Dear Friends and Supporters

With the continued generosity of our patrons and supporters, SITraN has grown and developed immensely over the last three years, building research expertise, critical mass and facilities to find and trial new treatments for MND and related neurological diseases.

Working together side by side, our clinicians and scientists have made considerable progress towards new therapy development and improved drug delivery techniques into the brain and nervous system. Professor Shaw’s and Bandmann’s teams have already uncovered several promising drug candidates for clinical testing, and gene therapy treatment for SMA and SOD1-related MND is preparing for clinical trials led by Professor Azzouz.

We have put together some of our latest news and successes and hope you will continue being part of our journey.

With kindest regards

Professor Dame Pamela Shaw
Highlights

Damehood and Awards for Professor Pamela Shaw

Congratulations to Professor Pamela Shaw who was made Dame Commander of the Order of the British Empire (DBE) in HM The Queen’s New Year’s Honours in recognition of her extraordinary contribution to neuroscience. Professor Shaw has also been awarded a prestigious Senior Investigator status from the National Institute for Health Research (NIHR) for outstanding work in her field.

Preparing for Clinical Trials

The use of gene therapy to treat inherited forms of MND is well advanced under the lead of Prof Mimoun Azzouz, so that a human trial of one candidate therapy to treat the childhood form SMA is likely to be feasible within the next 1-2 years.

Prof Mimoun Azzouz

Therapy for Parkinson’s in sight?

An extensive drug screen undertaken by Professor Oliver Bandmann’s team identified a promising synthetic drug urso-deoxycholic acid (UDCA) which will now be assessed in larger trials for its potential to treat Parkinson’s Disease.

Prof Oliver Bandmann

“The Sheffield Snood”

The customisable neck support developed by a team in Sheffield led by Dr Christopher McDermott is now in a follow-up clinical trial. The innovative neck collar is designed to give MND patients with neck muscle weakness much needed support and comfort and improve their quality of life. Read more on page 10.

Head-Up—the innovative neck collar

Our New Website

All our latest news and research will now be available on our updated website.

www.shef.ac.uk/sitran
The Broad Appeal

Chris Broad (England Cricketer), his son and daughter are supporting exciting projects at SITraN that could lead to early diagnosis, better quality of life and new treatments for MND patients.

- Identifying a Blood Based micro RNA Fingerprint for MND
- Clinical Trial of Diaphragm Pacing - DiPALs
- Understanding the Early Spread of MND and Screening Potential New Drugs Using a Zebrafish Model

Find out more www.thebroadappeal.org/

Next Generation Sequencing Kit

Thanks to many generous donations combined with a fundraising initiative by Mr. Jonathan Stone, Founding Patron of the Sheffield Institute Foundation for MND, we acquired a vital piece of equipment for Next Generation Sequencing (NGS). The Illumina HiScan will greatly expand the Institute’s capability in techniques to investigate neurodegenerative diseases at the molecular level. This system will enable us to sequence genes and detect differences in gene expression caused by disease in unprecedented detail and scale. Uncovering genetic variants and their effects in the disease process will be crucial to further unravel disease mechanisms and to find better targets and new strategies for drug development.

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Your generous donations enable us to accelerate our research

The Illumina HiScan, a major investment, was funded by a fundraising project led by Mr. Jonathan Stone.

Real Time PCR System

Another piece of essential equipment funded by donations to SITraN is the Real-Time PCR system. This machine will allow us to verify and quantify changes in gene expression in healthy versus diseased samples at the level of mRNA.

Cutting-edge Microscope

The Sheffield charity Neurocare has contributed much-needed equipment for SITraN. The new microscope will add to the existing, over 10-year-old imaging system and provide increased functionality and state-of-the-art computer-aided analysis to produce high quality, quantifiable data needed to publish our research.
Uncovering Disease Subtypes

MND can be caused in a variety of ways in patients and SITraN has already contributed to uncovering new genetic variants of the disease e.g. C9ORF72, TARDP and FUS in addition to the well known SOD1 gene defect in 20% of familial MND cases. Uncovering genetic variants and disease pathways is essential to better understand how MND manifests and progresses. More importantly, treatments can be designed to benefit a much wider range of patients.

Markers for Early Diagnosis

The timely diagnosis of MND will be crucial for any MND treatment since most of the motor neurons are already irreversibly damaged when symptoms occur. A number of our projects at SITraN are therefore dedicated to finding early indicators, also known as biomarkers, for the disease. Recent evidence points to defects in the cells power generating mitochondria. These defects cause an energy imbalance which could lead to degeneration and death of motor neurons. Dr Scott Allen is currently investigating the possibility to use patients’ skin cells for early diagnosis of MND, since they show the same defects in their energy metabolism as observed with motor neurons.

