

3-D colour scanner invented by Otago professor to be tested in international trial

November 16 2020



Professor Anthony Butler from the University of Otago, Christchurch and his MARS wrist scanner. Credit: University of Otago

A revolutionary compact 3-D colour wrist scanner invented by a University of Otago, Christchurch professor will soon be tested in a large scale international clinical trial. This development follows a promising pilot study with New Zealand orthopaedic patients.

More than a decade ago radiologist Professor Anthony Butler and his father Phil began developing an X-ray-based [scanner](#) that would produce clearer, colour images of the human body than existing radiology machines. Using technology adapted from the European Organization for Nuclear Research (CERN) they developed the 'MARS' scanner, which generates high resolution 3-D colour images.

In 2018, after years of research involving the Universities of Otago and Canterbury (where Phil Butler is a Professor of physics), the MARS team scanned the first human body. They then developed a special compact scanner for diagnosing hand and [wrist](#) injuries and will begin clinical trials on it from early 2021 at sites in New Zealand and Europe. Patients at an after hours clinic in Christchurch and at Lausanne University Hospital in Switzerland will be scanned as part of the first stage of [clinical trials](#).

The international clinical trial will be run by MARS Bioimaging Ltd (MBI), a company founded to commercialise the invention, and the University of Canterbury. The trial will involve up to 150 patients over a year at the two confirmed centres.

Professor Anthony Butler says a feasibility study in Christchurch orthopaedic patients in 2019 found the wrist scanner produced images as good as current CT, and potentially provides MRI information for improved diagnosis. Read a summary of the feasibility study.

"Results from the initial Christchurch-based patient [trials](#) showed our scanner's high-resolution spectral imaging could provide significant improvements in the diagnosis of hand and wrist injuries."

Professor Butler says pre-clinical versions of the MARS scanner are already used for research purposes at dozens of prestigious universities across the globe. It is exciting to now be taking the technology, backed by more than a decade of research done at the University of Otago, into the clinic, he says.

Professor Butler says the MARS technology provides radiologists with all the details of a CT, but in high-definition colour and with information about tissue health and composition, normally only available with MRI and PET. The team developed the compact wrist scanner as wrist injuries are common and diagnosis can be challenging, with frequent misdiagnosis and complications such as bones not healing properly, he says.

Pending regulatory approvals, the wrist scanners could be available for [clinical use](#) within the next year, Professor Butler says. The wrist scanner is the first in a range of products planned.

Provided by University of Otago

Citation: 3-D colour scanner invented by Otago professor to be tested in international trial (2020, November 16) retrieved 8 April 2023 from <https://medicalxpress.com/news/2020-11-d-colour-scanner-otago-professor.html>

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