

# Media Release

**Strictly embargoed**

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**“All of a sudden I could see a little flash of light. It was amazing.”**

In a major development, Bionic Vision Australia researchers have successfully performed the first implantation of an early prototype bionic eye with 24 electrodes.

Ms Dianne Ashworth has profound vision loss due to retinitis pigmentosa, an inherited condition. She has now received what she calls a ‘pre-bionic eye’ implant that enables her to experience some vision. A passionate technology fan, Ms Ashworth was motivated to make a contribution to the bionic eye research program.

After years of hard work and planning, Ms Ashworth’s implant was switched on last month at the Bionics Institute, while researchers held their breaths in the next room, observing via video link.

“I didn’t know what to expect, but all of a sudden, I could see a little flash...it was amazing. Every time there was stimulation there was a different shape that appeared in front of my eye,” Ms Ashworth said.

Professor Emeritus David Penington AC, Chairman of Bionic Vision Australia said: “These results have fulfilled our best expectations, giving us confidence that with further development we can achieve useful vision. Much still needs to be done in using the current implant to ‘build’ images for Ms Ashworth. The next big step will be when we commence implants of the full devices.”

Professor Anthony Burkitt, Director of Bionic Vision Australia said: “This outcome is a strong example of what a multi-disciplinary research team can achieve. Funding from the Australian Government was critical in reaching this important milestone. The Bionics Institute and the surgeons at the Centre for Eye Research Australia played a critical role in reaching this point.”

Professor Rob Shepherd, Director of the Bionics Institute, led the team in designing, building and testing this early prototype to ensure its safety and efficacy for human implantation. Cochlear technology supported aspects of the project.

Dr Penny Allen, a specialist surgeon at the Centre for Eye Research Australia, led a surgical team to implant the prototype at the Royal Victorian Eye and Ear Hospital.

“This is a world first – we implanted a device in this position behind the retina, demonstrating the viability of our approach. Every stage of the procedure was planned and tested, so I felt very confident going into theatre,” Dr Allen said.

The implant is only switched on and stimulated after the eye has recovered fully from the effects of surgery. The next phase of this work involves testing various levels of electrical stimulation with Ms Ashworth.

“We are working with Ms Ashworth to determine exactly what she sees each time the retina is stimulated using a purpose built laboratory at the Bionics Institute. The team is looking for consistency of shapes, brightness, size and location of flashes to determine how the brain interprets this information.

“Having this unique information will allow us to maximise our technology as it evolves through 2013 and 2014,” Professor Shepherd said.

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## How it works

This early prototype consists of a retinal implant with 24 electrodes. A small lead wire extends from the back of the eye to a connector behind the ear. An external system is connected to this unit in the laboratory, allowing researchers to stimulate the implant in a controlled manner in order to study the flashes of light. Feedback from Ms Ashworth will allow researchers to develop a vision processor so that images can be built using flashes of light. This early prototype does not incorporate an external camera – yet. This is planned for the next stage of development and testing.

Researchers continue development and testing of the wide-view implant with 98 electrodes and the high-acuity implant with 1024 electrodes. Patient tests are planned for these devices in due course.

## About Bionic Vision Australia

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Bionic Vision Australia is a national consortium of researchers from the Bionics Institute, Centre for Eye Research Australia, NICTA, the University of Melbourne and the University of New South Wales.

The National Vision Research Institute, the Royal Victorian Eye and Ear Hospital and the University of Western Sydney are project partners.

The project brings together a cross-disciplinary group of world-leading experts in the fields of ophthalmology, biomedical engineering, electrical engineering and materials science, neuroscience, vision science, psychophysics, wireless integrated-circuit design, and surgical, preclinical and clinical practice.

This research is funded by a \$42 million grant over four years from the Australian Research Council (ARC) through its Special Research Initiative (SRI) in Bionic Vision Science and Technology.

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### Researchers available for interviews:

1. Professor Emeritus David Penington AC (Chairman, Bionic Vision Australia)
2. Professor Anthony Burkitt (Director, Bionic Vision Australia)
3. Dr Penny Allen, (Vitreoretinal surgeon, Centre for Eye Research Australia / Royal Victorian Eye and Ear Hospital)
4. Professor Rob Shepherd (Director, Bionics Institute)

**We ask the media to respect patient privacy. Ms Ashworth will not be available for media interviews at this time. Direct quotes and an on-camera interview have been provided.**

### For further information please contact:

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