Recent research from Professor Shaw’s team has highlighted key differences in the way the protective systems of the body respond in rapid vs. slow progressing MND mice opening up new strategies for treatment of the disease. Evidence has also been found that vigorous physical activity could play a role in patients with a predisposition for MND. Read more on page 14.

Disease Progression and Risk Factors

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Gene Therapy and Nanotechnology

A focus of pre-clinical research is the safe and effective delivery of “Gene therapy”. Using this method faulty genes can either be replaced or silenced. Scientists at SITraN are exploring the use of nanotechnology to optimise the delivery of gene therapy into the central nervous system.

Cutting Edge Technologies

Motor Neurons from Stem Cells

Stem cell technology allows us to grow motor neurons from patients’ skin cells to study motor neuron-specific defects and test treatments. This new technology will enable us to study living motor neurons derived from patients.

Gene Therapy and Nanotechnology

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Charcot Marie Tooth Disease (CMT)

Developing treatments for the most common genetic disorder affecting the nervous system.

Dr Andrew Grierson and his team have studied a zebrafish model with a genetic defect that causes Charcot Marie Tooth disease (CMT) in humans. The fish develop normally, but once they reach adulthood they start to develop difficulties swimming which the team have found to be due to the faulty connections between motor neurons and muscle. These are known to be essential for walking in humans as well as swimming in fish. Dr Grierson and his team are now seeking funding to identify new treatments for CMT using the zebrafish model. More than 20,000 people in the UK suffer from this incurable disease. It affects the nervous system and typically causes progressive weakness and long-term pain in the feet, leading to walking difficulties.

Testing MND Drugs discovered at SITraN

Professor Shaw’s team have identified two drugs which increase motor neuron survival via the neuroprotective Nrf2-ARE pathway uncovered by SITraN researchers. One of these has received orphan designation from the European Medicines Agency for treatment of MND. *Read more on page 8.*

Promising Parkinson’s Drug

A large scale drugs screen conducted by the Parkinson’s group led by Professor Oliver Bandmann identified a promising synthetic drug called ursodeoxycholic acid (UDCA). The researchers tested over 2,000 compounds on skin cells from patients to find out which ones could make the faulty mitochondria observed in Parkinson’s patients work normally again and stop the nerve cells from dying. Based on this study, larger randomised controlled trials can be carried out to assess the potential of UDCA to treat Parkinson’s.
Awards & Grants

Dr Richard Mead has been awarded the A. Kenneth Snowman-MND Association Lectureship in Translational Neuroscience.

The 5-year A. Kenneth Snowman-MND Association lectureship is aimed to embed pre-clinical expertise in motor neuron disease (MND) models within SITraN as a national resource. Dr Richard Mead was awarded the lectureship as he has the expertise and knowledge to enable high quality pre-clinical research into MND.

“We have an ambitious strategy to stimulate pre-clinical research into MND through the work conducted here in SITraN but also in collaboration with industry and others and this funding will give me the freedom to pursue this programme of research.” - Dr Mead

We are proud of the fantastic achievements of our staff!
Find out more about their work on our website.

Prestigious Parkinson’s UK Senior Research Fellowship for Dr Heather Mortiboys.
Dr Mortiboys project focuses on screening promising candidates of licensed drugs for their therapeutic potential in Parkinson’s.

“We bring new treatments to patients with Parkinson’s Disease is why I wanted to become a scientist.” - Dr Mortiboys

MRC Fellowship for Dr James Hensman.
From his postdoc in SITraN and Computer Science, James has been awarded an MRC fellowship in biostatistics to study mathematical aspects of RNA sequencing.

National Institute for Health Research Fellowship for Dr Esther Hobson.
Our trainee Neurologist Dr Hobson is investigating the use of a telehealth service to deliver highly specialised care for MND patients at a distance alongside routine clinical care. The project is funded by the NIHR Doctoral Fellowship Award.
Dr Johnathan Cooper-Knock has been awarded the MNDA/MRC Lady Edith Wolfson Clinical Research Training Fellowship

Dr Cooper-Knock will be investigating DNA bank samples donated by people with the C9ORF72 MND subtype to find out more about how it can cause MND. In particular, he will be using cell models to identify potential therapeutic targets. The aim is to find pathways which can be altered by drugs to correct the effects of the C9ORF72 mutation found in approximately 10% of all MND cases. The MNDA/MRC Fellowships are aimed at supporting the brightest and best young clinicians to conduct research leading to the award of a PhD.

