VisionNews
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Centre for Eye Research Australia

FEDERAL GOVERNMENT BACKS BIONIC EYE DEVELOPMENT

CERA AND ITS BIONIC EYE RESEARCH PARTNERS COULD RECEIVE VITAL FUNDING NEEDED TO DEVELOP AN ADVANCED BIONIC EYE, FOLLOWING THE ANNOUNCEMENT OF A $50 MILLION COMMITMENT MADE BY THE FEDERAL GOVERNMENT.

CERA has joined four other outstanding research groups to form Bionic Vision Australia (BVA), a unique consortium of medical engineers, communication technology experts and eye specialists.

Within two years, BVA intends to develop a first generation bionic eye with 100 electrodes that will allow people with severe vision loss to see the contrast between light and dark shapes and navigate around them unaided.

In five years time a second-generation device that will give recipients the ability to recognise faces using 1000 electrodes will be developed.

BVA Chairman, Professor Emeritus David Penington welcomed the Prime Minister's announcement in April. "This funding will build on Australia's track record in developing the bionic ear and maintain Australia's position at the forefront of medical bionics. We look forward to submitting a detailed proposal to the Government to make this vision a reality," he said.

Research to find out more about the interaction between electrical stimulus and the optic nerve is underway at

Photo courtesy of Graduate School of Biomedical Engineering, University of NSW.

CERA, led by Professor Robyn Guymer, head of CERA's Macular Research Unit. "We are delighted that Prime Minister, Kevin Rudd has made a commitment to the many Australians living with profound vision loss," she said.

What does the bionic eye do?

The retina at the back of the eye converts images into nerve signals that travel via the optic nerve to the brain. Damage to the retina causes vision loss. The bionic eye has been developed to mimic the function of the retina and restore sight.

Who will benefit from the first generation bionic eye?

People with severe vision loss caused by diseases affecting the retina such as age-related macular degeneration and retinitis pigmentosa will benefit.

How does the bionic eye work?

A video camera built into a pair of glasses transmits images in real time to a handheld, video-processing unit. Light patterns represented as electrical pulses are transmitted from the unit to a retinal implant containing an array of electrodes acting as artificial photoreceptors. Stimulated electrodes send signals along the optic nerve to the brain where the image is interpreted.

Who is CERA working with in the BVA?

- The University of New South Wales
- The Bionic Ear Institute
- The Royal Victorian Eye and Ear Hospital
- NICTA
- The University of Melbourne

Study tackles diabetic eye disease

FOR MANY DIABETES SUFFERERS, MANAGING THEIR CONDITION CAN FEEL LIKE A FULL TIME JOB.

Grandmother of four, Argia Macginty, has lived with type 2 diabetes for almost 20 years. Her daily routine involves checking her blood glucose levels up to four times, administering insulin injections and following a strict diet.

Study participant Argia Macginty

Unaware of the seriousness of her condition, Argia's diabetes went untreated for a number of years. Recently diagnosed with diabetic retinopathy, she's quick to stress the importance of early diagnosis and effective diabetes management.

"Diabetes management is hard work. There's information out there but you need to know where to look. Early on I knew very little about managing my condition and the implications of diabetes. That's why education is so important," she said.

Diabetic retinopathy, a complication of diabetes, is a leading cause of blindness and low vision in Australia's working population.

Researchers at the Centre for Eye Research Australia (CERA) hope a new study investigating the barriers to effective diabetes management will help prevent unnecessary vision loss and blindness in patients like Argia.

Diabetes Management Project (DMP) Principal Investigator Dr Ecosse Lamoureux said that while most diabetic patients will develop diabetic retinopathy at some point in their lives, severe vision loss caused by the disease is preventable.

"Diabetic retinopathy is usually the result of untreated or poorly managed diabetes. Studies have shown that proper management of blood glucose levels and hypertension significantly reduces the incidence and progression of diabetic retinopathy," Dr Lamoureux said.

He said that despite the numerous education programs available, many patients at a high risk of developing the disease are not adequately managing their condition.

"Either patients aren't accessing the information available or certain messages about diabetes management aren't getting through," he said.

"From this study, we hope to get a better understanding of the factors that prevent patients' from effectively managing their condition. This information will allow us to tailor programs that educate diabetics about their treatment needs."

