

Media Release

This high-tech stick can predict your risk of heart problems

A hand-held device to predict heart failure based on saliva could help millions of potential victims take preventative steps to avoid their fate.

Nano-sensors on the tip of the diagnostic stick measure heart disease biomarkers from saliva to accurately predict the risk of heart disease, failure or heart attack, then warn users via a simple app.

Now a multi-partner deal has just been signed to bring the life-saving technology to market by 2021.

The collaboration is being led by an Australian start-up based in Melbourne called [ESN Cleer](#), with [RMIT University](#) and the [Innovative Manufacturing Cooperative Research Centre \(IMCRC\)](#) now researching and developing the device for pilot manufacture.

ESN Cleer CEO, Leopoldt de Bruin, said the collaboration represented some of the best minds in medical device innovation, design and manufacture.

“We’re really pleased to be able to bring these strands together in addressing such a major global health challenge,” De Bruin said.

“Of the 400 million people who suffer from cardiovascular disease globally, only 16 per cent of cases are due to genetic traits. This underlines how much room there is to improve on screening and prevention, which is where this device could have such an impact.”

Cardiovascular disease currently accounts for nearly one-third of all global disease deaths each year.

Research Co-Director of RMIT’s Functional Materials and Microsystems Research Group, Professor Sharath Sriram, said this was the first portable heart disease test with such high levels of accuracy.

The sensing technology, developed at RMIT’s cutting-edge Micro Nano Research Facility, was validated in the lab to measure biomarker concentrations a thousand times more precisely than levels in human body fluids.

“This marks a big step forward in technology for screening,” Sriram said.

“Currently, blood tests are conducted after a heart failure episode. Such reactive testing is too late, leaving people with debilitating illness or leading to deaths.

“Prevention is always better than cure, which is where this technology comes in, adding accurate prediction to the mix.”

The IMCRC funding, which matches contributions from ESN Cleer, is enabling a \$3.5 million project investment into addressing the challenge of manufacturing and large-scale production of these diagnostic swabs.

“Utilising advanced materials and adopting high-precision, automated manufacturing processes will allow the swabs to be high value and at a competitive cost”, explained David Chuter, CEO and Managing Director at the IMCRC.

Being manufactured in Australia, the swabs will also adhere to medical regulatory approvals.

RMIT healthcare design expert Dr Leah Heiss is also on the team, bringing insights into designing the device to be as user-friendly as possible.

“The aesthetics, tactility and usability of the product has to be balanced with manufacturability and cost,” Heiss said.

“By bringing users into the design process early on, we are considering the human experience in parallel with the operation of the technology.”

Incentivised feedback through the system will encourage users to take preventative actions, while machine learning algorithms used to assess results will further improve system accuracy over time.

It is envisaged that the device will also be used to predict cancer risk down the track

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For more information, or to coordinate interviews with a representative of the ESN Cleer, RMIT University or IMCRC, please contact:

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