



# Newsletter

NATIONAL  
**EYE**  
RESEARCH  
CENTRE  
YOUR SIGHT  
OUR VISION

## 21<sup>ST</sup> ANNIVERSARY OF THE NATIONAL EYE RESEARCH CENTRE

The Centre celebrated the 21<sup>st</sup> Anniversary of its formation on 12 February 2007 with a new logo incorporating the strap line *'Your Sight, Our Vision'*. The Centre and its staff really do care about your sight.

The Centre is having its website redesigned and urges supporters to visit it from mid April at: [www.nerc.co.uk](http://www.nerc.co.uk) to learn more about the charity, eye diseases and research to overcome them.

Since its formation over £10 million has been raised for eye research, the major part of which has been allocated to eye research in Bristol, but research has also been supported in eye centres countrywide including Yorkshire, Aberdeen, Cardiff, Leicester, London, Manchester and Nottingham. Research staff supported by the charity co-operates with other eye researchers both nationally and internationally and also co-operate with researchers in other university departments.

Particular research successes have been the development of the Corneal Transplant Service Eye Banks in Bristol and Manchester, the support for genetic research and the establishment of a Genetic Clinic in Bristol. In addition NERC has supported the establishment of an inflammatory eye disease group in Bristol developing new treatments for the prevention and cure of children's eye conditions.

The research group in Bristol investigating stem cell research is a leader in the field and is making exciting progress towards establishing treatments for conditions for which there is no known cure such as macular degeneration, diabetic retinopathy and damage to the retina caused by inflammation, stroke or injury. Support for stem cell research from the Centre has led to major government support in this area of research and also for research into corneal graft rejection. Another success has been advances in research into mucins, dry eye condition and other eye conditions involving the front of the eye.



*Successful eye surgery results from successful eye research*

# RESEARCH FOR PATIENT BENEFIT

*Professor Andrew Dick, Director of Research writes:*

Currently in Bristol we wish to maintain our ability to interrogate the basic biology of how cells and tissues function and how this is deranged in disease, through to developing and testing, experimentally, new therapeutic modalities for treatment. Finally armed with new advances we strive to move toward improving patient care by undertaking clinical trials in our clinical trials unit, particularly with emphasis on testing novel therapies; whilst also looking at ways of modernising care pathways to optimise patient care. Generating such a wide research remit requires infrastructure and collaboration with many researchers in the University of Bristol and other researchers nationally and internationally as well as clinicians at the Bristol Eye Hospital and other NHS institutions. Achievements have been made largely because of the strong core support from the philanthropic backup of the National Eye Research Centre.

Over the past 21 years Bristol has made significant advances to ophthalmology and eye disease. The strong legacy left by Professor David Easty establishing the now internationally renowned Corneal Eye Bank which now is led by Professor John Armitage, works closely with research councils and government to continue to optimise tissue processing for corneal transplantation and measuring factors that influence outcomes of success, which will inform treatment strategies for the future. As such we continue to develop experimental models to test this, and have recently been awarded a prestigious Medical Research Council Grant to investigate further. The culmination of work over decades by researchers investigating corneal toxicity and tear substitution has informed many Pharma companies and work with children in collaboration with University of Bristol, ALSPAC study has led to world-leading findings of influences of how vision develops. Work established over these years also continues in understanding likely visual outcomes of glaucoma (prognosis) alongside testing best approaches for treating patient population. This team led by John Sparrow is nationally regarded and because of their results, they work closely to inform government policies and direction.

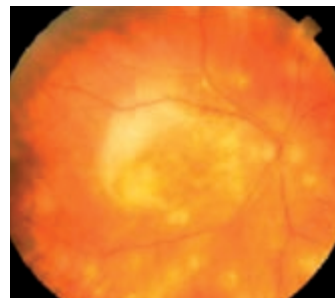


*A patient being examined in the eye clinic*

The last 6 years has seen a major fruitful expansion. I have reported on some advances in previous reports, which have led to new therapies being introduced to the clinic for the treatment of inflammatory eye disease and national and international awards for research papers. At the University of Bristol and Bristol Eye Hospital we have large teams working on inflammatory eye disease, diabetes and age-related macular degeneration involving studies from the bench to the bedside. The benefits of such programmes of research directly support and inform patient care in large regional clinics to manage macular disease, genetic inherited disorders and uveitis at the Bristol Eye Hospital, which have generated national and international reputations. The work is very much interdisciplinary to utilise the talents and skills of many scientific fields, including physics, engineering and chemistry. With this approach and as a result of technological advances, we move fast into an exciting era that allows us to experiment to a level never before possible.

