

1a The Brown Foundation Institute of Molecular Medicine for the Prevention of Human Diseases

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Source

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The Brown Foundation Institute of Molecular Medicine
for the Prevention of Human Diseases

History and Purpose

The Brown Foundation Institute of Molecular Medicine for the Prevention of Human Diseases (IMM) is a research institute that seeks to investigate the cause of human diseases at the cellular and molecular levels using DNA and protein technologies to elucidate disease mechanisms. The Institute was founded in 1995 and conceived as a new concept for UTHSC-H. Dr. Ferid Murad, the John S. Dunn Sr. Distinguished Chair in Medicine and Physiology and chair of the department of integrative biology and pharmacology at the Medical School is the director. Dr. Murad received the Nobel Prize for Physiology or Medicine in Stockholm in December 1998 for his work with nitric oxide. Dr. Irma Gigli is the deputy director and Dr. Kenneth Wu is associate director.

The long-term goal of the IMM is to link one of the largest medical centers in the world to one of the best medical centers for medical research, education and patient care. The Brown Foundation Institute of Molecular Medicine for the Prevention of Human Diseases will set the example for biomedical research excellence and collaborations both locally, nationally and internationally.

Major Objectives and Facilities

Advances in molecular and cell biology have enormous potential for innovative medical research and the future practice of medicine using novel therapies. It is clear that molecular and cell biology will play a major role in clarifying the causes of many unsolved problems of modern medicine: heart diseases, hypertension, vascular disorders, major mental illnesses, inflammatory and immunologic diseases.

The IMM occupies space at the Institute of Biosciences and Technology, in addition a satellite facility was recently established at the Texas Heart Institute in the Denton Cooley Building. This new facility will strengthen the IMM's basic science programs, and will build upon the excellence in research in vascular biology and cell signaling. Additional scientists capable of conducting leading edge research will be recruited. The physical location of this new facility also supports the institution's goal of continual partnership (or collaboration) with other institutions in the Texas Medical Center by sharing space and support services.

The IMM houses six research centers and several support laboratories, each exploring the genetic and molecular aspects of biological processes significant to explain the basis of human diseases and their prevention.

The Research Center for Cardiovascular Diseases is leading efforts to identify molecular mechanisms that contribute to the development of heart attacks and heart failure.

The Research Center for Human Genetics is using genomic technologies to unravel the genetic predisposition to the most common chronic diseases, such as heart disease and stroke.

The Research Center for Immunology & Autoimmune Diseases is examining the molecular and genetic bases of several different allergic, autoimmune and infectious diseases involving distinct organs using genetically altered animals in models of diseases.

The Research Center for Protein Chemistry, in addition to serving as a core facility for the structural analysis of proteins, focuses its research activities on major topics relating to the significance of the manipulation of conformational change of proteins.

This network of research laboratories was expanded by the addition of the Research Center for Vascular Biology and the Research Center for Cell Signaling. The role of nitric oxide and cyclic GMP in cellular signaling in vascular biology and inflammatory processes is being examined, as well as the pharmacologic implications of the discoveries.

The Laboratory for Developmental Biology helps health science center and IMM scientists conduct research that requires the generation of transgenic and knock-out animal models of human diseases. In these genetically altered animals, called transgenic and "knock-out" animals, candidate genes are inserted or deleted in order to study the role that specific gene products play in the pathogenesis of different diseases.

Dr. Willy Wriggers directs **The Laboratory for Molecular Imaging**. This core strives to provide a state-of-the-art electron microscopy facility for collaborations with institute personnel and to pursue independent research. Dr. Wriggers' biological interest includes molecular motors, cytoskeletal filaments and the transcription machinery.

Other core facilities include cell sorting and analysis.

The Future

The IMM broke ground in September 2003 for a new 223,000-square-foot building adjacent to University Center Tower. Once completed in 2005, the new facility will include a 200-seat auditorium, a large atrium for public events, and rooms for faculty conferences and collaborative scientific discussions, with at least 65 percent of the usable space devoted to research.