



Great Ormond Street   
Hospital for Children  
NHS Trust



# Paediatric Epilepsy Research Annual Report 2014/15



[youngepilepsy.org.uk](http://youngepilepsy.org.uk)

## Contents

Introduction	3
Research Partners	4
Research Funding	5
10th Anniversary Celebration of The Prince of Wales's Chair	6
Research Update	8
The Research Team	14
Epilepsy Research Retreat	16
Publications	18



## Introduction

It is with great pleasure that I introduce our annual research report for the period of March 2014 to February 2015 for the epilepsy unit across UCL-Institute of Child Health, Great Ormond Street Hospital and Young Epilepsy.

Our research continues to focus on all aspects of childhood epilepsy; looking towards optimising outcomes. New projects initiated over the past year have included a randomised controlled trial of the ketogenic diet in children under two years of age, funded by the NIHR, and a neuroimaging project which aims to use new technology to develop more advanced MRI scans that may better detect brain areas active at the start of seizures. We also appointed a Darzi Fellow, jointly with UCL-ICH, UCL Partners and the Whittington Hospital NHS Trust to develop an integrated tool, encompassing novel solutions, to address the gap between the desired standards in epilepsy service provision for children and young people and the services they are currently offered.

In addition we have, as a unit, been responsible for 57 peer-reviewed publications of primary research, as well as a further 11 publications of chapters, reviews and commentaries of expert opinion.

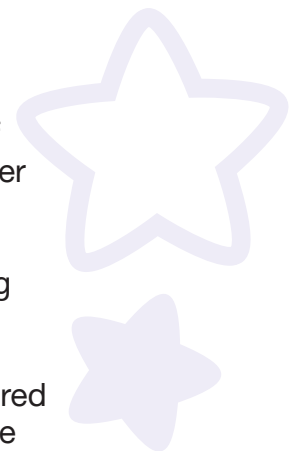
We also celebrated the 10th anniversary of The Prince of Wales's Chair of Childhood Epilepsy. This position was established in 2004 to bring together multiple domains of knowledge relating to childhood epilepsy and to find solutions to one of the most complex and disabling conditions. It was therefore a huge delight to mark a decade of achievement with an evening reception in December 2014 at the Royal Society in London with fellow researchers; colleagues from medical, social and academic institutions; funders and supporters of our research programme. We were also honoured to have His Royal Highness The Prince of Wales provide a foreword for the anniversary brochure. His Royal Highness expressed his delight at the major breakthroughs that have been achieved by our group over the last ten years and reaffirmed his support for our research programme.

In January 2015, we hosted our fifth annual research retreat for researchers and collaborators, moderated by Professor Renzo Guerrini from the Children's Hospital A. Meyer in Florence, Italy. Many of our projects were presented and discussed enabling further ideas to be explored.

Our research team continues to work towards finding ways to improve recognition of epilepsy as a healthcare priority in every part of the world and we aim to continue our focus of research into education to look at interventions following on from research into underlying mechanisms.

**Professor Helen Cross**

*The Prince of Wales's Chair of Childhood Epilepsy*



## Research Partners

### Young Epilepsy

Young Epilepsy is the national charity working exclusively on behalf of children and young people with epilepsy. With over 100 years expertise it provides world-class diagnosis, assessment and rehabilitation for children and young people with epilepsy. The charity also operates an internationally renowned research programme. Young Epilepsy has a specialist school and college, providing day, residential and short break services, for young people up to the age of 25 years, offering education and healthcare for children and young people with epilepsy, autism and other neurological conditions.

Young Epilepsy aims to achieve better futures for young lives with epilepsy and to raise awareness and understanding of epilepsy and issues associated with the condition. The charity provides support and information for parents, children and young people as well as training for professionals. It campaigns for better access to, and quality of, health and education services. It offers tailor-made training across the country for parents, teenagers, health, social care and education professionals and also works in schools.

