

A Record Breaking Year

We are pleased to announce that 2005/06 was the Foundation's most successful fundraising year ever. Income increased for the fifth year in a row to over £680,000 - up 35% on the previous year. Our annual research expenditure is now more than double what it was five years ago and we are currently supporting 18 projects at a combined cost of over £1million. Details of the eight new research projects we selected recently are featured in this newsletter.

The Foundation's continuing growth is entirely due to the incredible generosity of our supporters. Thank you for helping us to take great strides towards defeating epilepsy.



Grants Awarded Spring 2006

What is the link between febrile seizures in childhood and epilepsy later in life?

About 5% of all children under the age of five years will experience at some point a seizure caused by a fever. These are called febrile seizures. These seizures are not normally serious, and go away when the fever subsides. However, if these seizures are long or occur frequently, developing temporal lobe epilepsy (TLE) in adulthood is more likely. This form of epilepsy is often not treatable with current anti-epileptic drugs.

Scientists think that the febrile seizures may cause some sort of damage to the brain cells in the hippocampus, and that this is then the cause of the seizures many years later. These developments may be linked by the activity of a protein called interleukin-1, which is part of the body's immune system. Interleukin-1 helps generate and regulate the body's immune response. Developing a fever is also part of this natural immune response.

Dr Stuart Allan at the University of Manchester has been awarded **£59,518** over three years to investigate this link. This project, called "**The association between febrile seizures and temporal lobe epilepsy and the role of interleukin-1**", will look for the link by studying interleukin-1 levels and distribution in the brain. Dr Allan will look at whether these levels can be affected by genetic background or by the administration of anti-inflammatory drugs. If interleukin-1 is proved to be part of the development of TLE from febrile seizures, this may provide the basis for a new treatment for febrile seizures in children which will reduce their chances of getting TLE later in life.

We would like to thank everyone who responded to our appeal enabling us to fully fund this project.

UK-wide survey of refractory convulsive status epilepticus in children

Most seizures end naturally after just a few seconds or minutes. Occasionally, they can last much longer, as much as 30 minutes or more. These seizures are then called status epilepticus. A very long tonic-clonic seizure is called convulsive status epilepticus. This can be treated, but sometimes the drugs do not work and the status continues. This is then called "**Refractory convulsive status epilepticus**" (RCSE). This is a serious medical emergency and, particularly in children, may cause brain damage or death. The treatment of RCSE is therefore very important. There is currently no agreement amongst doctors on which drugs and treatments should be used to treat RCSE.

The sum of **£6,657** has been awarded to **Dr Richard Appleton** of the Roald Dahl EEG Unit, Royal Liverpool Children's Hospital, and his colleagues, to carry out a national audit of RCSE in the UK. This study will look at all children admitted to intensive care with RCSE over the course of one year. The researchers will study how many children get RCSE, what caused each case, what treatment was given in hospital and what happened to the patients afterwards. This will indicate which treatments are the safest and most effective, and could lead to a trial comparing them. It will also be used to find new and improved treatments for RCSE. It is hoped that this work will ensure fewer children suffer brain damage or death because of RCSE.



Professor Gray and colleagues

Memory decline in patients with temporal lobe epilepsy – could it be stopped?

Despite years of research into the causes of epilepsy and the treatment of seizures, little attention has been paid to the causes of memory loss and

depression in patients with TLE, the commonest drug resistant form of epilepsy in adults. Patients with TLE often show progressing memory loss over a period of years.

We know that growing new brain cells in the hippocampus (the part of the brain most concerned with memory) is important to maintaining memory function, particularly spatial memory. Normally this process, called neurogenesis, continues throughout life. However in brains affected by epilepsy, neurogenesis does not happen, or only happens at a reduced rate.

This study will test the theory that reduced growth of new brain cells is the cause of reduced memory in TLE. **Professor**

William Gray and colleagues at the University of Southampton, who have been awarded **£60,515** over three years, will investigate the relationship between memory decline and reduced rate of neurogenesis, and how this is affected by the presence of epilepsy. The study, entitled **“Does restoration of neurogenesis in chronic TLE improve spatial learning?”** will also investigate whether this process can be reversed: whether administering a drug that increases neurogenesis can improve spatial memory function.

If this drug intervention is possible, this would be the first exciting step towards a new treatment for a debilitating aspect of chronic epilepsy for many patients.



