designated as one of only two private research institutes in the country participating in the National Laboratory Response Network.

Partially because of this laboratory, MCRF investigators have been funded through the Wisconsin Division of Public Health to conduct surveillance and research on West Nile Virus (WNV). This virus, a native of East Africa, made its way into the United States in 1999 and into Wisconsin in 2001. WNV is a BSL-3 pathogen requiring a high containment facility to safely test for the virus. The investment made by Marshfield Clinic to build and staff a BSL-3 laboratory contributes to the security and health of Wisconsin citizens and allows its scientists and physicians to compete successfully for extramural research funding.

The EID research group is a multidisciplinary team of investigators with broad experience in clinical and laboratory infectious diseases, molecular microbiology, vector biology, and ecology. Researchers within MCRF and Marshfield Clinic's Division of Laboratory Medicine apply cutting-edge technology to recognize and characterize new pathogens of human and veterinary importance. Marshfield Clinic also houses a large collection of community-associated methicillin-resistant Staphylococcus aureus, as MCRF scientists have been tracking the emergence and spread of this important human pathogen for nearly 15 years. Within this highly collaborative environment, the gap between basic and applied research has been narrowed.

Continued successful discovery and investigation of EIDs require highly trained staff, high containment laboratories, field-based studies, and animal facilities with high containment capabilities. Many areas of EID research at Marshfield Clinic require a high containment animal facility.
in order to test hypotheses from clinical and field studies in animal models. To continue to be competitive for future research dollars and to attract new infectious disease researchers to the Marshfield Clinic team, the addition of an Animal Biological Safety Level-3 (ABSL-3) laboratory is critical.

The Laird Center for Applied Science allows consolidation of key components of EID research into a single physical space, which will create efficiencies and encourage collaboration. The EID laboratory and associated ABSL-3 facility will cost approximately $1.6 million to construct, and another $400,000 to equip with basic scientific and animal care equipment. As MCRF looks to further expand research capabilities, additional technology including microarrays, confocal microscopy, scanning electron microscopy, satellite imaging, and geographic information systems will help assure Marshfield Clinic’s future research contributions to the discovery, treatment, and prevention of emerging infectious diseases.

At Marshfield Clinic, as throughout the country, practicing physicians have historically made many of the most important discoveries in infectious disease research. One of the greatest challenges for such clinicians is having the time to do research in addition to their clinical practice. Endowed chairs are the mechanism used at most academic medical centers and in research-oriented physician group practices to provide protected research time for clinician-scientists whose contribution to medicine results from a balance of clinical care and scientific discovery. In general, clinician-scientists need approximately 40% to 50% protected research time to engage in the rigorous research regimen necessary to make significant discoveries and to be competitive for large grants from major federal research sponsors, no matter how brilliant or dedicated those clinicians may be. In order for a named endowment to cover from its dividends the cost for 50% protected research time of one clinician-scientist at the standard National Institutes of Health rate requires the endowments to have approximately $2.5 million in principal. Such an endowment supporting infectious disease research of Marshfield Clinic clinician-scientists, who would be selected competitively for 3-year awards, would be a major contribution in helping Marshfield Clinic to man the outer defenses in the eternal war between mankind and the microbes.