

MND Research in Scotland

MND Scotland LEARN



2026 – 2027



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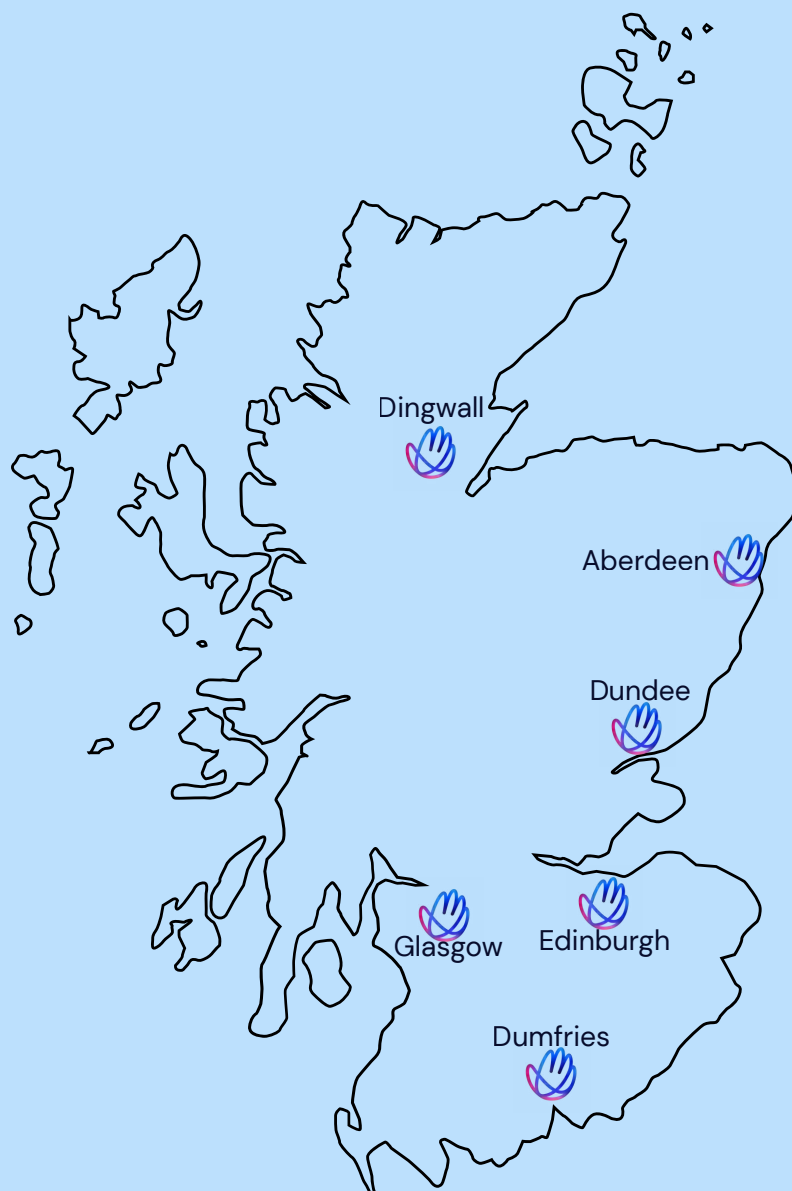
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LEARN 2026 locations



Glossary of abbreviations

ALS – Amyotrophic Lateral Sclerosis

ASO – Antisense oligonucleotide

AZA-PD – Azathioprine in Parkinson's Disease Clinical Trial

COMMEND – Acceptance and COMmitment therapy for people with Motor nEuroN Disease clinical trial

CSO – Chief Scientist Office

DM – Degenrative Myelopathy

DM1 – Myotonic Dystrophy type 1

EC – Environmental Controls

ECAS – Edinburgh Cognitive and Behavioural ALS Screen

FUS – Fused in Sarcoma

HRI – Heme-regulated Inhibitor

iPS – Induced Pluripotent Stem Cells

ISR – Integrated Stress Response

MIROCALS – Modifying Immune Response and OutComes in ALS clinical trial

MND – Motor Neuron Disease

MND-SMART – Motor Neuron Disease – Systematic Multi-Arm Adaptive Randomised Trial

MRC PPU – Medical Research Council Protein Phosphorylation and Ubiquitylation Unit

MRI – Magnetic Resonance Imaging

NMJ – Neuromuscular Junction

PROGAS – Gastrostomy in patients with amyotrophic lateral sclerosis study

SMA – Spinal Muscular Atrophy

SOD-1 – Superoxide Dismutase 1

TDP-43 – Transactive response DNA-binding protein 43

UCL – University College London

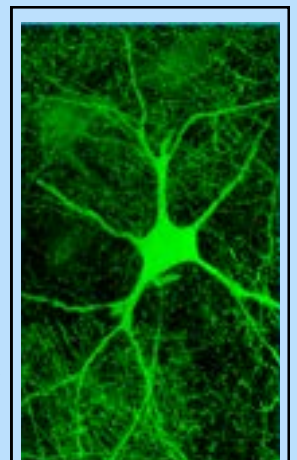
Foreword -

Professor Richard Ribchester



MND is a devastating disease that progressively robs those afflicted of their movements and, ultimately, their breathing. The immediate cause of progressive paralysis in MND is loss of motor neurons: large cells within the brain and spinal cord that normally bridge our intentions and behaviour by connecting the mind to muscles that execute our voluntary movements. As motor neurons are progressively lost, muscles no longer receive the messages from the brain that instruct movement; and the muscles therefore become weaker and, eventually, paralysed.

MND was first identified in the 1850's by Jean-Martin Charcot, a French neurologist, whose post-



A motor neuron in the spinal cord

mortem studies of individuals who had succumbed to the disease showed loss of tissue in the regions of the spinal cord where, subsequently (about 50 years later), it was found that motor neurons are located. Charcot called the disease "amyotrophic lateral sclerosis", a pathological description that encapsulated the features he observed. That name, and its abbreviation to "ALS", has stuck and is still used in many parts of the world as shorthand for adult forms of motor neuron disease. In the UK, neurologists generally use the abbreviation "MND", which recognises that there are actually many more forms of motor neuron disease than the ALS described initially by Professor Charcot (see Further Reading, Reference 1). Some forms of MND run in families, due to changes in the genes that programme our make-up; but most forms having no obvious cause and are referred to as "sporadic" MND. We also now know that cells other than motor neurons can be affected by MND in some patients: including neurons in parts of the brain responsible for awareness and cognitive function; and in "glial" cells that bond neurons together and sustain them by providing nutrients and removing waste products, as part of a host of biological processes that keep neurons alive.

Fundamental research carried out since motor neurons were identified as cellular entities has shown, remarkably, that the ones we are born with are the ones we die with. Of greater significance, once a motor neuron dies and degenerates it cannot be replaced. This is quite unlike, say, skin cells or those in many other organs of the body that turn over and are replenished throughout life. What normally keeps individual motor neurons alive – for up to 100 years or more in some people – remains a mystery. Unravelling this conundrum will help us to explain why MND occurs when the normal cell biology of motor neurons goes awry. In general, the gaps in our knowledge define the three main goals of MND research: first, to find out why motor neurons die in MND; second, to find out how to stop the process of motor neuron degeneration in its tracks; and third, to find ways that promote compensation and regrowth by those motor neurons that are still left after the condition has been diagnosed.

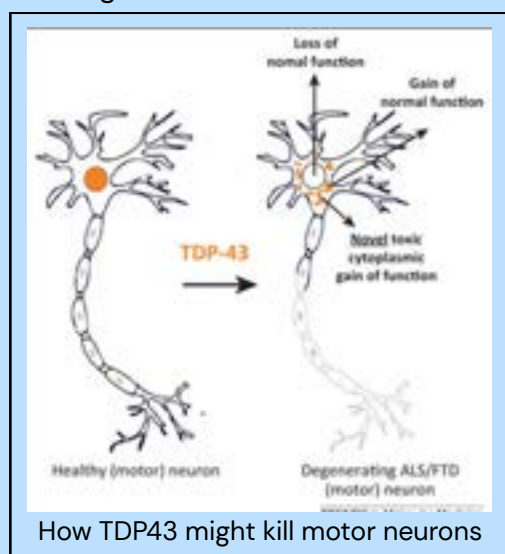
Research into the direct causes of MND, and clinical trials testing new candidate treatments, are the focus of worldwide efforts by scientists and clinicians attempting to understand MND find better ways to treat it. These global efforts include those of researchers based in Scotland: many supported by MND Scotland and working under the auspices and in association with the Euan MacDonald Centre for MND Research, which is based in Edinburgh.

