Advance: June 2020

MND Research in the time of COVID-19

Undoubtedly, these are some very strange times we live in and our resilience is truly being tested - though this pales in comparison with the challenges faced by those living with MND every day. And, as we are all aware, MND continues its relentless march with two Australians still being diagnosed with MND every day. This means our research cannot stop and our driven researchers are using all their ingenuity and resilience to keep striving for a world without MND.

So what is happening beyond our own lockdowns?

Neurologists have had to alter their work practices considerably with telehealth playing a significantly increased role, enabling patients to continue to be monitored and supported. In the longer-term, this may prove a boon for patients, especially for those located away from major clinics and presents an attractive option for future practice models.

A high priority is being placed on ensuring clinical trials continue to run. Those trials with minimally invasive treatment protocols are continuing with remote follow-ups being conducted (Cu(II)ATSM, REFALS and RESCUE-ALS). However new recruitment into current or new trials may be on hold and trials requiring more invasive procedures may be delayed until the COVID-19 burden on the health system is reduced. These are only delays however, with no trials cancelled to our knowledge.

For lab-based research other challenges have arisen. Most universities and their research facilities have been largely shut down with only critical studies allowed to continue. This has meant researchers have had to switch modes from generating new research data into analysing and communicating data they have already collected. This can be a benefit in allowing researchers to step back and plan as well as prepare grant applications and write manuscripts. All these activities are vital to the research process but sometimes get squeezed by the demands of running experiments.

As is the case for many of us, this is often occurring in conjunction with home-schooling kids, carer duties and other challenges. That the research continues to move forward and discoveries are still being made is a testament to the quality and fortitude of the MND research community. Dr Shyuan Ngo (recipient of 2020 MNDRIA Betty Laidlaw Research Prize) and Dr Frederik Steyn (recipient of 2020 MNDRIA Fat Rabbit MND Research Grant) provide a great example of how two of our gun researchers are dealing with the pandemic. And not only are they continuing their research, they even decided to undertake a daunting physical challenge to raise funds for MND research! The following is a report from Dr Steyn and Dr Ngo on how they are continuing their research during COVID-19, and on the fundraising challenge they have set for themselves.

As for many researchers we have had to largely shut down our lab operations to comply with COVID-19 restrictions and ensure the safety of our research team.

We were running multiple studies on mouse models of MND, conducting tests on muscle and skin-cell derived neurons that were donated by patients with MND, and completing research that directly engaged with people and families living with MND. We were looking forward to the initiation of our first clinical trial, looking at the safety of a new drug proposed to help those with MND.

To ensure this vital work would not stop completely, our team devised a schedule to allow for the continuation of critical and current preclinical research: we put in place a roster so people could access the lab in isolation; identified critical roles and assigned duties to different members of the team to ensure that cells are looked after, mice are fed, and ongoing experiments could be finished. Unfortunately, continuing clinic-based face-to-face research was not an option. Instead, we identified key research measures that could be collected via remote or online research visits and expanded our strategy to make the most of these visits.

We fast-tracked requests for ethical approval and developed online research protocols. While we miss face-to-face interactions, we are once again connecting with people, and collecting critical information that will help us make sense of MND. An up-side: we are now able to connect with more patients, as our new online research strategy means we can connect with patients no longer able to travel.

We've always supported local organisations that seek to raise funding for those living with MND and funding to support grants provided by the MNDRIA. The pandemic has severely curtailed fundraising and there is real risk that these organisations won't be able to support those living with MND, and that funding for critical research will dry up. Having witnessed the powerful impact that community-funded research has had on our progress towards finding treatments for MND, we decided that we needed to help. Normally, we would head outside, join events, go for a walk, a run, or ride a bike for those living with MND. This year, we jumped on our bikes and rode from Brisbane to Sydney - although we never left the house. Completing the Million Meters for MND challenge, we were able to support the MND and Me foundation. In just over two weeks, this event has raised close to $15,000 to support those fighting for a world without MND.

Dr Frederik Steyn and Dr Shyuan Ngo get on their bikes to raise funds for MND research.

The MND and Me Foundation has been supporting MND research and people living with MND since it was established by Scott Sullivan following his diagnosis with MND at the age of 38 in 2010. MND and Me has provided significant support towards research into finding a cure for MND and we have worked with the Foundation since 2016 to fund the MNDandME, Col Bambrick, Fat Rabbit and NTI Research Grants.

