NHMRC: IMPACT CASE STUDY

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Australian Government
National Health and Medical Research Council

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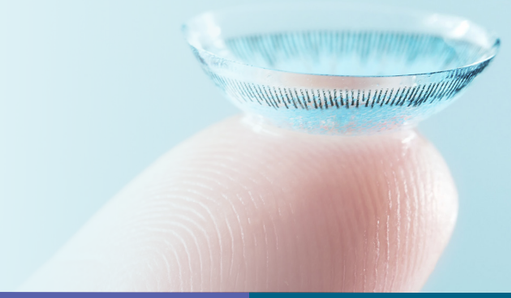
Safer contact lenses

Contact lenses provide improved vision for many people around the world, however when they were initially developed they could also impair eye health. The work of NHMRC-funded researchers at the University of New South Wales (UNSW) led to significant positive impacts on eye care globally. They co-developed a much safer type of contact lens along with several other market-leading products, as well as advancing knowledge about and protecting against contact lens-related infection and inflammation.



Origin

Contact lenses offer a number of advantages compared with eye glasses. However, starting in the 1970s when soft contact lenses (SCL) became available and popular, evidence began to accumulate that wearing them could compromise eye health.

In 1972, Australian researchers Leo Carney and Ian Bailey from the University of Melbourne published research showing that SCL could cause substantial increases in the thickness of the cornea. Their colleague Brien Holden sought to discover why.

Investment

Through a succession of grants, NHMRC supported the work of Brien Holden and his research team at UNSW. This team included Arthur Ho, Lewis Williams, Steve Zantos, Debbie Sweeney, Mark Willcox and Fiona Stapleton. The Australian Government supported the team's research through funding from the Australian Research Council and the the Cooperative Research Centres (CRC) Program.

The team also attracted significant funding from private sector organisations such as contact lens manufacturers.

Research

The team developed advanced tools to measure SCLs and their effects on the eye. Some of these tools, such as a technique for photographing the cornea, had applications beyond contact lens development.

The team found that maintaining oxygen levels was critical to protect the eyes of those wearing contact lenses for extended periods. They developed mechanisms for measuring the intrinsic oxygen permeability of various types of SCL materials, as well as anti-microbial coatings to reduce infections associated with contact lens wear.

Translation

The team were involved in a variety of product development breakthroughs related to SCL, including daily and extended wear soft lenses, the silicone hydrogel contact lens (released in 1999), the soft toric contact lenses designed for the correction of astigmatism (2002), and the MyoVision spectacle lenses, which can slow the progression of myopia (2010). The research studies of Willcox and Stapleton have led to the development of new antimicrobial biomaterials and novel antimicrobials, testing facilities, clinical trials and laboratory and clinical training.

Impact

The introduction of silicone hydrogel contact lenses onto the world market in 1999 heralded a revolution in eye care. They became the 'gold standard' for contact lens material, improving safety and representing the majority of lens sales worldwide. In 2024, silicon hydrogel SCLs accounted for 70% of lens fittings globally. Product sales arising from the UNSW team's research and development efforts have generated over $26 billion in sales for industry and over $300 million in royalties for partner institutions.

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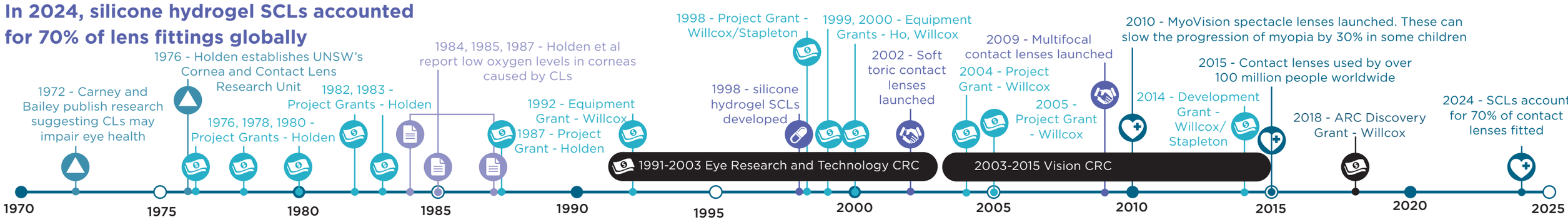

Researchers

Prof Brien Holden OAM
Dr Arthur Ho
Dr Lewis Williams
Prof Steven Zantos
Prof Deborah Sweeney
Prof Mark Willcox
Prof Fiona Stapleton AO

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