

# New lease of life with personalised precision therapeutics



Providing micro and nano fabrication facilities for Australia's researchers, students and industry

**Exploiting microfluidic technology, award-winning local researcher Dr Chia-Chi Chien has created a 'biological twin' to assist clinicians in delivering personalized, precision medication to people living with life-threatening health conditions.**

While undertaking her postdoctoral research at the University of South Australia's Future Industries Institute at Mawson Lakes campus, Dr Chien developed the BioTwin Chip, a novel 3D cell culture platform for growing patient tumour tissues outside of the human body for testing and optimizing personalized treatments.

Taking the key elements of a person's biological system to recreate a 'biological twin', the BioTwin Chip can grow replica cell lines, organoids and primary tissues in a 3D cell structure in just one day.

"The BioTwin Chip takes the guesswork out of predicting drug efficacy and enables

clinicians to analyse various treatments to identify the most effective option on

replica patient tissue," said Dr Chien. "It's a significantly better method of testing that will enable clinicians to recommend lifechanging – and potentially lifesaving – personalised, precision therapeutics."

Realising an opportunity to commercialise her emerging technology, Dr Chien created a spin-out

company, OminiWell, meaning growing organs in miniwells and sought out the expertise of the South Australian Node of the Australian National Fabrication Facility (ANFF-SA).

"The ANFF-SA team assisted me with professional discussions on 3D drawings, mould design and testing as well as fabrication processes during my postdoctoral research and I loved working with them," said Dr Chien. "I knew that ANFF-SA could assist me with the commercialisation process and engaged them to develop and enhance the BioTwin Chip prototype in preparation for mass production."

Dr Chien says ANFF-SA's advice over the years has been crucial in getting her to "think outside the box" to consider alternative methods to achieving her end goal.



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**Dr Chia-Chi Chien, R&D Scientist, Ominiwell** ”

"The idea of 3D printing and the feasibility of injection moulding was raised by the ANFF-SA team and to be honest it a concept that hadn't crossed my mind," said Dr Chien.

"They are resourceful, approachable, well connected within the ecosystem and across local businesses and I will definitely keep working with them to

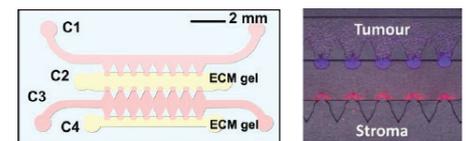
achieve our BioTwin Chip prototype!"

Easy to use the OminiWell BioTwin Chip offers one step operation with high cell survival rate and easy observation. The device is microscope compatible and suitable for various applications including cell-cell and cell-matrix interaction, cancer research, immunology research, therapeutics research, toxicological research and developmental biology.

Co-located at Flinders University and the University of South Australia's Mawson Lakes campus, ANFF-SA is a world-class micro and

nanofabrication facility providing access to cutting-edge equipment and facilities with support from expert staff. Specialising in microfluidics, organic electronics, biomaterials, novel semiconductor materials and characterisation, ANFF-SA can support or undertake the research and development of your next project.

If you would like more information on ANFF-SA please contact Simon Doe on 08 8302 5226 or visit [anffsa.com](http://anffsa.com).



OminiWell device design

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