SITraN researchers have attracted over £15 million of new research grant funding since the opening of the Institute in 2010.

Some other examples of recent grant funding and research awards

- **Professor Mimoun Azzouz** has been awarded €2.5m from the European Research Council for his groundbreaking work in gene therapy and has been recognised with the prestigious ERC Advanced Investigator Award, a great distinction in European biomedical research. He has further received an MRC Clinical Development Award for his SMA therapy and an academic fellowship for nanotechnology development in the delivery of gene therapy worth £1.7m.

- **Dr Kurt De Vos** has been awarded a £422,752 MRC research grant to investigate “The role of Miro and PKC signalling in axonal transport defects in ALS.”

- **Professor Pamela Shaw, Dr Janine Kirby and Dr Chris McDermott** have received two awards as part of the EU Joint Programme – Neurodegenerative Disease Research (JPND), the largest global research initiative tackling neurodegenerative diseases.

- **Professor Stephen Wharton and Dr Paul Heath** have been awarded £441,512 by the Biotechnology and Biological Science Research Council to study changes that occur with ageing in the cells that line the blood vessels of the brain.

- **Professor Neil Lawrence** has received an MRC Career Development Award as well as a number of valuable European Commission grants for computational modelling.

- **Professor Annalena Venneri** is co-applicant in the €18 million project VPH-DARE IT to deliver the first patient-specific predictive models for early differential diagnosis of dementias using computer simulation.

- **Professor Pamela Shaw and Professor Mimoun Azzouz** have received a major philanthropic award from the USA to develop gene therapy for SOD1-related MND through pre-clinical development to a first into man trial.

- **Professors Paul Ince and Stephen Wharton** have received £416,010 to study the neuropathology of dementia in the elderly as part of The Cognitive Function and Ageing Neuropathology Study.
Finding new uses for existing drugs:  
On the fast track to the clinic

What is drug re-purposing?

Drug Development is a long and expensive process, with human safety trials being a major hurdle regarding time and cost. Many drugs which have passed advanced clinical phases are left unused for various reasons. These drugs, as well as drugs already on the market for different therapeutic applications, can be investigated for as yet unknown beneficial effects. For rare diseases like MND with a limited patient base, traditional drug discovery and development is generally underfunded and overlooked by big pharma investors. Re-purposing of drugs which have been tested for safety in humans therefore presents a crucial strategy to accelerate the process of bringing new treatments to patients.

Typical Drug Development Pipeline

<table>
<thead>
<tr>
<th>Stage</th>
<th>Target Identification</th>
<th>Hit Identification</th>
<th>Lead Identification</th>
<th>Lead Optimisation</th>
<th>Candidate Drug Pre-nomination</th>
<th>Clinical Development</th>
</tr>
</thead>
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<td>Time (yrs)</td>
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<td>1 000</td>
<td>200</td>
<td>17</td>
<td>12</td>
<td>9+1</td>
</tr>
<tr>
<td>Cost (£bn)</td>
<td>4.5</td>
<td>6</td>
<td></td>
<td>$335</td>
<td>$467</td>
<td></td>
</tr>
</tbody>
</table>

By screening drugs already on the market or at the clinical development stage approved for human safety, several years of research and hundreds of millions of pounds can be saved in the development of new treatments.

Finding new uses for existing drugs:  
On the fast track to the clinic

Dr Richard Mead and Prof Pamela Shaw have won a £280,000 Medical Research Council’s ‘Mechanisms of Disease’ award for a drug re-purposing project in collaboration with AstraZeneca. AstraZeneca are providing their compound, AZD1080, which inhibits GSK-3 kinase and has Phase I clinical data. We are now investigating the compound at SITraN for neuroprotective effects in pre-clinical animal models of MND and for its potential as a new MND treatment.

Screening drug libraries

In addition to developing drugs “from scratch”, we have invested in several compound libraries to find suitable candidates for re-purposing as treatments for neurodegenerative diseases. Screening has so far resulted in promising hits for MND and Parkinson’s. One of these drugs, S(+) apomorphine, has now received orphan drug designation from the European Medicines Agency for the treatment of MND.

“MND Hit”  
S (+) Apomorphine

A screen of the 2000 compound “Spectrum” library has revealed Apomorphine as an activator of the Nrf2-ARE pathway known to elicit a neuroprotective response in MND models. The R(-) form of this drug is used in the treatment of Parkinson’s, whereas the S(+) form very specifically activates the Nrf2-ARE-dependent neuroprotective response in MND models. The drug is now being tested further in pre-clinical studies for its effectiveness.
Dr Ramesh and his team have developed an MND zebrafish model which shows the hallmarks of human SOD1 MND including defective motor performance, loss of motor neurons and neuromuscular connectivity, and muscle atrophy.