### UCL-Institute of Child Health

UCL-Institute of Child Health (ICH) is one of the world's pioneering paediatric research centres and represents the largest concentration of people dedicated to advancing paediatrics outside of the United States.

ICH pursues an integrated, multidisciplinary approach to enhance understanding, diagnosis, therapy and prevention of childhood disease. A broad range of paediatric issues is covered, from molecular genetics to population health sciences. All specialties as they relate to children's health are included so that ICH fulfils the role of a world-leading academic establishment in paediatrics.

In keeping with a commitment to disease prevention, ICH is active in teaching and research aimed at developing interventions to promote health both during childhood and in the later years of life.

The Research Excellence Framework (REF) is the new system for assessing the quality of research in UK higher education institutions.

In REF2014, ICH was part of a UCL return to the Clinical Medicine sub-panel of Main Panel A. In this sub-panel, 80% of UCL research was assessed as either world-leading (43%) or internationally excellent (37%). In assessment of research power, UCL's performance was top in the UK. The strength and range of child health research at UCL was specifically commended. As part of this exercise, case impact studies were submitted to the REF2014 database to illustrate the impact of research on the wider society. Two aspects of our work were submitted and are available for review – work on early treatment with ketogenic diet and surgery, and the work on status epilepticus.



## Great Ormond Street Hospital for Children

Great Ormond Street Hospital (GOSH) is an international centre of excellence in child healthcare. The hospital is dedicated to children's healthcare and to finding new and better ways to treat childhood illnesses. There are more than 50 different clinical specialties at GOSH.

GOSH is also at the forefront of paediatric training in the UK and trains more children's nurses than any other hospital. They also play a leading role in training paediatric doctors.

The hospital is committed to carrying out pioneering research to find treatments and cures for some of the most complex illnesses, for the benefit of children here in the UK and worldwide.

## Research Funding

Central to the research programme is the ability to apply for and manage research grants and funding. The various research activities are funded through a combination of research grants associated with specific projects and donations from individuals and other charitable organisations.

Funders of our 2014 research programme have included the following:

- Action Medical Research
- Charles Wolfson Foundation
- Engineering and Physical Sciences Research Council
- European Union
- George E Neville Foundation
- Great Ormond Street Hospital Children's Charity
- Kings College London
- Maurice Wohl Foundation
- McGrath Foundation
- NIHR EME Programme
- Reta Lila Howard Foundation
- The Wolfson Foundation
- University College London
- Vitaflo Limited

## 10th Anniversary Celebration of The Prince of Wales's Chair

Young Epilepsy marked the 10th anniversary of the establishment of The Prince of Wales's Chair of Childhood Epilepsy with an evening reception on 3 December 2014 at the Royal Society in London. The event was very well attended by researchers; colleagues from medical, social and academic institutions; funders and supporters of our epilepsy research programme. We were also honoured to have His Royal Highness The Prince of Wales provide a foreword for the anniversary brochure.

The Prince of Wales's Chair of Childhood Epilepsy is Europe's first Chair in Childhood Epilepsy. It was established to integrate research between Young Epilepsy (then National Centre for Young People with Epilepsy, NCYPE), the epilepsy unit at UCL-Institute of Child Health (ICH) and Great Ormond Street Hospital (GOSH). The collaboration between Young Epilepsy, ICH and GOSH brings together multiple domains of knowledge relating to childhood epilepsy to find solutions to one of the most complex and disabling conditions.

The Chair holder coordinates input from a multidisciplinary team working to make a real and enduring difference to young people whose lives have been affected by epilepsy.

The appeal to fund the post was launched in 2001 with support from His Royal Highness The Prince of Wales.

Professor Brian Neville was the first incumbent of the Chair in 2004 and was succeeded by Professor Helen Cross in 2007.

Enormous strides have been made in the field of childhood epilepsy over the last 10 years and our research team led by The Prince of Wales's Chair of Childhood Epilepsy, has remained at the forefront of discovery and implementation.



