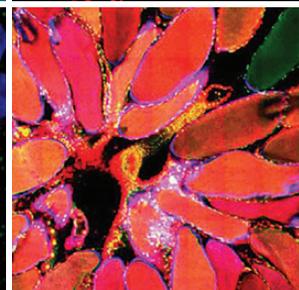
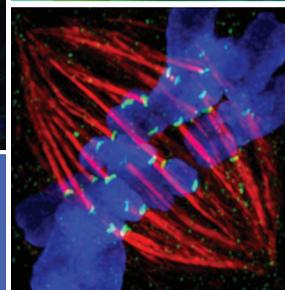
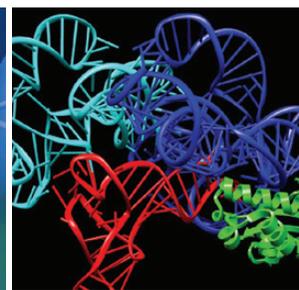
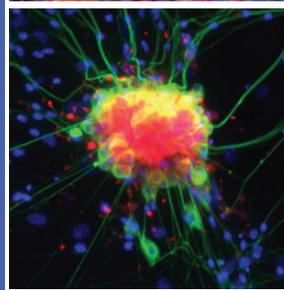
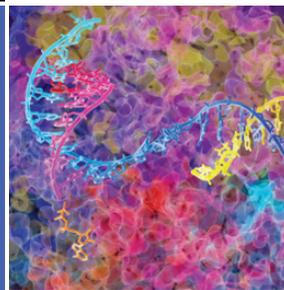
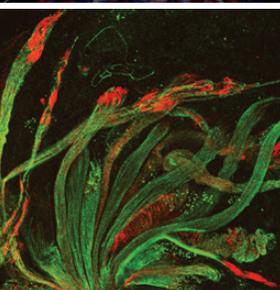
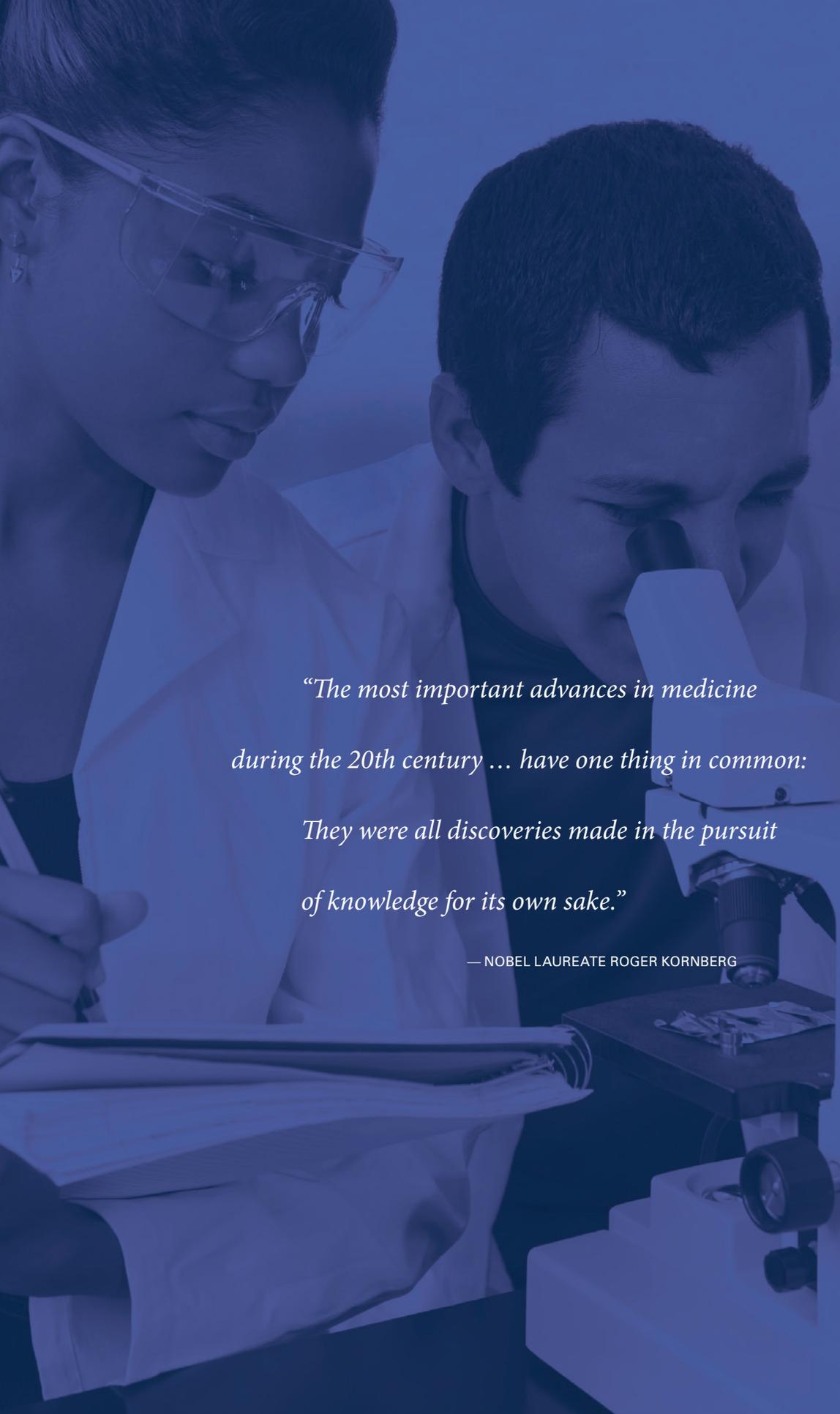