Foreword -

Professor Richard Ribchester



Sadly, however, despite decades of research there is still no effective treatment for most people living with MND. Following diagnosis by an expert neurologist, most people with MND may be offered a medicine called riluzole. However, the benefits of this medication are relatively slight, in terms of prolonging life or mitigating the deterioration in quality of life. Recently, however, there has been significant progress in treatment of one specific, familial (genetic) form of MND: SOD1-ALS. This treatment involves administration of an "Anti-Sense Oligonucleotide" (ASO) into the fluid bathing the brain and spinal cord. This is a form of gene therapy that prevents the damaged protein that triggers disease in SOD1-ALS motor neurons from being expressed. However, it is only beneficial to the small minority of people with MND who have an abnormal SOD1 gene: that is about 3% of all cases of MND. But it is an encouraging start. There is evidence that a similar approach will work for another familial form of MND, FUS-ALS; and optimism that similar kinds of treatment may be effective in other forms of familial MND where genetic alterations have been implicated.



A great deal of attention is also being devoted, worldwide, to a protein known as "TDP43", which cell biologists and pathologists discovered, almost 20 years ago, is abnormally shaped and clumped in motor neurons and other cells, both in the familial and sporadic forms of MND. This abnormal disposition of TDP43 has a knock-on effect on the chemical processes going on inside cells that keeps them alive, and this cascade of unwanted effects is almost certainly what causes motor neurons to become sick and to degenerate, causing the muscle paralysis that people with MND experience. One idea is that if common, unifying causes of TDP43 mis-localisation can be found then treatments that prevent this could potentially benefit most people with MND. This would represent a real breakthrough if such treatments were discovered and proved effective. But Nature has an uncomfortable habit of

reluctance in revealing such secrets, to even the most brilliant minds and industrious energies of scientists and clinicians on our planet (see Further Reading, Reference 2). There may therefore still be many years of research ahead before we obtain the knowledge required to block all the toxic effects of abnormal TDP43.

Additional progress has been made recently in the search for reliable "biomarkers" of MND: measurable changes that can aid both in speed, accuracy and reliability of diagnosis, and in providing a measure of how effective any new potential treatments might be, for instance in clinical trials of novel or repurposed drugs. One biomarker may be the TDP43 protein itself. Researchers at Aberdeen University (initially supported by research grants from MND Scotland) have developed a highly sensitive test for the presence of abnormally localised TDP43. This could lead to a sensitive blood test, for example, but other possibilities are actively being investigated.

One of the obstacles to progress in understanding and treating MND is the availability of suitable "models" of disease, in which ideas and hypotheses about the mechanisms of MND can be investigated and novel potential treatments tested. Animal models, mostly mice but also fruit flies and zebra fish, have been traditionally used but over the past two decades these have been progressively supplemented or supplanted by studies "in vitro" (from Latin, meaning literally "in glass") of cultured human cells and tissues, including motor neurons and glial cells derived from "iPS" stem cells extracted from small scratches of skin taken from MND patients. More recently, attention has become directed towards "organoids": clumps of cells comprising motor neurons, glial cells, and muscle cells mingled together, forming "motor units" in a dish, attempting to more closely mimic the situation in a living MND patient.

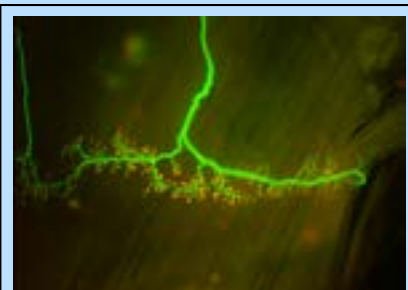
Foreword -

Professor Richard Ribchester



One of the challenges to research on both iPS-derived motor neurons and organoids is to replicate and accelerate the ageing process in these culture models. The rationale is that symptoms and signs in most people with MND emerge after 20 to 60 years of life, whereas iPS-motor neurons and organoids take only a few weeks to form. Ongoing research is addressing and progressing on this issue.

Finally, increasing attention is being directed towards improving the quality of life of people with MND by exploiting recent advances in technology, including Artificial Intelligence, machine learning, and robotics. These lines of research recognise that effective drug treatments may still be several years away for most groups of MND patients. Rather, the goal of technology research is to benefit everyone with MND in their lifetime, by improving their ability to breathe and enabling them to move, speak and communicate for as long as possible. This includes development and exploitation of technologies that directly facilitate movement: for instance, by linking brain waves to the control of speech, motorised wheelchairs, or wearable lightweight suits ("exoskeletons") designed to improve mobility and ability to communicate.



Nerve fibres and their neuromuscular junctions making up "motor units" in a mouse muscle

MND Scotland continues to play its part in the global challenge to advancing knowledge, understanding and treatment of MND. The biographies of some of the scientists based in Scotland taking part in this endeavour, with the support of MND Scotland and other organisations including the Euan MacDonald Centre, are to be found in this booklet. They range from the most senior investigators with many years of experience in this quest, to the most junior scientists or clinicians at the start of their careers embarking on their first MND-focused projects. MND Scotland believes that the bright ideas and industrious efforts of early career researchers, combined with the experience of their more senior mentors represent the best way forward for achieving the major advances that everyone in this field of research, worldwide, is diligently seeking.

Professor Richard R Ribchester BSc PhD DSc

**Trustee, MND Scotland and
Emeritus Professor of Cellular Neuroscience
University of Edinburgh**

FURTHER READING

1. Turner, M. and Jenkins, L. Diagnosing Amyotrophic Lateral Sclerosis: Clinical Wisdom to Facilitate Faster Diagnosis. Published by Health Press Limited. 2019.

ISBN-13 : 978-1912776122

(Digital version free for Kindle devices/Apps :- <https://tinyurl.com/4m54u5rz>)

2. Hardiman, O (ed.) Amyotrophic Trophic Lateral Sclerosis and Frontotemporal Dementia (Journal) Volume 26, Supplement 2: November 2025

Platform Communications: Abstract Book 36th International Symposium on ALS/MND Body.

I've been funded by MND Scotland



What is your Name?

Professor Jenna Gregory

Where do you work?

University of Aberdeen

What do you do in your spare time?

Swimming; relaxing; Margaritas ;-)

How long have you been doing MND research?

Since I started my PhD in 2007 in Cambridge. My PhD was part of an MBPhD programme and following my PhD and medical degree I moved to Edinburgh to train as a pathologist and then to Aberdeen where I am now a professor of pathology still working on TDP-43.

What are you currently working on?

We are trying to understand how and when to prevent MND from happening by looking for clues in the gut and skin long before brain symptoms occur.

What impact do you hope your research will have for people with MND and future MND research?

I hope to be able to prevent people from developing MND and hope that these prevention strategies could also be used to slow the disease progression in people who already have it.

I've worked on MND Scotland funded research



What is your Name?

Dr Fergal Waldron

Where do you work?

University of Aberdeen

What do you do in your spare time?

I enjoy being outdoors

How long have you been doing MND research?

Eight years. I have trained and worked in Galway, Cambridge, and Edinburgh, before Aberdeen.

What are you currently working on?

Developing biomarkers for early detection of MND pathologies. Investigating the role of the periphery in MND, in particular the role of the gut and skin.

What impact do you hope your research will have for people with MND and future MND research?

To develop biomarkers for early disease detection, and drug response monitoring in clinical trials.

I've worked on MND Scotland funded research



What is your Name?

Dr Holly Spence

Where do you work?

University of Aberdeen

What do you do in your spare time?

Knitting and Cross-stitch

How long have you been doing MND research?