Professors Neville and Cross have led several projects which continue to focus on all aspects of childhood epilepsy; looking toward optimising outcomes in children with epilepsy and exploring the health, psychosocial and educational impacts and interventions. In particular the role has:

- Overseen research in new techniques of neuroimaging which has resulted in an increase in the number of children considered for epilepsy surgery.
- Determined the incidence of epilepsy onset in the first two years of life and found that the most significant predictor of developmental outcome is how they present at the time of epilepsy onset.
- Overseen several studies determining outcomes from epilepsy surgery and promoted surgery as an intervention both nationally and internationally.
- Contributed to the development of Buccal Midazolam, an effective drug therapy for the treatment of prolonged seizures, with a more socially acceptable method of administration.
- Established an evidence base for the use of the ketogenic diet (a high fat, low carbohydrate diet) and widened its use in children with drug resistant epilepsy.
- Developed a clear understanding of the most common acute deterioration that occurs in early onset epilepsy (infantile spasms).
- Demonstrated the extent of educational difficulties and the high rate of cognitive and behavioural problems in school-age children with epilepsy.

We know that children and young people with epilepsy are systematically and needlessly failing in life because of multiple factors. These include cognitive and behavioural challenges, mental health issues, stigma and lack of understanding. Our world-class research has already evidenced some of the reasons for this but there is still much work to do.

The 10th anniversary celebration provided an ideal opportunity for the team to highlight the amazing work that has already been done and to discuss upcoming projects which will continue research into the impact of epilepsy on learning, to ensure that children and young people can reach their true potential. The team is also continuing with work in identifying the most appropriate treatments for the different types of epilepsy and developing strategies to support families and teachers of children with epilepsy.

**'I am honoured to hold the position of Chair. Over the past decade we have achieved a great deal and understand much more about the causes, effects and treatment of epilepsy, thanks to a brilliant team and some generous funding for which we are very grateful.'**

*Professor Helen Cross,  
The Prince of Wales's Chair of Childhood Epilepsy*

## Research Update

Below is a brief update on the research projects currently being undertaken across the unit:

### **Epilepsy in infancy: relating phenotype to genotype (EPIPEG)**

**Project Aim:** To improve diagnosis and treatment outcome for young people with epilepsy by studying newly presenting patients, under 12 months of age, and their response to treatment. A clinical database will be established to be used as a resource for health practitioners when determining the best course of treatment for a particular diagnosis.

**Investigators:** Helen Cross, Manju Kurian, Rod Scott, Christin Eltze, Finbar O'Callaghan, Elaine Hughes, Jane Kung

**Update:** The database is in development and site registration is underway to enable recruitment of participants from over 50 NHS sites across London and the South East.

### **Educational problems of children with epilepsy: their identification and management (CHESS Project)**

**Project Aim:** To determine the prevalence of learning and behaviour difficulties in school-age children with epilepsy.

**Investigators:** Brian Neville, Colin Reilly, Patricia Atkinson, Rod Scott, Victoria Burch, Paul McCrone, Richard Chin, Sarah Aylett, Krishna Das, Dame Philippa Russell, Christopher Gillberg

**Update:** The findings from this project, which provide clear evidence that children with epilepsy have a high rate of difficulties in cognition and behaviour, have been published in a number of peer-reviewed journals including *Pediatrics* and *Research in Developmental Disabilities*. The findings also featured on the BBC Sunday Politics Show (South East) and contributed to Young Epilepsy's Manifesto for Change which was launched at the House of Commons in March 2014.

### **Epilepsy genomics in childhood: finding the causes, directing treatment**

**Project Aim:** To determine the frequency of genetic deletions as a cause of epilepsy.

**Investigators:** Antonietta Coppola, Helen Cross, Sanjay M. Sisodiya

**Update:** Collection of the genetic and clinical data from 299 children with epilepsy is complete. The data is currently being analysed to look for novel genetic changes, combinations of genetic changes and the overall burden of genetic variability to see if these factors predispose to epilepsy in childhood. There has been a case report published of a novel finding, and an overall manuscript is in preparation.



