

The year in review



The Foundation has recently published its 2006 Annual Review which describes our activity during the financial year ending 31 March 2006. The review outlines the eight new research projects that we commissioned in March. Each one, we hope, will advance our understanding of the causes of epilepsy and how best to treat the condition.

During the year we also organised an international workshop on epilepsy and genetics that was attended by forty leading experts in the field. It was evident that all the attendees had many ideas on collaborative work that will increase our understanding of this important area in epilepsy research. More about the workshop can be found later in this newsletter.

Our ongoing audit of past research grants again demonstrated our ability to identify promising research at an early stage. Over the past five years, the £834,727 we have allocated to researchers has subsequently led to £1,680,000 in grants from other funders. **Put simply, every pound of Foundation funding leads to a further two pounds being allocated to epilepsy research.**

Our new website has been a huge success over the past twelve months with the number of monthly visitors trebling to 7,500. The range of information leaflets featured on the website has proved to be very popular: 31,497 have been downloaded in the past year. Nearly 1,000 people have responded to our online survey and 95% of respondents have rated the information leaflets either excellent or good.



2005/06 was also the Foundation's most successful year ever in terms of fundraising with income exceeding £680,000. While our income went up, our fundraising expenditure went down, with only 11 pence in the pound being spent on fundraising last year.

The Foundation has now enjoyed five years of continued growth and we are deeply indebted to our supporters for making this happen.

If you would like to receive a copy of the Annual Review, please complete the form on the back page.

Giant strides in genetics

The field of genetics in medicine has advanced very quickly in recent years. This has been an exciting time for epilepsy research, as genes that cause epilepsy have begun to be identified. However scientists learned very quickly that the genetic basis of epilepsy is not a simple business, and after the initial excitement, a sober and methodical research effort has begun.

What is a gene mutation and what does it do?



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Genes are a kind of how-to manual for an organism: they contain the information about how to build every component of a cell, and for how the cells subsequently divide and develop. Genes are made up of strands of DNA which includes a sequence of pairs of compounds called bases. There are only four bases used (referred to as A, T, G and C; A usually pairs with T and G with C), and it's their sequence that's important.

However there's a certain amount of variability allowed in DNA that still leads to the development of perfectly healthy organisms. Some of these variations are very common: for example, genes for blue or brown eyes. Mutations that cause problems are much rarer.

Suppose a base is altered (an A-G pair instead of a A-T pair) in a part of a gene that is the blueprint for a specific protein. The resultant protein might contain the wrong sequence of amino acids (its building blocks), and might consequently be a different shape from normal (or there might be too much of it or none at all). If this protein forms part of a channel in a cell wall, this can mean that the channel is permanently blocked, or stuck open, or that there are too many channels, or none. Any of these will have major implications for how cells containing this channel work. In epilepsy, a change like this leading to hyper-excitability of the cell could be very significant.

Inheriting epilepsy

It's been known for a long time that epilepsy can be inherited. There is some research that suggests that children of mothers with epilepsy are more likely to inherit it than those of fathers with epilepsy (a 5% chance compared with a 2% chance), but the reason for this is currently a mystery.

Only a small number of syndromes (amounting to perhaps 1% of all epilepsies) are caused by the presence of a single "epilepsy gene", inherited from the patient's father or mother. These are called monogenic epilepsies.

It now appears that many epilepsies are caused by combinations of genes, which all have separate subtle effects, all tending to increase a person's susceptibility to seizures. These

types of epilepsy are called polygenic. Scientists are only just beginning to identify these genes for some epilepsies: for example the groups of genes that cause disorders of the ion channels in neurones (important for signal transmission between brain cells). Many of the epilepsies currently labelled as cryptogenic or idiopathic, which account for up to 60% of all cases, are thought to have some genetic basis.

It is also possible for someone to have a "genetic cause" for their epilepsy without having inherited it. All inherited mutated genes have to start somewhere, and that somewhere is a new gene mutation. These are called *de novo* mutations and they happen when changes occur in the combination of DNA from mother and father in the fertilised egg. This means a child can be born with a gene (or genes) causing epilepsy where neither parent has the mutated version.

Genes and anti-epileptic drugs

It now appears that our genes also affect the way our bodies respond to medicines we take. A particular mutation of the gene called *ABCB1 3435*, associated with transporting drug molecules into and out of cells, has been found to be associated with having drug-resistant epilepsy. The damaging effects of some anti-epileptic drugs on a growing baby when taken by the mother during pregnancy are suspected to depend partly on an interaction between the drug and the mother's genetic profile. So genes can affect the efficacy of a drug and also its side effects.