I studied Biomedicine at Lancaster University before completing a PhD at the University of Aberdeen on brain iron and cognitive ageing. I joined the Gregory Lab in 2023 researching ALS biomarkers, and in 2026 received a fellowship to lead independent research at Aberdeen focusing on paired biomarker-therapy development for subtypes of ALS.

What are you currently working on?

My research focuses on understanding why ALS and other neurodegenerative diseases can vary so much between people.

I combine information from brain scans, tissue studies and large-scale biological data to investigate how changes in proteins such as TDP-43, along with disruptions in metals like iron, may contribute to disease. Using techniques including brain imaging and metabolic profiling, I study how these changes affect the brain and body, and whether they can be detected through biomarkers in scans or body fluids.

A major goal of my work is to support precision medicine in ALS. Rather than treating ALS as a single condition, I aim to identify distinct subtypes of the disease that may progress differently or respond to different treatments. By linking biomarkers with specific biological changes, my research aims to improve diagnosis, patient stratification for clinical trials, and the development of more targeted therapies.

What impact do you hope your research will have for people with MND and future MND research?

My research aims to improve outcomes for people living with MND by supporting more personalised approaches to diagnosis and treatment. By identifying distinct disease subtypes and developing earlier detection tools, I hope to help ensure patients receive the right treatments at the right time. I also focus on developing accessible, lower-cost MRI and fluid-based biomarkers so that advanced diagnostics, clinical trials and future therapies can become available to more people and healthcare settings worldwide.

I've been funded by MND Scotland



What is your Name?

Dr Björn Vahsen

Where do you work?

University of Aberdeen

What do you do in your spare time?

I enjoy time with my partner, friends & travelling

How long have you been doing MND research?

I studied medicine at the University of Göttingen in Germany, where I also completed a research MD on neurodegeneration. In 2018, I joined the Oxford MND Centre, where I completed an MSc, PhD and Postdoc. Since July 2026, I have been SSIG Lecturer in Neuroimmunology and MND Association Lady Edith Wolfson Fellow at the University of Aberdeen.

What are you currently working on?

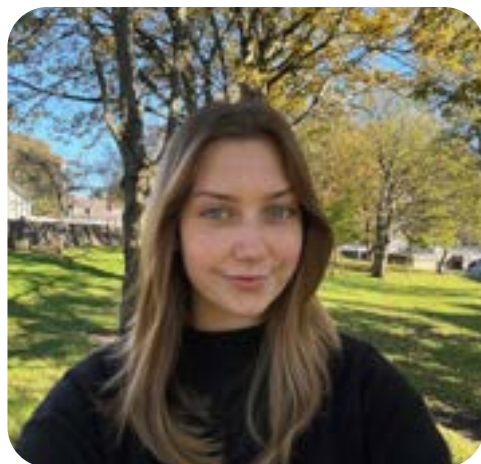
My research focuses on understanding how the brain's immune cells, called microglia, and inflammation contribute to MND.

My group uses stem cell technology to generate different types of human brain cells, including neurons and microglia, from people with different forms of MND. This allows us to study how these cells behave and interact in the laboratory. We combine molecular techniques with advanced microscopy to identify the changes that occur in MND compared with healthy cells.

By understanding how inflammation affects nerve cells in MND, we hope to uncover new disease mechanisms and identify opportunities for developing new treatments.

What impact do you hope your research will have for people with MND and future MND research?

Our ultimate goal is to translate a better understanding of MND biology into new treatments. We aim to identify new therapeutic targets and test potential drugs in our stem cell models before they move into clinical studies. We hope our work will help accelerate the development of more effective therapies and, ultimately, improve the lives of people living with MND.



What is your Name?

Tatiana Langerová

Where do you work?

University of Aberdeen

What do you do in your spare time?

Reading, crafting, going on walks, and exercising

How long have you been doing MND research?

I started my PhD project in late 2023 so I have been doing MND research for almost 3 years now. Before that, I was studying Neuroscience at the University of Aberdeen.

What are you currently working on?

My project focuses on the role of the gut-brain axis in MND. The gut and the brain are closely linked organ systems that are constantly communicating with one another. This communication pathway is called the gut-brain axis. Research shows that many conditions that affect the brain and spinal cord, including neurodegenerative diseases like MND, can also affect the gut. In fact, the gut is often affected early in the course of disease, with digestive symptoms, and even build-up of MND-related proteins observed in gut tissue before the motor symptoms start to appear.

When studying the gut, we have an advantage of being able to take small tissue biopsies from people, whereas we cannot take similar samples from the brain or spinal cord.

In my project, I am looking at early signs of MND and other neurodegenerative diseases in the gut in people who may be at increased risk of developing MND later in life. Ultimately, I am hoping that this research could contribute to a new biomarker that could help clinicians detect MND much earlier than current diagnostic methods.

What impact do you hope your research will have for people with MND and future MND research?

I am hoping that my work could contribute to the discovery of a new biomarker that could be used for early diagnosis of MND. This could also help us develop more effective treatments for MND. The earlier we can offer treatment and support to people with MND, the greater the impact we will have on how the disease progresses. Furthermore, I hope that my research will inspire other scientists to look at how MND affects the entire body, not just the brain and spinal cord.

I've been funded by MND Scotland



What is your Name?

Kristine Roberts

Where do you work?

University of Aberdeen

What do you do in your spare time?

Beach trips with my dog Betty

How long have you been doing MND research?

I am currently two years into my PhD which aims to identify early biomarkers of MND. Alongside this, I also work in an NHS Tissue Biobank as a Senior Biomedical Scientist. My Biobanking experience has allowed me to generate novel cohorts of valuable samples for MND research as part of my MND Scotland and CSO funded PhD.

What are you currently working on?

My research explores whether changes in the immune system could help us spot MND earlier.

In people with MND, the immune system behaves differently, and I am specifically studying these changes in skin and gut samples collected from individuals years before MND symptom onset.

This could help us understand whether the skin and gut hold early clues to immune changes that may be detected long before symptoms appear, offering potential early biomarkers for MND.

What impact do you hope your research will have for people with MND and future MND research?

I hope my research will help develop a simple and reliable laboratory test for detecting MND earlier using samples that are relatively easy to access, such as gut and skin. This could mean we would not need to rely on brain or spinal cord samples to look for early signs of disease. Ultimately, I hope this work will reduce diagnostic delay, support the development and testing of new treatments, and improve outcomes for people living with MND, while bringing us closer to prevention and a cure.

I've been funded by MND Scotland



What is your Name?

Dr Ian Morrison

Where do you work?

NHS Tayside

What do you do in your spare time?

I like walking my dogs, meeting friends, and church

How long have you been doing MND research?

I did early work on the motor neuron as part of my PhD, but started clinical research when my colleague, Dr Robert Swingler, retired and I took over the MND service in Tayside.

What are you currently working on?

Our main focus in Tayside is collaborative research to identify and develop effective treatments for MND, while also improving the care of people with the illness.

We are part of the MND SMART study and participate in trials to improve patient/carers support around the diagnostic and treatment journey.

We are also working on studies to improve diagnosis with imaging and neurophysiology.

What impact do you hope your research will have for people with MND and future MND research?

In Tayside, we hope that our work will find effective and safe treatments for people with MND, and improve diagnosis and care.



What is your Name?

Dr Arpan Mehta

Where do you work?

MRC PPU, University of Dundee

What do you do in your spare time?

Reading; writing; squash; music; theatre

How long have you been doing MND research?

I've been researching MND since 2017, when, midway through my clinical neurology training in Oxford, I moved to Edinburgh to undertake a PhD. During my research, I began using human stem cells to create motor neurons in the lab — giving us a way to study these vulnerable cells 'in a dish'. Using this approach, I found that when motor neurons struggle to produce enough energy, their long extensions, called axons, begin to malfunction. Axons are vital for transporting essential materials from the cell body to muscles, and their failure is thought to be an important part of how motor neurons are lost in MND.

What are you currently working on?

I am now focused on understanding the role of proteins called protein kinases in MND. Protein kinases act like molecular switches inside cells, turning other proteins on or off by adding small chemical tags to them. We think that problems with these molecular switches may contribute to the loss of motor neurons in MND.