Executive Director Research Report

So this Advance marks my first anniversary in the EDR role. Firstly, I would like to thank everyone I have encountered who have made me feel extremely welcome. Attending the 30th International Symposium on ALS/MND in Perth together with the associated meetings was a fantastic opportunity to meet many Australian and international researchers as well as my counterparts from the UK, US and Canada. One of the highlights for me was the MND Connect session, which provided the opportunity to hear many of the concerns and priorities of the MND community firsthand. It was incredibly obvious how well the MND community works together across the board from persons living with MND to care providers to Associations to clinicians to researchers. The strong focus on a world without MND and improving the lives of those living with MND while we get there is very special. It was very heartening to see the strong representation of MNDRIA funded researchers presenting their work at this international meeting. This really underlines how our donors support truly world-class research that is contributing to the global effort.

I have also managed to visit with researchers in Sydney and Brisbane and, once travel becomes feasible, I hope to be able to get out to meet more of our community.

So as already mentioned, we are obviously dealing with unprecedented times with challenges across the board for all of us. Our chief priority is to support our researchers and try and ensure the amazing research they undertake can continue and that we continue to provide opportunities for innovative ideas and build MND research capacity.

A key aspect of supporting MND research is trying to leverage the resources we have as much as possible. We need to make sure we work together with other organisations with mutual interests. We are continuing to build strong links with our international partners such as PACTALS (the Pan-Asian Consortium for treatment and Research in ALS), and the International Alliance. I am fortunate to have been invited onto the Alliance Scientific Advisory Council and this is providing a great forum to engage with my counterparts around the world. It is also important to ensure we work with other funding organisations such as FightMND to ensure our efforts are complementary rather than duplicative. We are also building our links with other neurodegenerative disease research bodies such as the MS Research Association and Dementia Australia. There are many similarities across these diseases and we can identify opportunities to jointly approach government and donors.

So what's happening moving forward? We are currently planning a National MND Summit in conjunction with FightMND. We hope to be able to identify some key research priorities for Australian MND research as well as discuss the best funding models to support research. The Annual MND Research Meeting will return in November after a hiatus in 2019 due to the Perth Symposium. We are hoping this will happen face-to-face in Brisbane. Please watch our communications for updates. And we will be announcing our funding round for 2021 in the near future – again keep an eye on our communications. Although many of our fundraising events have been hit by the pandemic it has been fantastic to see how the community has stepped up and kept supporting us. We are extremely grateful for every donation in these tough times.

Dr Gethin Thomas, PhD
Executive Director Research
MND Australia

The MND Research Australia and MND Australia team working and communicating from home via zoom.

Report from the 30th International MND Symposium: 4-6 December 2019

MND Australia, in partnership with MND Western Australia, was proud to host the 30th International Symposium on ALS/MND and the affiliated meetings in the sunny city of Perth this year with over 850 delegates attending. In order to organise the conference, the teams from both MND Australia and MND WA worked with the Motor Neurone Disease Association of England, Wales and Northern Ireland (MND Association) and the International Alliance of ALS/MND Associations (the Alliance) as a brilliant show of hard work, determination, and international cooperation.

Experts came from across the world to present their insights into the causes and biology of ALS/MND, developments in managing the diagnosis and symptoms of the disease, and what could help in its treatment.

There is still, of course, much to learn about stopping or even slowing ALS/MND. But important progress has been made in studies of genetics, disease mechanisms, biomarkers, inflammation, retroviruses, assistive technology, palliative care, potential drug treatments and related areas of work.

Many other meetings, workshops and panel sessions involving the broader MND community were held as part of the symposium, including the Annual Meeting of the International Alliance of ALS/MND Associations, the Allied Professionals Forum and the MND Connect session.

The 2019 Patient Fellows helped guide discussion at the Allied Professionals Forum through their perspectives on lived experience with ALS/MND. Occupational therapists, speech pathologists, palliative care professionals and other practitioners also shared their insights on what helps improve life with ALS/MND.

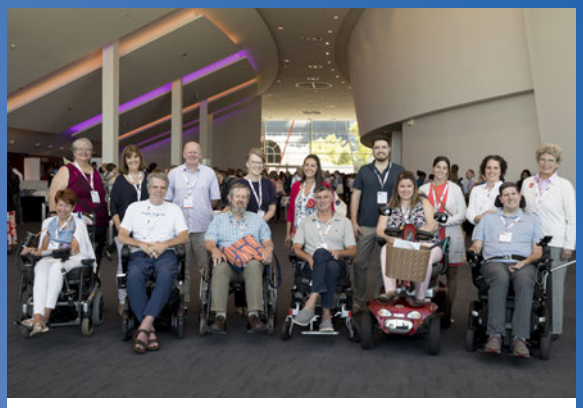
MND Connect, previously known as Ask the Experts, was a very well received panel session for people living with ALS/MND and their families. The panel of eminent clinician-scientists from Australia, England and the Netherlands answered questions from the delegates in the room and the online community via Facebook Live about the causes of ALS/MND and the search for an effective treatment.

