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UNIVERSITY OF CALIFORNIA

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R E S E A R C H

and public service by weaving research into the fabric of all its

EDUCATION

contributions to California. From the training of young engineers

to providing the latest medical therapies for hospital patients,

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At its core, the UC research mission is funded by the state of California.

ECONOMY

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UC RESEARCH

Making a difference in California and beyond



Research at the University of California

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The state provides most of the funds for the buildings, laboratories and equipment that support teaching, workforce development and tech transfer. The quality of UC's research attracts billions of dollars annually in funding from the National Institutes of Health, the National Science Foundation, the Department of Energy and other federal and private sources.

State funding also provides seed money for research projects vital to California, whether the subject is earthquake engineering or improved crop varieties. Once a research program is up and running, UC leverages the initial investment of state funds by attracting grants from federal and private sources.

From Central Valley farms to Silicon Valley factories, from educating the young to caring for the aging, virtually every aspect of life in California has been touched and improved by UC research.

Education

- Every year, thousands of UC undergraduates are exposed to research through research internships, projects, scholarship programs and seminars. UC's one million alumni have gone on to become teachers, designers and writers, justices and jurists, engineers and architects, and renowned scientists.
- UC undergraduates are responsible for editing and overseeing production of four professional-quality journals devoted exclusively to publishing results of undergraduate research.
- UC is awarded approximately 30 grants annually from the National Science Foundation's *Research Experiences for Undergraduates Program*. This program allows hundreds of California students to work with faculty researchers on diverse research programs from studying the wheat genome to developing artificial intelligence.
- Research is the heart of graduate student education, and UC's graduate programs are nationally recognized. Of the 229 UC doctoral programs ranked by the National Research Council, more than half are in the top 20 in their fields, and more than one-third are in the Top-10.
- UC research includes exploring culture and the humanities. Nationally known for turning out talented writers and poets, UC Irvine's creative writing program counts three recent Pulitzer Prize winners among the program's alumni – Yusef Komunyakaa (1994), Richard Ford (1996) and Michael Chabon (2001).
- As a UCLA doctoral student, Andrew Kennedy's research involved creating a new training model for dozens of school districts and nonprofit agencies to improve the ways that these schools and agencies work with Head Start programs.
- At UC, the National Science Foundation has funded several grants to help researchers improve math and science education. UC Riverside's Robert Calfee used an NSF grant to teach science to fourth- to eighth-graders by fostering students' reading and writing skills in the context of science instruction.

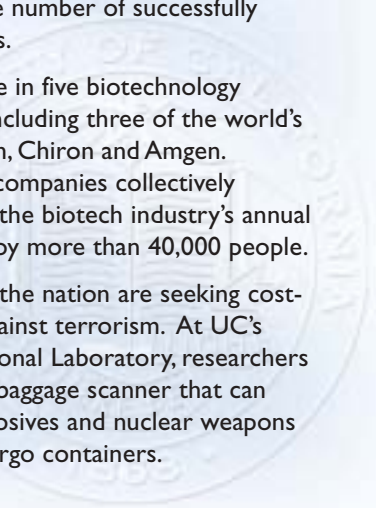


Health

- The University of California improves the health of the state's citizens through health sciences research, medical training and patient care. In fiscal year 2002, UC hospitals logged over 133,000 patient stays and over 3.5 million outpatient visits. UC provides almost half of the hospital care to uninsured and indigent patients in San Diego, Sacramento and Orange Counties.
- The University of California has the largest system of health sciences research and training in the nation. It includes five schools of medicine in addition to schools of public health, nursing, dentistry, pharmacy, optometry and a school of veterinary medicine.
- UC campuses are home to more than 230 specialized bioscience research centers, including seven state-funded Alzheimer's Disease research centers. These centers conduct research on prevention, diagnosis, treatment and cure of this widespread disease.
- The UC medical centers have more than 12,000 students enrolled in medicine, nursing and other health professional schools. More than two-thirds of all medical students in California are enrolled in UC schools of medicine. Their exposure to the latest medical research will help them provide the highest standard of care for their patients.
- UC is California's leader in organ transplants. UC medical centers perform 45 percent of all adult transplants and 56 percent of all pediatric transplants in the state, including the second heart/kidney transplant in a child under the age of 10.
- UC medical research helped tame Hepatitis-B, a deadly disease that often leads to liver cancer. The Hepatitis-B vaccine is UC's leading commercialized technology, bringing in nearly \$24 million in fiscal year 2001. The vaccine is now routinely given to California infants.
- Californians and others benefit from the medical advancements pioneered by UC. These include lung surfactant that helps premature babies breathe and diagnostic tools such as Magnetic Resonance Imaging. Medical advances not only save lives – they reduce the cost of treatment.