One of the kinases I study is NEK1, a protein that was identified as a genetic risk factor for MND in 2016 through a large international study supported in part by funds raised through the Ice Bucket Challenge. We still do not fully understand what NEK1 does in motor neurons, or how changes in this protein might contribute to MND. This is the question I am now trying to answer.

To investigate this, I use human stem cells to create motor neurons in the laboratory, allowing me to study what happens inside these cells in health and disease. I combine this with a technique called mass spectrometry, which allows us to measure thousands of proteins and their chemical changes at the same time. My aim is to identify the key changes that cause motor neurons to become damaged, and ultimately to uncover new ways of protecting these cells.

What impact do you hope your research will have for people with MND and future MND research?

I hope my research will help us understand what goes wrong inside motor neurons in MND, and, in particular, identify the molecular changes that cause these cells to become damaged and die. By understanding these mechanisms in greater detail, I hope to discover new targets for drug development.

In the longer term, this could help researchers develop treatments that interfere with the processes driving motor neuron loss, rather than simply treating the symptoms of MND. I also hope that the knowledge we generate will provide new avenues for other MND researchers to explore, helping to accelerate the search for effective treatments for people living with the disease.

I've been funded by MND Scotland



What is your Name?

Dr Chris Henstridge

Where do you work?

University of Dundee

What do you do in your spare time?

Enjoying family walks in Perthshire countryside

How long have you been doing MND research?

I started work on MND shortly after I joined the University of Edinburgh in 2014. I have always been interested in understanding brain changes in disease, and in 2019 I opened my own lab at the University of Dundee to continue my MND work.

What are you currently working on?

My lab is currently focused on tiny connection points between brain cells called synapses. These synapses break down in the very early stages of MND and I believe we may be able to stop MND in its tracks, by keeping these connections healthy.

We do a lot of experiments with donated human brain and spinal cord to try and fully understand what happens to synapses in MND. With this information we are now working in model systems (such as fruit flies and human brain cells in a dish) to discover when and why synapses break down. We hope to use this new information to design ways to keep these synapses healthy in MND.

We are also working on another project with a biotechnology company to develop new drugs that can keep nerve cells affected by MND alive for longer.

What impact do you hope your research will have for people with MND and future MND research?

I believe MND will become a condition that people live with and can manage with treatments. I hope our work will discover ways to slow down or stop the progression of the disease, giving people longer lives and better quality of life with MND.



What is your Name?

Dr Shalini Agarwal

Where do you work?

MRC PPU, University of Dundee

What do you do in your spare time?

Reading, Travelling

How long have you been doing MND research?

I have spent the past five years at the MRC PPU studying mitochondrial quality control and stress signalling in neurodegeneration. Over the last two years, my research has increasingly focused on MND, particularly understanding how and why mitochondrial quality control fails in motor neurons.

What are you currently working on?

I am currently developing fellowship and grant applications to transition towards an independent research career focused on mitochondrial quality control in MND.

My research aims to understand how mitochondrial stress signalling and mitophagy fail in motor neurons, and how these pathways can be therapeutically targeted to restore neuronal health. Recently, my work identified the mitochondrial ISR kinase HRI as a regulator of mitophagy, opening a new direction for understanding how stress signalling influences mitochondrial quality control in neurodegeneration.

I am now building translational projects centred on selectively targeting these pathways in human motor neuron models, with the long-term goal of developing new therapies for people living with MND.

What impact do you hope your research will have for people with MND and future MND research?

I hope my research will improve our understanding of why motor neurons become vulnerable in MND and help identify new ways to restore mitochondrial health and stress responses in disease. My long-term goal is to translate discoveries in mitochondrial quality control into targeted therapies that can better protect motor neurons and ultimately improve outcomes for people living with MND.



What is your Name?

Melissa Parra Torres

Where do you work?

University of Dundee

What do you do in your spare time?

Hiking, Mountaineering, climbing, and horse riding

How long have you been doing MND research?

I have been working on MND for almost three years during my PhD (Jan 2024–present), and for one year when I worked as a lab tech previous to my PhD (Jan 2023– Jan 2024).

What are you currently working on?

Migration of TDP-43 from the nucleus to the cytoplasm is toxic as it aggregates, hyperphosphorylates and polyubiquitinates. I identify disease modifiers that can stop or reduce TDP-43-induced toxicity in MND. We have identified two disease modifiers that interact with TDP-43 in different pathways and have shown improvement in our disease model, *Drosophila melanogaster* or fruit fly.

What impact do you hope your research will have for people with MND and future MND research?

I hope we can fully understand how these disease modifiers interact with TDP-43 so that we can design a medication that can interact in these pathways and provide patients with a trustable treatment.



What is your Name?

Anna McFarlane

Where do you work?

University of Dundee

What do you do in your spare time?

Spending time with friends and doing jigsaws

How long have you been doing MND research?

I have been researching MND for a year and a half as part of my PhD. Before this, I studied tiny connections between nerve cells, known as synapses, in my masters, studying them in healthy conditions. After my masters, I worked as a research assistant in Glasgow studying chronic pain and how the spinal cord helps detect temperature.

What are you currently working on?

I am studying how tiny connections between nerve cells, known as synapses, are lost in MND. Synapses are thought to be lost early in MND, and so they might represent a new target to treat MND earlier in its progression and improve patient outcome. Specifically, I am trying to understand when these synapses are lost in disease, and why they are being lost.

What impact do you hope your research will have for people with MND and future MND research?

I hope my research will contribute to the overall understanding of MND. There is currently no cure for MND, and so a better understanding of the underlying causes is vital. I hope my research can help us better understand the disease, and to contribute to the wider aim of finding new effective treatments that will help improve patient outcome.

I've been funded by MND Scotland



What is your Name?

Professor Tom Gillingwater

Where do you work?

University of Edinburgh

What do you do in your spare time?

Walk the dog and drink whisky (not together!)

How long have you been doing MND research?

I started working on the neuromuscular system during my time at the University of Leeds (1995–1998), but have been focussing specifically on childhood and adult forms of MND since arriving at the University of Edinburgh and then starting my own research laboratory in 2004.

What are you currently working on?

We have lots of exciting studies underway exploring fundamental mechanisms driving the disease, but always with one eye on identifying and developing new therapies that can target these pathways. As such, we try to do genuine 'bench-to-bedside' MND research in my group.

What impact do you hope your research will have for people with MND and future MND research?

We want to find new therapies that can help people with MND, whether through improving quality of life or delaying (and ultimately halting) the progression of the disease.

I've been funded by MND Scotland



What is your Name?

Professor Colin Smith

Where do you work?

University of Edinburgh

What do you do in your spare time?

Walking, cycling, and swimming

How long have you been doing MND research?

I have been an academic neuropathologist in Edinburgh for twenty six years, and Professor of Neuropathology for eleven years. Edinburgh has always had a strong focus on neurodegenerative disorders, and in particular MND. I initially worked to support existing discovery neuroscience colleagues translate to human tissues, developing the MND Scotland tissue bank.

What are you currently working on?

I am Director of the Edinburgh Brain Bank, and have an active research programme correlating neuropathology with clinical phenotype. The research is particularly focused on synaptic alterations, studied through synaptome mapping, synaptome preparations and array tomography. This research has highlighted the key role of synaptic alterations in many neurodegenerative disorders. In addition, we work closely with colleagues looking at spatial biology alterations in MND, including alterations in cognitive functions detected by ECAS testing. We use both spatial transcriptomics and spatial proteomics approaches.

What impact do you hope your research will have for people with MND and future MND research?

Ultimately, we hope to support novel biomarker discovery and potential therapeutic targets.

I've been funded by MND Scotland



What is your Name?

Dr Lyndsay Murray

Where do you work?

University of Edinburgh

What do you do in your spare time?

PA for my children!

How long have you been doing MND research?

I started work on motor neurons during my PhD in Edinburgh in 2006. Since then, I worked in Ottawa for 4 years before returning to Edinburgh to start my own research group in 2014.

What are you currently working on?

We are interested in how motor neurons breakdown in disease and also how they regenerate.

We are using mainly mouse models and looking for strategies which either slow the breakdown of the motor neuron or encourage repair and regeneration.

