

# Eyelights

The Newsletter of **GLAUCOMA NZ**  
TO SAVE SIGHT

## Awareness Campaigns – To Save Sight

One of Glaucoma NZ's major goals is to raise awareness about glaucoma in the community. Glaucoma Awareness Week attracted widespread publicity in June. In August we participate in Save our Sight month.

During our recent Glaucoma Awareness Week TV host Jason Gunn helped publicise the need for regular eye examinations. He was one of many endorsing the message. We are grateful to all those GNZ members who offered to share their stories with the media. (Read more about Awareness Week on p5.)

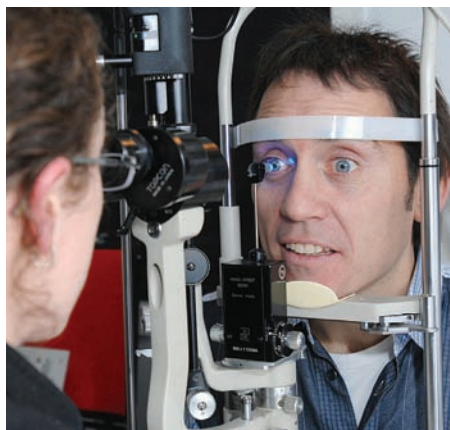
August is the month of Save our Sight, the annual eye health awareness campaign led by the NZ Association of Optometrists. The theme this year is "Healthy Eyes for an Active Lifestyle." From childhood to old age, active, healthy people need healthy eyes and people need to act to protect themselves against eye injury and disease.

Save our Sight will highlight the importance of eye safety and promote the use of appropriate eye protection. In New Zealand there are over 17,000 recorded

eye injury accidents each year. Many of these occur in the home or garden and involve the use of power tools.

Save our Sight will also focus on minimising your chances of vision loss from a range of eye conditions. Age-related vision problems such as macular degeneration and glaucoma strike often without warning or symptoms. Healthy people need healthy eyes and to maintain the active lifestyle Baby Boomers are accustomed to they need to build regular eye exams into their well-care health regimen.

The key message is that regular eye examinations can save sight. Please help spread the word.



Jason Gunn has a glaucoma check

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## The Genetic Basis of Glaucoma

### Part Three of Three

*This is the final in a series of three articles written for our readers by Dr Andrea Vincent, recipient of a research grant from Glaucoma NZ in 2007.*

#### **New Zealand Research In Glaucoma Genetics.**

The current knowledge for the genetic basis for glaucoma is being slowly elicited in research laboratories around the world. Since the first gene known to cause glaucoma, Myocilin, was characterised in 1995, further research has elucidated the nature of 3 other genes, Optineurin, WDR36 and CYP1B1, with evidence that at least 8 other genes exist.

With the assistance of funding from a Glaucoma NZ research grant, we are attempting to characterise the genetic nature of glaucoma in New Zealand. Overseas research centres have been involved for years, with vast libraries of DNA (and lots of money!), but it is still worthwhile to carry out such research in New Zealand.

Firstly we have identified a number of affected individuals with a positive family history of glaucoma, i.e. at least one first degree relative affected. After informed consent we take a blood sample, a cheek swab, or a saliva specimen for DNA extraction.



*Staff of the Genetic Eye Disease Investigation (GED) Unit in The University of Auckland Department of Ophthalmology, L to R: Lucia Tang, Dr Andrea Vincent, Janet Rhodes, Betina de Karolyi*

Our screening strategy is firstly to sequence the Myocilin gene. The frequency of Myocilin mutations is about 4% in the populations already characterised, so in a group of 100 patients we would expect to only find 3 or 4 with a disease-causing sequence change, or mutation. In those with a mutation, we then recruit their family members, both affected and unaffected, to make sure the mutation occurred only in conjunction with the disease, and not in the unaffected individuals.

As Myocilin is very well characterised we could then check with databases and research publications to ascertain whether our mutations have been characterised before. Our research can add to the pool of knowledge helping to confirm the status of a sequence change, or maybe even finding new mutations.

