Second UCL Queen Square Motor Neuron Disease Centre International Symposium:  
Friday 10th September 2021

Short Biographies and research profiles of Speakers, Chairs and their Groups

**Linda Greensmith**  
Scientific Lead for MND, UCL Queen Square, UK *(Chair)*

The research undertaken in our labs is focused on disorders that affect the neuromuscular system. In particular, our work is aimed at improving our understanding of the mechanisms involved in motor neuron degeneration and dysfunction in motor neuron diseases such as Amyotrophic Lateral Sclerosis (ALS) and Spinal Bulbar Muscular Atrophy (SBMA). A key pathological feature of these disorders is aberrant protein aggregation, and our interest in this pathological mechanism has led us to establish an active research programme investigating Inclusion Body Myositis (IBM), the most common muscle disorder affecting adults over the age of 50. Interestingly, mutations in the gene valosin containing protein (VCP) gene are a cause of both familial ALS as well as a hereditary form of IBM known as Inclusion body myositis associated with Paget's disease and frontotemporal dementia (IBMPFD), linking IBM with ALS and FTD.

**Andrea Malaspina**  
Clinical Academic Lead for MND, UCL Queen Square, UK *(Speaker and Chair)*

Professor Andrea Malaspina has extensive clinical expertise in neuromuscular disorders and a track-record of research in biological mechanisms and biomarkers of neurodegeneration. He completed his specialist training in Neurology and a PhD in Molecular Neurobiology at Imperial College London in 2021. He has been a Consultant Neurologist at Barts Health since 2002, with an active role in Clinical Neurology and research interests in neuromuscular and neurodegenerative disorders. In 2009, he has founded the Royal London (now Barts Health) MND Care and Research Centre. He has been the MND Research Director for DeNDRoN and for the LCRN North-Thames. In 2012, he took up a formal academic appointment as Clinical Senior Lecturer with the Barts and The London Medical School and in 2015 he became Reader in Clinical Neurology. In 2019, as Professor of Neurology, he established the neurodegeneration group at the Blizard Institute. He has been recently appointed Clinical and Academic Lead of the newly created ALS Centre at the National Hospital for Neurology and Neurosurgery (Queen Square Motor Neuron Disease Centre). His focus on patient’s care and research has supported a portfolio of research projects, teaching modules, nation-wide and international biobanking projects and public engagement activities.

**Robert H. Brown**  
Department of Neurology, University of Massachusetts Medical School, USA *(Speaker)*

Dr Brown completed a BA in Biophysics (Amherst College, 1969), a DPhil in Neurophysiology (Oxford, 1973) and an MD (Harvard, 1975). After a neurology residency at the Massachusetts General Hospital/Harvard Medical School (1980), he joined the faculty at the Massachusetts General Hospital where he established the Day Neuromuscular Research Laboratory and co-directed the Neuromuscular Clinic. From 2008-2018, he was the chair of neurology at UMass Medical School, where he holds the LaChance Family Chair of Neurology and serves as Director of the ALS Clinic and Director of Neurological Therapeutics.
Dr Brown has a longstanding research interest in identifying gene defects that underlie ALS and related neuromuscular disorders. With Teepu Siddique, Dr Brown was a lead member of the team that identified the first ALS gene (SOD1) and, with colleagues, has subsequently identified several other defective genes in ALS including alsin, dynactin, FUS/TLS, ErbB4 and profilin1. He has identified causative gene defects in other disorders including limb girdle dystrophy type 2B (dysferlin), hereditary sensory neuropathy (serine palmitoyl-transferase), and hyperkalemic paralysis (skeletal muscle sodium channel). His laboratory has generated cell and animal models of each of these disorders. Most recently, he has initiated trials of gene suppression therapy (SOD1, C9orf72) in non-human primates and now in humans. He is a member of the National Academy of Medicine (formerly the Institute of Medicine) and is a past president of the American Neurological Association.

**Pietro Fratta**
Professor of Cellular and Molecular Neuroscience, Neurologist, UCL Queen Square, UK *(Speaker)*

Prof Pietro Fratta is a Professor of Molecular and Cellular Neuroscience at the UCL Queen Square Institute of Neurology, and Honorary Consultant Neurologist at the National Hospital for Neurology, where he holds an MRC Senior Clinical Fellowship. He obtained his PhD at the UCL Institute of Neurology working on models of motor neuron disease. He previously trained in Neurology and neuromuscular disorders, at the University of Milan and at the University of Southern California (USC).