The promise of this branch of medicine, called pharmacogenomics, is the development of tailor-made treatment. One day, it is hoped, a gene test will allow a doctor to prescribe a drug for a person designed for precisely their type of epilepsy. The same test may allow a doctor to work out whether a drug is likely to cause a harmful side effect in a patient, so they can avoid prescribing that drug. But with the very wide variation in genetic bases of epilepsy, this may mean thousands of types of drugs, and expensive and complicated gene testing. It's not clear whether this will ever be financially viable.

The international workshop

The Foundation decided to hold a workshop to assess the current state of our knowledge of genetics in epilepsy, and what the next developments might be, in March 2006. The Foundation's workshops provide an arena for a full, expert and in-depth look at an area of research which has advanced quickly in recent years. Discussion includes both clinical and scientific aspects of the topic. The workshop was held at St Catherine's College, Oxford, and was chaired by Dr Sanjay Sisodiya of the Institute of Neurology, and Dr Helen Cross of the Institute of Child Health who is also Chairman of the Foundation.

John Harris from the Institute of Medicine, Law and Bioethics in Manchester spoke about the ethics of genetic testing for disease, and the need to keep strict controls on who has access to the data. José Serratosa from Madrid, Spain, spoke about the extent to which grouping epilepsy cases by seizure type and age

of onset should be replaced with grouping them by genetic background.

Renzo Guerrini from Pisa, Italy, described the types of epilepsy caused by single genes and the progress being made towards identifying the combinations of genes behind multi-gene epilepsies. Several presentations focused on the strategies needed to identify susceptibility genes for these types of epilepsy, and there was general agreement that large studies are needed, requiring collaboration between centres and accurate and consistent classification of clinical data. There were several technical talks about laboratory techniques and statistical methods used to conduct genetic studies and analyse the data. Other speakers covered specific diseases of the brain which can cause epilepsy, including tuberous sclerosis and focal cortical dysplasia, and whether these have a genetic basis.

The workshop confirmed that we have come a long way in a short time, but current research has probably raised more questions than it has answered. A fascinating comparison was made by a talk from Paul Harrison of the University of Oxford, who gave an overview of the search for schizophrenia genes. While it appears clear that schizophrenia is in part determined by genetics, no genes or gene mutations have been positively identified as causative. Compared to this discipline epileptologists are doing well: this was encouraging! However while a number of the genes causing the rare monogenic epilepsies have been found, a lot of work remains to be done to identify the genes responsible for polygenic epilepsies, which are much more common. The results of the workshop will be published in the near future.

Basic science symposium at the ILAE congress

The Foundation has recently been working closely with the UK Chapter of the International League Against Epilepsy, the leading international body of epilepsy professionals. At their Annual Scientific Meeting, held this year in Newcastle on 20-22 September, the Foundation hosted a symposium on basic science in epilepsy, with a prize for the best presentation.

Basic research is laboratory research. It asks fundamental questions about the way the brain works, the way drugs work in the brain, and the way our genes influence these things.

Graeme Sills and Matthew Walker (both of the Foundation's Scientific Advisory Committee) and William Gray of the University of Southampton selected the abstracts for the symposium. Nine speakers from academic institutions around the UK talked about their research work. The prize for the best presentation was won by Dr Premysl Jirutka of the Division of Neuroscience (Neurophysiology) at the University of Birmingham, who is currently collaborating with Professor John Jefferys on work funded by the Foundation, looking at how abnormal activity in individual neurones in the brain spreads to a wider area, and synchronises, becoming an epileptic seizure.



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British 10K London Run



Edinburgh Marathon:
St George's School relay team

Fundraising runners

We continue to receive outstanding support from runners who show extraordinary levels of dedication in their training and fundraising. Runners endure months of preparation before taking to the streets on race day resplendent in our bright green running vests! Over the summer teams have taken part in races in Manchester, Belfast, Edinburgh and London, raising well over £20,000 for the Foundation. Our thanks go to the following for their fantastic efforts on our behalf:

Gillian Adams, Milly Adams, Joanne Allen, Michael Allen, Kitty Ayres, Kevin Baldwin, Abi Bond, C. Brown, Emily Buckman-Drage, Kelsham Buckman-Drage, Jimi-Carlo Bukowski-Wills, John Bulman, Kate Burns, Peter Bush, Colin Campbell, Claire Chambers, Ian Chesham, Adrian Cox, Damian Cronshaw, Rachel Cronshaw, Julie Cubitt, Elizabeth Cullinan, Gareth Evans, Helen Falconer, Hayley Fallon, Janet Fallon, Sarah Farley, Sean Farley, Kate Gardner, Neil Gardner, Elaine Gibson, Jo Gibson, Julia Gray, Nikki Gray, Scott Gray, Caroline Handley, Paul Harrison, Patrick Hepplewhite, Diane Hollingworth, Matthew Hollingworth, Linda Holmes, Chris Johnson, Hannah Jones, Andrew King, Kris Lyons, Allan McDermid, Angela McDonald, John McDowall, Kerri McKee, Jonathan Moody, Hellen Muir, Sara Nemati, Annette Newell, Catherine Norman, Trudi Roberston, Jo Sheldon, Gordon Silvestro, Ben Smart, Vicky Smyth, Laith Suheimat, Chris Thomas, Jenny Viney, Steve Viney, Vicky Viney, Sarah Walker, Ben Wallace, Jenny Walton, Sarah Walton, Fiona White, Bil Williams, Genevieve Wilson and to Great Scottish Walk entrants Mandy and Pietro Gagliardini and Christina Cuss.

More recently people have been taking part in the Women's Challenge, Great North Run, Windsor Half Marathon and Great South Run. Details of their achievements will feature in the next newsletter.

If you are feeling inspired to run for the Foundation, visit our website for details of races next year: www.erf.org.uk

Memorial fund events

Our memorial fund co-ordinators have been extremely busy helping to raise urgently needed funds for epilepsy research.

Jonathan Moody organised a charity evening in aid of his friend Jamie Chivers' fund at the Black Bottom Club, Northampton. 300 people enjoyed an evening's entertainment with a local band, disco, auction, and raffle. The event was hugely successful both as a memorial to Jamie and as a fundraiser for the Foundation, with over £8,000 raised for research.

A garden lunch held for the Jonathan Bevan Memorial Fund raised £800.

Longridge local walking group, LUMPS, dedicated their annual '20 mile, 20 pub' sponsored walk on 17 June to the Jade Cronshaw

Memorial Fund and had much to celebrate, raising £7,758 from their day's exertions. Thanks to all who took part, their many sponsors and local companies Health Rack Ltd and PGB Architectural Services for their generous donations. Other recent donations for Jade's fund have come from the Royal Preston Hospital Medical Records Dept, £45, Goosnargh & Longridge Agricultural Show, £191, and a jumble sale, £15.

Family and friends have been active in their support of the Tamsin Cummings Memorial Fund with a charity football match organised by Tamsin's husband Giles, and Susan Allen and Helen Sawyer running the Hydro-Active Women's Challenge 5K. Over £13,000 has been donated in memory of Tamsin through these events and other generous donations.

A fundraising disco was held in memory of Tania Knight on 17 June to mark her 40th birthday at Canon's Brook Golf Club in Harlow, Essex. The event was a huge success with nearly 200 people dancing the night away and £2,621 was raised for epilepsy research. Particular thanks to Mrs A Tuerena from Chigwell who donated £100 after seeing an article about the disco in the local paper, the local companies who donated raffle prizes, and to Tania's sister Nicki Walker for organising the evening.



Tania Knight

Congratulations to the children of South End County Junior School, Rushden for organising their own fundraiser for the Kasia Gonzalez Memorial Fund. Through sales of cakes, games and other stalls they raised £529. A separate 'Pop Idol' night held by Kasia's family contributed a further £100.



Helen skydiving (above), Darren & Helen landed and Sam (below)



Our total admiration goes to Samantha Pennicott's mother, Helen, and boyfriend, Darren, who overcame their respective fears of heights and flying to take on the challenge of their 'MumDaz Skydive' in June! Helen's employers Le Creuset have also adopted the Foundation as their charity of the year and have been busy organising fundraising events such as a "Farmfest" rock concert and a 51 mile "Le Tour de Store" bike ride which have added over £4,300 to Sam's fund.

Family and friends of Ellen Mezzetti raised £575 when they came together this summer for a family fun day. Over 40 families enjoyed a rounders tournament, bouncy castle, gladiator-style pugel sticks and a quiz.



David Scourse's fund has recently received donations from: a concert by the students of Somerville College, Oxford, £750; the Inner Wheel Club Mendip, £200, and Mr & Mrs Larke, £120, proceeds of an exhibition.

Our thanks go to David Wilson Homes Northern for their generous donation of £1,000 to the Jonathan Vaughan Memorial Fund following their Charity Golf Day on 6 July.

In Memoriam donations and bequests

Since the last newsletter new memorial funds have been set up in memory of Ellen Mezzetti, Graham Whitmore and Beryl Wright. In addition to the memorial funds supported through the events listed, the following funds have also received donations:

Joan Brailsford, Alexander Buckman-Drage, Edna Collings, Mark Collins, Edward Daw, Nick Drake, Patricia Parsons, Jane Quinn, Adam Shackelford, Jill Sloan and Albert Wilkinson.