After screening the Myocilin gene, we would then screen OPTN, WRD36 and CYP1B1. It is likely after this process that at least 85-90% of patients would not have a genetic diagnosis, and it is this group of patients and their families which provide us with a powerful tool to identify new genes. Certainly when a very large, multiple generational family is discovered, with no mutations identified in known genes, a genetic method known as Linkage, can be employed to try and determine if the disease "links" to a certain area of a chromosome. Then we would look for genes within that area of a chromosome.

Although this work is very time-consuming and expensive, screening a New Zealand Glaucoma population for genetic causes can contribute to the world-wide knowledge, and has the potential to identify new genes.

## ERG – An Informative Tool

Sometimes simply looking at the retina does not provide all the answers. So how else can we find out if it is in trouble? ERG (electroretinogram) is a valuable clinical tool for analysing retinal function. It is analogous to the ECG (electrocardiogram) which measures the electrical currents produced by the heart. When a clinician examines the retina, it is the appearance or structure of the retina and optic nerve that is noted. The recording of electrical activity arising from the retina gives important information regarding the functional integrity of the retinal layers.

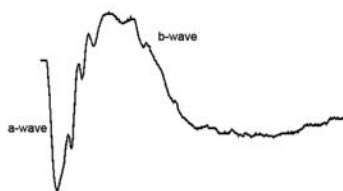
The test takes approximately 20-30 minutes and can be performed in anyone, from infants (under general anaesthetic) to adults. The pupil is dilated and the patient is dark adapted by sitting in a darkened room. After anaesthetic drops numb the ocular surface, a paper thin gold foil electrode is placed on the inner aspect of the lower eyelid in contact with the cornea.

When a flash of light strikes the retina, rapid changes occur in the retinal currents. The algebraic sum of these can be recorded as an ERG.

### Evaluation of the ERG

The initial downward deflection is termed the “a-wave” and originates from the photoreceptors (rods and cones) in the outer layers of the retina. This is followed by a positive deflection (“b-wave”) which originates from cells forming the inner layers of the retina.

The abnormalities detected by ERG make it possible to pinpoint abnormalities of specific retinal cells. If the waveform has diminished height (amplitude), then there are a reduced number of cells functioning.



Sample waveform extracted from an electroretinogram (ERG)

A delay in appearance of the waveform, known as latency, is due to the poor quality of the functioning cells. The electrical currents produced by the rod and cone photoreceptors can be further separated by recording the ERG in a dark adapted state (when only rods respond) or to a flickering light stimulus (when only cones respond).

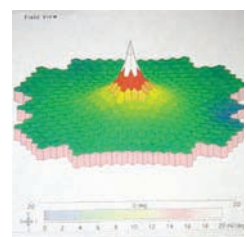
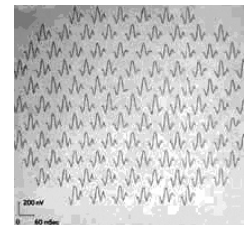
### The Multifocal ERG

More recently technology has been developed to further pinpoint the sites of retinal dysfunction by constructing a topographical map of retinal function. The Multifocal ERG entails viewing a screen constructed of 103 tiny hexagons. Each hexagon relates to a specific location in the retina. Each hexagon emits a light flash independently and randomly, which gives a miniature ERG response.

An abnormality of the ERG response to a specific group of hexagons indicates disease at the corresponding site of the retina. For example, normal eyes have a “central peak” at the fovea, illustrating the point of greatest sensitivity, and hence, greatest electrical activity of the entire retina.

This peak is reduced substantially in people with macular disease, such as, age related macular degeneration, and Stargardts disease – the most common form of inherited macular disease.

This technology promises to be useful for detecting a reduction of electrical activity early in macular disease. It may help determine whether or not proposed treatments prevent the reduction of retinal functioning or help restore the function reduced by the disease.





