



The Bionic Ear Institute

**Building the World's
Pre-eminent Medical
Bionics Institute:**

**From the Bionic Ear
to a Bionic Era**

December 2008

Medical Bionics

Medical Bionics

Now

Advanced Bionic Ear

Bionic Eye

Nerve and spinal
cord repair

NanoMedicine based
Drug Delivery

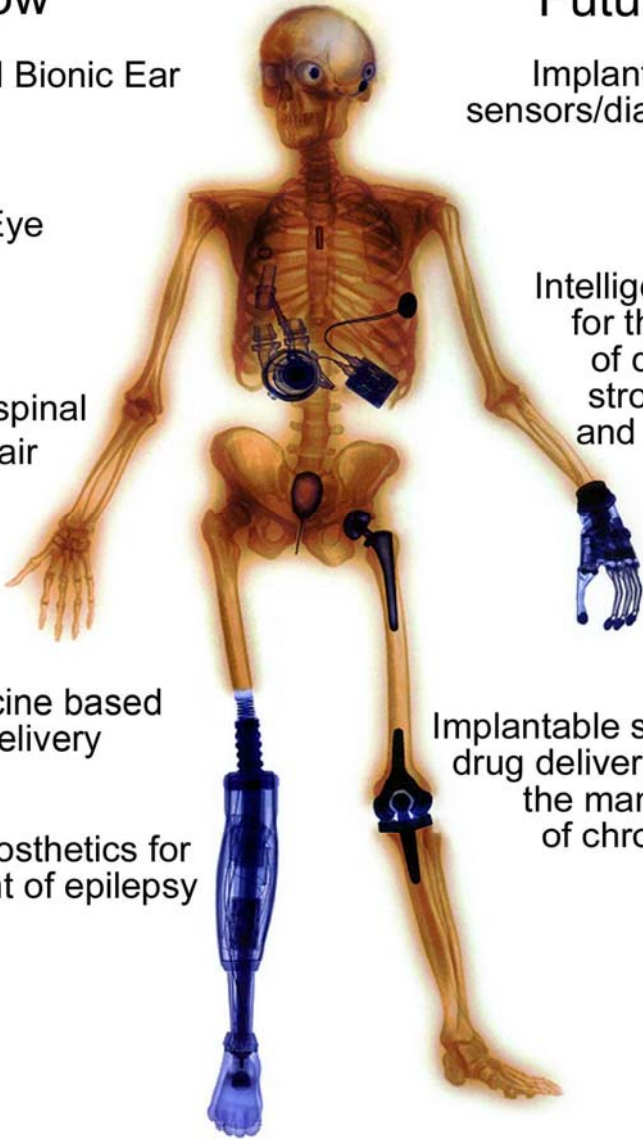
Intelligent prosthetics for
the treatment of epilepsy

Future

Implantable
sensors/diagnostics

Intelligent prosthetics
for the treatment
of depression,
stroke, anxiety
and Parkinson's
tremor

Implantable stimulators and
drug delivery systems for
the management
of chronic pain



The Bionic Ear Institute aims to create partnerships to replicate the success of the Bionic Ear by developing new bionic technologies including a bionic eye. In doing so the Institute will develop Australia's skills for the future, create high-tech manufacturing opportunities and improve the health of Australians.

The Institute proposes to build on the success of the bionic ear and, with appropriate support, its scientific research is aimed at delivering:

- **A bionic eye** that will provide independence for the blind and will eventually allow them to read large format print
- Nanotechnology based **targeted drug delivery systems** for the efficient delivery of therapeutic drugs without adverse side effects
- **Intelligent brain implants** designed to monitor, diagnose and treat a variety of neurological disorders including epileptic seizures
- **High-fidelity bionic ears** that will improve speech understanding in noisy environments and unleash the gift of music for deaf patients.

These projects will deliver technologies to secure better health outcomes for Australians, reducing the burden of disease and enabling people to effectively participate in the workforce for longer periods. The global medical devices and implants market is estimated to be worth US\$213 billion a year and the commercialisation potential for technologies developed is substantial (BCC Research, 2006). The Institute is focused on ensuring that Australians and the Australian economy reap the benefits, as with the commercially successful bionic ear manufactured by Cochlear Limited.

The Bionic Ear Institute is committed to securing the research workforce of the future. Our mission is to bring together talented and focussed people in a multidisciplinary research environment, spanning the biological, physical, engineering and clinical sciences. Researchers will work alongside clinicians to bring research into practice as soon as possible. The Institute aims to capture the imagination of Australia's brightest students and inspire the next generation of researchers by developing a program that provides a pathway from secondary school, through university and into postgraduate research. We will build Australia's skills base for innovation and create a brighter future for Australia industry and the Australian economy.

To counter the risks of Australia losing its researchers to other countries the proposed development of the Medical Bionics Institute and the ability to conduct high-level medical bionics research would provide an incentive for the best and brightest to stay in Australia and inspire today's students to become tomorrow's researchers.

The establishment of an international Medical Bionics Institute in Melbourne will provide a focus for scientific endeavour in Australia. Building human bionic technologies and their application in Australia will ignite the public's interest in science and technology. The science and engineering involved is complex and specialised. There are few, if any, organisations in the world that have the same relevant breadth of expertise as the Bionic Ear Institute and its collaborative partners.

The multidisciplinary research proposed by the Institute's vision for the future requires key research partnerships. The University of Melbourne is the core research partner by the research community.

St Vincent's Hospital Melbourne is a key clinical partner and, subject to approval of government funding, will construct a \$100 million purpose built research centre on land contributed by the hospital within the St Vincent's hospital campus. This facility will be phase 1 of St Vincent's International Research Centre.

Government funding is currently being sought to support the Institute's new proposal.

Support for this project will:

- position Australia, and specifically Melbourne, as the Medical Bionics capital of the world
- boost Australia's economy
- deliver health solutions to reduce the burden of disease sooner
- accelerate the take up of new technology and provide major commercialisation and investment opportunities
- strengthen Australia's skill base for innovation
- build Australia's culture of innovation
- provide inspiration for young people to consider a career in research
- provide a purpose built research building on the St Vincent's Hospital campus in the East Melbourne Precinct.

At the same time as governments are being approached to support this important project a number of philanthropic trusts and foundations, based both in Australia and overseas, are also receiving submissions for funding.