



# "Digital Tumors" for Precision Oncology: UC San Diego Receives Award from ARPA-H

The six-year project will create new technology to match patients with breast, lung or colon cancer to optimal courses of therapy



Researchers at UC San Diego, led by Professor Trey Ideker (right) are included in a \$142 million initiative from ARPA-H with the goal of creating adaptive and personalized cancer treatments. As part of the new project, Ideker will lead a team developing "digital tumors" to help match patients with the right treatment and predict the evolution of their disease. Photo Credit: UC San Diego Health Sciences/University Communications

**Story by:**

[Miles Martin](#) - [milesmartin@ucsd.edu](mailto:milesmartin@ucsd.edu)

**May 22, 2025**

**R**esearchers at University of California San Diego have been awarded a contract of up to \$23.6 million from the Advanced Research Projects Agency for Health (ARPA-H) within the U.S. Department of Health and Human Services (HHS) to develop and validate a new approach for selecting treatments for cancer. The six-year project, titled "Dynamic Digital Tumors for Precision Oncology," aims to revolutionize cancer care by creating tools powered by artificial intelligence (AI) that can accurately predict therapy outcomes and anticipate tumor evolution. These tools, called Drug Recommender Engines (DREs), will make it easier to match patients with the right treatments and predict how tumors will respond to treatment.

"Our goal is to improve patient care and outcomes by providing clinicians with the tools they need to make the best possible treatment decisions," said Trey Ideker, Ph.D., professor of medicine, bioengineering and computer science at UC San Diego and member of UC San Diego Moores Cancer Center. "Technology has extraordinary potential for precision oncology, and the tools we develop here will help doctors maximize the benefits of treatment for their patients."

There are over 500,000 patients currently living in the United States with advanced breast, lung or colorectal cancer. One of the biggest challenges of treating advanced cancers is that each case is unique, because tumors are driven by a mix of biological, environmental and genetic factors. The new DREs will be able to take the complex biology of a patient's tumor into account when recommending a therapy. By continuously updating the DREs with new data as it becomes available, they will also be capable of adapting to changes in a patient's disease course.

The new grant brings together an interdisciplinary team of scientific leaders from UC San Diego, City of Hope, University of Washington, UC San Francisco, University of Minnesota, Unravel Genomics and Serinus Biosciences. The project is part of the [ARPA-H ADAPT program](#), an up to \$142 million initiative which seeks to harness

advanced technologies and a deep understanding of tumor biology to power truly adaptive and personalized cancer care.

"This innovative approach has the potential to revolutionize the way we treat cancer, and we are proud to have UC San Diego at the forefront of this effort," said Barbara Jung, M.D., associate vice chancellor and dean of UC San Diego School of Medicine. "Cutting-edge technologies empower us to provide even more effective and personalized care to our patients, helping us save lives and make a meaningful difference in the fight against cancer."

In addition to projects like UC San Diego's focused on therapy recommendation tools, the program will also support a first-of-its-kind clinical trial to test new therapeutic approaches as well as a cancer treatment and analysis platform to enable real-time data availability.

"While we have made many advances in treating cancer patients, we still lack the precision needed to apply the right therapy to the right patient to optimize long term cures," said Diane Simeone, M.D., director of UC San Diego Moores Cancer Center. "The ADAPT program and the highly innovative approach Trey is taking is a critical initiative that aligns perfectly with our mission to transform health care and improve patient outcomes. I look forward to seeing this research make a significant impact on the lives of cancer patients nationwide."

#### Topics covered:

[Cancer](#), [Artificial Intelligence](#), [Technology](#), [Oncology](#), [Precision](#)

#### Share This:

