

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

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Source

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

## History and Mission

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 genetic, cellular and molecular levels using DNA and protein technologies, and animal models. 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 is the director. Dr. Murad received the Nobel Prize for Physiology or Medicine in December 1998 for his work with nitric oxide. Dr. Irma Gigli is the deputy director. Dr. C. Thomas Caskey is the chief operating officer and director & CEO (Elect).

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 the elucidation of genes, as well as 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.

In 2006, the IMM relocated from the Institute of Biosciences and Technology Building to a new 223,000-square-foot Fayez S. Sarofim Research Building adjacent to University Center Tower. The new facility includes a 200-seat auditorium, a large atrium for public events, and rooms for faculty conferences and collaborative scientific discussions. At least 65 percent of the usable space is dedicated to research laboratories. In addition, a satellite facility exists at the Texas Heart Institute in the Denton Cooley Building. This satellite facility strengthens the IMM's basic science programs, builds upon its excellence in research, and supports the institution's goal of continual partnership or collaboration with other Texas Medical Center institutions by sharing space and support services.

The IMM houses seven 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 predisposition to several different allergic, autoimmune involving distinct organs, and infectious diseases using genetically altered animals in models of diseases.

The **Research Center for Protein Chemistry** focuses its research activities on major topics relating to the significance of manipulating conformational changes of proteins. In addition it serves as a core facility for the structural analysis of proteins.

The **Research Center for Cell Signaling** examines the role of nitric oxide and cyclic GMP in cellular signaling in vascular biology and inflammatory processes, as well as the pharmacologic implications of the discoveries. The role of nitric oxide in the differentiation of stem cells is being investigated.

The **Research Center for Stem Cell Research** activities focus on understanding the molecular details of blood and mesenchymal stem cell and their environments in the body. Techniques have been developed relevant to these two areas to branch out into the study of more poorly understood stem cells in other adult tissues, including the lungs and the kidneys. The center is also looking at ways of making blood stem cells transplants safer.

The **Research Center for NanoMedicine** focuses on inter-disciplinary research to combine nano-engineering, mathematical modeling, and biomedical sciences to develop nanotechnology enabled therapeutic and diagnostic platforms for combating diseases including cancer, cardiovascular diseases and infectious diseases.

The **Laboratory for Developmental Biology** helps UTHSC-H and IMM scientists conduct research that requires the generation of transgenic and knock-out animals as models of human diseases. In these genetically altered animals candidate genes are inserted or deleted in order to study the role that specific gene products may 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, FACS analysis, and high through put DNA sequencing. Search committees are presently underway to recruit faculty for two new Centers (Neurodegenerative Diseases and Metabolic Diseases).