

## **Medical breakthroughs won't come from breaking animals** From [CAARE Citizens for Alternatives to Animal Research and Experimentation](#) April 2024

*If we are to cure human diseases, we need breakthroughs with human-relevant information such as this, which will not come from cruel and flawed animal experiments. So we are highlighting some recent innovative medical breakthroughs that have come about through research on organoids and human cell studies, including real and promising insights for those suffering from polycystic kidney disease..*



Suppose you took your car in for an engine repair and the mechanic said, "I don't know what's wrong with your car's engine, but I'm going to break the one on the car next to it. Once I've repaired that one, I might have some clues as to why your engine isn't running right."

You'd probably leave immediately and never go back there again.

Unfortunately, this is how animal research works, and it inflicts immense suffering on millions of animals while wasting valuable time and resources.

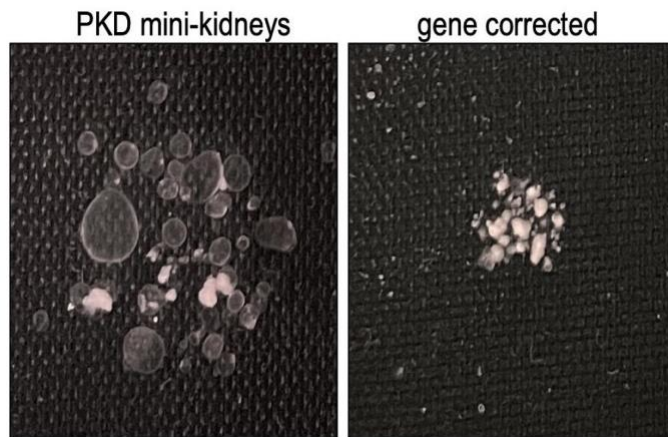
For example, researchers studying kidney disease don't understand the underlying mechanisms causing the problem. So, they damage animals' kidneys or insert faulty genes, or induce toxicity through overdosing to poison the kidney, and then they try to fix it. At the end, they claim they might have new clues as to what the problem is.

But we need cures, not clues to treat disease. And those can only come from human-relevant research, using human cells, tissues or ethical studies with human volunteers.

In today's newsletter we highlight some innovative medical breakthroughs that have come about through research on organoids and human cell studies, including real and promising insights for those suffering from polycystic kidney disease - a condition that has stumped medical doctors for decades, leaving them with little to offer patients as their kidneys decline, other than a lifetime of dialysis or the elusive hope of a kidney transplant. But now, using organoids, new information looks to truly be leading to a cure for human patients.

If we are to cure human diseases, we need breakthroughs with human-relevant information such as this, which will not come from cruel and flawed animal experiments.

## Scientists discover potential treatment approaches for polycystic kidney disease



Researchers at the University of Washington, Seattle have found [potential therapies](#) to treat polycystic kidney disease (PKD), a life-threatening, inherited kidney disorder which thus far has been without any effective treatments.

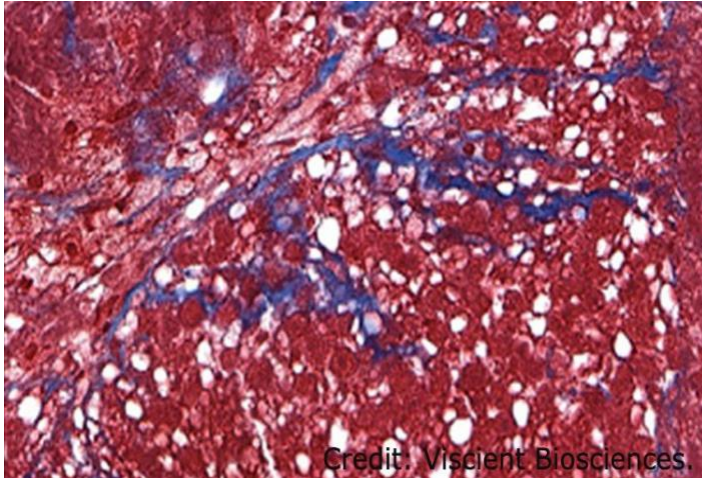
They generated organoids with the common PKD mutations and studied whether PKD manifested in organoids with one normal and one mutated gene and found that unless two defective genes were present, cysts did not grow. These new findings open the door to developing gene therapy to treat the disease.

They also found that an existing class of drugs known as eukaryotic ribosomal selective glycosides were effective at preventing cyst formation.

Senior author Dr. Benjamin Freedman, PhD, confirms the importance of using human-relevant organoids to gain these insights; “These compounds will only work on single base pair mutations, which are commonly seen in PKD patients. They wouldn’t be expected to work on any mouse models and didn’t work in our previous organoid models of PKD. We needed to create that type of mutation in an experimental model to test the drugs.”

This breakthrough based on human organoid research offers real hope to treat PKD patients using gene therapy or existing glycoside drugs.

