

Keck School
of Medicine
of USC



MESHing DISPARATE FIELDS

In an increasingly interconnected world facing significant health challenges, we must keep accelerating the pace of:

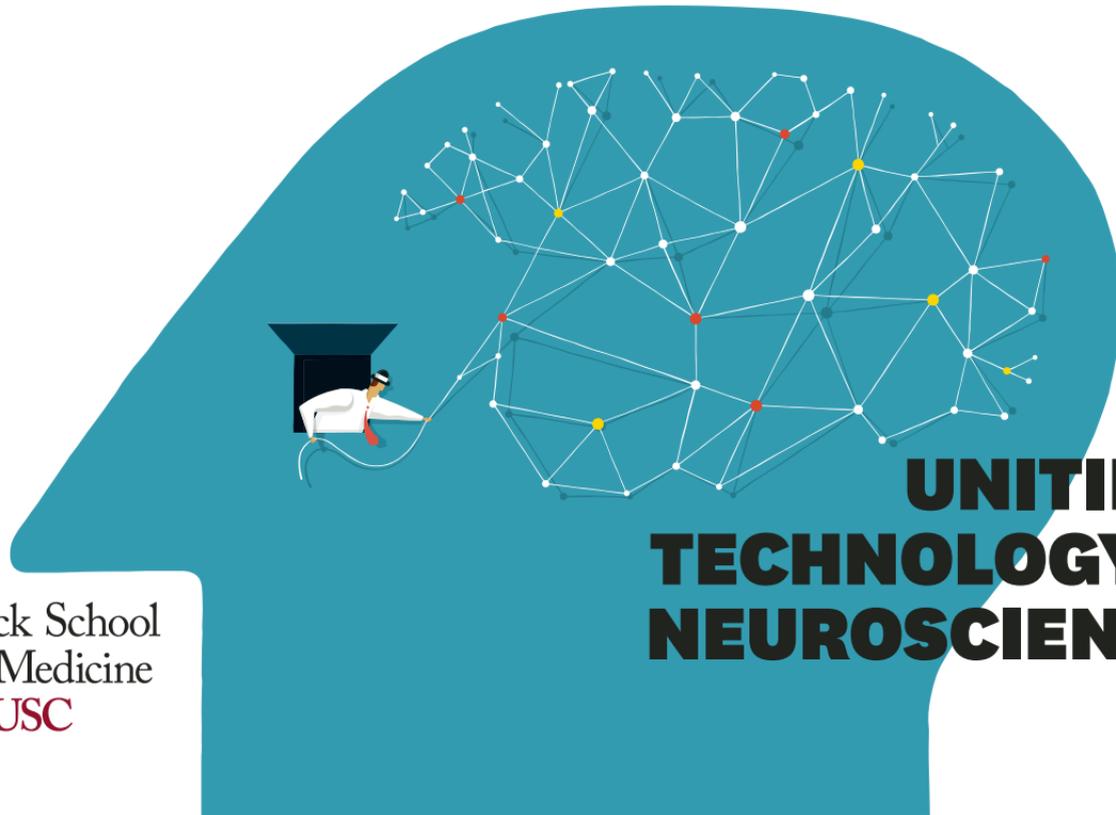
- » Groundbreaking discoveries
- » Their translation into revolutionary therapies
- » Availability in the global marketplace

These objectives require even greater **convergence** of:

- » Medicine
- » Engineering
- » Science
- » Humanities

The Keck Approach integrates these fields through the new Medicine Engineering Science and Humanities (MESH) Academy to train students in all aspects of 21st century healing, from personal communication to medical entrepreneurship. Meanwhile, the MESH Academy teams innovators from across the university and beyond to develop new technologies, therapies and methods for better health.

