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.

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

Defining the Future of the Public Research University

UC San Diego

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

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.
**REINVENTING Medicine**

**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.

**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.

**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, Lang 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.”

**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.

**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.