His research focuses on molecular mechanisms and biomarkers of motor neuron disease (MND) and Kennedy’s disease. His lab combines animal models, induced pluripotent stem cell systems (iPSC) and patient-derived tissue to investigate the pathogenesis and novel therapeutic approaches for these incurable neurodegenerative conditions. His MND research focusses on the role of two crucial RNA binding proteins, TDP-43 and FUS, and how altered RNA processing and metabolism contributes to disease.

**Giampietro Schiavo**
The Molecular NeuroPathobiology Laboratory, Queen Square Institute of Neurology, UK *(Chair)*

Gipi Schiavo heads the Molecular Neuropathobiology laboratory at the Institute of Neurology at University College London (UCL), is the academic lead of the ARUK UCL Drug Discovery Institute and is a UK Dementia Research Institute Professor at UCL.

He studied with Professor Cesare Montecucco at the University of Padova (Italy) and with Professor James Rothman at Memorial Sloan Kettering Cancer Center in New York. He is a member of the European Molecular Biology Organization and a Fellow of the Academy of Medical Science, the Royal Society of Biology and the Istituto Veneto of Science, Literature and Arts. He was awarded, among others, the International Society for Neurochemistry Young Scientist Award in 1995 and the G. Armenise-Harvard Foundation Career Development Award in 2002.

He has investigated the mechanisms of action of bacterial protein toxins, in particular tetanus and botulinum neurotoxins, and their exploitation as tools in cell biology. Using these tools, he has clarified key steps in the mechanism of ligand entry at the neuromuscular junction and their recruitment to the axonal retrograde transport route, an essential transport pathway impaired in several nervous system pathologies, such as ALS and peripheral neuropathies.
Sandrine Da Cruz  
VIB-KU Leuven Center for Brain & Disease Research, Belgium (Speaker)

Sandrine Da Cruz is Group Leader, head of the Laboratory of Neurophysiology in Neurodegenerative Disorders at the VIB-KU Leuven Center for Brain and Disease Research and Professor at KU Leuven, Department of Neurosciences. She also holds an affiliation as Investigator at the Ludwig Institute for Cancer Research - San Diego Branch.

Her research focuses on disease mechanisms and therapy development for Amyotrophic lateral sclerosis (ALS) and frontotemporal dementia (FTD) using mouse models as well as in vitro cellular models including patient-induced pluripotent stem cells. Her lab investigates two main questions: (1) how de-mixing/aggregation of RNA binding proteins TDP-43 and FUS causes toxicity, (2) what causes the early demise of neuromuscular junctions (NMJs) in ALS by studying the role of local axonal translation in the maintenance and loss of axons and NMJs and by screening for therapeutics that improve muscle innervation using a miniaturized motor neuron/muscle co-culture platform.

Sandrine graduated with distinction in Biochemistry from the University of Grenoble in France. She obtained her PhD in 2005 on mitochondrial biology at the University of Geneva and then for her postdoctoral work, joined the laboratory of Don Cleveland at the University of California San Diego where she started investigating mechanisms of inherited ALS using mouse genetics. In 2013 she transitioned as research scientist at the Ludwig Institute for Cancer Research San Diego Branch, and in 2016 she was appointed Assistant Investigator and head of the Laboratory of Neurobiology.

Jim Shorter  
Dept of Biochemistry & Biophysics, Perelman School of Medicine, University of Pennsylvania, USA (Speaker)

Jim Shorter graduated with distinction in Biology from Keble College, University of Oxford in 1995. He then joined Graham Warren's laboratory at the Imperial Cancer Research Fund at Lincoln’s Inn Fields in London (now The Francis Crick Institute) where he studied the molecular mechanisms of Golgi architecture and inheritance and received his Ph.D. in Cell Biology from University College London of The University of London in 2000.

Jim moved to the United States to continue his studies with Graham Warren between 2000 and 2002 as a Postdoctoral fellow in the Cell Biology Department of Yale University School of Medicine. In 2002, he joined Susan Lindquist’s laboratory at the Whitehead Institute for Biomedical Research at MIT as a post-doctoral fellow, winning a Charles A. King Trust Post-Doctoral Fellowship. In 2005, he won an American Heart Association Scientist Development Award and became a Senior Research Associate at the Whitehead Institute for Biomedical Research.