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UNITING TECHNOLOGY & NEUROSCIENCE

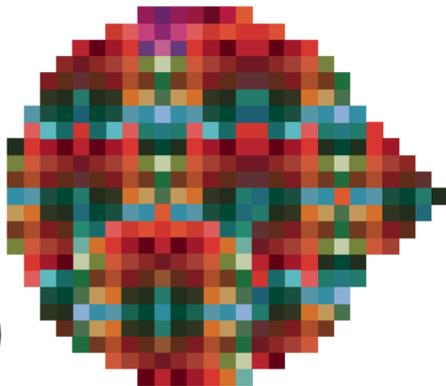
At the Keck School, no boundaries exist in the realm of creative discovery.

Our state-of-the-art Stevens Neuroimaging and Informatics Institute **converges:**

- » USC physicians, engineers, neuroscientists and computer scientists
- » The world's only 7T MRI devoted to scientific inquiry
- » More than 1,000 collaborators around the globe
- » 720,000+ images
- » Data on more than 237,000 participants from more than 95 studies

The Keck Approach illuminates the relationship between the brain's structure and how it functions in health — and malfunctions in diseases such as Alzheimer's, Huntington's and autism, as well as traumatic brain injury.

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FUSING BIOSCIENCE WITH ANIMATION

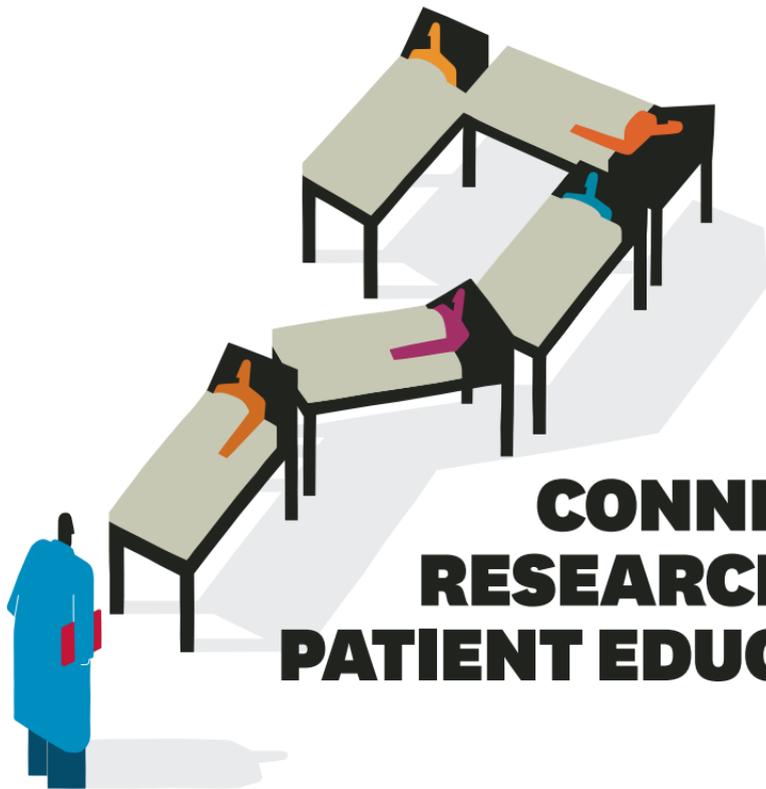


USC brings together the best scientific and creative minds to assemble the first atomic resolution model of humankind.

Working up from the molecule to the cell to the entire human body, we are **converging** interdisciplinary teams of students and scholars from:

- » Animation
- » Cinematography
- » Virtual reality
- » 3D imaging
- » Data visualization

The Keck Approach deploys advanced resources to understand how biological systems function in both healthy and diseased states. Our goal: manipulating those functions to dramatically improve human health.