INVESTING IN DISCOVERY

AN OVERVIEW OF THE
National Institute of
General Medical Sciences



U.S. DEPARTMENT OF
HEALTH AND HUMAN SERVICES
National Institutes of Health
National Institute of General Medical Sciences



*“The most important advances in medicine
during the 20th century ... have one thing in common:
They were all discoveries made in the pursuit
of knowledge for its own sake.”*

— NOBEL LAUREATE ROGER KORNBERG



The Dance of Life

RIGHT NOW, BILLIONS OF MOLECULES are coiling, oozing or vibrating throughout your body, all part of the carefully choreographed dance of life.

Understanding those molecules, along with the cells and systems in which they function, is the mission of the National Institute of General Medical Sciences (NIGMS), a part of the National Institutes of Health (NIH).

NIGMS uses the vast majority of its nearly \$2.4 billion annual budget to support the research of thousands of scientists across the country who seek to understand the basics of how life works.

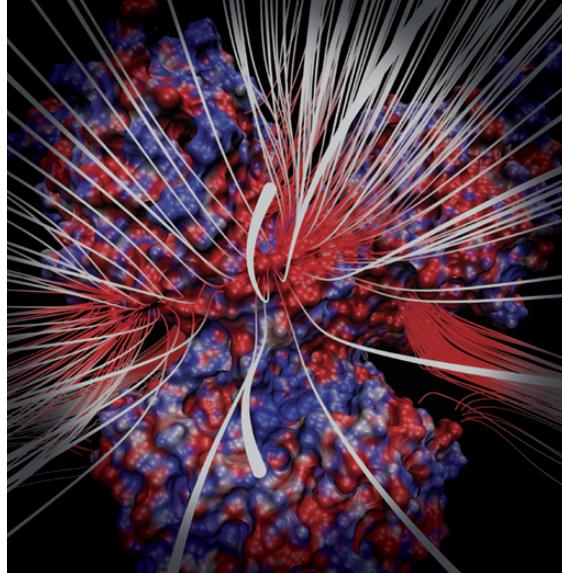
Knowledge gained from these investigations lays the foundation for new ways to predict, prevent, diagnose and treat disease.

The NIGMS investment also benefits local economies, fuels biotechnology and other industries, and helps the U.S. maintain its global competitiveness.

The Institute funds a broad spectrum of research, handled administratively by the divisions and center described in this brochure.

More information about NIGMS research funding opportunities is available at

<http://www.nigms.nih.gov/research>.