### The genetics of early onset epileptic encephalopathy

**Project Aim:** The project aims to identify novel early onset epileptic encephalopathy genes which will contribute to the understanding of the disease mechanisms involved in such epilepsies.

**Investigators:** Amy McTague, Helen Cross, Dimitri Kullmann, Rod Scott, Manju Kurian

**Update:** The team has already successfully identified one new gene causing a severe seizure disorder of infancy (migrating partial seizures of infancy) and has completed functional work to confirm pathogenicity. Further gene discovery work using autozygosity mapping and whole exome/genome sequencing in our large and expanding cohort of children with early onset epilepsy is ongoing.

### The genetics of Landau Kleffner Syndrome

**Project Aim:** The project aims to identify novel genes which will contribute to the understanding of the disease mechanisms causing language impairment and seizures in this epileptic disorder.

**Investigators:** Adeline Ngoh, Maria Clark, Brian Neville, Helen Cross, Rebecca Greenaway, Rob Harvey, Dimitri Kullmann, Manju Kurian

**Update:** The team has already gathered DNA from the Great Ormond Street cohort of patients and plans to undertake genetic studies to identify disease-causing genes. Dr Adeline Ngoh has secured funding for her PhD, including a Guarantors of Brain Fellowship and an Action Medical Research Training Fellowship.

### Sleep and memory in children with focal epilepsy

**Project Aim:** To evaluate the role of sleep in learning (specifically memory consolidation) in children with different types of focal epilepsy, and determine whether this is disrupted compared to healthy children. This should lead to a better understanding of the causes of cognitive impairment in epilepsy.

**Investigators:** Samantha Chan, Torsten Baldeweg, Stewart Boyd, Rod Scott, Krishna Das, Ronit Pressler, Helen Cross

**Update:** Data collection on control subjects is now complete, and patient recruitment stands at 90% of the target. Behavioural data from the control subjects has been analysed, allowing the validation of an English-language sleep dependent memory consolidation task, and facilitating an interim analysis of the patient data. Visual analysis of the EEG data is ongoing, yielding information on sleep parameters.



## Research Update (continued)

### Evaluating dietary intervention before surgical treatment for epilepsy (EDIBLE)

**Project Aim:** This is a work package of the European Union FP7 funded project DESIRE (Development and Epilepsy – Strategies for Innovative Research to improve diagnosis, prevention and treatment in children with difficult to treat epilepsy). The work package is a randomised controlled trial to determine whether seizure freedom is more likely when resective surgery is performed after a ketogenic diet, in the treatment of epilepsy associated with focal cortical dysplasia type II.

**Investigators:** Helen Cross is the leader of this work package and chief investigator of the randomised controlled trial.

**Update:** This is a multi-centre study with commitment from 20 sites in eight countries – UK, France, Belgium, Germany, Italy, Netherlands, Switzerland and Czech Republic. Ethical approval has been received in the UK and initial recruitment will begin in spring 2015.

### Ketogenic diet in infants with epilepsy (KIWE)

**Project Aim:** This is a randomised controlled trial to determine the effectiveness on seizure control of the ketogenic diet compared to alternative further antiepileptic drug treatment in children with epilepsy aged 3 months to 2 years who have failed to respond to two or more pharmacological treatments.

**Investigators:** Christin Eltze, Nicholas Freemantle, Simon Heales, Rachel Kneen, Louise Marston, Tim Martland, Irwin Nazareth, Elizabeth Neal, Finbar O’Callaghan, Alasdair Parker, Sunny Philip, Ruth Williams, Helen Cross

**Update:** The project has received full ethics and MHRA approvals and completed site registration at Great Ormond Street Hospital and Evelina Children’s Hospital. Recruitment of participants is now underway for the feasibility phase of the study with the aim to expand recruitment to seven other centres in the UK in 2016.

