

### Blood Test Could Detect and Locate Cancer Early On

Bioengineers at UC San Diego have developed a proof-of-concept blood test to detect cancer – and to locate where in the body the tumor is growing. Their work, published in Nature Genetics, could lead to new ways to diagnose cancer early on, without invasive procedures like biopsies. At the core of the advance are methods for screening blood for a particular DNA signature that identifies the tissue that houses the tumor. When a tumor starts to take over a part of the body, it kills off normal cells, which release DNA into the bloodstream. The researchers, led by bioengineer Kun Zhang from the Jacobs School of Engineering, integrated this screening with existing techniques to identify cancer cell signals in the blood. The result is a new approach to determine the presence or absence of a tumor, and where the tumor is growing. One next step: partnering with oncologists to develop clinical trials.

Learn more: [bit.ly/TumorDetect](http://bit.ly/TumorDetect)



### Jacobs School of Engineering Ranks 13th in the Nation

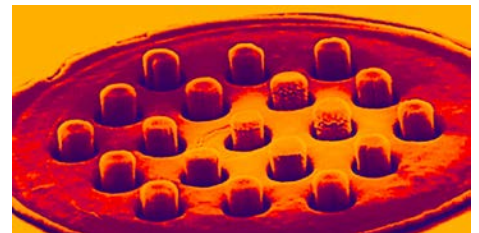
The UC San Diego Jacobs School of Engineering ranks 13th in the nation, up from 17th last year, in the 2018 U.S. News & World Report best engineering graduate schools rankings. The Jacobs School is 8th among the nation's top public engineering schools. The Jacobs School also ranks 1st among all public engineering schools – and 7th overall – for research expenditures per faculty member, with \$168M in research funding for the 2015-2016 fiscal year. The Jacobs School's Bioengineering Department ranks 3rd in the nation, up from 4th last year.

Learn more: [bit.ly/UniRankings](http://bit.ly/UniRankings)

### New Nano-implant Could Help Restore Sight

Researchers have developed the nanotechnology and wireless electronics for a new type of retinal prosthesis. The work brings research a step closer to restoring the ability of neurons in the retina to respond to light. Bioengineers, electrical engineers, and physicians at UC San Diego, and colleagues at Nanovision Biosciences, demonstrated this response to light in a rat retina interfacing with a prototype of the device in vitro. Led by Jacobs School of Engineering bioengineers Gabriel Silva and Gert Cauwenberghs, the team details their work in the Journal of Neural Engineering. The technology could eventually help tens of millions of people worldwide suffering from neurodegenerative diseases that affect eyesight, including macular degeneration, retinitis pigmentosa and loss of vision due to diabetes.

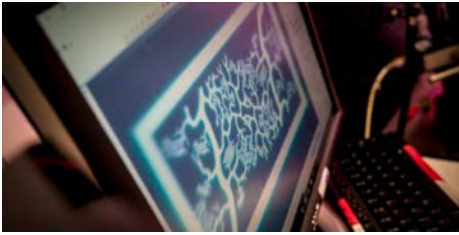
Learn more: [bit.ly/NanoVision](http://bit.ly/NanoVision)



### Connect with the Jacobs School at Research Expo

Hiring now? Hiring later? Attend Research Expo 2017 on April 20 to find out what's happening at the Jacobs School of Engineering: San Diego's innovation and technical workforce powerhouse. More than 200 graduate students will showcase their research during the event; [poster titles and abstracts are now online](#). In addition, attend 20-minute faculty talks for industry-relevant research highlights from Jacobs School centers designed for collaborations with corporate partners. Network with faculty, students, alumni and industry professionals.

Learn more: [jacobsschool.ucsd.edu/re](http://jacobsschool.ucsd.edu/re)



## 3D Printing Functional Blood Vessels

Nanoengineers at UC San Diego have 3D printed a biomimetic blood vessel network. The new work addresses one of the biggest challenges in tissue engineering: creating lifelike tissues and organs with functioning vasculature — networks of blood vessels that can transport blood, nutrients, waste and other biological materials. The team, led by Jacobs School of Engineering professor Shaochen Chen, printed and cultured several blood vessel networks in vitro, then grafted the resulting tissues into skin wounds in mice. After two weeks, the implants had successfully grown into and merged with the host blood vessel network, allowing blood to circulate normally. Developing networks with additional functions, such as nutrient transport, is one next step.

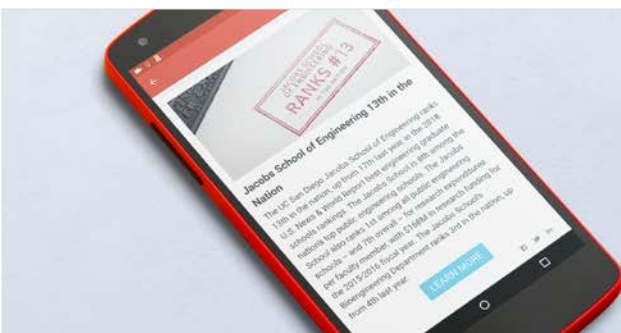
Learn more: [bit.ly/PrintingBloodVessels](http://bit.ly/PrintingBloodVessels)

## Visualizing the Future of Surgery

Before Dr. Sonia Ramamoorthy, the chief of colon and rectal surgery at UC San Diego Health, took a scalpel to “quantified self” pioneer Larry Smarr, she first took a virtual tour of his large intestine. The dramatic, data-driven computer models of Smarr’s abdomen and affected organs allowed the surgeon to essentially conduct the operation in advance. This UC San Diego collaboration between surgeons, engineers, and of course Larry Smarr, director of Calit2 and a computer science professor at UC San Diego’s Jacobs School of Engineering, aims to minimize the risk of surgery and improve outcomes by leveraging data we have access to, including 3D versions of imaging technologies.



Read more: [bit.ly/LSmarr](http://bit.ly/LSmarr)



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