In a project funded by the MNDA and the Broad Appeal, Dr Ramesh will be using the new zebrafish model to screen over 2,000 potential new drugs for their effectiveness in treating MND.

**What can we learn from a zebrafish?**

Zebrafish are ideal tools to investigate early neuronal development in MND and other neurodegenerative diseases. The larval zebrafish spinal cord is functionally and anatomically similar to that of humans, and zebrafish have transparent embryos, so that, uniquely, the developing neurons can be observed under a microscope! It is experimentally accessible, making it ideal for the study of neuronal circuits in normal and diseased conditions. Scientists can also look at disease progression in adult zebrafish where muscle strength can be assessed by testing the fish’s ability to swim against a current. Looking at how MND develops and progresses in zebrafish, before symptoms appear, can help us gain a much better understanding of what causes the disease, how it spreads and, most importantly, how to treat it.

**Zebrasfish models will push MND research to the next level**

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In a project funded by the MNDA and the Broad Appeal, Dr Ramesh will be using the new zebrafish model to screen over 2,000 potential new drugs for their effectiveness in treating MND.

**Drug Screening**

Zebrafish present an ideal model for drug screening, greatly reducing time and cost compared to other models like rats and mice. Potential new MND drugs can be screened quickly since zebrafish not only develop rapidly, but also show a SOD1-specific stress response after only 2-3 days. This neuronal stress response in MND fish can be used to identify neuroprotective compounds and identify biological targets that may ameliorate early disease processes.
Clinical Update

Head-Up
Many people with Motor Neuron Disease (MND) develop weak neck muscles leading to pain and restricted movement, as well as problems with breathing, swallowing, and communication. Head supports currently available in the NHS are not designed for and thus of limited use to MND patients and are often rejected by patients. To alleviate this, we have developed a new customisable head support with a multidisciplinary research team including MND patients, their families, MND experts, engineers and designers. Patients have now been recruited to use and evaluate the new device over a four week period. The purpose of the study led by Dr Chris McDermott is to establish if the new collar meets the identified needs of patients with neck muscle weakness and could be more widely used.

DiPALs
Weakness of breathing muscles including the diaphragm, the main breathing muscle, is the usual cause of end of life in MND. We trialled a diaphragm pacing device which helps increase the strength of the main breathing muscle with the aim to improve the quality of life and life expectancy of patients. Patients can control the device as needed. The large scale trial will be concluded later this year and results will be brought together. DiPALs is funded by NIHR and MNDA.

Chief investigator
Dr Chris McDermott
Early Diagnosis of MND is essential for any treatment to be successful since the disease is usually quite advanced by the time symptoms occur.

The aim of the MUSCLE ENERGY project led by Dr Tom Jenkins is to develop imaging biomarkers in MND i.e. early indicators of disease. Biomarkers are very important in order to help test new medicines and to understand how a disease develops. At present, no useful biomarker exists in MND. In this project, patients and healthy volunteers have a magnetic resonance imaging (MRI) scan either of their whole body to look at the muscles, or a specialised scan of the brain and muscles (spectroscopy) to measure energy levels. This is then compared with measures of muscle strength and electrical tests of the power of the muscles to see if there is a correlation which could be used as an early indicator for MND.

Telehealth in MND (TiM)

The Sheffield MND care team at SITraN, in collaboration with industry, Sheffield University School of Health and Related Research and CLAHRC Yorkshire and Humber, have developed a bespoke telehealth system which enables patients and carers to be monitored from their homes in order to provide specialist care when it is required. We predict this will improve patients’ quality of life and lead to more effective use of resources. This study will commence this summer and is led by Dr Esther Hobson, NIHR doctoral Fellow in SITraN.

Nutrition management - PROGAS Update

Due to problems with chewing and swallowing, MND patients often need to be fed liquid foods directly via tubes in the stomach (gastrostomy). There are multiple techniques, but no guidelines for best practice in MND. This study looked at the benefits of three alternative gastrostomy feeding tube insertion techniques assessing the safety, complications and benefits of the differing timings and methods.

Data collection for this study is now complete and the results are expected in the next three months.
New Appointments

**Professor Winston Hide**

*Chair of Bioinformatics and Computational Biology*

Professor Hide will join SITraN in August 2014 from his post as Associate Professor of Computational Biology at the Harvard School of Public Health in the USA. His wide-ranging expertise in bioinformatics, data handling, integration and analysis will be crucial for SITraN's genomics and sequencing projects. He develops and applies standards, computational systems and methods to more broadly compare and integrate experimental data, deliver discoveries and solutions and to make standardized experimental resources available for sharing.