### Improving epilepsy surgery in childhood using fMRI and EEG

**Project Aim:** To have a better understanding of the feasibility and the utility of EEG-fMRI in the presurgical evaluation of children with drug resistant focal epilepsy.

**Investigators:** David Carmichael, Maria Centeno, Daniel Konn, Chris Clark, Jonathan Clayden, Ronit Pressler, Helen Cross

**Update:** Led by the clinical research fellow, Dr Maria Centeno, 47 patients undergoing presurgical evaluation at Great Ormond Street Hospital and 21 control subjects have been scanned. Preliminary results show EEG-fMRI maps are concordant with the presumed epileptic focus, assessed clinically in around two-thirds of cases. Tolerance of the children to EEG-fMRI is very good so far. EEG-fMRI activations will be validated with the surgical outcome of these patients. So far 16 of these patients have proceeded to surgery and an additional three have had intracranial EEG implantations to evaluate further.

### EEG investigation of brain networks in Childhood Absence Epilepsy (CAE) and Juvenile Myoclonic Epilepsy (JME) using EEG-fMRI

**Project Aim:** The project aims to look at brain networks involved in the clinical expression of epilepsy as an approach to fully understand the common and distinct pathways existing across epilepsy syndromes.

**Investigators:** Suejen Perani, Maria Centeno, Helen Cross, Mark Richardson, David Carmichael

**Update:** This is a collaborative study with Professor Mark Richardson at Kings College. Data from CAE and JME drug-naïve patients have been acquired and recruitment is ongoing. Analyses are underway and preliminary results are available.

### Cerebral blood flow changes preceding epileptic events in children

**Project Aim:** To use the techniques of simultaneous intracranial EEG-LD (Laser Doppler) and scalp EEG-NIRS (Near Infrared Spectroscopy) measurements during seizures to have a better understanding of cerebral blood flow and the haemodynamic response in relation to seizures.

**Investigators:** Elhum Shamsiri, David Carmichael, Helen Cross

**Update:** The project has received full ethical and R&D approvals and the pilot data collection is currently underway.

### Using new quantitative MRI tissue parameter maps to detect and delineate focal cortical dysplasia

**Project Aim:** To develop better imaging methodology by investigating whether using quantitative MRI parameter mapping together with quantitative analysis can provide improved detection, delineation and classification of FCD lesions. This application is the first application of these scanning and analysis methods to epilepsy and can lead to a change in local, national and international practice in imaging childhood epilepsy.

**Investigators:** David Carmichael, Helen Cross, Nikolaus Weiskopf, Karin Shmueli, Thomas Jacques, Chris Clark, Kling Chong, Torsten Baldeweg

**Update:** The project has received full ethical and R&D approval and recruitment is underway for the research post funded by the project grant. The team have installed a new state-of-the-art 3-Tesla MRI scanner and motion correction software and hardware. This scanner is now being actively used for clinical and research work. The retrospective arm of the project is underway and the team is identifying participants based on their clinical and genetic groupings to look for phenotypic morphometric changes.



## Research Update (continued)

### The disability complex of early onset epilepsies (Under 5s project)

**Project Aim:** To investigate the major cognitive and behavioural problems faced by young children under 60 months of age with epilepsy and their families.

**Investigators:** Rod Scott, Brian Neville, Colin Reilly, Patricia Atkinson, Leanne Menlove, Christopher Gillberg

**Update:** Data collection commenced in September 2014 and will continue until February 2016. Results will be available in 2016 and 2017.

### Pilot study of cardiac rhythm in Dravet Syndrome: cause of SUDEP?

**Project Aim:** To determine whether heart rhythm abnormalities are aggravated at times of illness in children with Dravet Syndrome and establish whether this in turn has implications for management and monitoring at times of illness. We hope that this might lead to studies of acute preventative therapies at such times.