Division of Biomedical Technology, Bioinformatics, and Computational Biology

This division supports the discovery, development, dissemination and use of new tools and technologies that advance basic biomedical research. The division is particularly interested in applying techniques from the computational, mathematical and physical sciences.

The division focuses on questions like:

- What new technologies and techniques will help scientists better understand molecules, cells and organs and the roles they play in health and disease?
- What methods will reveal more about how cells, microbial communities, human populations and other complex biological systems respond to different or changing environments?
- How can researchers apply computational approaches to understanding and predicting the spread of infectious diseases?
- What are the best ways to organize, share and visualize vast quantities of biological data?

More information about this division is available at <http://www.nigms.nih.gov/bbcb>.

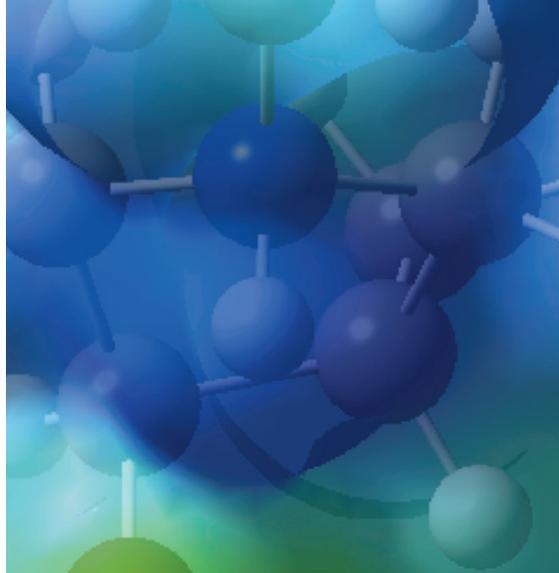
Division of Cell Biology and Biophysics

This division supports studies of the structure and function of cells and the molecules within them. Such investigations help scientists understand cellular activity in health and disease.

The division focuses on questions like:

- How do cells move, divide, communicate and sense changes in their environment?
- How are cell membranes made and maintained?
- How do viruses infect cells, develop and replicate inside them, and exit to infect other cells?
- How does an understanding of the detailed structures of molecules shed light on their functions in health and disease?
- How can scientists use their knowledge of protein structures to develop drugs for AIDS, antibiotic-resistant bacterial infections and other diseases?

More information about this division is available at <http://www.nigms.nih.gov/cbb>.



Division of Genetics and Developmental Biology

This division supports research on the fundamental mechanisms of genetic, cellular, developmental and evolutionary processes. Such basic research provides a strong foundation for the more disease-targeted studies supported by other NIH components.

The division focuses on questions like:

- How do genes control the life and death of cells and the circadian rhythms of organisms?
- What are the signaling pathways underlying cell growth, specialization and development?
- How do genes interact to produce complex traits and diseases?
- What can we learn about human development, health, behavior and disease by studying organisms like bacteria, yeast, roundworms and fruit flies?
- How do the bacteria and other micro-organisms that live on and in our bodies affect our health?

The division also supports the NIGMS Human Genetic Cell Repository, which houses a collection of well-characterized human cell lines for use in biomedical research.

More information about this division is available at <http://www.nigms.nih.gov/gdb>.

Division of Pharmacology, Physiology, and Biological Chemistry

This division supports research in pharmacology, physiology, biochemistry and chemistry that deepens understanding of biology. These studies include clinical research on trauma, burn injury, sepsis, wound healing and the effects of drugs and anesthesia on the body.

The division focuses on questions like:

- How do enzymes generate energy and facilitate myriad other chemical reactions in our bodies?
- How do carbohydrate molecules influence the action of cells?
- How can scientists harness molecules from nature to use as medicines?
- How do medicines work in the body, and what role do a person's genes play?
- What physiological changes occur immediately and over time when a person is critically ill or injured?

More information about this division is available at <http://www.nigms.nih.gov/ppbc>.



Division of Training, Workforce Development, and Diversity

This division supports programs that train tomorrow's scientists and develop a strong and diverse biomedical research workforce. It funds:

- Undergraduate student training and development.
- Postbaccalaureate research education.
- Predoctoral research training.
- Postdoctoral research training, career development and transition to independence.
- Workforce development research.