Professor Ann Jacoby

The effect of being diagnosed with epilepsy on quality of life

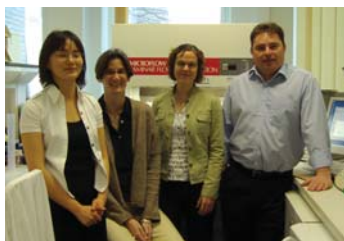
Seizures and epilepsy can have a profound impact on a person's quality of life. Up till now, most research on quality of life in epilepsy has been concerned with the quality of life of people with already established epilepsy. As a result, we do not have a

clear understanding of what factors contribute to changes in quality of life, both good and bad, that occur from the point of diagnosis of epilepsy onwards.

Professor Ann Jacoby of the University of Liverpool has been awarded **£57,554** over three years to look at **“Quality of life trajectories for new-onset epilepsy”**. She and her colleagues will look at how quality of life develops after the onset of epilepsy, and how it is affected by factors such as

- the number of seizures the patient has, and how successful their treatment is;
- how having seizures affects the patient's social interactions and psychological state; and
- any side effects produced by prescribed anti-epileptic drugs.

The study will follow the same set of patients as the recent SANAD study, the largest randomised trial ever conducted in epilepsy, which included 2,400 patients. It will follow all patients for at least four years, collecting information on their health, everyday functioning and quality of life, via postal questionnaires. The aim is to identify how best to support people, both medically and socially, when they are first diagnosed with epilepsy.



Professor Mark Rees and colleagues

Investing in an epilepsy DNA biobank

The effects of our genes in causing epilepsy are only just beginning to be explored by scientists. To investigate genes, a DNA sample is needed and this is normally taken from a blood sample

given by people with epilepsy at a hospital or a specialised epilepsy centre.

This grant will allow the collection of a 'library' of DNA samples from 25,000 people with epilepsy in Wales over the next five years. These samples need to be frozen to remain

useable, and this grant will buy the freezers needed to do this. **Professor Mark Rees** and colleagues at the University of Wales in Swansea have been awarded **£9,660** to set up **“Storage capacity for a DNA biobank for epilepsy”**.

This very large DNA database will include samples from patients with every type of epilepsy. It is very important to collect a very large number of samples, as many of the genes or gene combinations that lie behind epilepsy are very rare, and so will only occur a few times in every thousand people. This large database will therefore allow investigation of, for example, the genetic differences between people with or without epilepsy; which genes are associated with specific types of epilepsy; and which genes are associated with responding or not responding to anti-epileptic drugs.

Electrical activity in the brain just before a seizure starts

The area of the brain in which seizures start is called the seizure focus. In this area, the normal electrical signalling of the brain is not always totally controlled. If the excitability gets out of control, a seizure arises. The seizure focus therefore often has different electrical properties to those of the normal surrounding tissue. The area's response to stimulation with a magnet has also been found to change in the run-up to a seizure.

This project will look at how these electrical and magnetic features are related. **Dr Mark Richardson** at the Institute of Psychiatry, London has been awarded **£59,991.74** over one year to conduct **“Electrical and magnetic brain stimulation studies of the epileptogenic zone in man”**. This will include whether stimulating the focus with a magnet produces a measurable electrical response, and whether the electrical properties of the focus change in the run-up to a seizure parallel with the magnetic changes. If these properties are related it may be possible to develop the use of EEG to forecast when a patient's next seizure will happen, a completely non-invasive, cheap, easy and safe investigation. If an imminent seizure could be reliably predicted, in theory a new therapy could be developed for administration at this point. At the very least these investigations should tell us more about the electrical and magnetic properties of epileptic brain tissue immediately before a seizure, which should tell us more about how seizures start.



Dr Mala Shah

Ion channels in the hippocampus and the development of epilepsy

Epilepsy can develop after the occurrence of damage to the brain. This could be through events such as traumatic head injury or stroke. There is often a delay

between the occurrence of this damage and the onset of chronic seizures. This period is called the latent period. An important question is whether treatment given during this period could prevent the onset of epilepsy.

The excitability of certain neurones in one section of the hippocampus called the entorhinal cortex has been found to be significantly increased during the latent period. This is due at

least partly to a change in the nature of certain ion channels in the membranes of these cells. These, called h-channels, are opened or closed by the size of the difference in electrical charge between the neurone and the surrounding fluid. During the latent period, the number of h-channels decreases significantly, which means these neurones are more excitable, and therefore more prone to seizure activity.