A lot of our work is in the childhood motor neuron disease Spinal Muscular Atrophy, but we are interested in how there might be common strategies across different types of motor neuron diseases i.e. finding ways to promote the repair of motor neurons during disease.

What impact do you hope your research will have for people with MND and future MND research?

In the future I hope that our work will lead to therapeutic strategies which will slow the loss of motor neurons in motor neuron disease and also allow repair of the damage which has occurred.



What is your Name?

Professor Kiterie Faller

Where do you work?

University of Edinburgh

What do you do in your spare time?

Cycling, Walking in remote Scotland, baking

How long have you been doing MND research?

I am a veterinary clinician scientist specialising in neurology/neurosciences. I have started working on MND about 8 years ago when I moved to the University of Edinburgh.

What are you currently working on?

My research is focused on understanding the cellular changes that lead to neurodegeneration in amyotrophic lateral sclerosis and spinal muscular atrophy.

We are particularly interested in how cells manage energy under disease conditions. By gaining a deeper understanding of these molecular changes, we hope to identify new therapeutic targets.

What impact do you hope your research will have for people with MND and future MND research?

Our research is translational, meaning we hope to turn our lab findings into therapies. We aim to identify therapeutic targets that are independent of genetic mutations, making them potentially applicable to all patients.

I've been funded by MND Scotland



What is your Name?

Dr Marta Vallejo

Where do you work?

Heriot-Watt University

What do you do in your spare time?

Nature walks, yoga, and other sports

How long have you been doing MND research?

I began in 2022 through a collaboration with the University of Edinburgh, which introduced me to Professor Jenna Gregory. Since then, MND has become my primary research focus. I now lead multiple AI-driven projects on ALS biomarkers, digital pathology, early diagnosis and patient stratification, in close collaboration with clinicians.

What are you currently working on?

My research focuses on developing AI-driven biomarkers for earlier diagnosis, patient stratification and improved understanding of MND. I continue to investigate TDP-43 pathology in post-mortem brain tissue from people with ALS and frontotemporal dementia, using digital pathology and explainable artificial intelligence to identify disease-associated patterns. My main research programme now centres on the gut, analysing longitudinal gastrointestinal biopsy samples collected years before symptom onset to identify pre-symptomatic biomarkers and understand the earliest pathological changes in MND. In parallel, I am developing machine learning approaches for Raman spectroscopy of skin biopsies as a label-free method to detect protein misfolding and support earlier diagnosis. Together, these projects aim to deliver clinically relevant biomarkers and improve our understanding of disease mechanisms.

What impact do you hope your research will have for people with MND and future MND research?

I hope my research will help shift MND diagnosis from detecting established disease to identifying the earliest biological changes, creating opportunities to prevent or delay disease onset. Reliable biomarkers and AI tools could enable earlier intervention, improve patient stratification, strengthen clinical trial recruitment, and accelerate the development of effective therapies. Ultimately, I hope this work will improve outcomes and quality of life for people living with MND and contribute to future research into disease prevention.

I've worked on MND Scotland funded research



What is your Name?

Dr Helena Chaytow

Where do you work?

University of Edinburgh

What do you do in your spare time?

I love reading, knitting, and tap dancing!

How long have you been doing MND research?

I started my PhD on therapy development for MND in 2012, and have been focussed on that same topic since then. I did my PhD in London, and moved up to Edinburgh to work with Tom Gillingwater in 2017 and have been here ever since.

What are you currently working on?

I am currently focussed on how the immune system targets the motor neurons in MND and how that might contribute to MND progression. We think that by blocking the immune response, that is seen in most MND patients, we should be able to delay MND progress. We have lots of different approaches to target the immune system that we are testing, and we hope to ultimate develop these strategies into a new therapy to bring to clinical trial.

What impact do you hope your research will have for people with MND and future MND research?

My work is in developing novel therapies, and so I hope that one day I will contribute to a new drug that meaningfully delays or halts the progression of MND.



What is your Name?

Dr Rebecca Graham

Where do you work?

University of Edinburgh

What do you do in your spare time?

Gardening and playing with my 1-year old outside

How long have you been doing MND research?

I started doing MND research relatively recently in 2023. I have worked across many different diseases, however I really like working on MND because of the link to the clinic we have here (the Anne Rowling Regenerative Neurology Clinic) and having the potential to make a real impact on the lives of those with the disease.

What are you currently working on?

In general my work is focused on finding drugs to help treat MND and identifying biomarkers to help diagnose the disease and measure whether a new treatment is working or not. Right now, I am computationally testing drugs to identify those that can make MND motor neurons behave more like healthy motor neurons.

We have identified a gene that appears to be dysregulated early on in the disease process and we are now investigating whether it could be driving disease progression and whether there are drugs that can reverse the changes we see in MND, as well as whether it's detectable in patient blood samples as a diagnostic.

What impact do you hope your research will have for people with MND and future MND research?

I would like to help improve diagnosis since I know that it can be a really slow, stressful, and emotionally painful process. This is where improved diagnostic biomarkers are really important. Secondly I hope that through our work we will identify drugs and combinations of drugs that are more effective than the current treatment options.



What is your Name?

Dr Rebecca Saleeb

Where do you work?

University of Edinburgh

What do you do in your spare time?

I love to read and to dote on my dog

How long have you been doing MND research?

I've worked in MND research for three years. I started out as a cell biologist interested in how old or misbehaving proteins are removed from a cell. Along the way, I developed a passion for the incredible capability of modern microscopy and wanted to use it to detect when these processes fail – as happens in MND – so we can realise rapid diagnosis.

What are you currently working on?

My current work focusses on developing a blood test for the rapid diagnosis of ALS. To do this, we need to identify molecular changes that occur inside affected nerve cells at the earliest stages of disease. These serve as 'biomarkers' – measurable signs that the disease is present.

One promising biomarker is the protein TDP-43, which becomes misplaced and forms clumps in the vast majority of ALS cases. However, detecting this change is extremely challenging: it happens in a hard-to-access organ (the brain), is very rare in the early stage of disease, and is hidden by large amounts of healthy TDP43. It's like trying to find a single altered blade of grass in a field, which traditional diagnostics are poorly suited to.

In my research, I've co-developed ways to isolate the thousands of TDP-43 molecules that escape into the bloodstream and look at each individually to determine if it's healthy or clumped. I've also been looking at the TDP-43 in donated brain tissue to better understand other features, beyond clumping, that may also indicate ALS.

What impact do you hope your research will have for people with MND and future MND research?

My hope, and belief, is that a rapid blood test for MND can be achieved. The current delay in diagnosis, on average 12 months from symptoms first appearing, means critical time in responding to the disease is lost. I hope that earlier diagnosis will help people living with MND process and prepare, and I hope it will give trial drugs the best possible chance by administering them before too many neurons are lost.



What is your Name?

Dr Reiss Pal

Where do you work?

University of Edinburgh

What do you do in your spare time?

Martial arts training, gym and hiking.

How long have you been doing MND research?

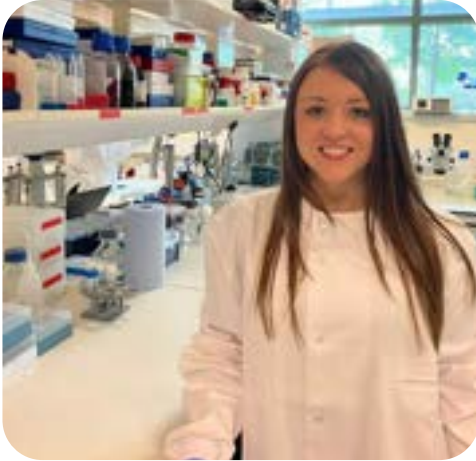
I have been an active researcher in the field of neurodegenerative disorders for six years. My research career started as a PhD student, where I was investigating how the immune system in the brain contributes to prion disease. After my PhD I worked on the AZA-PD clinical trial, before moving up to Edinburgh where I am now researching MND.

What are you currently working on?

I am currently using human stem cell models of MND to better understand defective biological mechanisms, and screen drugs for clinical trial.

What impact do you hope your research will have for people with MND and future MND research?