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**Professor Arshad Majid**

Professor Majid served as the founding Director of the Division of Cerebrovascular Diseases at Michigan State University and the William and Claire Dart Stroke Center at Sparrow Health System. He joined SITraN in 2013 focusing on translational research using both *in vitro* models (cell culture) and *in vivo* models (focal ischaemia and global ischaemia). He is interested in understanding the pathogenesis of cerebrovascular diseases and developing new treatment and brain repair strategies. His lab has been successful in developing two novel treatments which are now undergoing further preclinical testing before they are taken to the clinic.

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**Building the critical mass of our research teams**

*To find out more about our new staff visit [www.shef.ac.uk/sitran](http://www.shef.ac.uk/sitran)*

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**Dr Michael Shanks**

*Reader in Old Age Psychiatry*

From his post as Director of a tertiary referral Neuroscience Centre based in Hull University from 2004, Dr Shanks was appointed to his present full time academic post in Sheffield in 2012. Dr Shanks is applying integrated clinical, neuropsychological and neuroimaging studies to questions of clinical importance. These include the causes of abnormal experience and belief in organic brain disorders, the early detection and differential diagnosis of neurodegenerative diseases and the central actions of pharmacological and neurocognitive treatments.
Dr Guillaume Hautbergue  
Lecturer in RNA biology

Dr Hautbergue was recruited to SITraN in 2012 to set up the RNA laboratory for research aimed at understanding gene expression dysregulation in motor neuron disorders. He is developing a novel method to identify specific protein factors involved in the onset of TDP43, FUS/TLS, C9ORF72 dependent ALS pathologies.

Dr Jessica Redgrave  
Clinical Lecturer in Vascular Neurology

Dr Redgrave joined SITraN in 2013 to build a research programme to study novel markers of the vulnerable carotid plaque. She has set up the ongoing Stroke and TIA and Response to Symptoms Study (S.T.A.R.S.) to determine patients’ awareness of the FAST campaign and the barriers to help-seeking for stroke patients.

Dr Alisdair McNeill  
Clinical Research Fellow

Dr McNeill will join the INSIGNEO team in Sheffield and develop a clinical research program around neurological conditions. He plans to combine genomic biomarkers and neuro-motor biomechanics through computer simulation, in order to improve our ability to understand and treat neurological conditions. This innovative approach will lead the translational development of genomics research into clinical practice.

Congratulations to 3 SITraN academic staff on their recent promotions:

- Professor Oliver Bandmann, Movement Disorders Neurology
- Professor Stephen Wharton, Neuropathology
- Dr Christopher McDermott, Reader in Clinical Neurology
Is physical activity a risk factor for MND?

A highlight of the 24th International ALS/MND Symposium in Milan in December 2013 was the presentation of MND Association-funded researcher, Dr Ceryl Harwood’s study. During her MRC-MNDA Lady Edith Wolfson Fellowship at SITraN, Dr Harwood was addressing the link between physical activity and MND. Her research provides evidence that MND patients have significantly higher levels of total physical activity than matched controls. “However, physical activity can only be seen as a risk factor in the presence of a certain genetic profile which in turn controls the chemistry within the nervous system,” explained Professor Shaw.

Matters of the ageing brain

Members of the Neuropathology research group attended the 115th meeting of the British Neuropathological Society in London from 5 to 7 March 2014. Dr Julie Simpson presented her findings on the correlation between cognitive impairment in the ageing brain and the neuronal DNA damage response detected at early neuropathological stages of Alzheimer’s disease. Final year PhD student Sufana Al-Mashhadi presented and won a prize for her poster on oxidative stress and DNA damage in cerebral white matter lesions of the ageing human brain.
Collaborations

**Tongji University, Shanghai, China**

Dr Ke Ning, Senior Lecturer in SITraN, was awarded funding by the MRC China Initiative to develop motor neuron reprogramming via induced pluripotent stem cells (iPSC) derived from patient skin cells. We will benefit from the expertise from Professors Jun Xu and Zhengliang Gao who have established a Stem Cell Research Center at the University of Tongji. This pioneering technique has now been set up in SITraN. Dr Ning has an honorary faculty position at Tongji University.

![Dr Ke Ning](image)

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**San Camillo, Venice, Italy**

Professor Annalena Venneri, Head of the Translational Neuropsychology Group, was appointed as Scientific Director of the IRCCS San Camillo Foundation Hospitals in Venice. She also collaborates with leading dementia research groups in Italy, UK, Belgium, Spain, Canada and the USA.

