ANFF-SA

Precision machining accelerates critical production process for cardiac researchers.

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

Investigating novel approaches to improve the heart function of people with cardiac failure, a condition affecting 26 million people globally, Professor James Hudson and his team at QIMR Berghofer are using human cardiac organoids to accelerate research impact.

The team grow human cardiac tissue, derived from pluripotent stem cells, on a 96-well organoid culture plate screening platform enabling them to rapidly generate and study genes and drugs in a highly controlled and precise manner.

Enabling researchers to deliver unprecedented insights into cardiac biology, the novel platform technology needed a more reliable master mould than their original SU-8 to improve the production of their culture plate platform.

Prof Hudson turned to the South Australian Node of the Australian National Fabrication Facility (ANFF-SA) for critical expert advice and micromachining capabilities.

He was interested to know if there was a better process or if his moulds could be made using other materials or processes to suit his specific needs.

"We had numerous geometric, surface roughness, and resolution metrics that needed to be met and ANFF-SA came up with a perfect approach that produces a quality product and is also cost-effective," said Prof Hudson.

Operated by skilled machinist Mark Cherrill, ANFF-SA's Kira SuperMill 2M delivers outstanding next-generation high-speed precision machining capabilities for true, simultaneous 3-dimensional interpretation of micro-structures.

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>
> **Professor James Hudson, QIMR Berghofer.**

Mark used two types of tooling to achieve the contrasting roughness required for the platform mould.

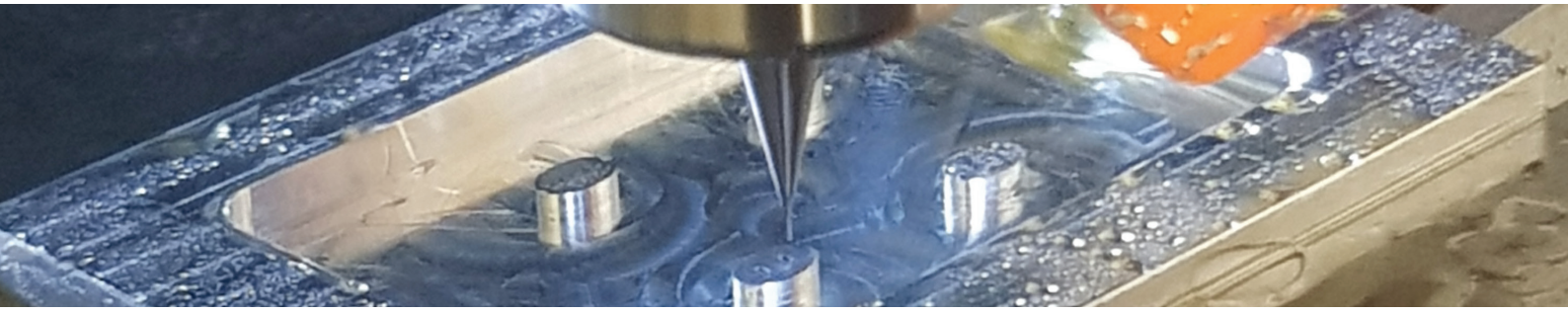
The mono crystal diamond tooling delivered a smooth finish to the base of the culture plate while the conventional carbide tooling gave the pillar tops a rougher surface finish enabling the automated inspection equipment to quickly focus on the correct surface.

Helping to reduce the impact of cardiovascular disease, Prof Hudson and his team have already discovered new pathways regulating cardiac function, which has led to a phase IIb clinical trial of a drug for hospitalised COVID-19 patients.

He plans to continue using ANFF-SA's improved process for organoid culture plates and is keen to adopt new technical innovations for scaling up production in the future.

Co-located at the University of South Australia and Flinders University, ANFF-SA is a world-class micro and nanofabrication facility providing researchers, academics and industry with open access to cutting-edge equipment and support from expert staff.

ANFF-SA is ready to support your next project. Contact us today on 08 8302 5226 or visit www.anff-sa.com.



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