The 1st ever Global Walk to D'Feet MND was a huge success. Around 400 people, sporting ALS/MND-themed t-shirts from around the world, walked the streets of Perth to raise awareness of ALS/MND research and care. The City of Perth helped make the walk possible, and also lit the city in blue to honour the global ALS/MND community.

Typically, the Australian motor neurone disease research community would have met to discuss and showcase their ongoing work funded by MNDRIA at a national level at the annual MND Australia Research Meeting. However, with the International symposium being held in Perth, our researchers instead had the marvellous opportunity to attend this world-class meeting, with many showcasing their work, on home soil. One of those, was Dr Luke McAlary, our latest Bill Gole Fellow. On the following page is a report from Luke detailing his meeting experience. MNDRIA funded researchers are designated with names **bolded and underlined**.

The city of Perth was lit up in blue for the duration of the Symposium in December

Outgoing MND Australia President, David Ali, welcoming delegates to the 30th International Symposium on ALS/MND



The 2019 Patient Fellows who travelled to Perth in December to attend the Allied Professionals Forum, MND Connect and the International Symposium

Reflections on the 30th International Symposium on ALS/MND by Dr Luke McAlary from the University of Wollongong:

Recipient of 2020 Bill Gole Postdoctoral Fellowship

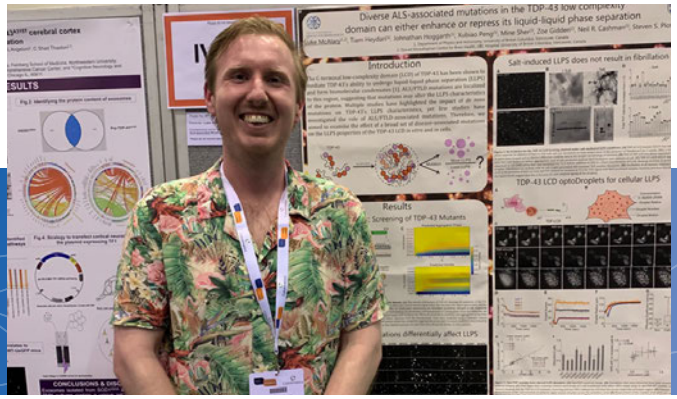
The symposium commenced with a joint opening session with the majority of attendees present. A short welcome by the organisers and hosts (MND Association and MND Australia) was held before two excellent presentations. Dr Jeffrey Iliff (University of Washington) presented his work investigating the glymphatic system in neurodegenerative disease. This system is thought to be responsible for clearing all the waste products that the nervous system creates, such as the pathological protein aggregates that are associated with neurodegeneration. Following on from this, Professor Martin Turner (University of Oxford) told of how far we have come in biomarker research, and how much work is left to do. A sensitive and accurate biomarker would be of significant value to the MND field for both clinical work and biomedical research. Following on from the opening, attendees split off into the separate arms of the conference, one of which was a clinical trials arm. That an entire arm was devoted to clinical trials is extremely encouraging, highlighting the strides the MND community is making towards finding new treatments and potential cures for MND. My own focus is on biomedical research, therefore, I was present only at the biomedical arm of the symposium throughout.

The opening session of the biomedical arm was devoted to the idea of proteostasis and proteotoxicity (proteins doing things that they shouldn't be doing and becoming toxic to neurons), and was filled with some of Australia's best and brightest in the field. The opening presentation was none other than our own **Professor Justin Yerbury** (University of Wollongong), who presented an overarching hypothesis that even small changes in motor neurons can lead to a chronic failure of protein homeostasis mechanisms, giving way to disease. In accordance with this idea, the following presentations detailed how proteostasis is altered in MND (Thomas Hedl - University of Queensland, **Dr Nirma Perera** – University of Melbourne), and how proteostasis might first become altered in MND through the environment (**Associate Prof Ken Rodgers** – University of Technology Sydney).

The next session in the biomedical arm concerned pathology at the synapse, the junction between nerve and muscle cells. Hiroshi Nishimune (University of Kansas) described the similarities and differences in neuromuscular junction degradation in both ALS and spinal muscular atrophy (SMA). Katalina Dittlau (Katholieke Universiteit Leuven) then provided an update on current work to better model neuromuscular junctions in dishes for more rapid examination of the processes and testing of drugs to prevent degradation. Professor Janice Robertson (University of Toronto) then described how mutations in C9orf72 may lead to downstream pathology at synapses, highlighting the potential role that C9orf72 has in intracellular trafficking. **Dr Catherine Blizzard** (University of Tasmania) then posed the interesting question of whether oestrogen can protect against MND synaptic pathology.