**Investigators:** Helen Cross, Juan Pablo Kaski, Sarah Aylett, Elaine Hughes, Sanjay Sisodiya

**Update:** The project has received full ethical and R&D approval and recruitment of participants is underway.

### The fast without the spurious: developing a system for robust and rapid simultaneous EEG-fMRI measurements

**Project Aim:** To develop more advanced MRI scans that may better detect brain areas active at the start of seizures. To do this we are trying new motion correction technology that tells the scanner where the head is using a camera and a marker attached to a retainer and updates the scan accordingly.

**Investigators:** David Carmichael, Helen Cross, Kelly St Pier, Nikolaus Weiskopf

**Update:** This project received funding in June 2014 from the Engineering and Physical Sciences Research Council. Ethical approval has been received and the first workpackage of the project, which is the development of optimised fast fMRI sequences with prospective motion correction (PMC), is underway.





### A European pilot network of reference centres in refractory epilepsy and epilepsy surgery (E-PILEPSY)

**Project Aim:** To trigger accelerated development of epilepsy surgery by promoting cooperation between highly specialised neurology, clinical neurophysiology and neurosurgery centres in all EU regions. The primary expected outcome is to increase the number and proportion of patients cured from their refractory epilepsy by improving delivery of optimal epilepsy surgery throughout Europe.

**Lead Investigators:** Philippe Ryvlin, Helen Cross

**Update:** The public website has been launched ([www.e-pilepsy.eu](http://www.e-pilepsy.eu)) with links to the Canadian eligibility tool for primary care to determine whether patients should be referred. An IT platform for case discussion has also been launched.

### Improving services for children, young people and families affected by epilepsy (Darzi Fellowship Project)

**Project Aim:** To examine the gap between desired standards and the services currently offered in epilepsy service provision for children and young people and to develop an integrated tool, encompassing novel solutions, to address the gap. This is a collaborative project between Young Epilepsy, UCL-ICH, UCL Partners and the Whittington Hospital.

**Project Team:** Amit Bali, John Cowman, Monica Lakhanpaul, Kerry Robinson, Helen Cross

**Update:** A scoping review of the relevant literature has been completed. A report has been produced on the findings of the review together with qualitative data from group interviews with parents, completed questionnaires from young people and perspectives from a multi-professional forum, which included commissioners, healthcare professionals, education and social care representatives.



## The Research Team

The research team contribute to a wide spectrum of activities from basic science across UCL-Institute of Child Health, Great Ormond Street Hospital for Children

### Principal investigators

**Professor Helen Cross** *The Prince of Wales's Chair of Childhood Epilepsy*

**Dr David Carmichael** *Lecturer in Neuroimaging and Biophysics*

**Professor Christopher Gillberg** *Visiting Professor in Child and Adolescent Psychiatry*

**Dr Manju Kurian** *Consultant Paediatric Neurologist and Clinician Scientist*

**Professor Brian Neville** *Emeritus Professor of Childhood Epilepsy*

**Dr Finbar O'Callaghan** *Reader in Paediatric Neuroscience*

**Dr Ronit Pressler** *Consultant and Senior Lecturer in Clinical Neurophysiology*

**Professor Rod Scott** *Professor in Paediatric Neurology*

### PhD students

**Samantha Chan** – *Sleep and memory in children with focal epilepsy*

**Ben Duffy** – *Experimental imaging studies post-status epilepticus*

**Jane Kung** – *Epilepsy in infancy: relating phenotype to genotype*

**Danilo Maziero** – *Prospective motion correction of EEG-fMRI data*

**Amy Mctague** – *The genetics of early onset epileptic encephalopathy*

**Suejen Perani** (jointly with Kings College) – *Investigation of brain networks in Childhood Absence Epilepsy and Juvenile Myoclonic Epilepsy using EEG-fMRI*