## INFLAMMATORY EYE DISEASE

Inflammatory Eye Disease caused by immune attack on the retina, is a major cause of severe visual impairment. In some studies it has been estimated to account for 10-15% of all cases of total blindness, despite the low prevalence of disease affecting circa 115/100,000 people. Although inflammation can be caused by any infection, the commonest infections include toxoplasmosis, a parasite which is caught from animals, particularly cats (<http://www.patient.co.uk/showdoc/40000376/>) and more rarely, herpes virus (the same viruses that cause shingles or cold sores). Outside these infections at least in the UK, the majority of patients do not have infections and suffer from inflammation in the eye that is thought to be due our own immune system attacking our eye tissue via a failure of normal immune system regulation. Sometimes inflammation in the eye represents disorders that affect other organs of the body. Such conditions include sarcoid, Behcet's disease and multiple sclerosis. Other inflammatory conditions affecting the back of the eye (retina) which can be severely sight-threatening include disorders such as Birdshot choroidopathy, Serpiginous choroidopathy, Sympathetic ophthalmic and many others. More information about uveitis can be found on many websites, including the patient Uveitis Information Group website (<http://www.uveitis.net/>).



**Severe non-infectious posterior intraocular inflammation resulting in profound loss of vision.**

### RESEARCH

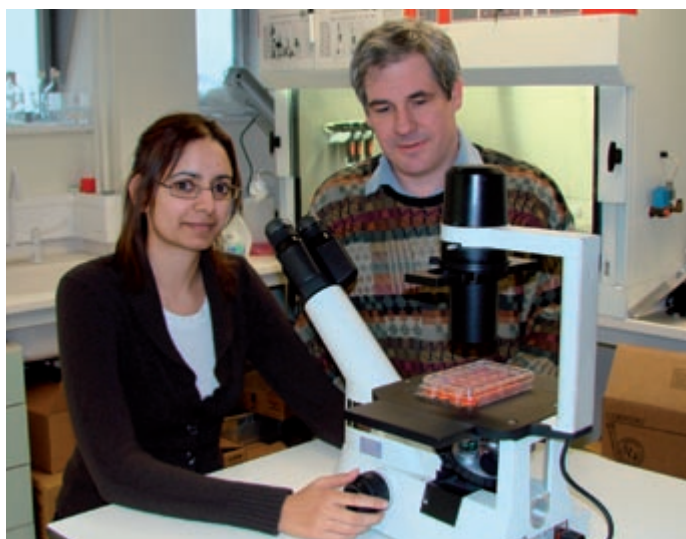
The group's (Professor Andrew Dick and Dr Lindsay Nicholson) current projects have two main streams, in a goal to maintain a strong basic science background so that ideas emanating from the laboratory can be rapidly translated to specific clinical problems. We have both a strong international renowned laboratory base, one of the largest UK regional NHS services for the management of ocular inflammatory disease and a regional clinical research facility to facilitate our goals. Our current programme includes in the basic

science arena aspects to generate advances in knowledge to directly lead to development of newer more specifically targeted therapies:

- regulation of macrophage activity
- matrix and tissue control of immune responses in the retina
- role of macrophages in maintaining retinal homeostasis in inflammation and retinal degeneration
- role of immune responses in neural progenitor cell behaviour: toward facilitating repair

Clinical translatory programmes have included in the past a randomised control trial of tacrolimus versus cyclosporin therapy for non-infectious posterior intraocular inflammation (uveitis) and phase I/II study of TNFalpha blockade in severe refractory uveitis in collaboration with Therapeutic Antibody Centre, University of Oxford. Currently we are undertaking:

- a randomised control trial of optimising Tacrolimus therapy
- investigating the ability to predict patients response to steroid therapy (collaborating with Dr Colin Dayan in Endocrinology)
- investigation of the influence of genetic polymorphisms on severity and course of uveitis (ie identifying those patients most at risk of sight threatening disease – in collaboration with Dr Amanda Churchill)



*Dr Lindsay Nicholson and Dr Tarnjit Khara at work in the laboratories of the University of Bristol studying inflammatory eye disease*

## RESEARCH TO HELP WEARERS OF CONTACT LENSES

*Dr Monica Berry writes:*

We can blink without feeling it – except if suffering from dry eye disease – because the tear film cushions the movement and flows underneath the advancing lid. Similarly contact lens movements over the cornea are not felt. It follows that every contact lens should be wrapped in a tear-like layer, to hide its presence, especially when the wearer's tear film is less than perfect.

At the Bristol Eye Hospital, and in collaboration with physicists in H Wills Laboratory at the University of Bristol, we have been seeking

such a solution, by exploring a number of different avenues. We have characterized the structure and qualities of individual molecules which coat the front of the eye, measured collective properties of assemblies of these molecules, imaged and quantified the behaviour of samples of ocular surface fluid.

The combination of these approaches leads us to formulate a list of quantitative properties for a tear-like sheath to coat contact lenses. Now we need to collaborate with polymer and material scientists to build a layer and test it.

## HOW TO LOOK AFTER YOUR EYES

Our eyes are a very important part of our bodies. They represent the first stage in the transformation and processing of visual information that our brains use to see and sense our environment. Humans are primarily visual creatures, unlike some animals which have a greater reliance on other senses. It is therefore important that we do our best to safeguard and protect our eyes.

Many different disease processes that affect the whole body (systemic conditions) as well as conditions which are specific to the eye can affect our vision. It is therefore not surprising that leading a healthy lifestyle is the most important step in looking after ones eyes.

It is well known that being overweight, as well as excessive alcohol consumption, increases the risk of diabetes, which can lead to blindness. For people with diabetes as well as everyone else a good balanced diet, with plenty of fresh fruit and vegetables will help ones eyes to stay healthy by providing adequate levels of important vitamins and a balanced source of nutrition. Exercise and rest also help the body in general to remain healthy. Smoking has been shown to increase the risk of or exacerbate some eye diseases, notable in this respect is macular degeneration, which is increasingly common in people over the age of 60 and causes loss of central vision. Another condition made notably worse by smoking is thyroid eye disease (a condition where the immune system attacks the muscles and other tissues around the eye). Excessive alcohol and smoking can rarely be responsible for a toxic degeneration of the optic nerve (that carries information from the eye to the brain) especially in the presence of nutritional or dietary deficiencies.

It is important not to neglect ones eyes. Because many diseases (for example glaucoma) that threaten vision can occur without one knowing about them, it is wise to have regular eye checks with an optician. This is especially (although not exclusively) so if there is a history of eye disease in the family. People known to have diabetes and glaucoma are screened regularly to monitor their eyes and vision. Those with diabetes are at risk from diabetic retinopathy that can develop without any symptoms to make the individual aware. The same is true of glaucoma where pressure may build up in the eye and can damage the retina and optic nerve without the individual affected knowing that the process is going on.

There is increasing evidence of toxicity from blue and ultraviolet light to the retina. It is therefore reasonable to protect ones eyes by wearing appropriate sunglasses when it is very bright. Certainly one should never look directly at the sun. Likewise rubbing ones eyes or subjecting them to trauma of any sort is not advisable. To protect ones eyes safety goggles should be worn whenever working with power tools, to minimise potential trauma.

Anyone noting a significant change or reduction in their sight or

visual function, new floaters or shadows in the eyes, inflammation or pain in the eye should seek advice and / or be reviewed. An Optician or a General Practitioner will usually be able to advise whether referral to a specialist Ophthalmologist (eye doctor) is necessary. On a global scale, most blindness is treatable. With very good health care provision in the UK, most people should have good access to first rate care for their eyes, as well as any other medical problems or concerns that they may have. Not all conditions are fully understood or treatable. This makes ongoing research, which is often associated with hospitals and universities of paramount importance. Research is the way to bring about improvement and change for the better. The National Eye Research Centre has a long record of commitment to this ideology.

