

Biomedical researchers suggest using robots to grow human tissue

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Credit: AI-generated image ([disclaimer](#))

(Tech Xplore)—A pair of biomedical researchers with Oxford University is suggesting that human-like robots might provide the best platform for growing tissue to be transplanted into human patients. In a recent issue of *Science Robots*, Pierre-Alexis Mouthuy and Andrew Carr offer a Focus piece outlining the way that human tissue is now grown

and explain why they think moving the process to a robot would provide a better product.

Anyone who has suffered an injury or illness serious enough to force them to be bedridden for a length of time knows that without constant use, muscles do not grow or work properly—that is why Mouthuy and Carr are suggesting that if we are to grow functional [human tissue](#), such as muscles, sinew or tendons, we need to do it in an environment that is as close to the human ideal as possible—and currently, that means robots. Growing [muscle tissue](#) on a scaffold, the current standard, does not provide a way to allow the tissue to move as it grows and to move in a way that it would if it were inside of a human body. That means it will never grow into tissue that is ready for use; instead, it will be a reasonable facsimile—one that requires the recipient to undergo extensive physical therapy to coax weak tissue into strong muscles and connectors.

Mouthuy and Carr suggest the time is now for considering robots as tissue growing platforms (bioreactors) because both technologies have matured to the point that it is now possible—and because an aging population is creating a strong demand for it. They note that extremely lifelike robots such as Eccerobot could provide the ideal platform—with some obvious modifications. The biggest hurdle, they note, is figuring out how to apply wet tissue to dry robot parts, some of which contain sensitive electronics. Such a robot would also have to move the same ways a person does, obviously, to ensure that the tissue grows to meet the right demands. To that end, the robot would have to engage in physical activities that stress the growing tissue appropriately. To make sure things are going well, sensors could be embedded inside.

Moving [tissue growth](#) to [robot](#) bioreactors would offer another benefit as well, the researchers point out—the promotion of the development of robots that look just like us, because they would have real human skin

and other tissue.

More information: Pierre-Alexis Mouthuy et al. Growing tissue grafts on humanoid robots: A future strategy in regenerative medicine?, *Science Robotics* (2017). [DOI: 10.1126/scirobotics.aam5666](https://doi.org/10.1126/scirobotics.aam5666)

Abstract

Humanoid robots may enhance growth of musculoskeletal tissue grafts for tissue transplant applications.

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