In April 2007, Jim became an Assistant Professor at the Perelman School of Medicine at the University of Pennsylvania, where he established his own group in the Department of Biochemistry and Biophysics. In the same year he became a member of the editorial advisory panel for The Biochemical Journal and won a NIH Director’s New Innovator Award. In 2009, Jim won an Ellison Medical Foundation New Scholar in Aging Award. In 2010, Jim won a Grand Challenges Explorations Award from the Gates Foundation. In 2012, Jim was selected as the seventeenth recipient of the Michael S. Brown New Investigator Research Award, which recognizes emerging faculty engaged in innovative discoveries. In 2013, Jim was promoted to Associate Professor of Biochemistry and Biophysics with tenure. In 2014, Jim won the Linda Pechenik Montague Investigator Award and became an editor of
Elizabeth Fisher
Professor of Neurogenetics, Department of Neuromuscular Diseases, UCL Queen Square Institute of Neurology, Faculty of Brain Sciences, UK (Chair)

Elizabeth Fisher graduated in Physiological Sciences from St Anne’s College, University of Oxford, in 1981. She started PhD in 1983 in mouse molecular genetics, the microdissection of the mouse X chromosome, at St Mary’s Hospital Medical School (Imperial College) with Steve Brown and co-supervised by Mary Lyon at MRC Harwell. In 1987 she started postdoctoral work with David Page at the Whitehead Institute, MIT, on a project to find the human male sex determining factor and then moving onto a project to identify genes involved in Turner syndrome, an early human positional cloning project. In 1990 she returned to UK on a Royal Society Research Fellowship to start her lab at Imperial College, studying the effects of aneuploidy. In 1991 Victor Tybulewicz (at MRC NIMR) and EF gained funding from the Wellcome Trust to start a long-term project to create a new ‘humanised’ mouse model of Down syndrome, which led to the research project they pursue jointly to use mouse molecular genetics to find the individual dosage sensitive genes giving rise to aspects of Down syndrome. In parallel her lab has also created and analysed a series of mouse models with motor neuron degeneration, trying to shed light on why motor neurons die in the disease amyotrophic lateral sclerosis. Since moving to UCL Queen Square Institute of Neurology in 2001, she has collaborated closely with Linda Greensmith, Giampietro Schiavo, Pietro Fratta, Abraham Acevedo Arozena, Adrian Isaacs and Tom Cunningham on the creation and analysis of these models. These two research themes come together with a focus on humanised mouse models of neurodegeneration.

In 2007 she was elected to become a Fellow of the Academy of Medical Sciences, in 2009 became a Member of EMBO, and in 2010 I became a Fellow of the Royal Society of Biology. She is a Wellcome Trust Senior Investigator, jointly with Victor Tybulewicz.

Jan Herman Veldink
Brain Center Research, UMC, Utrecht, Netherlands (Speaker)

The overall aim of my research is to understand the genetic and environmental causes of ALS and related diseases, and to understand how one mutation has various clinical outcomes. I have a past performance with innovations both in the development of a custom reference panel that allowed the interrogation of rare genetic variation in a large sample of genotyped cases and controls (Van Rheenen et al., Nat Genet 2016), and the development of a tool that is near perfectly able to detect the C9orf72 repeat expansion in WGS data - http://biorxiv.org/content/early/2016/12/19/093831. This tool can also be used for any other large repeat expansion in any other disease. Currently, I am leading a large-scale international collaboration (Project MinE, www.projectmine.com). The project is in the process of whole-genome sequencing 15,000 ALS cases and 7,500 population-matched controls (with > 10,000 genomes completed already). Upon completion, the project will have standardized phenotype information, whole-genome sequence data, SNP-array data, and methylation data for every sample. I am deeply passionate about making science more reproducible and transparent for the scientific community and the general public. Consequently, I have successfully implemented a shared international clinical database (https://progeny.umcutrecht.nl) containing detailed core clinical data and data on environmental exposures and lifestyle factors on thousands of international (Irish, Italian,
Belgian, German, Dutch, Swiss, and British) samples. I also setup a FAIR ICT solution for Project MinE at SURFsara, by adhering to a “franchise” model: international collaborators keep full control of their data, and support is available to help input data. Project MinE results are freely accessible online using the data browser I setup: http://databrowser.projectmine.com. Access to data can be requested at that site as well. This is combined with my skills as a clinician who sees patients on a weekly basis, together with my extensive international collaborations, published track record in bioinformatics, statistics, epidemiology and on the successful translation, through collaboration, of findings in relevant neurobiological models.