Donations have been received in memory of the following:

Simon Beard, John Bentley, Mary Chaffer, Dennis Chiles, Shanice Chrystie, Paul Clarke, Paul Connolly, John Anthony Cox, David Emerson, Robert Fisher, Constance Fletcher, Dorothy Glibbery, Simon Gray, Gillian Hart, James Hart, John Hems, Jean Howitt, Catherine Jarvis, Martin Langston, James Latham, Christopher Law, Brian Lindo, Robert Maunoury, Edna Spiller, Janice Taylor, Edith Whaley, Brett Whiting and David Willcocks.

We would like to thank everyone who has chosen to remember their loved one by supporting the Foundation and we are also very grateful to have received bequests from: Mr Horace David Binnie, Mrs Jean Annie Boyle, Mrs Grace Collins and Mrs Betty Williams.

Fundraising events

The Foundation was delighted to be the official show charity at the Mid-Devon Show, Tiverton, on 22 July. Thanks to tireless work from Marilyn Daw (Show President), Lisa Daw and family, we were able to man a stand at the show and have a Grand



Balloon Release from the main ring at the end of the day. Thanks to all who helped sell balloon tickets on the day contributing to the £1,961 raised.

The Parry family's annual sponsored walk in Hawarden, Flintshire continues to attract ever more loyal supporters and this year raised over £8,000 for research into epilepsy and neuroacanthocytosis. Our thanks to Cereal Partners UK and BHP Billiton for their generous donations, and to Gordon, Gill and Mark Parry for many years of fundraising on our behalf.

Jyoti Patel triumphed over her epilepsy, which had confined her to a wheelchair, to complete a 5-mile sponsored walk in Central Park, Peterborough on 20 August to raise money for epilepsy research. Jyoti trained with her father for months to be able to complete this challenge and through her determination has raised a fantastic £1,625 for the Foundation.

Dr John Mumford, Foundation Trustee, gave a talk to the residents of Waterford Court, Birmingham. Many thanks to Miss Poole for organising the event which raised £175.

Cheers to the regulars at the Anchor Inn, Thornbury for their contribution of £300 to Mike York's sponsored hair cut!

Fiona Evans took on the challenge of cycling from London to Paris in five days in June to raise funds for the Foundation. As a result of all her hard work on and off the road she has raised an incredible £6,859 for research.



Penn and Angela Morcom-Webb's annual Cornish cream tea garden party raised £400 in memory of Angela's son, Simon Beard. Brenda Horne's popular tombolas and coffee morning raised £427 this summer. Other convivial occasions held recently include: Rev & Mrs Clarke's coffee morning in memory of Paul Clarke, £70; Mr & Mrs Stevens' coffee morning, £550; Mr & Mrs Lambert's buffet lunch, £218; the Corbyn's family party, £165; Corseford School enterprise shop, £25; Faversham Charity Bike Ride, £46.

A first for the Foundation was receipt of donations to mark a 100th birthday! Mrs Joy Closs-Davies chose to celebrate her century with a request for donations towards research and we are grateful for the £750 received on this remarkable occasion. We also received £620 in celebration of Mrs Whiting's birthday, given in memory of her son Brett.

Michele de Kock generously offered to donate 10% of her takings from two sales of jewellery held earlier this year; this in turn inspired some of Michele's customers to make their own donations to our research and in total £350 was raised for the Foundation.

Christmas Cards

Our range of Christmas cards is selling fast. If you have not already received a leaflet, the full range can be viewed and bought at www.erf.org.uk or you can request a leaflet using the form opposite. Postage and packing is free on all orders over £5 and all profits go to the Foundation.

Donation and Information Request Form 11/06

I would like to support the Foundation's work and enclose a cheque/postal order/CAF voucher payable to Epilepsy Research Foundation for:

£15 £25 £50 £100 or I prefer to give £ _____

or I wish to donate by Switch/MasterCard/Visa/Amex/CAF Card

Card Number _____ / _____ / _____ / _____

Expiry date ____/____/____ Issue No _____ (Switch only)

Cardholder's signature

Please send me information on:

making a regular donation to the Foundation

Christmas Cards

Entry for sponsored running events

annual review

Name

Address

Postcode

Tel Email

Gift Aid Declaration

I want to Gift Aid all my donations to the Epilepsy Research Foundation until further notice. I understand that to be eligible I need to be paying an amount of income and/or capital gains tax equal to, or more than, the amount the Epilepsy Research Foundation reclaims on my donations (currently 28p per £1)

Signed Date

Please complete this form and return it to: **Epilepsy Research Foundation, FREEPOST (6963), London W4 1BR.** Thank you.

We like to keep you informed about the work you are helping to make possible, but if you would rather not be written to, please tick here

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