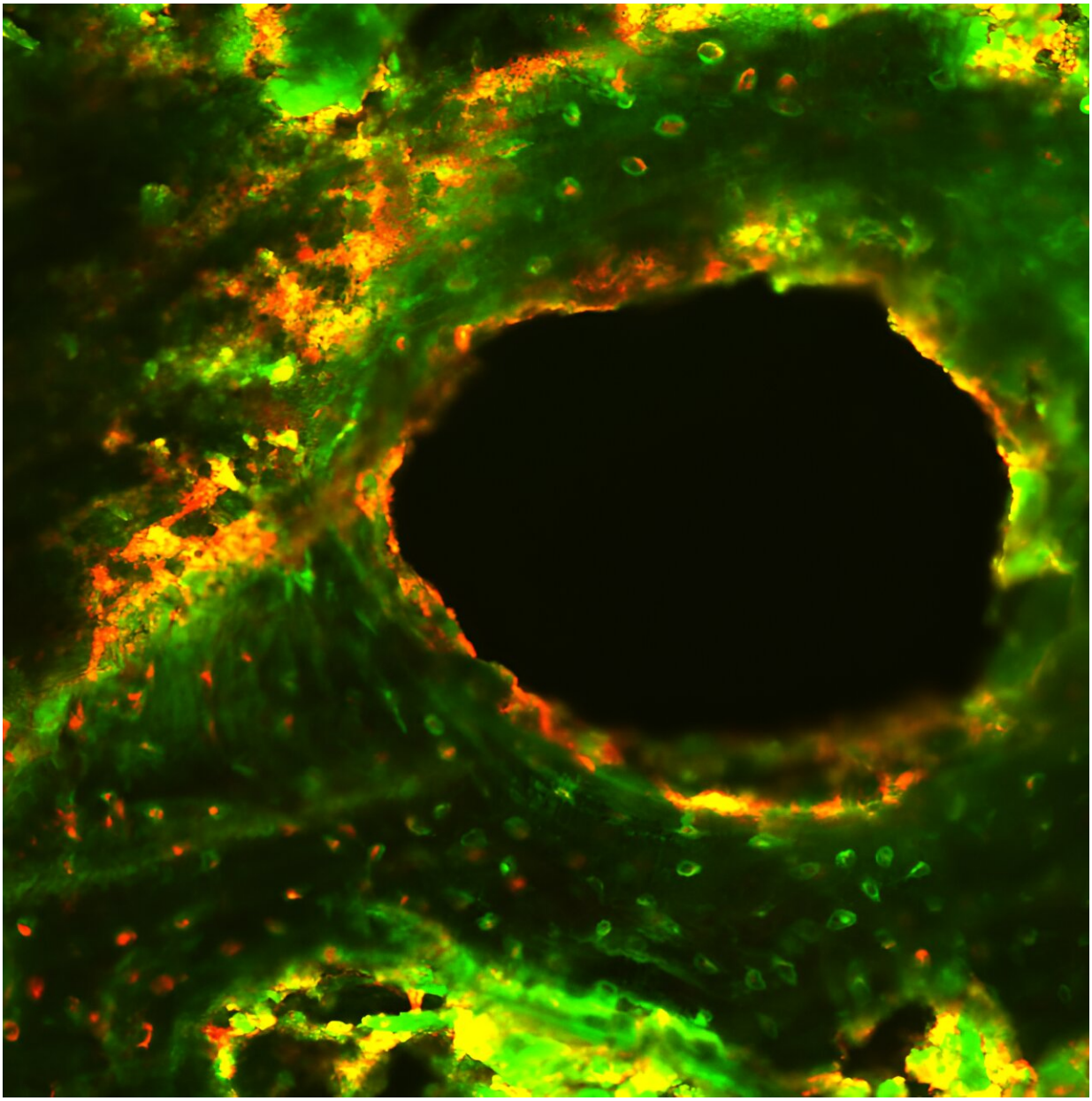
Researchers develop an automated 3D-printed bioreactor to grow bone in the lab