Dame Pamela J Shaw
Sheffield Institute for Translational Neuroscience (SITraN), University of Sheffield, UK (Speaker)

Professor Dame Pam Shaw is Professor of Neurology at the University of Sheffield and Director of the Sheffield Institute for Translational Neuroscience (SITraN); the NIHR Sheffield Biomedical Research Centre for Translational Neuroscience; the Sheffield Care and Research Centre for Motor Neuron Disorders and the cross-faculty Sheffield Neuroscience Institute.

She is a Clinician Scientist in Neurology, formerly a Wellcome Trust Senior Fellow and currently an NIHR Senior Investigator. Her team investigates genetic, molecular and neurochemical mechanisms underlying ALS/MND; investigates new therapeutic targets and translates new neuroprotective and symptomatic treatment approaches into the clinic, including genetic therapy approaches.

She has authored more than 525 publications (H-index 108) and has been awarded >£110m in research income. Her research is funded by the MRC, Wellcome Trust, NIHR, MND Association, MyName’5 Doddie Foundation, Darby Rimmer Foundation, EU and biotech/pharmaceutical industry partners.

Significant research achievements include:

- Identification of cell specific features of motor neurons which underlie susceptibility to neurodegeneration.
- Understanding the cellular pathways of motor neuron injury in the presence of mutant SOD1 and C9ORF72 using a combination of cell biology, proteomics and gene expression profiling.
- Identifying the different subtypes of motor neuron disease (MND) based on genetics and molecular pathology.
- Development of new small molecule and gene therapy candidate treatments for MND patients using staged screening programmes in cellular and other experimental model systems.
- Promoting the introduction of one neuroprotective drug for MND into clinical practice – riluzole.
- Establishing the role of non-invasive ventilation (NIV) in improving the quality of life and prolonging survival of MND patients.
- Unravelling the role of strenuous physical activity as a risk factor for the development of MND.

From 2009-2016 she established and led the national UK Clinical Studies Group for ALS/MND, a vibrant clinical research and trials network which links 20 ALS/MND Care and Research Centres. Professor Shaw has taken part in more than 23 ALS clinical trials, including roles as Chief Investigator and Steering Committee member and also including several academic led studies. She is an active member of the European Network for the Cure of ALS (ENCALS). She has active programmes in systematic biosample collection from ALS patients, neurological and control cases.
Orla Hardiman
School of Medicine, Trinity College Dublin, Ireland (Chair)

Orla Hardiman is the one of only two full Professors of Neurology in Ireland. She is the founder and Head of the Discipline of the Academic Unit of Neurology at Trinity College Dublin and Consultant Neurologist at Beaumont Hospital, where she is Director of the National Amyotrophic Lateral Sclerosis (ALS) service. The clinic provides direct clinical care for over 80% of Irish patients with ALS. She is the founder of the Irish ALS/MND Register, currently in its 27th consecutive year of data collection.

Orla is a Science (BSc, Human Physiology 1979) and Medical (MB BCh BAO 1983; MD 1992) graduate of University College Dublin. She undertook a Residency in Neurology at the Harvard Partners Programme, prior to returning to Ireland in 1991 as a Newman Scholar and later College Lecturer in the Dept. Human Anatomy and Physiology University College Dublin. In 1996 she was appointed as one of only 11 Consultant Neurologists in Ireland. In 2007 she moved her research group to Trinity College Dublin, where she set up the first Academic Unit of Neurology in the country in TCD in 2011, and in 2014 was appointed as the first full Professor of Neurology in modern times. She was Academic Director of Trinity Biomedical Sciences Institute from 2015-18, and then took up a new role as National Clinical Lead in Neurology for the Health Service Executive in early 2019.

Orla leads a research group of over 40 individuals working on translational and clinical research in ALS and frontotemporal dementia. Her research group focuses on epidemiology, deep phenotyping, biomarker discovery, imaging and signal analysis and population genetics of ALS.