My goal is to accelerate therapeutic development of human brain disorders, to ultimately improve healthy brain ageing. I am motivated by patient transformation; this is through testing donated patient samples in the laboratory, identifying therapeutic targets and delivering treatment back into the clinic. I hope for future MND research to continue testing patient samples to improve diagnosis & our fundamental understanding of MND.



What is your Name?

Dr Alannah Mortimer

Where do you work?

University of Edinburgh

What do you do in your spare time?

Swimming, playing music and movie nights!

How long have you been doing MND research?

I began researching MND eleven years ago during my undergraduate studies at the University of Glasgow, inspired by a young boy that I taught to swim. I completed a PhD in MND at the University of Edinburgh, followed by five years of postdoctoral MND research at the University of Sheffield. I now continue this research at the University of Edinburgh.

What are you currently working on?

I am currently a Research Fellow at the University of Edinburgh, working with Dr Lyndsay Murray to better understand how communication between nerves and muscles is disrupted in motor neuron diseases and during recovery from injury. My research focuses on the neuromuscular junction (NMJ), the specialised connection where motor neurons communicate with muscles to control movement.

Damage to the NMJ is one of the earliest features of motor neuron diseases, including MND and Spinal Muscular Atrophy (SMA). Although current treatments can improve outcomes, recovery of the NMJ is often incomplete. By studying how nerves and muscles communicate during regeneration, we hope to uncover the molecular signals that support healthy NMJ repair and identify new opportunities to improve recovery.

What impact do you hope your research will have for people with MND and future MND research?

We are particularly interested in the proteins that allow nerve and muscle cells to communicate with one another. By understanding which of these signals are disrupted in MND, we hope to identify new therapeutic targets that could enhance repair of the neuromuscular junction, preserve muscle function, and ultimately improve quality of life for people living with MND. I hope this work will provide a foundation for future research into treatments that protect and restore the connections between nerves and muscles.

I've been funded by MND Scotland



What is your Name?

Rosie Sinclair

Where do you work?

Euan's Guide (Based in Edinburgh)

What do you do in your spare time?

I'm a keen hand cyclist

How long have you been doing MND research?

The charity was founded in 2013 by the late Euan MacDonald MBE, a powerchair user, and his sister Kiki after Euan was diagnosed with Motor Neuron Disease.

What are you currently working on?

Improving disabled access information availability across the UK.

What impact do you hope your research will have for people with MND and future MND research?

We want to make it easier and less stressful for people with MND to go out by making access information more readily available.



What is your Name?

Jade Lucas

Where do you work?

University of Edinburgh

What do you do in your spare time?

Board gamer and master of unfinished craft projects

How long have you been doing MND research?

Nearly five years in MND research! I started at UCL using stem cells to look for ways to protect brain cells. Now completing my PhD at Edinburgh, I study donated human tissue to solve a vital mystery: why do some people survive MND much longer than others? My goal is to find protective clues that can guide future treatments.

What are you currently working on?

My current research focuses on a crucial mystery of MND – why the condition progresses so differently from person to person. Whilst some individuals face a very rapid decline, others experience a much more prolonged disease course.

To understand why some people with MND survive longer than others, I am studying incredibly kindly donated human brain and spinal cord tissue. Looking directly at this precious tissue allows me to examine the disease at a cellular and molecular level. My main goal is to identify specific "resilience factors"—unique biological features that help long-surviving patients resist the disease for longer.

By uncovering these resilience mechanisms, we hope to discover new targets for future treatments. Ultimately, this work is about turning the incredible gift of tissue donation into meaningful biological insights that may be able to help slow down MND for everyone in the future.

What impact do you hope your research will have for people with MND and future MND research?

I hope my research brings us closer to a future where an MND diagnosis doesn't mean a single, unpredictable timeline. By identifying the exact biological factors that give long-surviving patients their resilience, we can provide future research with concrete, human-validated targets for new treatments. I hope this work honors the incredible gift of tissue donation. Ultimately, I want to help shift MND from a disease we map to one we can actively slow down for everyone.



What is your Name?

Jyoti Nanda

Where do you work?

University of Edinburgh

What do you do in your spare time?

I enjoy swimming and going for walks.

How long have you been doing MND research?

I have spent the past seven years working in MND research. I play a key role in managing and maintaining patient derived stem cells and using them to generate functioning motor neurons 'in a dish' to study MND. I am also a project manager, and this involves proactively communicating and managing various collaborative projects.

What are you currently working on?

I currently work on generating human motor neurons for high throughput drug screening. The aim is to create reliable cell models that can be used to test potential new treatments more quickly and effectively.

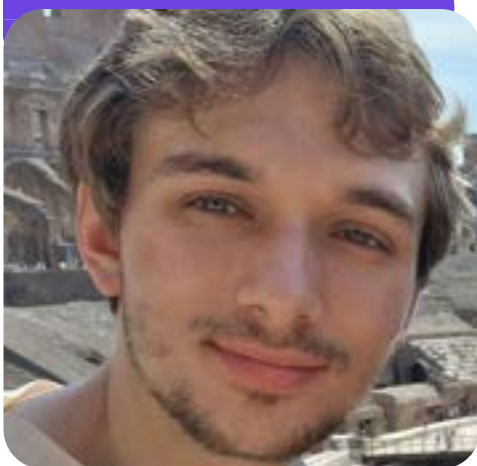
Alongside my laboratory work, I provide technical expertise and support to other researchers within the team, helping to develop and optimise experimental methods across a range of MND research projects.

I also teach students that come through the laboratory; ensuring they have the technical skills to be productive in their research. I enjoy the collaborative nature of my role and being able to contribute to research that has potential to improve the lives of people living with MND.

What impact do you hope your research will have for people with MND and future MND research?

I hope that with my expertise in generating motor neurons, combined with the team's dedication to solving the puzzle of MND, will help us piece together the disease's complexities and lead to the discovery of more effective treatments. I also believe this work will have a lasting impact on future MND research. The motor neurons we generate provide researchers with valuable tools to better understand why these cells die and what can be done to protect them.

I've worked on MND Scotland funded research



What is your Name?

Lukas Jurcaga

Where do you work?

Heriot-Watt University

What do you do in your spare time?

Lots of Climbing, Reading, Tennis

How long have you been doing MND research?

I started my MND research in October 2025 alongside my Computer Science PhD. My interest in neurodegenerative diseases began as an undergraduate, where I applied computational methods to tremor data for early Parkinson's diagnosis. This background in data-driven analysis naturally led me to my current MND focus.

What are you currently working on?

My current research investigates the use of gut tissue biopsies for the early diagnosis of MND. Recent studies indicate that specific protein biomarkers, such as TDP-43 aggregates, can appear in the gut thirteen to fifteen years before a formal neurological diagnosis. These biomarkers offer a crucial early warning system, potentially enabling clinicians to implement preventative measures long before symptom onset. Within this broader project, my focus is on the data analysis of stained biopsies. I apply statistical and machine learning techniques to develop computational tools that assist clinicians and pathologists in evaluating this data. Ultimately, this work aims to improve early diagnostic accuracy while also yielding new biological insights into these protein aggregations, deepening our knowledge of the mechanisms driving MND.

What impact do you hope your research will have for people with MND and future MND research?

I aim to give people the ability and choice to detect MND early, long before any symptom onset. This early warning would allow them to make suitable lifestyle changes and implement measures to hopefully prevent the disease from manifesting. I also hope my work will contribute towards our understanding of pathological TDP-43 and, in turn, our broader knowledge of the disease.

I've been funded by MND Scotland



What is your Name?

Dr George Gorrie

Where do you work?

NHS Greater Glasgow and Clyde

What do you do in your spare time?

Spending time with my friends and family.

How long have you been doing MND research?

Since 2003, postdoctoral basic science MND research at North Western University in Chicago studying Ubiquilin2, then clinical research within the NHS in Glasgow helping deliver MND trials and clinical research studies; PROGAS, MIROCALS, COMMEND, MND SMART and currently an MND Biomarker study examining the use of high field (7T) MRI in MND patients.

What are you currently working on?

Exploring the use of high field (7T) MRI to study MND pathobiology in patients affected by the disorder.