The particular care that any one of us needs to give to our eyes should be governed by advice given from recognised authorities and needs to be appropriate to that individual. It is very difficult to come up with anything general.

## CHILDREN'S EYE DISEASES

Amblyopia (lazy eye) is the most common eye disease in children occurring in about 4 in 100 due to the suppression of visual information passed between the eye and brain. For children up to seven years of age it can normally be treated by patching the good eye and forcing the amblyopic eye to see. Much research is being done into the optimum time for patching and the difficulties involved.

The Centre has supported the ophthalmic part of the Avon Longitudinal Study of Parents and Children (ALSPAC). This study has looked at children over a number of years investigating the many factors that can affect children's sight and how a child's vision affects their physical co-ordination, school achievement and relationships with friends. The Centre has also supported the purchase and use of a retinal camera for ALSPAC, pictures from which are showing how even in a child's eye, early warning signs of later heart disease can be detected.

## RESEARCH SUPPORTED 2006/2007

### UNIVERSITY OF BRISTOL

- Dowry for Head of Department of Ophthalmology for consumables and equipment for laboratory research
- Salary and research expenses for Senior Research Fellow in Ophthalmology, Head of Immunology Research Group and Research Assistant's salary
- Salary of Research Scientist in Immunology Group
- Salary and research expenses for Senior Research Fellow investigating corneal graft rejection
- Salary and research expenses for Research Assistant conducting corneal graft follow up study
- Research expenses of developing an animal component free corneal storage medium
- Genetic research expenses, Research Assistant's and Technician's salary
- Research into children's eye diseases including expenses and equipment
- Research consumables for mucins research

- Funding of a Cryostat and Flow Cytometer to advance inflammatory eye research
- Expenses for Stem Cell Research Group, Research Assistant's and PhD Student's salary
- Funding of Clinical Trial staff and research expenses developing new treatments and therapies
- Salary and research expenses for Clinical Research Fellow investigating thyroid eye disease
- Salary and expenses for Bristol Lens Opacification Care Pathway Study



*A Cryostat in the laboratories of the University of Bristol*

### UNIVERSITY OF CARDIFF

- PhD studentship relating to implications for retinal ageing
- PhD studentship relating to macular degeneration
- PhD studentship identifying genes during corneal development
- PhD studentship investigating retinal plasticity in experimental glaucoma

### UNIVERSITY OF MANCHESTER

- PhD studentship relating to eye development

### UNIVERSITY OF ABERDEEN

- Project examining chemokines and their receptors as therapeutic targets in autoimmune uveitis

### UNIVERSITY OF LEICESTER

- Project developing educational intervention for amblyopia treatment

## YORKSHIRE EYE RESEARCH

The Centre's branch based in Leeds continues to seek funding for its appeal to fund a Chair of Ophthalmology in Leeds as well as supporting a variety of eye research projects in Yorkshire.

The Management Board, chaired by Mr Martin McKibbin also includes Mr Bruce Noble, Professor Chris Inglehearn and Mr Ian Simmons.



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OUR  
SUPPORTERS  
WHO ARE  
REGULARLY WINNING  
PRIZES IN THE GREAT  
WEATHER LOTTERY

# WIN £10,000 DAILY

with the



NATIONAL  
**EYE**  
RESEARCH  
CENTRE

Check your numbers online at [www.theweatherlottery.com](http://www.theweatherlottery.com) to see if you have won

- For just 20p a day you can win up to £10,000
- 31.5% of the funds come back to the National Eye Research Centre, even after all the prize payouts
- Prizes are posted to your door
- You can pay by standing order or cheque
- The top prizes are insured at Lloyds of London

## HOW TO PLAY

The Lottery is really fun to play. Simply select six single lucky numbers (between 0-9) to play in our daily game (4 days a week, Monday - Thursday).

Every day we will take the last digit of the recorded temperature (in Fahrenheit) as reported in the Daily Telegraph for six locations and scan all the entries to see who has won! You can check your numbers daily through The Daily Telegraph.