## Your Glaucoma “Screening” Test

“Screening” for the presence of a disease is an examination, a test or an investigation done for a person who has no symptoms of the disease, who has no complaints about their eyes. Glaucoma NZ recommends the “45 + 5 glaucoma eye examination”. We are recommending people who have no symptoms of eye problems to have an examination for glaucoma. If the examination is normal we recommend you have it repeated every 5 years. We expect the examination to not only detect glaucoma early but to also detect and assess your risk of developing glaucoma.

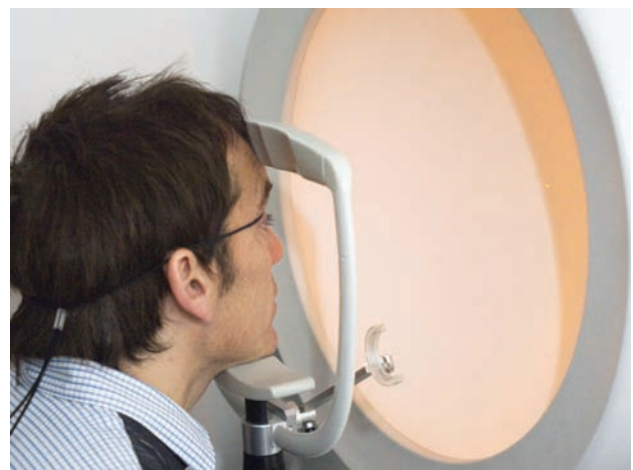
### What would you expect to happen at a glaucoma eye examination?

You should be asked about a family history of glaucoma, eye injury, and steroid use; all of which are risk indicators for glaucoma. Your vision, with spectacles if you use them, would be tested, but how well you see detail is no indication for the presence of glaucoma except when very severe damage is present. However people with high levels of short-sightedness (myopia) do need special attention. The eye pressure would be measured. The eye examination should find any eye pathology that leads to glaucoma. Most importantly the examination would assess the health of the optic disc. On the basis of the clinical findings a decision would be made as to whether you require a visual field test. Our emphasis is on detecting the risk factors for glaucoma and assessing the optic disc to decide the possibility of early glaucoma being present at that examination. If the optic disc is very healthy and there are no risk factors present, then a 5 yearly examination is appropriate. If the optic disc is suspicious of glaucoma a visual field test should always be done. If a number of risk factors are identified, for example a family history, a borderline eye pressure and a

suspicious optic disc then routine examination should be more frequent.

### Should everyone have a visual field test?

New machines can screen for defects in the visual field very quickly. A field test alone will detect advanced and moderately advanced glaucoma. However, it may miss early signs of definite glaucoma in your eyes and it certainly cannot assess the risk factors that we have discussed. Routine visual field testing on everyone will detect many abnormalities that do not reflect the presence of real disease and are not part of the glaucoma risk profile. Relying on visual field testing as the important feature of a glaucoma eye test is not recommended. However, a visual field test is very important if the appearance of the optic disc is suspicious for glaucoma. It is a decision that your eye care professional needs to make for you.



*Visual Field Testing*

Glaucoma NZ does not want to impose on our community unnecessary testing for glaucoma. What Glaucoma NZ does want to happen in our community is that all adults have an initial examination at or before 45 years of age - an examination that will have a careful assessment of the risk factors for glaucoma

and the possibility of early optic disc damage from glaucoma. This assessment should be done every five years. We have come a long way from when measuring the eye pressure was considered an adequate glaucoma test. Eye pressure is a very important risk factor but it is useless as a screening tool. A visual

field test is very important also but again used indiscriminately or alone it is not best eye care. What Glaucoma NZ wants for you is an accurate assessment of the risk factors that lead to glaucoma and careful assessment of the optic disc where glaucoma does its damage to your eyesight.

## Appreciation Awards for GNZ Volunteers

The work of two special Glaucoma NZ volunteers was recognised at the Auckland public Meeting on June 23rd. Associate Professor Helen Danesh-Meyer presented Appreciation Awards to Elizabeth Sadler and John Jones.