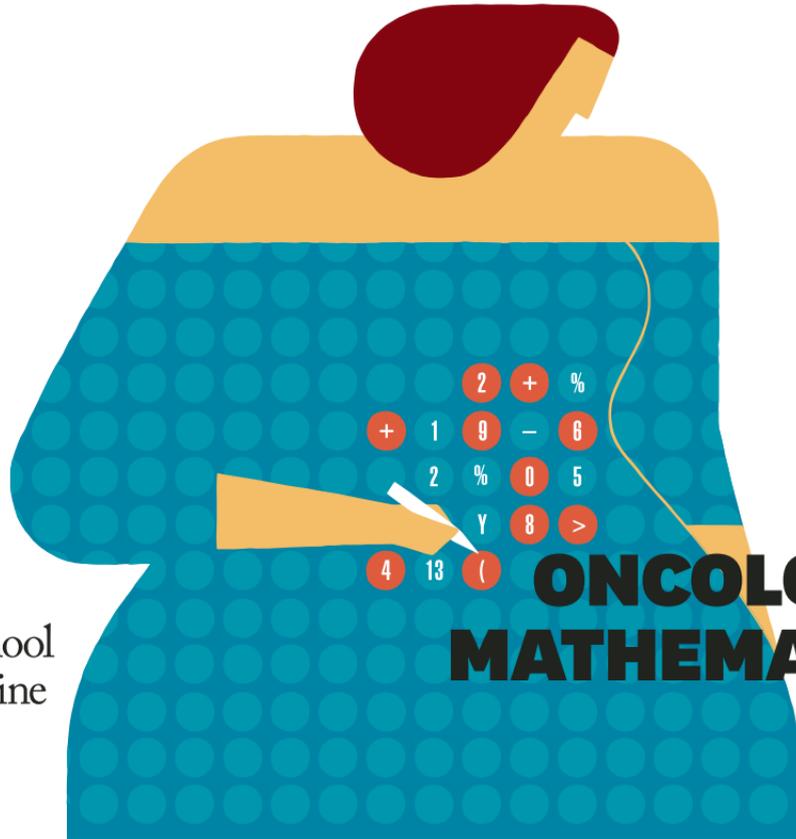
CONNECTING RESEARCH WITH PATIENT EDUCATION

With 75 faculty spanning USC and Children's Hospital Los Angeles, our Diabetes and Obesity Research Institute **converges** basic, clinical and public health research with patient education.

Our pioneering clinical investigations include:

- » The USC Gestational Diabetes Study Group, with four major studies in 3,000 patients, \$25 million in grants and 52 publications to date
- » The largest-ever study of children's brains to identify determinants of obesity and diabetes
- » A unique focus on racial disparities and early-life causes
- » The Community Diabetes Initiative to encourage lifestyle changes that can stem the onset of disease and prevent its complications

The Keck Approach pairs groundbreaking research with patient education to advance understanding of these conditions and develop effective approaches for risk assessment, prevention and treatment.



PAIRING ONCOLOGISTS & MATHEMATICIANS

The liquid biopsy developed at USC may render surgical detection of cancer obsolete.

The method can reliably detect cancer cells from a single blood sample, thanks to **convergent** research headed by USC:

- » Oncologists
- » Biological scientists
- » Genomics specialists
- » Mathematicians

This speedy, inexpensive liquid biopsy differentiates circulating tumor cells from ordinary blood cells by using a digital microscope and image-processing algorithm. It even holds the potential to predict heart attacks.

The Keck Approach works to enhance doctors' ability to detect, monitor and predict cancer progression and other diseases at earlier, more treatable stages.

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COMBINING ECONOMICS & HEALTH

Improving the health of vulnerable populations is a core value of the Keck School of Medicine. The Keck-Schaeffer Initiative for Population Health, a collaboration with the USC Schaeffer Center for Health Policy & Economics, **converges** multidisciplinary research with clinical insight to strengthen the nation's safety net for the most disadvantaged members of society.

Current investigations focus on:

- » Improving mental health services
- » Reducing the burden of disability
- » Fighting America's opioid-abuse epidemic

The Keck Approach partners with organizations such as the Behavioral Health and Economics Network to improve mental health delivery systems nationwide.

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