

## **MEDIA RELEASE**

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### **Scientists aim to ‘print’ living replacement ears**

Researchers at the University of Wollongong are developing 3D-Bioprinted ears for people with deformed or missing ears.

Around a dozen babies are born each year in Australia with a condition called Microtia, in which one or both outer ears have developed abnormally or are missing completely. The rates are higher in some other countries, with 1 in 4,000 babies born in Japan affected.

Professor Gordon Wallace from the ARC Centre of Excellence for Electromaterials Science at UOW has partnered with Sydney ear, nose and throat surgeon Dr Payal Mukherjee, on the project that aims to use the patient’s own cells to 3D-print ear ‘scaffolds’ that will grow into living ears.

Dr Mukherjee said treatment of outer ear deformity is demanding because of its extremely complex 3D shape, not only in length and breadth but also in height, and projection from the head.

“Reconstructive options involve many hours of multiple surgeries, with cartilage taken from the rib cage to create the new ear,” Dr Mukherjee said.

“Complications of the surgery can be significant, including skin death, scarring, infection and chest deformities.”

Other options for patients include generic artificial implants or prosthetics.

“This is where bioprinting is an extremely exciting avenue, as it allows a graft to be designed and customised to the patient’s own face using what we hope will be the patient’s own natural tissue,” Dr Mukherjee said.

“We will develop the bio-inks and customised 3D printer technology needed to deliver the required clinical outcome,” Professor Wallace said.

“It is already obvious that a two-head printing system capable of simultaneously providing fine features in a structural support while delivering cells in a softer material will be required.”

“This is made possible by combining skills in science and engineering with those of our clinical collaborators.”

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**ENDS**