

World-first vaccine for highly prevalent and damaging gum disease



Pictured: Laureate Professor Eric Reynolds (second from left) with members of the team based in Melbourne working on the new vaccine.

Bringing together world-class scientific and clinical research teams with Australian manufacturers and established global marketers and distributors, the Oral Health Cooperative Research Centre (CRC) has developed a vaccine to target gum disease. By driving collaboration, Oral Health CRC is inspiring innovation as it works to improve the lives of Australians affected by Periodontitis.

As a part of the Australian Department of Industry, Innovation and Science CRC Programme, the Oral Health CRC has been taking strides in oral disease prevention, diagnosis, treatment and management since its launch in 2003. Laureate Professor Eric Reynolds and his Melbourne-based team have opened-up avenues of research and innovation by engaging The University of Melbourne and CSL Ltd. to join them in the development of a world-first therapeutic vaccine for the gum disease Periodontitis. Identified as a chronic disease, Periodontitis destroys the gum tissue and bone that support the teeth, leading to tooth loss as well as much discomfort. Periodontal disease is also associated with diabetes, heart disease, rheumatoid arthritis, dementia and certain cancers.

Over 50% of Australians over the age of 65 years have gum disease or Periodontitis¹, and once it is established in the mouth, the disease is often very difficult to treat, requiring patients to submit to regular professional cleaning, ongoing antibiotic regimes, and extensive surgery.

¹ Retrieved from Australian Institute of Health and Welfare (AIHW) <https://www.ada.org.au/Dental-Professionals/Australian-Dental-Health-Plan/Download-your-copy-of-the-Dental-Health-Plan/2016-17-Pre-Budget-Submission-ADA-Australian-Denta>

Through Oral Health CRC's extensive research 15 years in the making, they have developed a new and world-first vaccine. By targeting enzymes produced by the bacterium *Porphyromonas gingivalis*, to trigger an immune response it produces antibodies that neutralise the pathogen's destructive toxins. *P. gingivalis* is known as a keystone pathogen. The immune response of the vaccine has the potential to distort the balance of micro-organisms in dental plaque.

Oral Health CRC has licensed the innovative technology to CSL Ltd.; which is now in the clinical trial development stage. The research group's findings were recently published in the international *Nature Vaccines Journal*, which is dedicated to highlighting advancements in the field of science and vaccine development.

CEO of the Oral Health CRC, Melbourne Laureate Professor Eric Reynolds AO, said the vaccine would provide dentists with a new treatment for one of the world's most prevalent diseases.

"Current methods of treating periodontitis are helpful, but in many cases the bacterium re-establishes in the dental plaque and the disease continues," Laureate Professor Reynolds explained.

"We hold high hopes for this vaccine to improve the quality of life for millions of people around the world."

The trials on Periodontitis' patients could potentially begin in 2018.

Oral Health CRC's research is aligned with MTPConnect's 10-year Sector Competitiveness Plan (SCP) through focusing on clinical speciality or therapy areas such as inflammatory diseases. The MTPConnect SCP promotes accelerating collaboration and commercialisation by building a dynamic and supportive research culture by establishing hubs that combine institutes with research organisations and universities. MTPConnect recognises the great progress that the Oral Health CRC has made in exploring commercialisation pathways and medical research into gum disease.

For more information, visit oralhealthcrc.org.au and to see how the vaccine works click [here](#).

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