![Professor Annalena Venneri](image)

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**King Fahad Medical City, Riyadh, Saudi Arabia**

Following a previous successful visit in May 2012, Professor Dame Pamela Shaw hosted a delegation from Riyadh in September 2013. KFMC is one of the biggest specialised hospitals in Saudi Arabia and is establishing a translational neuroscience research centre modelled on SITraN. Saudi Arabia has a high number of some clinical disorders such as SMA in children, and this collaboration has the potential to offer valuable knowledge exchange and crucial new insights into these diseases.

![KFMC delegates from Riyadh with Vice Chancellor Sir Keith Burnett (2nd left)](image)
Training and Education

MSc courses are a great success

More information can be found on www.shef.ac.uk/neuroscience/

Recent MSc graduates

Some of our Translational Neuroscience MSc graduates with their course leaders Dr Janine Kirby (right) and Dr Jon Wood (left).

New integrated PhD programme

We have developed and are offering now a new integrated PhD programme that combines our one-year taught MSc programme in Translational Neuroscience with a three-year individual research PhD.

The next generation

Training future MND researchers is one of SITraN’s priorities.

Our MSc courses in Translational Neuroscience established in 2011 and Clinical Neurology in 2012 are proving very successful. Our intake has steadily risen to above target in 2013 and we have now a combined intake of 30 to 40 students per year.

New MSc courses

Building on the success of our MSc courses, we are currently developing a Translational Neuro-pathology MSc course, a key skill requirement in the field of neuro-degenerative disease, and a Computational Biology MSc with application to biomedical translation.

Congratulations to our graduates

By the end of 2014 SITraN will have brought 59 MSc students to graduation. Moreover, SITraN currently has 48 PhD students. 11 doctoral students have graduated from SITraN in 2013 to 2014.
Fundraising meerkats
Mo LeCule and Mo MND wouldn’t miss a SITraN Open Day!
You can follow what they are up to on Twitter: Mo LeCule@Mo_MND

“The great SITraN Bake Off”
Our visitors were treated to cakes and cookies homebaked by SITraN staff. A highlight was the “Brain Cake” created by BMedSci student Aritri Mandal.

Our annual Open Days are always a great opportunity to catch up with our supporters and present our latest research. On 17th September 2013 SITraN welcomed over a 100 visitors: patients, carers, families as well as members of the public. We had an exciting programme with talks, posters, lab tours, demonstrations, and many interactive workstations. Our researchers explained how animal models such as zebrafish are used in MND and Parkinson’s research; how our new drug screening technology is helping us to identify and develop new treatments and how we use viral vector technology for gene therapy for MND and SMA. The dementia group offered memory tests and informative stands were hosted by the South Yorkshire MNDA branch, Alzheimer’s Research UK and the Sheffield Motor Neuron Disorders Research Advisory Group (SMND-RAG) with plenty of advice for our visitors.

Our Next Open Day - 11 July 2014
We would be delighted to see you at our next Open Day!
To register please phone 0114 222 2230 or email: neuroscience@sheffield.ac.uk

Find out about our research into neurodegenerative diseases like
- Motor Neurone Disease
- Parkinson’s Disease
- Alzheimer’s Disease

- Meet our scientists
- Watch poster sessions
- Take a tour through our labs

Please register to attend and receive a programme by e-mail neuroscience@sheffield.ac.uk or phone 0114 2255065
What next?

Key Goals for 2014/2015

1. To diagnose MND earlier through the development of better diagnostics and biomarkers in order that existing as well as new therapies have a better chance of working.

2. To investigate the underlying mechanisms of motor neurone injury to identify new targets for neuro-protective therapy development in order to slow the progression of MND.

3. To bring some of our existing preliminary therapeutic agents including pharmacological small molecules and gene therapy products into clinical trials for MND patients.

4. To complete our senior appointments in Stem Cell Neurobiology and Drug Discovery during 2014 to strengthen our research in these areas and accelerate the development of novel treatments for patients.

5. To provide symptomatic relief now, improve the quality of life, and the life expectancy of patients with MND by improving the standards of care for MND patients.

6. As well as continuing our efforts to obtain grant and philanthropic funding we are seeking the opportunity to obtain “centre” core funding to provide a secure foundation for our research at SITraN.

7. Thanks to the philanthropic donations made by our supporters we will be able to acquire a state-of-the-art live cell imaging microscope system to study what happens in living nerve cells. We have already found that the transport of certain organelles is defective in MND and Parkinson’s disease. Dr Kurt De Vos has been awarded an MRC New Investigator Grant to further study the underlying molecular mechanisms and the feasibility of correcting this defect as a therapeutic approach.

