MEDIA RELEASE
31 October 2018

Meet 3D Alek – working to combat congenital ear deformity across the globe

Innovation, clinical collaboration and game-changing devices will be on display at the ARC Centre of Excellence for Electromaterials Science (ACES) and KS3DPM Innovation Showcase at the Australian Embassy in Korea on 6 November.

The event, to be hosted by Australian Ambassador to the Republic of Korea, His Excellency Mr James Choi, will highlight the significant collaborative relationship between ACES and KS3DPM as the two groups work to bring together the Australian and Korean clinical communities in the area of 3D bioprinting.

Associate Professor Payal Mukherjee, Ear Nose and Throat (ENT) Surgeon at Royal Prince Alfred Hospital will present at the Showcase, on her partnership with ACES to develop a 3D bioprinting system to treat microtia, a congenital deformity where the external ear is underdeveloped.

The ACES team has designed a customised multi-materials biofabrication 3D printer, known as 3D Alek, as well as the required bioinks to support this project, which aim to regenerate cartilage for use in reconstructive ear surgery.

A/Prof Mukherjee said she was thrilled to be working with ACES researchers to develop a solution to combat microtia that is individualised to match the patient's own anatomy.

"Treatment of this particular ear deformity is demanding because the outer ear is an extremely complex 3D shape, not only in length and breadth, but also in height and projection from the skull," A/Prof Mukherjee said.

"This is where bioprinting is an extremely exciting avenue, as it allows an ear graft to be designed and customised to the patient's own face using the patient's own natural tissue, resulting in reduced operating time and improved cosmetic outcome, and avoids the current complication of requiring a donor site for cartilage, usually from the patient's rib cage."

Prof Gordon Wallace said the 3D Alek collaboration has drawn upon the diverse skills of scientists, engineers and clinicians to bring about real advances to tackle this significant medical challenge.

"This project illustrates our ability to manage a successful pipeline to turn fundamental research into a strategic application to create a new health solution to improve people's lives," Prof Wallace said.

"We have been responsible for the primary sourcing of materials, the formulation of bioinks and the design and fabrication of a customised printer, the required optimal protocols for cell biology, through to the final clinical application.

“Furthermore, we will be launching a new 3D bioprinting translational facility in the very near future that will facilitate and accelerate the development of commercial opportunities such as 3D Alek in 3D bioprinting. The facility offers the exciting opportunity for enterprises to engage with our researchers in developing bioinks and bespoke 3D printing olutions for novel med-tech solutions, like our 3D Alek project.”

ENDS

Media opportunity:

Prof Gordon Wallace and A/Prof Payal Mukherjee are available for interviews the afternoon of 6 November 2018. Please contact Lauren Hood (ACES) on lhood@uow.edu.au to arrange an interview.

The ACES and KS3DPM Innovation Showcase in the area of 3D bioprinting and its commercialisation and collaboration potential will be held on 6 November 2018 from 4pm – 6pm (KST) at the Australian Embassy in Korea.

Speakers:

His Excellency Mr James Choi – Australian Ambassador to the Republic of Korea
Prof Gordon Wallace – Director, ARC Centre of Excellence for Electromaterials Science (ACES)
Prof Chung-Hwan Baek – Samsung Medical Centre, Chairman of KS3DPM
A/Prof Payal Mukherjee – ENT Surgeon at Royal Prince Alfred Hospital, Sydney, Australia

A 3D printing demonstration by ACES and the Australian National Fabrication Facility (ANFF) will follow the presentations, including the Biopen for cartilage, the iFix pen for eye wounds, the 3D PICT for islet cell transplantations, and the 3D Alek for printed ears.

The ARC Centre of Excellence for Electromaterials Science (ACES)
ACES continues to advance cutting edge electromaterials science through the discovery of new materials, technology breakthroughs and 3D fabrication machinery to enhance the performance of electrochemical devices for our applications in energy, robotics, medical bionics and diagnostics.