This study will use lamotrigine, a commonly-prescribed anti-epileptic drug, to attempt to prevent the decrease in the number of h-channels from occurring, and to find out if this prevention can delay the beginning of chronic epilepsy. It will also look at whether preventing seizures using a drug such as valproate also alters the number of these channels present. This study will be carried out by **Dr Mala Shah** and **Dr Matthew Walker** at University College London, who have been awarded **£60,000** over one year to investigate **“The role of I_h in the entorhinal cortex during the latent period”**. This work will clarify the role of h-channels during the development of epilepsy and could identify a new approach for treatment.

The project has been funded in its entirety by donations to our memorial funds over the past year. We would like to thank everyone for their exceptional support in funding this important research.

How do women with epilepsy take decisions about pregnancy?

About a third of the 456,000 people with epilepsy in the UK are women of childbearing age (16 to 45 years). Many of these women may become pregnant whilst taking anti-epileptic drugs. We know a great deal about the effect of these drugs on the mother's seizures, and more and more about how both the drugs and the seizures affect the infant's growth and future development, but there are still unknown factors. It is not known how women with epilepsy who are taking anti-epileptic drugs weigh up the risks of having a miscarriage or a disabled child (or any other “adverse outcome of pregnancy”) and arrive at a decision about whether or not to become pregnant, and further decide how to prepare for the pregnancy.

Miss Janine Winterbottom at the University of Liverpool and the Walton Centre for Neurology and Neurosurgery has been awarded **The Sir Desmond Pond Fellowship** to gain a better understanding of how women with epilepsy interpret information about risk. Her study **“Women with epilepsy preparing for pregnancy; a qualitative analysis of the perception and communication of risk information”** (for which she was awarded **£86,779** over three years) will use focus groups and interviews to look at how women with epilepsy perceive information about pregnancy risk at different stages of their reproductive lives, and how they are involved in decision-making when preparing for pregnancy. The study will provide an account of their beliefs, experience and feelings, all of which might shape their reproductive behaviour. The aim is to improve how information about these risks is communicated. This has immediate applicability to how these women are counselled by their doctors, and how their epilepsy care is managed leading up to and during a pregnancy.



This year saw another successful group of Foundation supporters putting on their running shoes and pounding the pavements to raise money for epilepsy research. This year we have had and will have runners in many races including the Great South Run, the Great North Run, the Great Manchester Run, the British 10K London, the Edinburgh Marathon and the London Marathon.

In this issue of Focus, we asked one of our runners to share their experience of running for epilepsy research. **Kate Murphy ran the Flora London Marathon 2006:**

My son Joshua developed epilepsy in June last year, a couple of weeks before his fourth birthday. As the months went on and prescribed medication was failing to control the seizures, I found it increasingly frustrating that as his mother I was unable to make my little boy better. I needed to do something, even if it did not help him directly, it could perhaps go some way to helping other mothers who have to go through a similar experience to me.

I'd only started running in September and by January I had decided to run the marathon. It was a huge challenge for me and an ideal way to raise some money for charity. I was accepted by Epilepsy Research Foundation to run on their behalf...there was no backing down now!

I trained 5 days per week in what was probably one of our longest, coldest winters. I found the training a big struggle, with two children under 5 and a part-time job, but overall I really started to enjoy it.

I managed to stay pretty much injury free, but felt extremely nervous in the last couple of weeks leading up to the big day. I was not convinced I would complete the course, as even though I had stuck to my training and completed a 3 hour run only weeks before, it just seemed an unreachable goal.

But now sitting at the other end of it, I can only describe running the marathon as one of the most amazing experiences of my life. I kept a steady pace throughout and completed the race in 4 hours 51 minutes...for me a fantastic achievement. People cheered me on the whole way, but what really kept me going was a regular stream of family and friends strategically placed at certain points along the way. I only had to run a couple of miles before I would see someone I knew cheering me on.

To run alongside so many other dedicated people, most of them running for a charity that really means something to them makes you feel very proud of your nation. The marathon is not all about costumes and celebrities, it's about the millions and millions of pounds being raised for charity.

My own fundraising was extremely rewarding, with a projected £3,000 increasing to over £11,000. I involved all my family in the fundraising - mums, dads, sisters, brothers - as well as work colleagues and friends - all going off to raise money whilst I concentrated on the running. The response has been fantastic, but there's no real advice I can give, other than to ask as many people as you can. Never go out without your sponsor form...you don't know who you might bump into. It never ceased to amaze me how generous people are, genuinely impressed by the challenge of running the marathon and wanting to support such a worthy cause.