Patients are at the very heart of the SITraN research endeavour.
A Special “Thank you”!

To our Honorary Patron

To our Founding Patrons

Mrs Irene Beard and the late Professor Richard Beard
Mr Gordon Bramah
Ms Sarah Dunn
Mr John Fitzgerald
Mr Tom Gilbey
Lady Gowrie
Mrs Elaine Greenwood
Ms Susan Greenwood
Mr David Harrel
The late Mr David Hart
Mrs Claire Hartley
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SMA Europe
The SMA Trust
Spastic Paraplegia Foundation

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Eve Davis
Margaret Hall
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Christine Hickman
Christopher Hickman
Shaun Keane
John Key
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The Zegarelli Foundation

We would also like to express our special thanks to our donors who prefer to stay anonymous.

We are immensely grateful to all our supporters who so generously give their time and money to support our research at SITraN.
**Eve Davis Scholarship for Eva Karyka’s PhD training**

The Davis family have established a fund to support research in memory of their daughter Eve Jessica Davis who passed away just before her ninth birthday. Eva Karyka has received the funding to pursue her PhD training and research into SMA, the childhood form of MND, at SITraN starting from July 2013. She is part of Professor Azzouz’s team working on the promising gene therapy treatment for SMA.

“I am enormously grateful to the Eve Davis Scholarship for enabling me to continue my training and research into SMA” - Eva Karyka

**Loyal SITraN supporters: Stuart Keane, the Hunslet Hawks and Ex-Parkside RL Players**

Stuart Keane and his family are loyal SITraN supporters and have tirelessly been raising funds in memory of their son Shaun Keane. Stuart has now brought the Hunslet Hawks and Ex-Parkside RL Players on board, here seen at a visit to SITraN to present their donation and a Hunslet Hawks rugby shirt to Professor Shaw.

**A big “Thank You” to our donors and fundraisers**

Doug Allaway • David Allen • Theresa Amato • John Ansell • George Armstrong • Kathryn Atkins • Irene Baker • Theresa Ball • Mrs Barker • Barbara Barnes • K K Basran • B Bateman • Mr Beardsmore • Family of Janet Beddus • David Bedwell • The Bee Family • Maureen Benn • Alice Bentham • Connie Biglan • Chris Birch • Mr & Mrs Bishop • Iain Bott • C Bradley • P Bradley • Eric Bridstock • Mr Britton • The Broad Family • The Brocketbank Family • David Bruce • Mrs S Brunt • Mrs S Bullens • Susan Burt • Stephen & Barbara Byer • J Carmichael • Sarah Casey • Kara Christie • The Clarke Family • Michael Clark • Ronald Clements • K Coates • Team Coatsey • R Cohen • Kay Colclough • Judith Coles • Angela Collins • Warren Cookson • D Credland • Nicola Davey • Gareth and Andrea Davis • Helen D’Monte • Tony Dodd • F A Donald • Ann Duong • R Ellis • Kevin Fineran • Anne Firth • Neil Footitt • P J Ford • K J Foster • Lesley Foster • Frank Gallagher • The Gamble Family • Rosemary Gannon • Tim Garrod • J Glover • Lady Gold • Emily and Helen Goodall • M C Gowdy • James Grace • Thomas Greatarex • Tom & Liz Green • Mr & Mrs Greener • Colin Greenwell • Andy Gregg • Andy Grierson • Kim Griffiths • A E Hall • John & Joan Hall • Dr Stephen Hall • Chris Hannam • Caroline Harries • Tim Hart • Sir James Hawley • Cynthia Haywood • Mr & Mrs R Hewitt • Michael Hickman • J Hill • Phil Hodgson • Linda Hoffmann • Richard Hollox • Tony Holmes • Lee Hopkins • David Horner •

Harry the Hawk at the microscope
The Bridlington Lions support SITraN as their Charity of the Year

Lioness Joan Hall and The Bridlington Lions Club have chosen SITraN as their charity of the year and have been very busy fundraising for the expanding tissue culture facilities to work on induced pluripotent stem cells.

Gayle Bee raised funds at the Salutation Pub

Patrons, staff and guests of the Salutation Pub in Doncaster have raised a fantastic sum of money for SITraN to purchase equipment for the expanding tissue culture facilities to work on induced pluripotent stem cells.