**Suresh Pujar** – *The outcomes 5 to 10 years after childhood convulsive status epilepticus: a population based study*

**Fatma Scerif** – *Identification of gene networks in childhood epilepsy*

**Elhum Shamshiri** – *Cerebral blood flow changes preceding epileptic events in children*

**Tim Tierney** – *Retrospective motion correction in fMRI data*

**Adeline Ngoh** – *The genetics of Landau Kleffner Syndrome*

### Research staff

**Amit Bali** *Darzi Fellow*

**Maria Centeno** *Clinical Research Associate*

**Cleo Chevalier** *Assistant Researcher*

**Leanne Menlove** *Assistant Research Psychologist*

**Angela Mensah** *Research Coordinator*

**Esther Meyer** *Research Fellow*

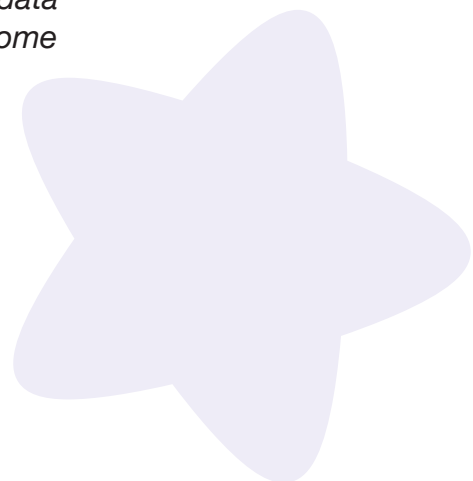
**Liz Neal** *Honorary Research Dietician*

**Manuela Pisch** *Research Assistant*

**Colin Reilly** *Research Psychologist*

**Siobhan Titre-Johnson** *Trial Manager*

**Anna Tyler** *Postdoctoral Research Fellow*



through to patient care and consists of a multidisciplinary range of experts working and Young Epilepsy.

### Clinicians in neuroscience active in epilepsy research

**Dr Patricia Atkinson** *Consultant Community Paediatrician*

**Dr Sarah Aylett** *Consultant Paediatric Neurologist*

**Dr Stewart Boyd** *Consultant Neurophysiologist*

**Dr Maria Clark** *Consultant Paediatric Neurologist*

**Dr Krishna Das** *Consultant Paediatric Neurologist*

**Dr Christin Eltze** *Consultant Paediatric Neurologist*

**Mr William Harkness** *Consultant Paediatric Neurosurgeon*

**Dr Cheryl Hemingway** *Consultant Paediatric Neurologist*

**Dr Isobel Heyman** *Consultant Child and Adolescent Psychiatrist*

**Dr Robert Robinson** *Consultant Paediatric Neurologist*

**Mr Martin Tisdall** *Consultant Paediatric Neurosurgeon*

**Dr Sophia Varadkar** *Consultant Paediatric Neurologist*

### Active collaborators

**Dr Shakti Agrawal** *Consultant Paediatric Neurologist, Birmingham Children's Hospital*

**Professor Torsten Baldeweg** *Professor of Cognitive Neuroscience, UCL-Institute of Child Health*

**Dr Richard Chin** *Clinical Senior Lecturer, University of Edinburgh*

**Dr Michelle de Haan** *Reader in Developmental Cognitive Neuroscience, UCL-Institute of Child Health*

**Professor Nick Freemantle** *Professor of Clinical Epidemiology and Biostatistics, PRIMENT Clinical Trials Unit, UCL*

**Professor Simon Heales** *Professor of Clinical Chemistry, UCL-Institute of Child Health, Great Ormond Street Hospital*