**CORFU 93**      **ISTANBUL 84**  
**TENERIFE 90**   **INNSBRUCK 70**

**EDINBURGH 55**   **STOCKHOLM 61**

The £10,000 winning combination is: **340051**

So if you pick numbers: 340051

THEN YOU MATCH 6 AND WIN £10,000

## HOW TO WIN

Although it's fun, you don't even need to read the papers to check your numbers. We check your numbers via our computers and prizes are paid automatically. Match 3 or more numbers in the correct position to win.

**MATCH 3 NUMBERS AND YOU WIN £2.00**

**MATCH 4 NUMBERS AND YOU WIN £20.00**

**MATCH 5 NUMBERS AND YOU WIN £200.00**

**MATCH 6 NUMBERS AND YOU WIN £10,000.00**

To play simply complete all 3 sections and return your completed form in it's entirety to us at Lottery Services Providers, Freepost NEA 12220, Leeds, LS6 2YY

**EACH ENTRY COSTS £1 A WEEK - THAT'S JUST 20P A DAY**

## HOW TO ENTER

### CHOOSE YOUR LUCKY NUMBERS

Enter a single digit number (0-9 inclusive) in each box. Match 3 or more numbers in the correct position to win.

Locations	Corfu	Istanbul	Tenerife	Innsbruck	Edinburgh	Stockholm
Example	3	4	0	0	5	1
Entry 1						
Entry 2						
Entry 3						

Tick one box only below to show how many entries you wish to play. Each 6 number entry costs £4.34 a Month (equal to just 20p a day).

Entries	Cost per Month	Tick your choice here
1	£4.34	<input type="checkbox"/>
2	£8.68	<input type="checkbox"/>
3	£13.02	<input type="checkbox"/>

### YOUR DETAILS (PLEASE PRINT IN BLOCK CAPITALS)

Complete your personal details and sign below.

Title \_\_\_\_\_ Initial \_\_\_\_\_

Surname \_\_\_\_\_

Address \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Postcode \_\_\_\_\_

Telephone Number \_\_\_\_\_

Email \_\_\_\_\_

Signature \_\_\_\_\_

I am aged 16 years or over and agree to abide by the full rules.

## HOW TO PAY

Please complete the following payment options  
Please do not detach this part of the application form.

### BANKERS STANDING ORDER

Please note each 6 number entry costs £4.34  
Every Month

TO THE MANAGER OF \_\_\_\_\_ Bank

ADDRESS \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

POSTCODE \_\_\_\_\_

Please pay: **Prize Provision Services Ltd.**

A/C No. 22438844 Sort Code 40-27-15

The amount of

£4.34	£8.68	£13.02
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Please delete as appropriate

Starting immediately from:

For Office Use Only

My Account Name \_\_\_\_\_

Account Number

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Sort Code

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And thereafter until further notice quoting my membership number of

For Office Use Only

Signature \_\_\_\_\_

Print Name \_\_\_\_\_

\* Note: Please remember to make sure the cost of your entries indicated in your standing order application matches the number of entries you intend to play.

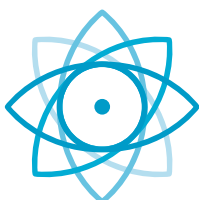
# LEGACIES AND IN MEMORIAM GIFTS

Legacy income continues to be an important part of our voluntary income and we thank all those who plan to leave us a legacy. It can reduce an estate's liability to estate duty.

Many people organise an 'In Memoriam' collection in memory of a loved one or make an 'In Memoriam' gift. A very much more lasting tribute than flowers; it can be linked to a particular research project or piece of research equipment.

If you would like information about making a legacy and will writing, please ask for our legacy leaflet. Do contact the Director, Colonel Sam Gausson in the Appeal Office.

Remember, if you are a tax payer please ensure we have a "Gift Aid Declaration" so that we can claim back tax and boost the value of your gift by 28p in the £1. Higher rate tax payers can obtain further relief.



NATIONAL  
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CENTRE

Registered Charity No. 294087

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Email: **nerc-charity@bris.ac.uk**

Website: **http://www.nerc.co.uk**