What impact do you hope your research will have for people with MND and future MND research?

Improved understanding of the disease including its identification at an earlier time point after symptom onset.



What is your Name?

Dr Hazel Allardyce

Where do you work?

University of Glasgow

What do you do in your spare time?

Outdoors activities such as running & hiking

How long have you been doing MND research?

I have been involved in MND research since 2017, beginning during my master's degree and continuing through my PhD, postdoctoral research and current role as a Research Fellow. Much of my previous research focused on spinal muscular atrophy, an inherited form of motor neuron disease.

What are you currently working on?

My current research focuses on understanding some of the earliest changes that occur in neurological conditions, including MND. In particular, I study the blood vessels that supply the brain and spinal cord and investigate how changes in their structure and function may contribute to disease.

Blood vessels do much more than deliver oxygen and nutrients to the nervous system, which includes the brain and spinal cord. They also help maintain a stable environment within the nervous system and form a protective barrier between the blood and the brain and spinal cord. If these vessels become damaged or dysfunctional, this barrier may become less effective, allowing harmful substances to enter the nervous system and potentially contribute to motor neuron damage and disease progression.

My work aims to determine when these blood vessel changes occur, what causes them and how they influence the development, severity and progression of disease.

What impact do you hope your research will have for people with MND and future MND research?

I hope my research will improve our understanding of the processes that contribute to MND, particularly those occurring outside motor neurons.

By identifying how blood vessel changes influence disease, we may uncover new ways to treat MND. Ultimately, this work could contribute to treatments that protect both motor neurons and the wider environment that supports them.

I've been funded by MND Scotland



What is your Name?

Dr Megan Bolton

Where do you work?

NHS Greater Glasgow and Clyde

What do you do in your spare time?

Being out in nature, skiing, jigsaws

How long have you been doing MND research?

I have been involved in MND research for the past seven months. I have over ten years' experience as a Clinical Scientist in the NHS, specialising in Rehabilitation Engineering. I also hold a PhD in Biomedical Engineering, providing a strong foundation for my research work.

What are you currently working on?

I am currently working on standardising best practice for the delivery of Environmental Controls (EC) across Scotland. Our aim is to improve quality of life for people with MND by ensuring EC systems are fast to access, reliable, and easy to use.

At present, EC service provision is variable and does not fully meet the ambitions set out in Health and Social Care Partnership and Scottish Government strategies, particularly around promoting independence, supporting people to live in their communities, and enabling the use of technology.

This work seeks to address these gaps by creating a more consistent, efficient, and accessible service model that better supports individuals living with MND.

What impact do you hope your research will have for people with MND and future MND research?

The aim is to improve quality of life and promote independence for people with MND by ensuring timely access to the right equipment and support. By reducing delays and inconsistencies in service provision, we hope to minimise frustration for patients and families. Evidence shows that timely EC provision has significant benefits, and we aim to make this standard across Scotland.



What is your Name?

Dr Katie Hanna

Where do you work?

University of Strathclyde

What do you do in your spare time?

Singing, escape rooms and playing board games

How long have you been doing MND research?

I've been working in MND research for almost two years, having transitioned into the field in September 2024 after several years of research in cancer. My background in Raman spectroscopy, digital pathology, and biomarker discovery has provided a strong foundation for developing accessible biomarkers for earlier ALS diagnosis.

What are you currently working on?

I'm currently an MNDA Lady Edith Wolfson Research Fellow at the University of Strathclyde, where I lead a research programme focused on developing skin-based biomarkers for the early detection of ALS. My work combines Raman spectroscopy, digital pathology and artificial intelligence to identify molecular changes in skin that occur before symptoms develop. Alongside this, I'm investigating how these approaches can be translated into accessible, non-invasive diagnostic tools that could help enable earlier diagnosis and improve our understanding of disease progression.

What impact do you hope your research will have for people with MND and future MND research?

I hope my research will help make ALS diagnosis earlier, more accessible, and less invasive. By identifying molecular changes in the skin that occur before symptoms develop, we aim to create biomarkers that support earlier diagnosis and improve access to clinical trials. I also hope this work broadens how we study ALS, demonstrating that the skin can provide valuable insight into disease processes and become a useful tissue for biomarker discovery and monitoring disease progression.



What is your Name?

Dr Lauren Elaine Black

Where do you work?

University of Glasgow

What do you do in your spare time?

Crochet and gardening

How long have you been doing MND research?

I started researching MND seven years ago during my PhD. I studied a disease in dogs called degenerative myelopathy (DM), linked to the SOD1 protein also found in some people with MND. I then studied whether head injuries and contact sports may increase MND risk in humans.

What are you currently working on?

I am continuing research from my PhD studying a disease in dogs similar to MND called degenerative myelopathy (DM). I want to understand how the SOD1 protein disrupts normal spinal cord function and identify factors that may increase the risk of MND in dogs and humans. Dogs can be more similar to humans than rodent models in their size, lifestyle, environment and clinical care. This makes them valuable for research. DM can progress quickly in dogs. Some owners kindly choose to donate tissue samples after euthanasia, helping us better understand the earliest stages of disease- something that is very difficult to study in humans.

What impact do you hope your research will have for people with MND and future MND research?

I hope this work will improve our understanding of how MND develops and support earlier diagnosis and future treatments in patients (humans and canines alike!).

I've been funded by MND Scotland



What is your Name?

Professor Gareth Miles

Where do you work?

University of St Andrews

What do you do in your spare time?

Sport (e.g. golf, cricket), spend time with family

How long have you been doing MND research?

I started researching MND as a PhD student in New Zealand in 1999, and have continued ever since.

What are you currently working on?

Our current research focuses on understanding how communication within spinal motor circuits becomes disrupted in MND. We are investigating the connections between neurons, known as synapses, that provide critical input to motor neurons and help control movement. Our work aims to identify which synapses are most vulnerable to disease, when these changes occur, how they contribute to the gradual breakdown of motor circuits, and how they might be protected. In parallel, we are studying the electrical properties of motor neurons to understand how they process information and generate the activity needed to control muscle contraction, and how these functions become altered in MND. By combining advanced imaging approaches with measurements of neuronal activity, we are building a detailed picture of how changes in synaptic communication and motor neuron function contribute to disease progression.

What impact do you hope your research will have for people with MND and future MND research?

We hope our research will uncover the biological mechanisms that make motor circuits vulnerable in MND and reveal new targets for treatment. By understanding how synaptic communication and motor neuron function become disrupted, we aim to identify opportunities to protect neural circuits, preserve motor function and slow disease progression. We also hope that the knowledge generated by our work will guide future MND research and support the development of more effective therapies.

I've been funded by MND Scotland



What is your Name?

Dr Judith Sleeman

Where do you work?

University of St Andrews

What do you do in your spare time?

Sewing, horror films, learning horse riding

How long have you been doing MND research?

I began studying structures within the nucleus (the control centre) of human cells back in the '90s after I completed my PhD. This led me to work on Spinal Muscular Atrophy and start a research group in 2004. My interest in MND broadened from there looking for similarities in how different diseases damage cells that we can use to develop therapies.

What are you currently working on?

We are trying to find out how diseases including ALS (amyotrophic lateral sclerosis), SMA (spinal muscular atrophy) and DM1 (myotonic dystrophy type 1) damage cells at a fundamental level. In each of these conditions, some types of cells are more vulnerable than others but it is not clear why.

We use techniques including time-lapse and enhanced resolution microscopy to image cells from different models of diseases to look for changes in their structure and behaviour compared to healthy cells.

We also identify the proteins present in cells (proteins do most of the actual work in cells) to look for changes in them that might explain why the types of cells affected in ALS, SMA and DM1 are vulnerable to damage and to give us ideas about how we might be able to fix, or at least support, them.

What impact do you hope your research will have for people with MND and future MND research?

A key difficulty in developing treatments to help people with MND is that we are so far from understanding what causes it. There are many genetic causes, which must interact with environmental and life-style factors. My hope is that, if we can understand exactly what 'goes wrong' with cells in MND, we will be able to design and test treatments. The impact of our fundamental cell biology research is likely to be a fair way into the future, but the progress in treatments for Spinal Muscular Atrophy over the past thirty years keeps me optimistic.



