# New Home for Center for Molecular Genetics to open

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NEW HOME FOR CENTER FOR MOLECULAR GENETICS TO OPEN THIS WEEK AT UCSD

The Center for Molecular Genetics at the University of California, San Diego is opening a facility to embrace the medley of campus research activities that offer new hope to segments of society as diverse as victims of genetic diseases, children with hormone deficiencies, and populations plagued by food shortages.

UCSD will inaugurate the new building May 7 and 8 with a day and a half symposium on recent developments in molecular genetics -- the study and manipulation of genes.

The $7.6 million, 26,434 square-foot building, which is located on the School of Medicine campus west of the Basic Science Building, will house roughly 150 scientists working in seven of the 50 or more UCSD laboratories engaged in recombinant DNA research.

"Molecular genetics is the most explosive, the most exciting, dynamic and changing field in science right now," said Donald Helinski, director and a founder of the Center for Molecular Genetics. "It's going to have tremendous social impact in terms of the treatment of disease. Its implications in terms of biomedicine are profound and will continue to be so."

Scientists at UCSD are isolating, manipulating, and inserting genes from humans, animals, plants, and microorganisms into the chromosomes of cells from a variety of living things. Their research addresses such fundamental questions as how information encoded in DNA gets translated into protein, as well as applied problems, such as the development of genes for disease resistance in food crops.

In the new facility, some laboratories will be investigating the regulation of gene expression and other processes that underlie animal and plant development while others will be trying to develop the technology to treat or prevent genetic disorders.

"We're very excited about the new facility. It will provide a focal point for the campus' broad based molecular genetics research and help to secure UCSD's position as one of the nation's foremost universities in the field," Helinski says.

The Center for Molecular Genetics, established at UCSD in 1984, had its beginning during a decade of dramatic developments that revolutionized biology and medical research by providing an extraordinary technology for probing basic life processes.

Research activities in UCSD's Departments of Biology and Chemistry and at the School of Medicine, all three nationally recognized for their outstanding scientific programs, thrust the campus into the forefront of research in molecular genetics.

The center's primary missions are to promote a lively exchange of ideas and information on molecular biology across disciplinary and departmental lines on campus and to strengthen ties with the biotechnology businesses that have sprouted on the university's perimeter in the past decade.

Helinski also expects the CMG to foster interaction with other research units on campus, particularly those engaged in biomedical research such as the Cancer Center and the Center for Research on Aging.

"The center is not only an intellectual resource. It's an equipment resource as well, with an emphasis on the use of computers in molecular genetics research and synthesizing DNA and peptides," Helinski explains.

The facility will house a world class computer complex for the analysis of genes and proteins. This mini-computer center will serve as a gene and protein bank, enabling scientists to compare the structure and components of different genes and proteins in order to identify those that have potential application in research or medicine.

CMG's "pay-as-you-go" gene and protein machines will synthesize parts of genes or even whole genes for scientists desiring genetic probes, or markers, for their investigations.

Biotech firms will be encouraged to tap the center's resources. They'll have access to recent research findings, the latest advances in recombinant DNA technology, state-of-the-art equipment, and other important services.

"We believe we can help new and established companies solve specific problems in molecular genetics, whether they're related to modifying DNA, expressing a particular gene in bacteria, or making a new antibody," Richard Firtel, a molecular biologist and a key mover in the Center's development, told an industry forum recently.

In turn, it is hoped that industry will open the channels necessary to transfer useful substances developed in university laboratories into the marketplace where it can be of most benefit to society.

The growth of the biotechnology industry in San Diego has been triggered largely by the presence of UCSD and its two neighbors, The Salk Institute and Scripps Clinic and Research Foundation. The "big three" not only attracted numerous biotech firms to the area, they actually have served as incubators for new companies. Today, the county is one of the four major biotech centers in the nation.

San Diego's prominence in molecular genetics and biotechnology aroused the interest of the Howard Hughes Medical Institute (HHMI), which has announced plans to build a facility in UCSD's "biomedical corridor" adjacent to the CMG, HHMI will break ground this year for the building, which will house a program in molecular neurobiology, the investigation of the nervous system, THE brain and neurological diseases.

The symposium will feature nine renowned scientists, speaking on mapping genes to pinpoint genetic defects and genetic fingerprinting, how insulin maintains blood sugar levels, a genetic technique for predicting whether a person is at risk for heart disease, and other research topics on the cutting edge of molecular biology.

Eli Lilly & Company, the UC Biotechnology Research and Education Program, and a host of San Diego high tech firms have underwritten the event, which will be held in the Basic Science Building at the School of Medicine, beginning at 9 a.m. both days.

THE UNIVERSITY OF CALIFORNIA, SAN DIEGO MOLECULAR BIOLOGY SYMPOSIUM DINNER IN CELEBRATION OF THE OPENING OF THE UCSD CENTER FOR MOLECULAR GENETICS (agenda attached)

UCSD MOLECULAR BIOLOGY SYMPOSIUM, May 7-8, 1987

Speakers:

DR. DAVID BOTSTEIN, Department of Biology, Massachusetts Institute of Technology: "Using Restriction Fragment Length Polymorphism's (RFLP) to Study Complex Inherited Disease."

Botstein is on the forefront of identifying and mapping genetic defects associated with specific inherited diseases. Using basic molecular genetic techniques to map genes on a chromosome, Botstein is laying the groundwork for genetic fingerprinting, a method to determine whether an individual is a carrier of a genetic defect. Certain applications of genetic fingerprinting are controversial. The technique can be used to discover whether potential employees are susceptible to certain compounds used in the workplace or have genes for certain debilitating diseases. Further, genetic fingerprinting gives law enforcers the ability to identify individuals by their genetic makeup.

DR. ALDRED GILMAN, Department of Pharmacology, University of Texas Health Science Center, Dallas: "G Proteins and Trans membrane Signaling."

Gilman's work is directed toward identifying the parts and workings of a cell that . enable it to respond to hormonal and other stimuli in regulating its metabolism. G proteins are essential in transferring an external signal into a response by the cell. They may interact, for example, with insulin in commanding a cell to use sugar. Gilman hopes to identify the role of G proteins in this complex cellular communication process. He believes that understanding this signal system may also provide answers as to why certain cells become tumorous and lead, ultimately, to the prevention of abnormal responses.

DR. JOSEPH GOLDSTEIN, Nobel Laureate, Department of Molecular Genetics, University of Texas Health Science Center, Dallas: "A Receptor-Mediated Pathway for Cholesterol Homeostasis."

Goldstein won the Nobel Prize in Medicine in 1985 for his trail-blazing work in blood cholesterol, one of the chief determinants in heart disease. Having isolated the gene that regulates cholesterol levels in humans, Goldstein discovered that low density lipoproteins (LDL) play a positive role in maintaining cholesterol levels. His success in identifying the mechanism that regulates cholesterol levels in the blood has provided a genetic basis for predicting whether an individual is predisposed to high cholesterol and consequently at risk for heart disease.

DR. DAVID HOGNESS, Department of Biochemistry, Stanford University School of Medicine: "Molecular Genetics of Genes that Control Development in Drosophila."

Hogness has identified key genes which control the development of the fruit fly and other higher organisms. His work addresses a compelling question in biology: how are complex genetic programs coordinated in the development of an individual? In other words, how do the body's many complex parts come together during development to form a whole organism?

DR. BRIAN MATTHEWS, Institute of Molecular Biology, University of Oregon: "Structural and Genetic Approaches to the Protein Stability Problem."

Matthews is using the tools of molecular genetics to unravel the three-dimensional structure of proteins. Understanding the structure of a protein is essential to fathoming the regulation of gene expression and the functioning of metabolic machinery in a cell. This basic research is a key to how living organisms carry out life processes.

DR. MARK PTASHNE, Department of Biochemistry, Harvard University: "Protein-DNA Interaction and Gene Regulation in Bacteria and Yeast."

Ptashne's research has provided a structural basis for the control of gene expression by a specific protein molecule. He discovered that bacteria and higher organisms use similar mechanisms in the control of gene expression.

DR. ORA ROSEN, Memorial Sloan Kettering Cancer Center: "The Role of Protein Kinases in Insulin Action."

Rosen's description of how insulin maintains blood sugar levels has important implications for treating diabetes. She has charted the receptor in human cells that is involved in insulin regulation of sugar intake.

DR. GERALD RUBIN, Department of Biochemistry, University of California, Berkeley: "The Development of the Drosophila Visual System."

Rubin uses the tools of genetics and molecular biology to dissect the development of the visual system, an extraordinary system for studying the molecular basis of nerve cell activity and eye development. The eye serves as a model system for unraveling the molecular basis of other neurobiological processes, including memory, decision-making, and reasoning.

DR. PHILLIP SHARP, Center for Cancer Research, Massachusetts Institute of Technology: "Splicing of Messenger RNA Precursors."

Sharp examines molecular events in a cell that are responsible for "read-out" of the genetic information. In higher organisms, the protein-encoding portions of many genes are split into multiple parts. This seminal work describes how the messenger RNA of such genes is "spliced" together to form an intact and functional unit capable of instructing protein synthesis.

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