Elizabeth works in the Glaucoma NZ office on a voluntary basis one day each week. She has been doing this work for three years now. John has turned up for every newsletter folding and enveloping day since Glaucoma NZ started using volunteers for this work in 2005! Interestingly, neither Elizabeth nor John is affected by glaucoma. They volunteer because they appreciate the critical importance of the work Glaucoma NZ does.

We have many more fantastic volunteers to whom we are extremely grateful. Volunteers come together to fold and stuff envelopes four times a year, usually on a Tuesday.

If you live in the Auckland area and could to help out on Eyalights mailing day Heather and Karon would love to hear from you. Please email [admin@glaucoma.org.nz](mailto:admin@glaucoma.org.nz) or telephone 09 373 8779.



*John sneaks an 'appreciation hug' from the professor.  
L to R: Elizabeth Sadler, John Jones, A. Prof. Helen Danesh-Meyer*

## Glaucoma Questions & Answers

You are invited to send in questions. Contact details appear on the back page.

**I have had glaucoma for many years and now it seems I am developing cataracts. Can I have cataract surgery if I have glaucoma?**

Yes you can still have successful cataract surgery if you have glaucoma. Your eye surgeon will monitor your eye pressure

carefully after the surgery. It may be temporarily elevated soon after the operation. In the longer term some glaucoma patients even experience a reduction in intra-ocular pressure following cataract surgery. However it is better to have cataract surgery well before having glaucoma drainage surgery.

## Report on Awareness Week June 16th - 23rd

Were you one of the 770 people who attended a Glaucoma NZ public meeting in June? Perhaps you are one of the 260 new members who enrolled at those meetings in Christchurch, Wellington, Tauranga, Auckland and North Shore. If so, welcome!

The public meetings were just one feature of Glaucoma Awareness Week. Media attention included television and radio coverage and newspaper articles around the country. The theme of the week was '45 Plus 5' emphasising the need for regular eye examinations.

Posters were distributed to optometrists and pharmacists around the country, and advertisements placed in a range of publications. As a first venture into workplace awareness a two page supplement was published in the Telecom Health and Safety newsletter for June.

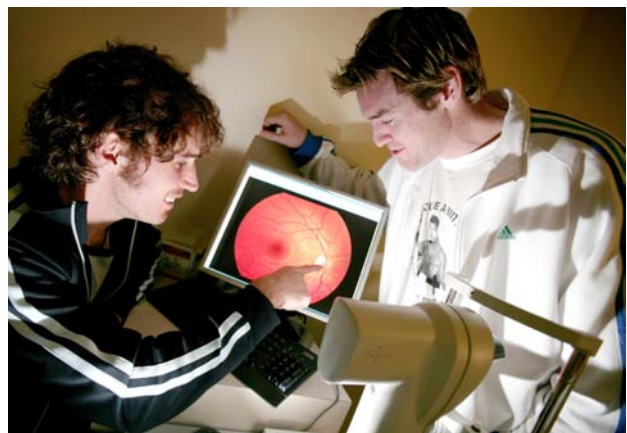
The public campaign began on Triangle TV with Glaucoma NZ featuring on Alice Worsley's Galleria programme every day for a week. Glaucoma NZ was also featured in a programme on CTV broadcasting from Christchurch. Radio interviews were broadcast in Auckland, Waikato, Christchurch, Whakatane and Rotorua.

Articles appeared in print media throughout the week. These ranged from large circulation papers such as the NZ Herald and Dominion Post to smaller regional and local community papers such as the Timaru Herald and Napier Mail. A total of thirty five articles were published around the country. Glaucoma NZ is grateful to all those members who offered to be interviewed for press releases. We regret that not everyone could be interviewed within the resources and time available, and that not everyone's story was used.

Television celebrity Jason Gunn was photographed having his eyes examined in Christchurch, and in Auckland Youthtown Stars basketballers Dillon Boucher and Casey Frank took part in a similar photo shoot. Dillon and Casey were keen to publicise the fact that glaucoma is not just an issue for older people, and that glaucoma can have a devastating effect on one's ability to play sport. Optik Newmarket optometrists pitched in and arranged for journalists to photograph and report on Rodney Hide having a glaucoma check.