Would I run the marathon again...well having moved to Tokyo a week ago, who knows what next year might bring.

Kate Murphy, June 2006

The Foundation would like to thank Kate for telling her story and thank all of the runners listed on page 4 for their extraordinary commitment and determination.

Sponsored events

There is still time for Foundation supporters to enter the highly popular Hydro-Active Women's Challenge 5K fun run for women of all ages. Taking place on Sunday 3rd September 2006 in London (Hyde Park), Liverpool (Sefton Park) and Birmingham (city centre), the races are designed for runners of all abilities and aspirations. Enter online at www.womenschallenge.co.uk or by application form available from the Epilepsy Research Foundation office. Entry fee £15, no minimum age.

London marathon

Running for the Foundation were: John Boardley, Neal Boardley, Drew Gatherer, Harry Gladwin, Tom Jensen, Andrew King, Kate Murphy, Kathryn Perkins, Mark Pickard, Fraser Sharpe and Anthony Stell. Together our London Marathon team has raised to date £21,782 from their exertions, a truly valuable contribution to epilepsy research. Thank you and congratulations on your amazing achievement!



left to right: Anthony Stell, Andrew King, Mark Pickard and Drew Gatherer

Andrea Fletcher organised a Valentine's Ball 'Darwin & Friends' raising a fantastic £5365.00 towards Dr Helen Cross's research study *Epilepsy in Infancy*.

The Cronshaw family and local community have been helping

the Jade Cronshaw memorial fund to grow through a Star Night, a raffle and donations from a birthday. These events added £510 to Jade's fund.

The John Morton Memorial Fund benefited from a charity Golf Day which raised £1092.

Mrs Simms held a sponsored fast in memory of her daughter, Jill Sloan and contributed £170.

A tea morning organised by Mrs J Heffer succeeded in raising £30.

David Kaaria holds an annual event called Davestock at The Tavern in Wigan and this year donated the money to the Foundation. The music event was very successful and raised over £600.

In memoriam donations, memorial funds & legacies

Since the last newsletter we have received donations in memory of the following people: Ashley Allen, Maureen Barnard, Mrs Barrow, John Bentley, Peter Birkenhead, Jean Carter, Louise Collins, Joanna Davis, Louise Dempsey, Majorie Gardner, Peter Garlick, Michael Gray, Edith Hare, Gillian Hart, Leslie Hartzig, Denise Hilton, A Houliston, Stephen Jarvis, Lauren Kellet, Colin Knight, J Manuel, Ellen Mezzetti, Rosa Payne, Fred Randlesome, Bob Sindall, Martin Smith, Carol Smythe, Mandy Sowerby, Edna Spiller, Jack Spurr, Daniel Strudwick, Sharon Tellam, Geoffrey Webb and Karen Williams.

New memorial funds have been set up in memory of Albert Wilkinson, Michael Gray, Laura Turner, Adam Shackelford, Jonathan Vaughan, John Anthony Cox and Tamsin Cummings. In addition to the memorial funds supported through the fundraising events listed above, the following funds have also received donations: Joan Brailsford, Mark Collins, Jade Cronshaw, Stephen Jarvis, Lauren Mayes, John Morton, Jane Quinn, David Scourse and Jill Sloan.

Bequests have been received recently from Miss Joanna Davis, Mrs Jacqueline O'Connor, Mr Walter Sims, Mr Horace Stableford and Mrs Pauline Ward.

Donation and Information Request Form

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 (delete as appropriate)

Card Number _____ / _____ / _____ / _____

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

Cardholder's signature

Please send me information on:

- making a regular donation to the Foundation
- Payroll Giving
- Entry for sponsored running events
- fundraisingdinner.com

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 June 2006

Cycle Cuba!



If you have ever wanted to do an exhilarating challenge for charity here is your chance. We are looking for adventurous volunteers to cycle in Cuba, taking in some of the world's most breathtakingly beautiful landscapes. Cuba won't fail to leave an indelible mark on you, from the dazzling beaches and clear blue seas of the Gulf of Mexico to the vibrant city of Havana, providing you with memories which will last forever.

The tour takes place between 15th – 25th February 2007. For an information pack call Shona on 020 8995 4781.

A Cycle Cuba poster is enclosed with this newsletter. We would be very grateful if you could get it displayed at work or any local venue so that we can attract as many people as possible to join our Cycle Cuba team.