Therapeutic Strategies was the theme for the next session with the opening talk from Professor Don Cleveland (University of California San Diego) describing the potential uses of gene therapies to target neurodegenerative disease in a highly selective manner. The rest of the session showed how cutting-edge the MND field can be by highlighting the usage of artificial intelligence in screening of drugs (Professor Steve Finkbeiner – University of California San Francisco, Dr Rebecca Paul - Benevolent AI, Dr Irene Choi – Verge Genomics). It was encouraging to see industry-based research still moving forward into new areas with a focus on MND. This session was capped by **Associate Professor Peter Crouch** (University of Melbourne) describing the relevance of CuATSM to ALS cases other than SOD1, providing evidence to suggest that copper homeostasis is perturbed in sporadic ALS cases.

Following from this session, the global walk to D'Feet MND was help with the majority of the attendees suiting up in the best MND-themed finery and taking part in the largest gathering for this event to date.



Dr Luke McAlary at the symposium poster session

The following day, there was an entire session devoted to the main pathological marker of ALS, TAR DNA-binding protein 43 (TDP-43), showcasing the extensive research that has been conducted on this protein since the discovery of its role in ALS in 2006. Xinrui Wen (John Hopkins University) provided convincing evidence to support loss of TDP-43 repression may be a toxic mechanism in ALS, and can also be targeted therapeutically. **Dr Marco Morsch** (Macquarie University) showed how he is using zebrafish to understand the reasons for why TDP-43 mislocalises in disease. Alan Yu (University of Melbourne) described his efforts to uncover the innate immune sensor that responds to TDP-43 and creates neuroinflammation. Dr Emily Feneberg (University of Oxford) described her attempts to provide a more quantitative approach to measuring the levels of fragmented TDP-43 in ALS and FTD patient brains tissues. Owen Kantelberg (University of Edinburgh) finished the session by presenting his work using super-resolution microscopy to examine the sizes of TDP-43 aggregates present in ALS patient tissue.

Human cell biology and pathology was the theme for the next biomedical session, with a series of talks encompassing virus-mediated onset of ALS and the role of the immune system in ALS pathology. Dr Avindra Nath (National Institutes of Health) highlighted the potential role that endogenous retroviruses may play in the aetiology of ALS. Dr Haiyan An (Cardiff University) then described her research into the potential role that the antiviral immune response has in triggering the formation of persistent FUS granules. Dr Tomasz Brudek presented his work showing that naturally occurring autoantibodies against TDP-43 are reduced in ALS patients, suggesting an altered immune response in ALS may permit toxic TDP-43 aggregation. Dr Emma Scotter (University of Auckland) presented an intriguing set of data supporting a role for cell autonomous dysfunction in brain pericytes mediated by TDP-43. Finally, Dr Min-Young Noh (Hanyang University) shed some light on dysfunctional phagocytosis playing a role in controlling ALS patient progression rates.

The genetics session contained a mix of presentations with strong Australian representation. Julia Pytte (University of Western Australia) presented work identifying a structural variant in the SCAF4 gene, which is located close to SOD1, that may play a role in SOD1-associated ALS prognosis. Frances Theunissen (University of Western Australia) presented data on structural variants in the stathmin-2 gene and how they affect the prognosis of sporadic ALS patients.

Sarah Opie-Martin (Kings College) described an in-depth examination of the relationship between SOD1 mutations and prognosis in SOD1-ALS, demonstrating SOD1 mutants can be grouped on the basis of patient survival. Dr Natalie Twine (CSIRO) presented her work on developing better relatedness tools for candidate gene identification. **Dr Kelly Williams** (Macquarie University) presented data on relatedness mapping using identity-by-descent analysis, finding that some previously thought sporadic ALS cases could actually be low penetrance familial cases. This session was closed with some late breaking news from Dr Alfredo Lacoangeli (King's College London), who presented on ALS-causing mutations in the gene DNAJC7. DNAJC7 encodes heat shock protein 40, which is a protein that plays important roles in protein quality control and proteostasis.