**Professor Gregory Holmes** *Professor of Neurology and Paediatrics, University of Vermont, USA*

**Dr Elaine Hughes** *Consultant Paediatric Neurologist, Evelina Children's Hospital*

**Dr Thomas Jacques** *Clinical Senior Lecturer, UCL-Institute of Child Health*

**Professor Matthias Koepf** *Professor of Neurology, UCL-Institute of Neurology*

**Dr Rachel Kneen** *Consultant Paediatric Neurologist, Royal Liverpool University Hospital*

**Dr Pierre-Pascal Lenck-Santini** *Assistant Professor of Neurology, University of Vermont, USA*

**Dr Andrew Lux** *Consultant Paediatric Neurologist, Bristol Children's Hospital*

**Dr Louise Marston** *Trial Statistician, PRIMENT Clinical Trials Unit, UCL*

**Dr Tim Martland** *Consultant Paediatric Neurologist, Royal Manchester Children's Hospital*

**Dr Helen McCullagh** *Consultant Paediatric Neurologist, Leeds Teaching Hospital*

**Dr Ailsa McLellan** *Consultant Paediatric Neurologist, Royal Hospital for Sick Children, Edinburgh*

**Professor Irwin Nazareth** *Professor of Primary Care, PRIMENT Clinical Trials Unit, UCL*

**Dr Alasdair Parker** *Consultant Paediatric Neurologist, Cambridge University Hospital*

**Professor Sanjay Sisodiya** *Professor of Neurology, UCL-Institute of Neurology*

**Professor Faraneh Vargha-Khadem** *Professor of Developmental Cognitive Neuroscience, UCL-Institute of Child Health*

**Professor Matthew Walker** *Professor of Neurology, UCL-Institute of Neurology*

**Professor Robin Williams** *Professor of Molecular Cell Biology, Royal Holloway Hospital*

**Dr Ruth Williams** *Consultant Paediatric Neurologist, Evelina Children's Hospital*



## Epilepsy Research Retreat

The Epilepsy Research Retreat serves as an annual gathering of researchers and collaborators across the unit. This follows similar models used by other research centres around the world and gives researchers the opportunity to discuss ongoing projects, completed projects and possible future directions of research.

The 2015 research retreat took place on 29-30 January at the Felbridge Hotel in East Grinstead. The moderator was Professor Renzo Guerrini from the Children's Hospital A. Meyer in Florence, Italy.

The meeting brought together 90 researchers from Young Epilepsy, UCL-Institute of Child Health, UCL-Institute of Neurology and Great Ormond Street Hospital as well as collaborators from Evelina Children's Hospital, Matthew's Friends, Royal Holloway, Crawley Hospital, King's College Hospital and elsewhere in the UK as well as collaborators from the University of Vermont, USA.

'A highly enjoyable forum for focused discussion and debate. It is unique on two counts; the themes and moderation by a world expert.'

*Clinical research fellow*

'It was an excellent meeting and venue.'

*Professor of Molecular Cell Biology*





Research fellows presented updates on projects currently taking place across the unit. There were 26 presentations in total and these were grouped under the following themes:

- aetiology
- cognition and behaviour
- connectivity
- interventions
- outcomes

Discussions at the end of each presentation gave investigators the opportunity to receive comments and feedback from fellow researchers and principal investigators.

The retreat also proved to be a highly social occasion. This aside, it successfully highlighted the breadth of epilepsy research being undertaken across the unit and also served as a way of motivating young researchers who may not have previously had the opportunity to meet other members of the unit.

'This was again a very successful and interesting meeting. It's impressive how much research is being done in the field of epilepsy.'

*Consultant Neurophysiologist*



'The whole system is just so encouraging to connect people willing to explore new science fields.'

*Neurophysiology Fellow*

## Publications

### Peer Reviewed Publications

1. C Pedreira, AE Vaudano, RC Thornton, UJ Chaudhary, S Vulliemoz, H Laufs, R Rodionov, DW Carmichael, SD Lhatoo, M Guye, R Quian Quiroga, L Lemieux. Classification of EEG abnormalities in partial epilepsy with simultaneous EEG–fMRI recordings, *Neuroimage*. Volume 99, 1 October 2014, Pages 461–476.
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3. Pugnaghi M, Carmichael DW, et al Generalized Spike and Waves: Effect of Discharge Duration on Brain Networks as Revealed by BOLD fMRI Brain Topogr. 2014 Jan;27(1):123-37.
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