

Defining the Future of the
Public Research University

UC San Diego

#5 for total R&D expenditures
among U.S. universities

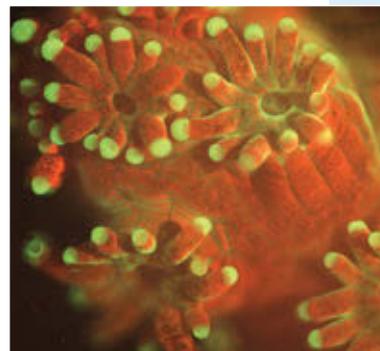


UC San Diego's iconic Geisel Library, a meeting place for faculty and students, and home to the Dr. Seuss Collection

Breakthroughs to Better Our World

From its inception, the University of California, San Diego has attracted leading scholars with an entrepreneurial spirit and a penchant for risk taking. The freedom to cross boundaries and to create new disciplines fuels breakthrough research with global impact. Our visionaries are looking for the next discoveries that will benefit people around the world in all walks of life.

Microscope image of the coral *Pocillopora damicornis* polyps taken in the Jaffe lab. Actual size approximately 3.5 millimeters.



David Victor, Ph.D.



Jules Jaffe, Ph.D.

ADDRESSING *Climate Change*

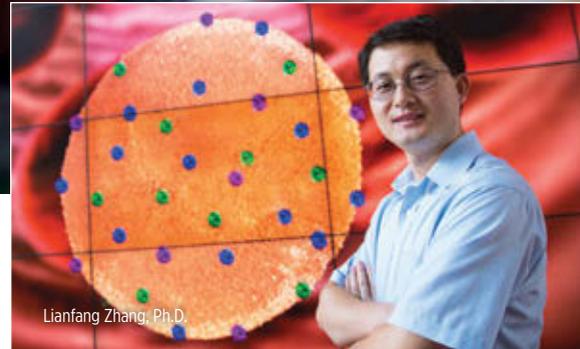
Examining Global Policy

Global warming is one of today's greatest challenges and international policies to cut emissions are overdue. **David Victor's** book *Global Warming Gridlock* explains why the world hasn't made much diplomatic progress and explores new, effective strategies. His research has produced a roadmap to a lower carbon future through bottom-up initiatives at the regional, national and global level.

Peering Into Processes

Many of the most important biological processes in the ocean take place at a microscopic scale, but when scientists remove organisms to study them, much of the information and its context are lost. **Jules Jaffe** is overcoming this challenge by developing several types of underwater microscopes that can image microorganisms in their natural settings without disturbing them.

#1 for positive impact on the nation
-Washington Monthly



Lianfang Zhang, Ph.D.

Stealthily Delivering Drugs

Targeted drugs that treat specific tissues are often attacked by the body's immune system. **Lianfang Zhang's** research group approaches the problem from an engineering perspective and bypasses the biology. They fool the immune system by using natural red blood cell membranes to camouflage nanosponges that deliver drugs and soak up toxins.

REINVENTING Medicine

Stopping Shock

Multiorgan failure is the second-leading cause of death in hospitals in the United States. **Geert Schmid-Schönbein** has a working hypothesis for its causes and how to stop it. Clinical trials are underway, and physicians have anecdotal evidence that Schmid-Schönbein's ideas may have saved the lives of people who had no other option.

Mending Damaged Hearts

There is no established treatment for repairing the damage to cardiac tissue caused by the 785,000 new heart attack cases each year—yet. **Karen Christman's** lab has developed a new injectable hydrogel that encourages cells to repopulate areas of damaged tissue, and to preserve heart function by forming a scaffold to repair tissue and increase muscle.



Geert Schmid-Schönbein, Ph.D.



Karen Christman, Ph.D.

Students at work in the Zhang lab



Lei Liang, Ph.D.

INSPIRING New Thought

Composing New Music With Old Roots

Lei Liang's award-winning work creates new musical forms by blending Chinese tradition with technology. Hailed as "an important musical philosopher" by *The Wire*, Liang is considered one of the most exciting voices in new music.

Confronting Crises Through Verse

Pulitzer Prize winner **Rae Armantrout** pushes the English language in new directions and asks tough questions of our culture through her poetry. The poems in her book *Money Shot*, a response to the global financial crisis, were praised by *Publishers Weekly* as "among the most relevant poems now being written."



Rae Armantrout

Cracking Societal Problems With Technology

The commercial enterprise of data mining and the economics of cybercrime have created vulnerabilities, inspiring **Stefan Savage** to consider the public-policy implications of cybersecurity. In the near future, Internet immunology may have less to do with the technology and more to do with human relations. His work reveals how computer science is catalyzing scientific advances and solving societal problems.



Stefan Savage, Ph.D.

Challenging Norms to Change Behavior

Can people change their ways? Yes. But don't bother preaching or outlawing. Neither will work for long. **Gerald Mackie** says that when it comes to harmful social practices, you must empower a community to change its norms by integrating new policies into existing culture.



Gerald Mackie, Ph.D.

UC San Diego

Learn more at ucsd.edu.