Following Glaucoma Awareness Week TV One's Breakfast TV broadcast an item about the risk of neglecting glaucoma examinations when one has purchased over-the-counter glasses. (See article p7)

It is always a challenge to attract media attention to glaucoma in an information scene teeming with competing stories. But thanks to the support of Glaucoma NZ members, nurses, optometrists and eye specialists the message was delivered to many thousands of New Zealanders in June.



*Casey Frank and Dillon Boucher admire an image of Casey's optic disc.*



## Over-the-Counter Spectacles

### What are over-the-counter spectacles?

Over-the-counter spectacles are those that you can purchase over the counter, and are commonly called hobby glasses. They all have one feature in common: the same power of spherical lens for each eye. If your eyes see best with a +2.00 spherical lens in front of each eye then hobby glasses of +2.00 DS will give you good vision in each eye. However if your eyes require a different lens for each eye, e.g. +2.00 DS for the right eye and +1.00 DS for the left eye then these spectacles will give an imbalance in the focusing between the two eyes. If your eyes have astigmatism that requires a cylindrical component to the spectacle lens then hobby glasses cannot correct that refractive error for you. Your vision will not be in perfect focus. Astigmatism comes not only in different powers but also with different axes or direction of the cylinder. This all makes for many combinations.

### Are over-the-counter spectacles harmful?

There is no evidence that wearing incorrect spectacles will permanently harm an adult's eyes. Incorrect spectacle prescription for one or both eyes may lead to eye discomfort and even headaches because of the inappropriate focusing adjustments and eye movements that may occur. You can be sure that if you are happy with the sight through hobby spectacles and you do not develop eye strain symptoms or headaches then they are okay for you.

### Moving House?

Don't forget to include Glaucoma NZ when you are doing your change of address cards. Remember, we have no way of knowing your new address if you don't tell us!

### So why is Glaucoma NZ concerned about hobby spectacles?

Reliance on hobby glasses for many years may lead to many people not having an eye examination



before they are well into their 60s or 70s. When you present for an eye examination for reading glasses, the routine eye check should also address your risk factors for glaucoma and whether you have early or advanced glaucoma. This of course will not occur if you always purchase over-the-counter spectacles. Glaucoma New Zealand would like a warning label attached to over-the-counter spectacles emphasising the need for an eye examination to assess the risk for glaucoma, so that its early detection will prevent serious visual disability in the later years.

## Glaucoma NZ Bequests Brochure

Following our article about bequests in the previous issue we enclose our new Glaucoma NZ Bequests Brochure. This is being distributed to every solicitor in the country for their clients' consideration. Please read it and consider the possibility of including Glaucoma NZ amongst your beneficiaries.

If you do not wish to retain the brochure it would be appreciated if you could place it amongst reading materials at your local CAB, sports or service club, public library or doctors' rooms etc.

# YES, I would like to help

I would like to become a member of Glaucoma NZ at no cost

I would like to donate \$\_\_\_\_\_

I enclose my cheque for \$\_\_\_\_\_ made payable to Glaucoma NZ,  
or please debit my

Visa     Amex     Mastercard    Name on Card \_\_\_\_\_

Card No \_\_\_\_\_ Expiry \_\_\_\_/\_\_\_\_ Signature \_\_\_\_\_

Address \_\_\_\_\_

\_\_\_\_\_ Phone No \_\_\_\_\_

Donations of \$5.00 or more are tax deductible

I would like information on leaving a bequest for Glaucoma NZ

## Forthcoming Meetings 2007

<b>Sept 1</b>	<b>Waitakere City</b> 10am The Trusts Stadium, Central Park Drive, Henderson
<b>Sept 8</b>	<b>Wanganui</b> 10am Regional Centre for the Blind, Peat St.
<b>Sept 29</b>	<b>Whangarei</b> 10am Forum North, Rust Ave

## Contact Us with Your Questions & Comments

We welcome feedback and questions for Eyelights.

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