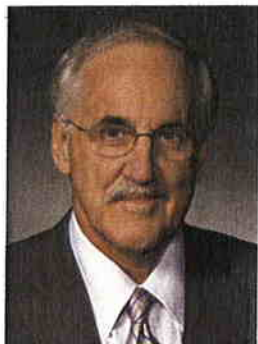


FEATURE ARTICLE

# From Vision to Reality: The Hamner Institutes for Health Sciences

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**A person of unusually keen foresight** is often tagged as a visionary. North Carolina has its share. Among them is William F. Greenlee, Ph.D., president and chief executive officer of The Hamner Institutes for Health Sciences based in Research Triangle Park.

For some, The Hamner Institutes is not as familiar as the Chemical Industry Institute of Toxicology (CIIT), a private, not-for-profit research organization founded by 11 chemical companies in 1974 to study how environmental chemicals impact human health. The 2007 name change to The Hamner reflects Greenlee’s vision of creating the “preeminent center in the world for collaborative, cross-disciplinary education and translational research and technology development in the biomedical sciences.”

## THE MAKING OF A VISIONARY

Greenlee began his career at CIIT as a postdoctoral fellow in the late 1970s. He returned in 1982 as a scientist in the Department of Cellular and Molecular Toxicology and attained the chairmanship in 1988. Greenlee also held an assistant professorship in toxicology at Harvard University’s School of Public Health and a joint appointment in Cellular and Developmental Biology at Harvard Medical School. He was a professor and head of the Department of Pharmacology and Toxicology at the School of Pharmacy and Pharmaceutical Sciences at Purdue University before becoming a professor and chair of the Department of Pharmacology and Molecular Toxicology at the University of Massachusetts Medical School.

Greenlee returned to CIIT in 1999 as president and CEO and began to implement his vision for the organization. Based on his long history with academic research, Greenlee foresaw how CIIT’s legacy in chemical safety sciences created the foundation for an institute dedicated

to translating scientific discoveries to new, safer medicines and better health policies. He planned to achieve this transformation through the development of a human health outcomes-based systems biology platform and a commitment to establishing a common ground for scientists from academia, industry and government to work together.

## REALIZING THE VISION

One of the first steps Greenlee took to implement his vision was to broaden the membership of the board of directors to include biotechnology, life sciences and community leaders. Dr. Charles Hamner, now the namesake of the institute, was an early recruit. As the president and CEO of the North Carolina Biotechnology Center (NCBC) from 1988 to 2002, Hamner played a pivotal role in establishing North Carolina’s global presence in biotechnology. Recent additions to The Hamner’s Board of Directors include Dr. Enriqueta C. Bond, immediate past-president of The Burroughs-Wellcome Fund, Dr. Garheng Kong, general partner at Intersouth Partners, William D. Johnson, chairman, chief executive officer and president of Progress Energy, Inc. and Robert C. Eubanks, founder and president of Franklin Street Partners.

Another key accomplishment for Greenlee was the 2004 construction of a 28,000 square foot laboratory annex. With his new open-laboratory model, Greenlee recruited researchers whose work complemented existing programs. Greenlee dismantled the traditional departmental structure and established centers of excellence allowing the implementation of an integrated systems-biology research platform. In addition to building upon expertise in environmental health sciences and small-molecule chemical safety, The Hamner’s translational research efforts include groups focused on respiratory diseases, oncology, metabolic diseases, nanoparticle delivery systems and safety.

“Through a seamless integration of basic and applied research and its position as a credible and neutral party to

unite academe, industry and government, The Hamner fills a critical gap in the translation of discoveries in the laboratory essential for the development of new and safer medicines and science-based public health policy," Greenlee said.

Training and education is another critical element of Greenlee's vision. More than 400 postdoctoral fellows have received training since the founding of the CIIT over 30 years ago. The Hamner offers predoctoral fellowships and summer internships and cooperative education opportunities for undergraduates. The Hamner supports Project SEED, a statewide science enrichment program which encourages talented, disadvantaged high school students to pursue graduate and professional school degrees in chemistry and chemistry-related disciplines. The Hamner made its scientific training available to the FDA. Five FDA scientists attended a week-long training program in computational systems biology conducted at The Hamner.

## CENTERS OF EXCELLENCE

The Hamner's Center for Dose Response Modeling integrates biological systems research with computational modeling to better determine the interactions of chemical and physical agents on humans. The goal of the Center is to participate in and lead the development of new science that will provide a stronger basis for assessing whether chemicals, at relevant environmental exposures, are likely to affect people.

Researchers within the Center for Genomic Biology and Bioinformatics apply bioinformatics and "large-scale" genomics tools to map the molecular signaling networks and pathways that regulate the biological responses to pharmaceuticals or chemicals in the environment. Longer-term research goals include the investigation of human susceptibility to environmental factors on the regulation of information contained within human genes.

The Center for Human Health Assessment supports human chemical safety assessments and will aid in the discovery and development of new pharmaceuticals, developing alternative approaches to animal testing by combining computational modeling, tissue dosimetry and cellular response. The goal is to reduce the uncertainties in estimating the effects of chemicals or pharmaceuticals in human populations by incorporating chemical-specific, biological information in health and safety assessments.

The Institute's newest initiative, The Hamner-University of North Carolina Center for Drug Safety Sciences (CDSS), addresses major safety issues relating to drug development through a collaboration between an independent research institute, academia, industry and

regulatory agencies and an interdisciplinary integration of *in silico*, *in vitro*, *in vivo* and clinical research. The Science Advisory Board consists of executives from five leading bio and pharma companies, academic scientists and two members of the FDA. Dr. Paul Watkins, the founding director, is one of the world's leading experts in liver injury and drug safety. He will retain his endowed chair as the Verne S. Caviness Distinguished Professor of Medicine at UNC-Chapel Hill.

"The Center for Drug Safety Sciences positions North Carolina to be a leading force in drug safety. This partnership with one of the world's leading biomedical research universities will foster new alliances between academe, industry and government regulatory agencies to advance public health research, education and scientifically informed policies," said Greenlee.

## ACCELERATING COMMERCIALIZATION

Greenlee is also interested in accelerating the path to commercialization. The 56-acre Hamner campus includes The Accelerator for Translational Biosciences. Working with the NCBC, the Council for Entrepreneurial Development, university technology transfer offices and business schools, The Accelerator gives emerging companies like BioMedomics and b3 bio access to research support facilities, a world-class scientific staff and a business development team.

BioMedomics develops advanced medical diagnostics tools based on multiplexed genomics and proteomics detection technologies for use in personalized medicine. BioMedomics developed several biomarker reagent products and sells a biosensor system for advanced cell assay applications. The goal of b3 bio, an RNA therapeutics company, is to develop an entirely new class of medicines using small RNA molecules to target individual cells and tissues. If successful, their technology, licensed from Duke University and the University of Texas, could be used to treat cancer, metabolic diseases, inflammation and infection with reduced side effects.

"The Hamner's integrative partnering with academe, industry and the government creates a major new force to translate the discoveries being made in North Carolina's university and biomedical industry research laboratories into treatments and cures for diseases that severely impact the quality of life for many of the citizens of this state, nation and the world," Greenlee said. ①



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[www.thehamner.org](http://www.thehamner.org)