## A new 3D bioprinted model offers a novel tool to study common liver disease, and perhaps find an effective treatment



Credit: Visicent Biosciences

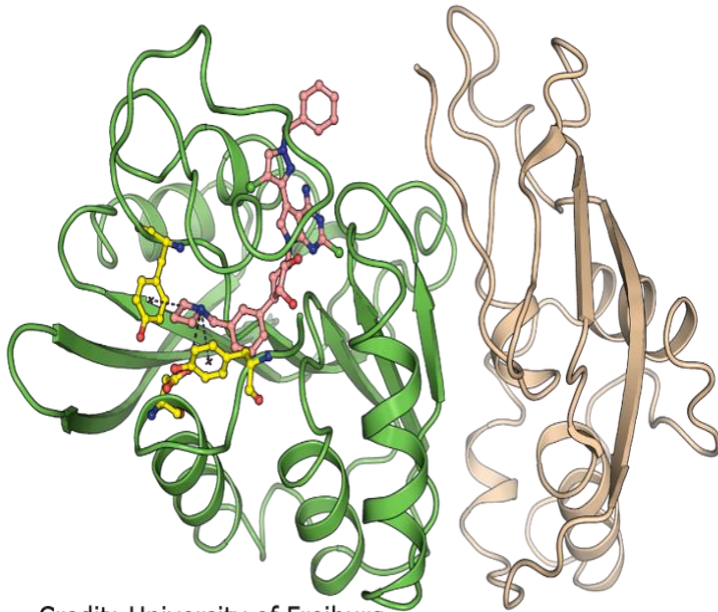
Metabolic dysfunction–associated steatohepatitis, (MASH) is a serious inflammatory liver disease that leads to fibrosis, or scarring, of the liver. To date, there have been no effective treatments for MASH, which is on the rise.

Now, a team led by researchers at Sanford-Burnham Prebys have [developed a three-dimensional bioprinted liver tissue model](#) that is created from the patient's own cells and can accurately model the disease, allowing researchers greater insight into the pathology behind it and setting them up for discovering treatments.

This is possible, according to co-author and chief scientific officer of Visicent Biosciences, Dr. Jeffrey Miner, because the new model mimics human physiology, which prior animal studies failed to do. He states: “This approach utilizes the patient's own diseased cells, allowing them to generate the disease within the bioprinted tissue. We specifically exclude agents that artificially induce disease. We believe this advance enhances the translation of our results to human clinical trials and drug discovery.”

“This model represents a fully human system with the potential to detect clinically active targets and therapies. That's important given that current discovery and animal models have not translated into any approved drugs.”

## Prostate cancer: Newly-developed inhibitor shows massive potential



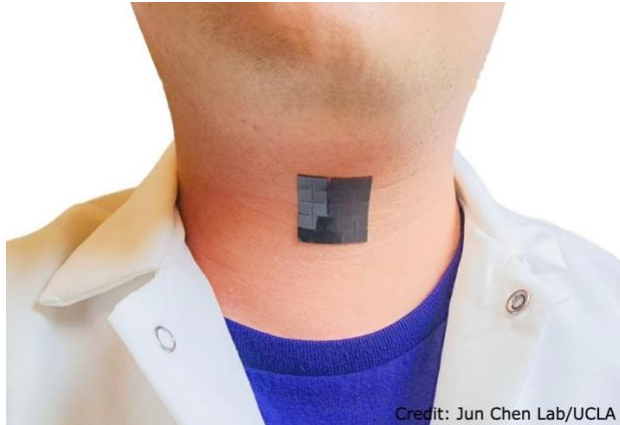
Credit: University of Freiburg

Scientists at the Freiburg University Medical Center as well as the Institut für Pharmazeutische Wissenschaften at the University of Freiburg [discovered a potential treatment](#) for prostate and bladder cancers.

They used human cell cultures to study the enzyme KMT9, which had previously been identified as playing a key role in the development of certain prostate and bladder cancers that are resistant to standard treatments. Using crystal structure analysis and after multiple attempts, they developed an inhibitor that blocks the functioning of KMT9 and that could potentially stop the growth of cancer.

Cell cultures are another non-animal method that provide superior, human-relevant data as opposed to animal testing that is scientifically flawed and unethical.

## Speaking without vocal cords, thanks to a new AI-assisted wearable device



Scientists at the University of California, Los Angeles, have [created a device](#) that shows great promise to help people who are unable to speak due to laryngeal cancer surgeries or other vocal cord disorders.

The bioelectric device, developed without animal experiments, measures about 1 square inch and can be attached to the skin outside the throat. Powered by AI technology, it detects small movements in a person's larynx muscles and translates those into audible speech.

Scientists tested the device on 8 healthy adults and found that it had an accuracy rate of nearly 95%. In future studies, scientists will utilize machine learning to add more vocabulary and eventually test it on people with vocal cord disorders.