

A decade later: UCSD's Center for Molecular Genetics holds three-day symposium commemorating its opening

April 24, 1997

Media Contact: Warren R. Froelich, (619) 534-8564, wfroelic@ucsd.edu

A DECADE LATER: UCSD'S CENTER FOR MOLECULAR GENETICS HOLDS THREE-DAY SYMPOSIUM COMMEMORATING ITS OPENING

When the Center for Molecular Genetics (CMG) opened its doors a decade ago on the campus of the University of California, San Diego, the world of biology was spinning around recently discovered laboratory techniques popularly known as "genetic engineering" or "gene splicing."

Experiments involving the isolation, manipulation and insertion of genes from one organism into another captured international headlines. At UCSD, for example, the announcement in December 1985 that researchers had spliced into tobacco plants the gene for luciferase--the enzyme responsible for the glow of fireflies--lit up the public's imagination during that year's holiday season.

Today, such "recombinant DNA" studies are so commonplace that undergraduate and even high school biology students are doing them.

To help illustrate how far molecular biologists have come, and to introduce new research directions, the CMG will hold a symposium to commemorate its opening 10 years ago, and the inauguration of its industrial affiliates program, Biotechnology InCyte. Aside from scientific sessions, the symposium will honor Don Helinski, associate dean of UCSD's Division of Natural Sciences and the Center's first director, for his contributions to the development of molecular biology and biotechnology at UCSD; and the memory of the late Dick Liu, of Beckman Instruments, for his years of dedicated service to biomedical researchers in Southern California.

The three-day event will take place April 30 at the CMG and May 1-2 at the UCSD Price Center Theatre (see attached program).

"UCSD ranks as one of the top research institutions, academic or nonacademic, in the world in the area of molecular genetics," said Rick Firtel, director of the CMG and a professor of biology. "Part of this obviously is due to the hiring of exceptional people by the various departments. But I think the Center, and the leadership of Don Helinski, has been a principal reason why people have been attracted to this campus."

Today, about 100 faculty members from various departments on campus are affiliated with the Center in an interdisciplinary program that crosses the boundaries between general campus science and the School of Medicine, between basic research and applied activities in biomedical sciences. The CMG building itself, located on the School of Medicine campus west of the Basic Science Building, houses seven laboratories, administration offices, a library, computer center, and a seminar room that serves as a gathering place for meetings.

"One of the goals of the Center has been to establish resource centers for biomedical research," said Firtel.

For example, when the building opened it housed a world-class computer complex for the analysis of genes and proteins. The mini-computer center served as one of the world's earliest databases of this kind, helping scientists to compare the structure and components of different genes and proteins to identify those that had potential for research or medicine. Another popular resource was CMG's peptide facility, featuring "pay-as-you-go" gene and protein machines that synthesized parts of genes or even whole genes for scientists desiring genetic probes, or markers, for their studies. Both of these early facilities have been supplanted by newer technology or commercial services.

However, the CMG established this year a "mouse knock-out" center to help researchers create animal models for specific genetically related diseases. This new facility works in tandem and complements the UCSD Cancer Center's "transgenic" laboratory that allows researchers to insert genes into a mouse to study specific proteins linked to tumor formation and to examine the developmental consequences of gene functions.

"For the average researcher who wants one or two germ-line transmissions that are stable, with mice strains carrying a particular mutation, the technology is both very expensive and very, do that. The Center has established this with support from the general campus and the School of Medicine."

With the help of these new facilities, and others on the drawing board, the Center has decided to focus its future efforts on two areas of research: signal transduction and human genetics.

In essence, signal transduction is the study of how cells respond to each other through a cascade of chemical messages, such as hormones.

Take, for example, a family of enzymes called protein kinases--biological catalysts that form the backbone of a molecular relay team in the body. Kinases hand off chemicals called phosphate groups to other enzymes, much as relay runners pass a baton to each racer in a series until one reaches the finish line where the final enzyme in the path initiates some cellular function--the breakdown of fat stored for energy for example, or cell motility, or cell division, or gene transcription, to name a few. Faulty regulation of kinases is involved in, or can cause, many diseases including diabetes, neurological disorders and cancer.

"Pharmacology, in part, is the study of signal transduction," said Firtel. "And it is clear that a significant number of medical diseases are based on problems of signal transduction."

With human genetics, Firtel said he would like to mesh basic science studies with practical therapies to treat genetic diseases.

"We just don't want to identify the gene that causes human disease or a model of the human disease," he said. "We also want to study the mechanisms that go wrong with cells that result in disease. That's what the Center tries to do, to function at the interface between research that is medically directed and research that is quite basic."

Firtel noted that the biotechnology industry in San Diego has been triggered by the presence of UCSD and its two neighbors, The Salk Institute and The Scripps Research Institute. Not only have these three centers attracted biotechnology firms to the community, they have served as incubators for new companies. At least 39 San Diego biotechnology companies, employing in excess of 5,500, were created partially as a result of UCSD technology or were founded by UCSD faculty, alumni, students or staff.

To help bridge the campus with this burgeoning community, CMG established the Biotechnology InCyte program, directed by Robert Bohrer. Among other things, the program hosts periodic breakfast meetings with members of the biotech community to discuss various problems including financing, tech-transfer, legal issues and the science itself.

"I'm a strong believer that the university has a responsibility to the community," said Firtel. "We need to help the community and the campus to integrate as much as possible."

This year's symposium is being funded with the support of Beckman Instruments, Inc.; UC Systemwide Biotechnology Program; Aurora Biosciences; Agouron Pharmaceuticals; Knobbe, Martens, Olson & Bear; and Price Waterhouse.

(April 24, 1997)