Economy

- The University of California boosts the state economy by attracting almost \$2 billion annually in federal research funds. Without California's investment in UC research facilities, these federal awards – and the resulting tech transfer and job creation – would go to other states.
- There are more than 30 UC research centers around the state dedicated to improving the production, supply and quality of food and fiber, as well as the health and safety conditions on California farms. The average return for public investment in UC agricultural research and extension activities is about 20 percent.
- A prime example of UC's research contribution to California agriculture is the success of the state's strawberry industry. California produces more than 80 percent of the nation's strawberries, and 90 percent of California's strawberry acreage is planted in UC-developed varieties.
- Private companies and consortia contract with UC to perform over \$180 million of research annually. This research helps create new products, improves productivity and leads to the creation of well-paid jobs in California.
- Over 160 companies have been founded on UC-bred technology. The UC technology transfer program leads U.S. universities, both in terms of the number of patents granted and in the number of successfully commercialized inventions.
- UC scientists founded one in five biotechnology companies in California, including three of the world's top companies, Genentech, Chiron and Amgen. California biotechnology companies collectively account for nearly half of the biotech industry's annual sales in the U.S. and employ more than 40,000 people.
- California and the rest of the nation are seeking cost-effective ways to guard against terrorism. At UC's Lawrence Livermore National Laboratory, researchers have devised a hand-held baggage scanner that can detect knives, plastic explosives and nuclear weapons hidden in suitcases and cargo containers.



UC is active in moving inventions, technologies and products from its laboratories into the marketplace. Here is a sampling of companies founded with UC technology licensing

Biotechnology

Abaron Biosciences
Androclus Therapeutics
Applied Phytologics
Aurora Biosciences Corp.
Biagro Western Sales, Inc.
Canji Inc.
Cell Genesys
Celladon
Chiron Corp.
DNA Sciences
EpiGenX Pharmaceuticals
Exelixis Pharmaceuticals, Inc.
Genentech Inc.
Genicon Sciences
Generic Inc.
Geron Corp.
Hermes Biosciences
I-MEDD
Immusol
Iris MicroMedical
PanCel Corp.
Pangenix
Planet Biotechnology Inc.
Protein Pathways
Protos Corp.
Remedyne
Sagres Discovery
Sangart
Senomyx

Signal Pharmaceuticals
Tissue Technologies Inc.
World Blood
Xenometrix

Pharmaceuticals

Agensys
AriZeke Pharmaceuticals
AvMax
BioSante Pharmaceuticals
Collateral Therapeutics
Cortex Pharmaceuticals Inc.
Cytokinetics Pharmaceuticals
Dynavax Technology Corp.
GeneTrol Biotherapeutics
ID Vaccine Corp.
Iguazu Biosciences
Inologic
Intrabiotics Pharmaceuticals
Islet Technology Inc.
KBC Pharma
Meyer Pharmaceuticals LLC
Myelos Neurosciences
NeoGene Technologies
Nereus Pharmaceuticals
NeurogesX
ONYX Pharmaceuticals
Octamer
Ontogen
Parnassus Pharmaceuticals

Penederm Inc.
ProDuct Health
Salmedix
Serra Pharmaceuticals
Sunesis Pharmaceuticals Inc.
VIRASIM Inc.

Energy

Advanced Materials
Composite Solutions
MMFX Steel Co. of America
Nitres
Onsite Power Systems
RHA TechnologySeashell Technology
Seashell Technology
SiGen
Surfx Technologies
TefLabs
Zettacore

Chemicals

Halosource

Computer hardware

Calimetrics Inc.
Digital Instruments Inc.
Tech Systems
Tests and Measurements
Quadrant Imaging
SpectruMedix Corp.

Photonics

Agility Communications
Alien Technology Corp.
Alvesta Corp.
Bandwidth9 Inc.
Genoptix
ModeTek
Onix Microsystems
Terabit Technology
Uniax
Yuni Networks

Software

Inktomi Corp.
Neomorphic Software Inc.
Pixon
Praja
Scientific Learning Corp.
SignalCom
TruVideo Inc.
Viasense Inc.

Medical devices

Brain Dynamics
Calhoun Vision
GlySens
Intra-Medical Imaging
Thuris
Uros

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