Some notable discoveries by her group include:

- Identifying and characterizing new causative genes for ALS and related frontotemporal dementia (FTD).
- Recognizing and defining the clinical, biological and genomic overlap between ALS and psychiatric conditions including schizophrenia, bipolar affective disorder and autism.
- Demonstrating that ancestral origin is an important determinant of ALS, and that admixed populations have lower rates of disease.
- Characterizing the population prevalence and characteristics of cognitive and behavioural change in ALS and demonstrating that ALS can be segregated into subgroups based on cognitive and behavioural subphenotypes.
- Demonstrating the limitations of current outcome measurement including the ALSFRSR, and development of new quantitative and remote technologies for accurate measurement of disease progression.
- Defining the patterns of change in neuroimaging and neuroelectric signalling in ALS, and development of new imaging and quantitative EEG based biomarkers of disease subtype and progression.

Professor Hardiman is Co-Chair of the European Network for Cure of ALS (ENCALS) and a member of the TRICALS Consortium Executive. She is Editor in Chief of the journal *Amyotrophic Lateral Sclerosis and the Frontotemporal Degenerations*. She is the recipient of a number of international awards including the AAN Sheila Essey Award in ALS Research, and the International ALS Alliance Forbes Norris Award. In 2018 she received the Trinity College Dublin Innovation Award for Societal Impact. She is one of a handful of practicing physicians to have been elected as members of the prestigious and scholarly Royal Irish Academy.
Orla is the author of over 410 peer reviewed research articles and has raised over €20million in research funds. Her research is funded by Science Foundation Ireland, the Health Research Board, The American Centre for Disease Control, The American ALS Association, the British MND Association the Thierry Latran Foundation, the Irish MND Association, and the charity Research Motor Neuron.

Robert Baloh
MD, PhD, the Neurodegenerative Diseases Laboratory, Cedars Sinai, USA (Speaker)

Dr Baloh received a MD-PhD degree from Washington University in 2001 working with Dr Jeffrey Milbrandt on discovery and signaling mechanisms of neurotrophic factors, and subsequently entered the Harvard Massachusetts General/Brigham and Women’s neurology residency, serving as Chief Resident in his final year.

He returned to Washington University in 2005 for a fellowship in neuromuscular diseases and then developed a laboratory research program focused on understanding the molecular mechanisms of neurodegenerative diseases involving the peripheral nervous system. While at Washington University he made key discoveries into the mechanisms of axonal Charcot-Marie-Tooth disease, described the first family with a mutation in TDP-43 as the cause of ALS, and developed the first and still most widely used animal model of frontotemporal dementia/ALS due to a TDP-43 mutation.

In 2011 Dr Baloh moved to Cedars-Sinai Medical Center to head the newly formed Division of Neuromuscular Medicine, and developed specialized programs in ALS/frontotemporal dementia, Charcot-Marie-Tooth disease, and muscular dystrophy with a focus on multidisciplinary patient care and clinical research. His group designed and completed a first in man Phase 1/2a study of surgical transplantation of neural progenitor cells into the spinal cord for the treatment of ALS and has performed over 20 interventional and observational protocols in neuromuscular diseases. From 2017 – 2020 he oversaw clinical trial selection and execution department wide as the Vice Chair for Neurology Research.

While at Cedars-Sinai, his laboratory program continued to examine mechanisms of ALS/frontotemporal dementia and inherited neuropathy, with focus on understanding neuro-immune interactions in neurodegeneration from C9orf72 repeat expansion mutations, with publications in Science, Nature, Neuron, Science Translational Medicine and JCI.

In 2020 he joined Roche Pharmaceuticals as VP and Global Head of Research in Neuroscience and Rare Diseases in Basel Switzerland.

