

Inspired by you

How the multi-channel cochlear implant transformed from an investigational device to a real-world hearing loss treatment for hundreds of thousands of people

Professor Graeme Clark changed the world by developing a new way of treating hearing loss. From the realization of one man's dream four decades ago, hundreds of thousands of people have experienced life's opportunities through hearing. And they form a global community of millions, through their families, friends, colleagues, teachers and more.

While Professor Clark was the first researcher to lead a team to create the world's first multi-channel implant – the first that was approved for use outside of clinical research – he was not the only person to investigate the possibility of an electronic implantable hearing device.

Here we look at the journey of how the multi-channel cochlear implant moved from science fiction to an approved treatment for hearing loss, and how many companies since have joined the cause to help more people hear.



Alessandro Volta was one of the earliest scientists on record to stimulate his ear with electricity.⁵

The early forays into single-channel cochlear implants

1800s: As early as the 1800s, scientists began investigating the effect of electricity on the ears. Alessandro Volta described using a battery to probe into his ear that led to a “crackling sound.”¹

1950s: Two French researchers, André Djourné and Charles Eyriès, performed the first direct electrical stimulation of the human auditory system, but as the devices failed to enable the patient to understand speech, they decided to abandon their research.²

1960-80s: American Researcher Dr. William House researched a single-channel cochlear implant.^{3,4} Patients could recognize different pitches but not open speech.⁵ Other researchers, including teams in America, France and Austria, also studied single-channel devices.⁵

1980s: The 3M Corporation eventually received U.S. Food and Drug Administration (FDA) approval for two single-channel commercial devices – the 3M House and the 3M Vienna.⁵ These devices were discontinued in the 1980s after trials of and a comparison to the Nucleus® 22 Implant, a multi-channel cochlear implant.⁵⁻⁸ Compared to the single-channel design, the multi-channel cochlear implant design enabled people to recognize more environmental sounds, provided more speech reading enhancement and enabled most users to understand limited speech in the sound-only condition.⁸



Professor Clark was a medical doctor before beginning research on hearing implants.



Professor Clark recreates one of his “eureka moments” from 1977.



Graham Carrick becomes the first recipient of a commercial multi-channel cochlear implant.

The first multi-channel implant to be approved outside of research

While a number of researchers tried to develop a multi-channel cochlear implant, the device developed by Professor Clark and his team was the first device approved by the FDA, meaning it could be used outside of experimental trials.⁶

1940s: From a young age, Professor Clark knew what he wanted to do, “I want to fix ears.” That’s what he told his primary school teacher. He’d watched his father, a pharmacist, struggle with hearing loss. Professor Clark wanted to save others from the same hardship and isolation his father faced.

1967: At this time an ear, nose and throat doctor, Professor Clark gave up his full-time clinical position to begin researching an electronic implantable hearing device.

1977: On holiday, Professor Clark was on the beach when a seashell and a blade of grass offered the inspiration needed to navigate the cochlea and help people hear again. The grass was stiff at the base and flexible at the tip. Professor Clark knew this is how he had to design his electrodes.

1978: Rod Saunders in Australia received the first successful multi-channel cochlear implant in the world. The joy of music brought him to his feet when he heard the Australian national anthem.

1982: Graham Carrick in Australia becomes the first recipient of the commercial Cochlear™ Nucleus® 22 Implant and states with conviction, “Giving people hearing is giving them life.”

1985: The Nucleus® 22 Implant with the Wearable Sound Processor was the first multi-channel cochlear implant to receive pre-market approval from the FDA for adults with hearing loss, converting years of investigational research into a real-world treatment.⁶ The device was subsequently approved by the FDA for children aged 2-17 in 1990. In 2000, the FDA lowered the minimum age to 12 months and in 2020, to 9 months for children with bilateral, profound sensorineural hearing loss.



Since Cochlear was founded in 1981, seven companies have provided almost one million^{12, 14-16} commercial hearing implants with the majority (600,000+) provided by Cochlear.

Cochlear was the first company to bring multi-channel cochlear implants to people around the world

1981: Cochlear, the company, and the Cochlear™ Nucleus® 22 Implant are born when the Nucleus Group partners with the Australian government to bring the first commercially available multi-channel cochlear implant to more people. In 1985, the Cochlear™ Nucleus® 22 Implant was approved for commercial use by the FDA.

1990: After the 3M Company abandoned the 3M Vienna single-channel cochlear implant, the Hochmair Group established its own company, known as MED-EL, in 1990.⁵ Their COMBI 40 Cochlear Implant System was launched in Europe in 1999, but it did not receive FDA approval.¹⁰ In 2001, their Combi 40+ Cochlear Implant System was approved by the FDA.¹¹

1992: French company, MXM, launched a digital cochlear implant system.⁵

1993: The American company, Advanced Bionics, was founded.⁵ In 1996, the Clarion cochlear implant was approved by the FDA.⁵

2006: Neurotron was founded in 2006, manufacturing cochlear implant devices from China.¹²

2006: Neurelec SA was founded as a spin off from parent company, MXM, remaining in France.⁵

2013: William Demant signed an agreement to take over 100 percent of the shares in Neurelec SA.¹³ Oticon Medical began distributing multi-channel cochlear implants as part of the William Demant Group.¹³



In 1984, Sue Walters from Australia received one of the first commercial multi-channel cochlear implants.

In 2020, she upgraded to the Nucleus 7 Sound Processor, enabling her to stream directly from her smartphone to her 36-year-old implant.

Cochlear implants today

Cochlear implants have come a long way since the early implants and body-worn sound processors that existed when Cochlear was formed in 1981. Compared to early experiences, recipients can now obtain some of the newest sound processor technology and stream sound directly from smartphones,* even if they have the same implant that was first approved and implanted in the 1980s.

Today, Cochlear continues Professor Clark's dream and connects hearing implant recipients everywhere. And they're not just connected to their own community — each shares a link with each other and to Graeme's childhood desire to help people hear.

* For compatibility information, visit www.cochlear.com/compatibility.

Hear now. And always

As the global leader in implantable hearing solutions, Cochlear is dedicated to helping people with moderate to profound hearing loss experience a life full of hearing. We have provided more than 600,000 implantable devices, helping people of all ages to hear and connect with life's opportunities.

We aim to give people the best lifelong hearing experience and access to innovative future technologies. We collaborate with the industry's best clinical, research and support networks.

That's why more people choose Cochlear than any other hearing implant company.

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Please seek advice from your health professional about treatments for hearing loss. Outcomes may vary, and your health professional will advise you about the factors which could affect your outcome. Always read the instructions for use. Not all products are available in all countries. Please contact your local Cochlear representative for product information.

Views expressed are those of the individual. Consult your health professional to determine if you are a candidate for Cochlear technology.

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