Supporters’ Gallery

A big “Thank You” to our donors and fundraisers

A Howarth • F Hughes • Joan Hulse • Graham Hunt • Kevin Hyland • Maureen Ince • A Jackson • Ann & David James • Peter Jarvis • Sir Elton John • Isabella John • Flora Johnson • Robert Johnson • Anne Jones • B Joshi • Kenneth Jude • Ms Keal • S Kealy • Michael Kefferd • Jean Kendall • Mary Key • Bob Kiddle • B M Law • Michael Lawlor • Garth Lawrence • Juliet Levy • Jo Lindley • Joan Long • Derek Lloyd • Susan Lockyer • Mary Luke • Mrs P A Lunn • Todd Main • Ann Marriott • W McArdle • Dave Meadows • Julie Mitchell • Ian Moore • Michael Mulhern • The Myland Family • Prof Graham Neale • Allan Oakey • Gary Ogden • Daphne Oxford • Suzanne Philips • Keith Pollard • Jennie Powell • Roger Radford • Teresa Rawden • D Romanow • Sue Richardson • Barry Russell • Stuart Salenger • Tim Schroder • The Schroder Charity Trust • The Shaw Family • David Sheppard • Hilary Sidi • The Silington Family • Marion Singleton • John R Skeavington • John Sloan • Lisa Slone • Paul Smith • The Snowman Family • Marjorie Sojka • John Spicer • Stanley Community Centre • L Stenton • Arthur Stevenson • Joan Stevenson • Joe & Bridget Stewart • Robin S Darling • Trevor Taylor • Robert Teasdale • E Thomas • Sheila Thompson • Adam Till • J Trafford • E Trewin • D Waring • Sue Watson • Brian Wein • Garth Weston • J A Wilkins • Mrs Wilkinson • James Wilson • M Winnard • The Wood Family • Mary Wrage • Andrea Wyatt • C A Yardy

Team Coatsey goes the extra mile!

Big hearted fundraisers from Chesterfield Royal Hospital and the University of Sheffield have taken on the Great Yorkshire Run to raise funds for us in memory of their friend and colleague Chris Coates who suffered from MND.

A Howarth • F Hughes • Joan Hulse • Graham Hunt • Kevin Hyland • Maureen Ince • A Jackson • Ann & David James • Peter Jarvis • Sir Elton John • Isabella John • Flora Johnson • Robert Johnson • Anne Jones • B Joshi • Kenneth Jude • Ms Keal • S Kealy • Michael Kefferd • Jean Kendall • Mary Key • Bob Kiddle • B M Law • Michael Lawlor • Garth Lawrence • Juliet Levy • Jo Lindley • Joan Long • Derek Lloyd • Susan Lockyer • Mary Luke • Mrs P A Lunn • Todd Main • Ann Marriott • W McArdle • Dave Meadows • Julie Mitchell • Ian Moore • Michael Mulhern • The Myland Family • Prof Graham Neale • Allan Oakey • Gary Ogden • Daphne Oxford • Suzanne Philips • Keith Pollard • Jennie Powell • Roger Radford • Teresa Rawden • D Romanow • Sue Richardson • Barry Russell • Stuart Salenger • Tim Schroder • The Schroder Charity Trust • The Shaw Family • David Sheppard • Hilary Sidi • The Silington Family • Marion Singleton • John R Skeavington • John Sloan • Lisa Slone • Paul Smith • The Snowman Family • Marjorie Sojka • John Spicer • Stanley Community Centre • L Stenton • Arthur Stevenson • Joan Stevenson • Joe & Bridget Stewart • Robin S Darling • Trevor Taylor • Robert Teasdale • E Thomas • Sheila Thompson • Adam Till • J Trafford • E Trewin • D Waring • Sue Watson • Brian Wein • Garth Weston • J A Wilkins • Mrs Wilkinson • James Wilson • M Winnard • The Wood Family • Mary Wrage • Andrea Wyatt • C A Yardy
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<th>Journal/Conference</th>
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<td>Molecular Therapy</td>
<td>2013</td>
<td>Viral delivery of antioxidant genes as a therapeutic strategy in experimental models of amyotrophic lateral sclerosis. N Nanou, A Higginbottom, CF Valori, M Wyles, K Ning, PJ Shaw, M Azzouz.</td>
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<tr>
<td>Brain</td>
<td>2013</td>
<td>Ursolicolic acid rescues mitochondrial function in common forms of familial Parkinson’s Disease. H Mortiboys, J Aasly, O Bandmann.</td>
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<td>Brain</td>
<td>2013</td>
<td>Transcriptomic indices of fast and slow disease progression in two mouse models of amyotrophic lateral sclerosis. G Nardo, R Iennaco, N Fusi, PR Heath, M Marino, MC Trolese, L Ferraiuolo, N Lawrence, PJ Shaw, C Bendotti.</td>
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SITraN is a reality thanks to our loyal patrons and supporters. We would not have come this far without your help!