Dr Baloh is a fellow of the AAN and ANA, and a member of the American Society for Clinical Investigation (ASCI) and the Association of American Physicians (AAP). He received the S. Weir Mitchell Award from the AAN and the Derek Denny-Brown award from the ANA and received funding from numerous sources including the National Institutes of Health, Burroughs-Wellcome Fund, California Institute for Regenerative Medicine, and the Muscular Dystrophy Association.
Michael Benatar
Department of Neurology, Miller School of Medicine, University of Miami, USA (Speaker)

Michael Benatar, MBChB, MS, DPhil, is the Walter Bradley Chair in ALS Research; Executive Director of the ALS Center; Chief of Neuromuscular Division; and Vice Chair for Clinical & Translational Research in the Department of Neurology at the University of Miami. He obtained his medical degree at the University of Cape Town in South Africa, and his doctorate in neuroscience while a Rhodes Scholar at the University of Oxford. After completing residency and fellowship training at Harvard, he obtained formal training in research methodology through a Master’s in the Science of Clinical Research degree at Emory. Dr. Benatar leads an active clinical and translational research program focused on biomarker and therapy development for ALS. He is the principal investigator of the ongoing Pre-Symptomatic Familial ALS (Pre-fALS) study, which he initiated in 2007, and the CReATe Consortium, a ~35-center network focused on therapy development for ALS and related disorders. Dr. Benatar is recognized for his pioneering work in defining the field of pre-symptomatic ALS, including discovery of the first biomarker of pre-symptomatic disease that has been critical to the design and initiation of the first pre-symptomatic ALS trial. Dr. Benatar has also been a thought-leader in challenging existing paradigms for pre-clinical therapeutic studies; shaping how we conceptualize and use biomarkers for therapy development; and championing the use of enrichment strategies in ALS trial design.

Professor Albert Ludolph
Department of Neurology, University of Ulm, Germany (Speaker)

Albert Ludolph is Professor of Neurology and Chairman of the Department of Neurology at the University Hospital and Medical Faculty of Ulm. He is also acting Director of the Academic Neuroscience Centre of the University of Ulm.

He has established and leads the ALS-Centre at the University Hospital of Ulm and directs a multidisciplinary team for ALS care, clinical and experimental research.

His research focuses on models for ALS, both naturally occurring and animal models, clinical genetics, development of clinical care, and translational research including development of new drugs for ALS and other orphan neurological diseases.

Professor Michael G Hanna
Director UCL Queen Square Institute of Neurology and Department of Neuromuscular Diseases, UCL Queen Square Institute of Neurology, Faculty of Brain Sciences, UK (Chair)

Professor Michael G Hanna is a Consultant Neurologist and Director of the UCL Queen Square Institute of Neurology where he leads over 1200 staff and students and with over £300m in current active research grants.

He qualified in Medical Biochemistry and then in Medicine at the University of Manchester and undertook postgraduate medical and neurological training posts in Newcastle, Oxford and London. He was an MRC training fellow to Professor Anita Harding undertaking his medical doctorate research in the genetics of mitochondrial diseases. He became a consultant at the National Hospital and Senior Lecturer in the Institute of Neurology in 1997 and Professor in Clinical Neurology in 2006.
He has a longstanding clinical and research interest in neuromuscular diseases and especially muscle diseases including channelopathies and mitochondrial diseases and is head of the Queen Square muscle disease clinical service. He is interested in elucidating molecular genetic mechanisms and also in the development of improved genetic diagnostics. He leads the UK national diagnostic reference laboratory and advisory service for channelopathies and co-leads a similar service for mitochondrial diseases. Professor Hanna established and Directed the MRC Centre for translational research in neuromuscular diseases 2008-2020. The central mission of the MRC Centre was to work closely with clinical and scientific colleagues across UCL and Newcastle to add value to basic science programmes and catalyse the pipeline from discovery to treatment. The centre established new core activities to overcome gaps in translation, including a neuromuscular clinical trials centre, an animal model unit, a UK muscle cell-line biobank, an outcome measure activity which includes neuromuscular MRI and a translational research PhD programme where 38 PhD students graduated. In 2020 he secured £5m to established a new International MRC Centre for Genomic medicine in neuromuscular diseases spanning 14 centres in 5 lower and middle income countries supporting an international fellowship programme and developing cohorts to study genetic architecture of nm diseases across continents.

Professor Hanna is co-chair of the North American Muscle Study Group - a consortium of scientific investigators who are committed to running controlled clinical trials for neuromuscular diseases. He is also corresponding member of the American Neurological association, member of the World Muscle Society and is a Guarantor of Brain. He is a Fellow of the Academy of Medical Sciences a council member. He has published over 400 peer reviewed articles.

**************************************************************************