Through these efforts, NIGMS helps assure the continued vitality and productivity of the research enterprise.

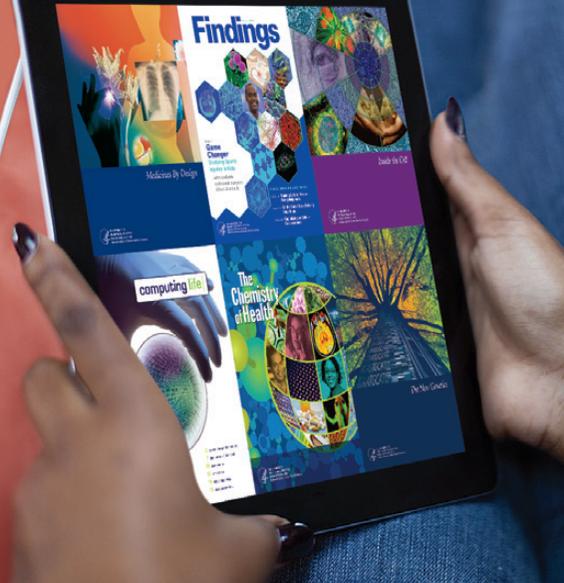
More information about this division is available at <http://www.nigms.nih.gov/twd>.

Center for Research Capacity Building

This center supports programs aimed at increasing the research capabilities of institutions and the research competitiveness of faculty in states that historically have not received significant levels of research funding from NIH. It also supports similar programs at institutions that have a historical mission focused on serving students from underrepresented groups. It funds:

- Undergraduate research experiences and student development.
- Junior faculty research development and mentoring.
- Basic, clinical and translational biomedical research, including on conditions that disproportionately affect medically underserved populations.
- The formation of collaborative research and training networks.
- The enhancement of biomedical research infrastructure and of access to shared research resources.

More information about this center is available at <http://www.nigms.nih.gov/crcb>.



To strengthen public understanding of science, NIGMS produces free resource materials, including:

- Award-winning publications on topics like cell biology, genetics, chemistry, pharmacology, computational biology and structural biology.
- *Findings*, a magazine that showcases vibrant and diverse scientists who do cutting-edge research and lead interesting lives.
- A scientific image gallery with downloadable photos, illustrations and videos.
- A blog that highlights scientific progress.
- Articles and fact sheets on areas of science within the NIGMS mission.

Browse, download and use these free resources at <http://publications.nigms.nih.gov/epublications.htm>.

NIGMS also houses the trans-NIH Office of Emergency Care Research, which coordinates and fosters research and training in the emergency setting.

More information about this office is available at <http://www.nigms.nih.gov/oecr>.

Supporting high-quality research is a defining characteristic of NIGMS. Many of the Institute's grantees earn prestigious awards, including the Nobel Prize, the highest honor bestowed in science. Over its 53 years, NIGMS has funded the Nobel Prize-winning work of 83 scientists. Among their discoveries:

- Translating the genetic code and explaining how it functions.
- Defining the internal organization of cells using electron microscopy and other techniques.
- Finding that RNA can act as a catalyst, controlling and directing cellular functions.
- Discovering restriction enzymes, which cut DNA at precise locations and are a cornerstone of the biotechnology industry.
- Identifying proteins that trigger a cell's response to outside signals and are involved in normal activities as well as diseases like cancer, cholera and diabetes.

A complete list of NIGMS-funded Nobelists is at <http://www.nigms.nih.gov/GMNobelists>.

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Under provisions of applicable public laws enacted by Congress since 1964, no person in the United States shall, on the grounds of race, color, national origin, handicap, or age, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity (or, on the basis of sex, with respect to any education program or activity) receiving Federal financial assistance. In addition, Executive Order 11141 prohibits discrimination on the basis of age by contractors and subcontractors in the performance of Federal contracts, and Executive Order 11246 states that no federally funded contractor may discriminate against any employee or applicant for employment because of race, color, religion, sex, or national origin. Therefore, the programs of the National Institute of General Medical Sciences must be operated in compliance with these laws and Executive Orders.

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Web Links

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