NHMRC: IMPACT CASE STUDY

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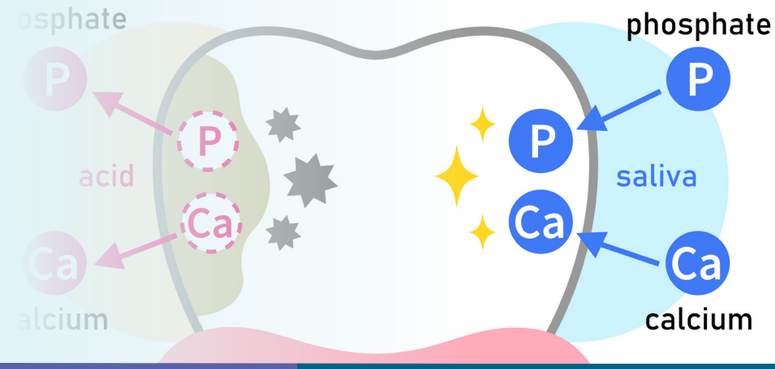
Australian Government
National Health and Medical Research Council

NHMRC

Improving dental health

Oral diseases such as tooth decay and erosion are the most prevalent diseases of humankind and create a substantial economic and social burden. The cost of treating oral diseases and disorders in Australia is $10 billion per annum, with the full global economic impact of oral diseases in 2010 estimated at US$442 billion. NHMRC-funded researchers at the Melbourne Dental School and the University of Melbourne have developed new technologies that significantly improve dental health, and that are being used worldwide.



Origin

Tooth decay is a major public health problem, and oral health is crucial for overall well-being. Poor oral health can contribute to conditions like heart disease, diabetes and stroke.

In addition to the discovery that fluoride could protect against tooth decay, during the 20th century, evidence from epidemiological and dietary studies began to accumulate showing that the consumption of dairy products, too, might lead to improved oral health.

Investment

Commencing in 1989, researchers at the Melbourne Dental School were supported by a succession of NHMRC grants, as well as by funding from the Australian Government's Cooperative Research Centres (CRC) program.

Other funding was provided by the Australian Research Council, the Medical Research Commercialisation Fund, CUREator, CSL, GC Corp, Recaldent and Mondelez. In addition, the team's research was underpinned by infrastructure at the Bio21 Institute.

Research

The Melbourne Dental School team found that CPP-ACP peptides released from the milk protein casein during digestion are similar, but superior, to statherin, a protein found in human saliva that helps to repair teeth. This is because the CPP-ACP molecules carry substantially more bioavailable calcium and phosphate ions than does statherin, and also because they are very small in size and so can penetrate tooth enamel.

The team also discovered that CPP-ACP could carry fluoride ions into tooth enamel, enhancing fluoride uptake to repair damaged enamel.

Translation

The team patented the CPP-ACP peptide and then marketed it as Recaldent®. CPP-ACP's unique properties brought strong interest from large multi-national oral health companies and Australian dairy companies. The team developed the production and quality control processes for the large-scale manufacture of Recaldent® from casein in Australia.

Recaldent® is now manufactured in a purpose-built factory in Victoria. It is produced from Australian dairy milk and exported around the world, incorporated into a range of products.

Impact

During the period 1996-2024, the casein purchased from Australian dairy processing companies for the manufacture of CPP-ACP was in excess of $200 million, and the global sales of CPP-ACP manufactured in Australia were in excess of $500 million.

Over the past 15 years, products containing Recaldent® have led to healthcare and public good savings (including improvement in quality of life and increased productivity) in excess of $12 billion. They have also generated in excess of $2 billion in global sales.

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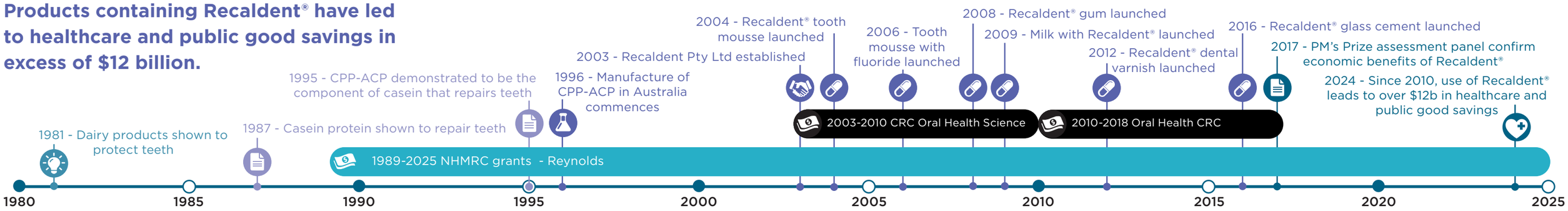

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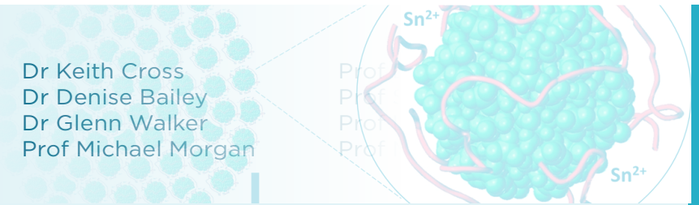

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BUILDING A HEALTHY AUSTRALIA