Researchers at CERA and the Eye and Ear Hospital aim to recruit 2000 diabetic patients to participate in the two year baseline study. Study participants will undergo a blood test and complete an eye test before being interviewed.

Patients with type 1 or type 2 diabetes, who are over 18, free of significant hearing loss, are English speaking and live independently in the community, are invited to participate in the study.

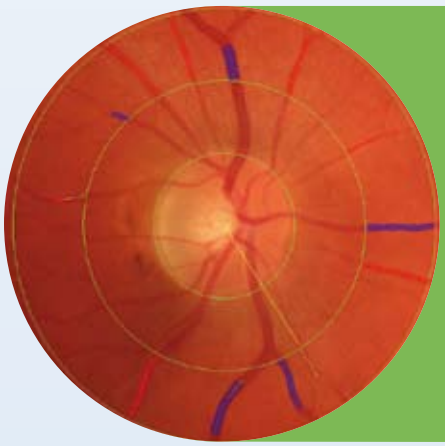
For more information please contact CERA research coordinators Eva Fenwick on 9929 8363 or Melanie Larizza on 9929 8072.

WHO IS AT RISK OF DEVELOPING DIABETIC RETINOPATHY?

- Everyone with diabetes is at risk of developing diabetic retinopathy.
- The longer a person has diabetes the more likely they are to develop the disease

HOW CAN I PREVENT VISION LOSS AND BLINDNESS FROM DIABETIC RETINOPATHY?

- Take action before you notice any problems
- Have your eyes tested at least every two years
- Effective diabetes management will delay the development of diabetic retinopathy



DIABETIC RETINOPATHY, A COMPLICATION OF DIABETES, IS A LEADING CAUSE OF BLINDNESS AND LOW VISION IN AUSTRALIA'S WORKING POPULATION.

RED MEAT INCREASES AMD RISK

CERA researchers have discovered a link between red meat consumption and an increased risk of early age-related macular degeneration (AMD).

In the world's first detailed study into the relationship between meat and AMD, researchers examined the diets of almost 7000 Melbourne residents aged between 58 and 69 over two decades.

PhD student Dr Elaine Chong said people who ate red meat more than 10 times per week were nearly 50 per cent more likely to develop AMD than those who ate it less than five times a week.

"Meat forms a large part of the Australian diet so understanding its relationship to AMD is very important," she said.

"We found that a quarter of our study population ate red meat at least ten times a week. Interestingly, we found that the association with both early and late AMD was stronger for salami and continental sausage than for fresh red meat."

Dr Chong said high meat intake has been associated with higher levels of N-nitroso compounds and heme iron which can result in oxidative damage and is toxic to the retina.

Report co-author Professor Robyn Guymer said that while people must be aware of the amount of red meat they consume, the findings do not mean that people should eliminate it from their diet.

"The key to a healthy diet is simple - everything in moderation," she said.

"Studies have found that a balanced diet incorporating dark green leafy vegetables, fish, seeds and nuts is beneficial in maintaining good eye health," she said.

"The key to a healthy diet is simple - everything in moderation"

Other lifestyle factors associated with increased risk of AMD include smoking and a diet high in fat.

AMD is the leading cause of vision loss and blindness in Australia and one in seven people over the age of fifty are affected by the condition.

The study was completed in collaboration with the Melbourne Collaborative Cohort Study (Health 2000).

Lecture honours Australia's first Professor of Ophthalmology

IN FEBRUARY, VICTORIAN GOVERNOR PROFESSOR DAVID DE KRETSER LAUNCHED THE INAUGURAL GERARD CROCK LECTURE TO HONOUR THE MEMORY OF PROFESSOR GERARD CROCK AO.

Professor Crock, who passed away in December 2007, was Australia's first Professor of Ophthalmology and the founding Ringland Anderson Professor of Ophthalmology at the University of Melbourne.

Members of the Crock family, including Gerard's widow Jacqueline and his identical twin brother Harry, joined other prominent members of the medical and research community at the sell-out event.

In his opening speech Governor de Kretser, who first met Professor Crock as a medical student at Melbourne University, said Professor Crock was a pioneer in his field and a passionate educator. "It's truly fitting that Gerry should be honoured in this way, via a lecture; the transmission of knowledge," Governor de Kretser said.