What is your Name?

Dr Matthew Broadhead

Where do you work?

University of St Andrews

What do you do in your spare time?

Spending time with my wife and two children.

How long have you been doing MND research?

I gained my Bachelors degree in Neuroscience from the University of Manchester in 2012, and my PhD from the University of Edinburgh in 2015. I have been at St Andrews since 2015, investigating aspects of spinal cord motor function in health and disease. Since ~2018 my main area of focus has been to understand the mechanisms of ALS.

What are you currently working on?

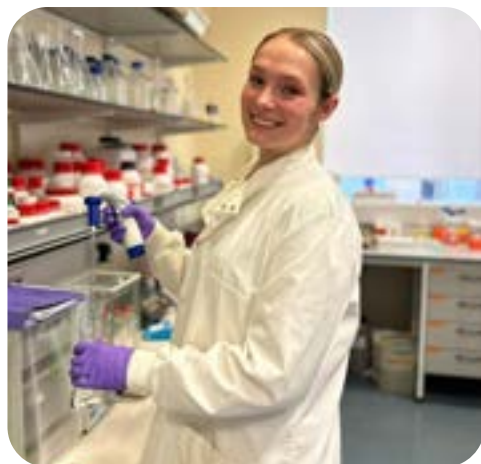
I am investigating how certain types of connections between neurons are vulnerable to degeneration in the early stages of ALS.

Our neurons receive thousands of connections (called Synapses) with other neurons around them to ensure they talk to one another and function correctly. Some of these connections appear to become dysfunctional and degenerate early on in pathological conditions of the nervous system such as ALS.

However – not all synapses are the same. Some are vulnerable than others. My goal is to identify which types of synapses are most vulnerable with a view toward a more complete understanding of the disease and to help identify potential therapeutic targets aimed at preserving vulnerable synaptic connections.

What impact do you hope your research will have for people with MND and future MND research?

There are many suggested genetic and environmental factors that may cause ALS – but how these different mechanisms converge and ultimately lead to ALS remains unknown. I believe that synapses may be crucial sites of convergence between different disease mechanisms. If we can understand the role of synapses in ALS, we could therapeutically target them, preserve them and ultimately treat the disease.



What is your Name?

Alyssa Corbett

Where do you work?

University of St Andrews

What do you do in your spare time?

Hike, read, and play ice hockey!

How long have you been doing MND research?

I've been conducting MND research for four years now. I am a final-year PhD researcher at the University of St Andrews, but my MND research journey began at the University of Toronto in 2022 after having previously been in the field of cancer research.

What are you currently working on?

My PhD research, funded by the Euan MacDonald Centre, is primarily focused on how communication between nerve cells and support cells called astrocytes becomes disrupted in MND. While much MND research has traditionally focused on motor neurons themselves, we now know that astrocytes also play an important role in disease progression.

Using mouse models and advanced imaging techniques, I study how astrocytes regulate communication at synapses – the connections through which nerve cells send signals to one another. My work investigates whether changes in astrocyte signalling contribute to the loss of normal neuronal communication seen in MND. Ultimately, this research aims to improve our understanding of the biological mechanisms driving MND and reveal new treatment avenues to consider.

What impact do you hope your research will have for people with MND and future MND research?

I hope my research will identify new potential therapeutic targets, helping inform drug development considerations. I also hope my work helps shift the field toward a more complete understanding of MND as a disease involving multiple cell types; understanding the impact astrocytes have on MND could provide a vital piece of the puzzle when it comes to developing effective therapies for future patients.



What is your Name?

Sophie Cuthbertson

Where do you work?

University of St Andrews

What do you do in your spare time?

I love the gym and hosting games nights!

How long have you been doing MND research?

I am in the first year of my PhD, but my undergraduate and Master's projects (which I carried out at Newcastle University) were also related to MND.

What are you currently working on?

My PhD project looks at how a protein modification called arginine methylation may be a process that underlies ALS onset. We know that many proteins linked to ALS (such as TDP-43 and FUS) contribute to nerve cell death, but we are unsure how they cause harm. These proteins have been shown to be controlled by a small chemical change called arginine methylation. This affects the way these proteins behave within cells, and when this process goes wrong, it may contribute to the nerve damage seen in ALS. Our research will investigate whether adjusting arginine methylation can reverse or prevent ALS development.

What impact do you hope your research will have for people with MND and future MND research?

I hope that the work that I produce during my PhD will lead to findings that are helpful for other researchers, whether that be proving that arginine methylation is a cause of ALS, or finding evidence that other causes may be more likely. The ultimate goal of my career is to contribute to MND knowledge and aid in finding a cure.



What is your Name?

Neela Murti

Where do you work?

Previously a student researcher at the University of St Andrews

What do you do in your spare time?

I love volunteering, rock climbing, and baking

How long have you been doing MND research?

I have been involved in ALS research for three years

What are you currently working on?

I previously worked on ALS projects at the University of St Andrews. Most recently, I performed experiments on mice to investigate a pathway involved in ALS. The pathway I studied is believed to affect neuronal excitability, which may ultimately result in neuronal death, contributing to disease progression.

What impact do you hope your research will have for people with MND and future MND research?

I hope my research will help understand early disease mechanisms.



What is your Name?

Dr Caroline McHutchison

Where do you work?

University of Stirling

What do you do in your spare time?

Sewing, cooking, and being outdoors!

How long have you been doing MND research?

I've worked in MND research since starting my PhD in 2019 with Prof Sharon Abrahams. I explored links between mental health conditions and the thinking and behaviour changes experienced by some people with MND. My two postdoctoral fellowships then examined whether these changes can occur before MND is diagnosed and how they develop over time.

What are you currently working on?

Much of my previous research has focused on changes in thinking (cognition) experienced by some people with MND. I am now particularly interested in understanding the behavioural changes that can also occur. Working with researchers in the UK and US, I have helped to develop a new tool for measuring behavioural changes. We are using it to investigate whether certain types of behavioural changes occur early in MND, potentially even before diagnosis, and how they develop over time. We are also interested in whether depression, stress and difficulty coping may influence these changes, and in the impact that behavioural changes can have on people living with MND and their family members.

What impact do you hope your research will have for people with MND and future MND research?

I hope my research will help us identify difficulties in thinking and behaviour as early as possible, so that people with MND and their families can receive the right support at the right time. I also hope that recognising these early symptoms will improve our understanding of how MND develops and progresses. In future, these symptoms could help researchers identify and enrol people in clinical trials earlier, with the aim of slowing disease progression, including changes in thinking and behaviour.



What is your Name?

Nicola Glennie

Where do you work?

University of Stirling

What do you do in your spare time?

Gardening, walking, and watching motorbike racing.

How long have you been doing MND research?

I started the MND Diary Project, which is my PhD in 2020, before this I conducted a qualitative systematic review exploring how people living with MND perceive and experience feelings of control. Prior to this I have worked as a Dietitian in the NHS and spent time working in creative projects through my interest in textile art.

What are you currently working on?

People may remember me talking about The MND Diary Project when I was looking for people to take part in 2021. My research interest is the effects that a diagnosis of MND can have throughout people's lives not just in their bodies but also in their social, work, and family life. The aims of the project were to explore people's experiences of coping or not coping with the effects that a diagnosis of MND has had within their lives and to find out what the challenges were and how people dealt with them.

I did this by listening to people's stories. Thirteen people living with MND throughout the UK, contributed twenty two hours of interviews and one hundred and fifty pages of diaries documenting three to six months of everyday experiences. I also interviewed five family members, and two focus groups took place with healthcare professionals. Analysing the stories people told me has given rich insight into what helped and what did not help people feel that they were coping well and living a good life. I'm currently writing up what I have found out into a thesis and hope to share the findings and stories soon.

What impact do you hope your research will have for people with MND and future MND research?

My findings suggest contextual problems such as funding and provision of health and social care and family support really affect people's coping ability. To create impact I would love to work with people living with MND, their families and health and social care professionals to look at how we can improve the stories, resources and support networks people living with MND and their families need to enable more people to tell a story of coping and living well following a diagnosis of MND.