

UC SANTA BARBARA

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## **PROPOSED NANOSYSTEMS RESEARCH CENTER SELECTED AS FINALIST IN STATE COMPETITION FOR NEW RESEARCH INSTITUTES**

A joint proposal by UCLA and UC Santa Barbara to create a wide-ranging nanosystems institute that could help revolutionize many fields of science has been chosen as a finalist in the competition for one of the California Institutes for Science and Innovation proposed by Gov. Gray Davis.

The California Nanosystems Institute, a collaboration between the two universities with UCLA as the lead institution, is one of six finalists selected by the University of California Office of the President, which is coordinating the competition for the three initiatives to be funded under the governor's proposal.

Nanosystems, which involves the science, engineering and manufacturing of molecular-based structures, is a rapidly expanding, multidisciplinary field that holds the promise of revolutionizing many modern industries, including the high-tech industries that fuel much of California's economy.

The UCLA-UCSB collaboration focuses primarily on the areas of molecular medicine and information technology.

"We believe we can create the world's leading research center in the field of nanoscience," said James Heath, a UCLA professor who is a leader of the project and a pioneer in the field of molecular electronics. "We want to be able to train and produce the scientists and engineers needed to bring this technology from the academic laboratory to the marketplace of industry."

Davis has proposed creating three California Institutes for Science and Innovation, which will focus on scientific and engineering research in fields key to the future of the California economy. Each institute will bring together faculty, students and industrial partners to work in cross-disciplinary teams aimed at developing the next generation of knowledge in the field.

The state would provide up to \$100 million in state funding over four years to each of the institutes, with each institute expected to raise at least \$200 million in additional support. Leaders at UCLA and UCSB have been talking to a number of the state's leading companies about becoming partners with the institute, which is estimated to cost about \$360 million.

Creation of the California Nanosystems Institute could involve as many as 150 faculty members from both universities and would build upon existing strengths at both UCLA and UCSB.

At UCLA, those strengths include tight scientific links between the schools of medicine and engineering and the College of Letters & Science, and a strong array of core research facilities, ranging from bio-imaging facilities to a semiconductor fabrication facility.

At UCSB, strengths include world-recognized leadership in the areas of materials research, optoelectronics, biomimetic and biomolecular materials. UCSB also has extensive

and expanding research facilities in the materials and engineering fields, including a node of the National Science Foundation-funded National Nanofabrication Users Network.

Facilities would be built on both campuses, connected by high-speed Internet links so that equipment on one campus could be operated from another.

"UCSB and UCLA have formidable and complementary strengths in the physical sciences and engineering disciplines," said Evelyn Hu, a UCSB engineering professor who is co-directing the project. "Those strengths, taken together with UCLA's biomedical research programs, give us tremendous advantages that we can leverage in putting together this nanosystems institute."

Nanosystems is an emerging area of science and technology that promises to use technological advances to create a wide array of molecular-scale machinery, much like the ones seen in nature or in the human body.

By manipulating individual atoms and molecules, it may be possible to create powerful devices that are microscopic in size, researchers say. For example, nanosystems research may lead to the manufacture of entire laboratories that are smaller than a modern computer chip, but capable of carrying out the analysis and identification of trace toxins or pathogens.

Nanosystems also may make it possible to create new ways of processing electronic information, holding the promise of creating high-power computers that are hundreds of times smaller and require only a fraction of the energy of today's equipment. UCLA and UCSB both have world leaders in this area of research.

The federal government is preparing to nearly double its investment in nanosystems research. President Clinton has proposed increasing spending on nanotechnology research and development by \$225 million in his budget proposal for 2001, largely because of its potential to provide breakthroughs that will produce new industrial technology.

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## **About UC Santa Barbara**

The University of California, Santa Barbara is a leading research institution that also provides a comprehensive liberal arts learning experience. Our academic community of faculty, students, and staff is characterized by a culture of interdisciplinary collaboration that is responsive to the needs of our multicultural and global society. All of this takes place within a living and learning environment like no other, as we draw inspiration from the beauty and resources of our extraordinary location at the edge of the Pacific Ocean.