May 23 2024, by Angela Nicoletti



Credit: Florida International University

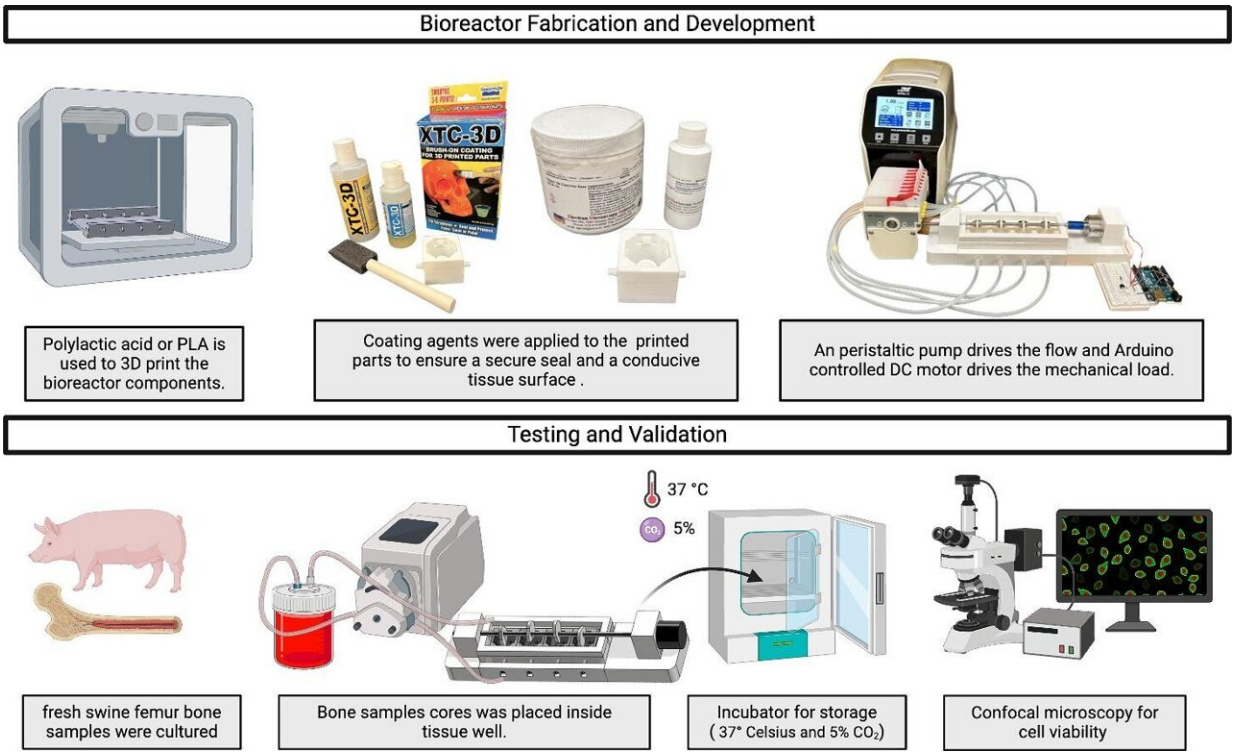
Bone cells live in bone tissue in the body. But the cells in these images are carrying out their bone-building duties outside the body—inside a 3D printable device, called a bioreactor, created by FIU researchers.

Over the years, Florida International University (FIU) biomedical engineer Anamika Prasad has been refining the device with the help of her students, most recently master's student Paula Gustin. The result: A design with cylinder-shaped hollows that mimics the unique environment that bone tissue requires. And, most important, supports long-term survivability of samples.

In fact, new published research shows samples can survive in the device for up to 28 days. This can be a gamechanger for scientists who need to study cellular changes over longer periods of time to discover new drugs and therapeutics.

It can also help advance bone engineering research—including bone reconstruction to replace large chunks of bone lost to cancer, infections or injury—as well as cartilage research and growing new cartilage tissue.

Prasad also plans to use this device as a part of her other research, including an ongoing 3D bone reconstruction project with Dr. Juan Pretell, Chief of Musculoskeletal Oncology Surgery at Baptist Health.



Graphical abstract. Credit: *HardwareX* (2024). DOI: 10.1016/j.ohx.2024.e00535

More information: Paula Gustin et al, EnduroBone: A 3D printed bioreactor for extended bone tissue culture, *HardwareX* (2024). DOI: 10.1016/j.ohx.2024.e00535

Provided by Florida International University

bioreactor-bone-lab.html