

Defining the Future of the
Public Research University

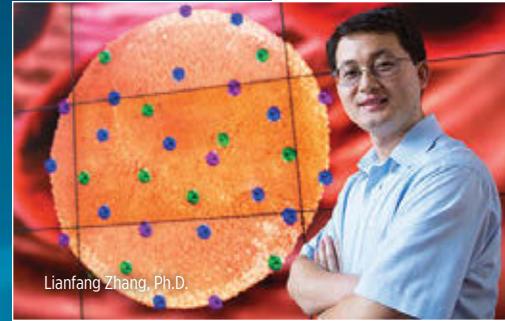
UC San Diego



#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.



Lianfang Zhang, Ph.D.



Karen Christman, Ph.D.



David Victor, Ph.D.



Jules Jaffe, Ph.D.

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.

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.



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

UC San Diego

Learn more at ucsd.edu.