Governor David de Krester, Professor David Mackey and members of the Crock family.

The event also served as a farewell to Professor David Mackey who in March commenced as director of the Lions Eye Institute in Perth and Professor of Ophthalmology at the University of Western Australia. He retains an honorary association as a senior researcher with CERA, where he has been head of the Clinical Genetics Unit since 1997. Professor Mackey captivated the audience with this highly acclaimed lecture, The 'I' in Personalised Genetics.

A recording of the lecture is available to download from the CERA website at: www.cera.org.au

DID YOU KNOW....? The first corneal transplant was performed in 1905. During the early years of the procedure Viennese surgeons used the hair of Japanese women to attach the donor cornea to a patient's eye!

In Brief

HUGH TAYLOR HONOURED WITH GLOBAL AWARD

Professor Hugh Taylor is the first Australian to be awarded the Helen Keller Prize for Vision Research for his work to close the 'vision gap'.

The prize, which recognises Professor Taylor's work to eradicate blindness in indigenous communities, was awarded at the Association for Research in Vision and Ophthalmology (ARVO) conference in May.

As a student of the late Fred Hollows, Professor Taylor is now a world authority on trachoma and recently led Australia's first comprehensive national survey into indigenous eye health.

He also spent much of his early career working to eradicate river blindness in African Countries.

Conducting an eye exam in the remote community of Kalkaringi

Professor Taylor is chair of Indigenous Health at the University of Melbourne. He founded the Centre for Eye Research Australia as managing director in 1996, a position he held until 2007.

He continues to be associated with CERA in a research capacity and as an honorary governor.

LAWYERS PEDAL FOR LOW VISION

Sixteen lawyers from CBD law firm Herbert Geer collectively pedalled more than 520 kilometres within 24 hours in April's Murray to Moyne Challenge to raise funds for eye research.

More than 1,650 cyclists participated in the event, which began along the Murray River in Echuca and ended at the Moyne River in Port Fairy.

The team raised more than $15,000 for CERA research programs including sponsorship from pharmaceutical company, Novartis.

Team member Paul Beilharz said that while this year's ride was one of the most challenging he'd been on, he was proud to support such a worthy cause.

"Herbert Geer has enjoyed a long-standing association with CERA. Many team members have a family history of eye disease and are passionate about supporting medical research, so the partnership makes a lot of sense," he said.

HAROLD MITCHELL FOUNDATION SUPPORTS YOUNG INVESTIGATORS

CERA researchers Christine Wittig and Sophia Xie have each been awarded Harold Mitchell Foundation Fellowships to allow them to travel overseas and present their research papers at international conferences.

The Fellowship rewards the achievements of outstanding young researchers by helping them share their research and build on their career pathways.

Dr Wittig is principal investigator of the Cross Linking for Keratoconus clinical trial. The Fellowship will fund her travel to the International Congress on Corneal Cross-linking where she will present her research findings and meet with key corneal research collaborators.

"Attending international conferences is an important part of the research process. It allows us to share our research, obtain feedback from international experts and learn about exciting new developments," she said.

LIONS RIDE FOR SIGHT

The Lions Ride for Sight is an annual event that brings together organisations and individuals to raise money for eye research and spread the word about preventable blindness.

Since 2004, the event has raised more than $500,000 to help support an annual Low Vision Research Fellowship and other CERA research programs.

Nine CERA researchers participated in this year's event covering more than 400 kilometres in four days. Pharmaceutical company Alcon sponsored the team's effort.

INTERNATIONAL EXPERT PROFESSOR JONATHAN CROWSTON WILL HOST A SUPPORTER INFORMATION SESSION *FOCUSING ON GLAUCOMA*, ON 11 AUGUST 2009.

TO RESERVE A PLACE FOR YOU AND YOUR GUEST PLEASE PHONE 03 9929 8360 OR EMAIL **cera-rsvp@unimelb.edu.au**

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EYE RESEARCH NEEDS YOUR HELP.

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To make a donation, or if you would like to talk to a Foundation member about remembering eye research in your will, please complete the form overleaf and post to:

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Locked Bag 373
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Credit card donations or bequest enquires can be made by phone or fax

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F: (03) 9662 3859

Online donations can be made via our secure website at **http://www.cera.org.au/supportus/**

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