Disease models followed on next, again with strong Australian representation. Associate Professor **Bradley Turner** (University of Melbourne) opened the session with an insightful perspective on ALS mouse models, as well as providing some preliminary data on a new mouse model he is generating in his lab. **Dr Adam Walker** (University of Queensland) then provided a rundown of his labs characterisation of the biochemical changes in TDP-43 model mice across time, to better understand presymptomatic disease. PhD student **Britt Bernin**g (University of Queensland, from Adam Walker's lab), presented her findings that Golgi dysfunction occurs early in TDP-43 model mice and is associated with TDP-43 pathology. Chloe Allen (University of Sheffield) then described how she used a combination of methods to identify differences in cell lines derived from patients and predict who may or may not respond well to riluzole and other compounds. This session was capped by Dr Peggy Allred (AveXis Inc, San Diego) giving a presentation on AAV-mediated delivery of anti-sense oligonucleotides against SOD1, and how they are achieving excellent results using this in multiple SOD1-ALS models. By far the most important part of any conference (in my opinion) is the poster session(s), where summarised work can be displayed and, more importantly, discussed in detail not afforded to a 15 minute talking slot. I was fortunate to have lots of interest in my own poster which made it difficult to visit many other posters, but I managed to get to several, which were of the highest quality. The displayed posters were excellent and it was great to see so many young and enthusiastic scientists working in this area of biomedical research. Seeing so many young scientists is excellent for the future of ALS/MND research as we move forward towards new discoveries and closer to a cure.

MNDRIA is Changing: The Case for a Name Change

After 30+ years as the MND Research Institute of Australia (MNDRIA) the time has come to move to a simpler name that better reflects our role as the National MND research organisation. We are therefore changing the organisation name to MND Research Australia (MNDRA).

MNDRIA was originally established in 1984 as the ALS Research Foundation with a goal to raise $1 million for MND research and a vision to understand the causes, find effective treatments and ultimately a cure for MND. At that time, it was necessary to be an "Approved Research Institute" under the Commonwealth Tax Assessment Act to qualify for tax exempt status as a research organisation. These requirements included establishment of a dedicated research fund and an administering research committee whose members were approved by the Commonwealth Department of Health. Such principles also ensured that the appropriate structures and governance were in place to support and fund high quality research. The Foundation became MNDRIA in 1986 and awarded its first modest grant-in-aid in 1987.

Over the succeeding 30 years the regulatory landscape has evolved significantly with medical research now falling under the remit of the National Health and Medical Research Council (NHMRC). MNDRIA still operates as an approved entity under the NHMRC remit and fulfils the governance and quality requirements to ensure the credibility and quality of our research support.

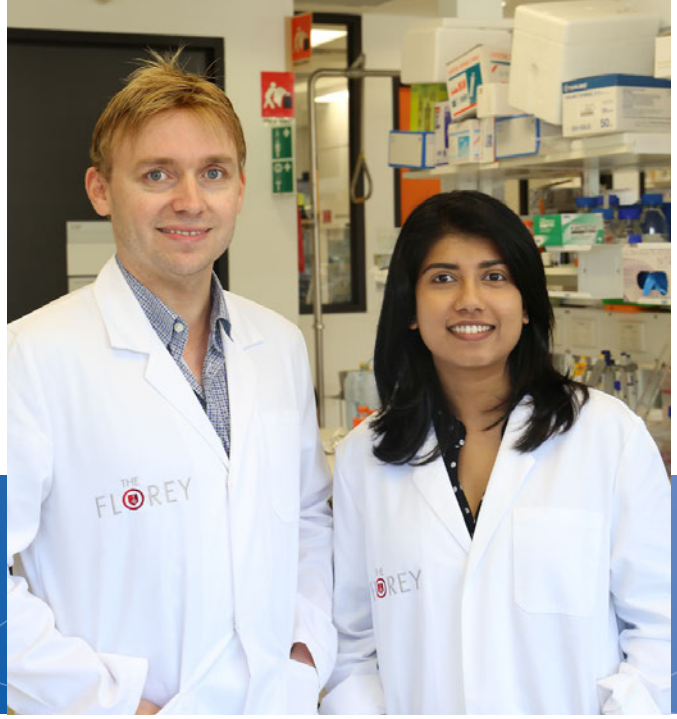
However, classification as a "Research Institute" is no longer required and with the profusion of medical research institutes in Australia today the distinction of MNDRIA as in institution supporting and funding research versus one actually undertaking the research can be confusing.

Further, in 2010 MNDRIA amalgamated operationally with MND Australia. As the research arm of MND Australia, MNDRIA functions as the national MND research organisation within the network of MND Associations that includes MND Australia, MNDRIA and the six state MND Associations. As well as funding research and representing the State MND Associations on research matters, we also advocate with government and represent Australia on international bodies such as the Pan-Asian Consortium for Treatment and Research in ALS (PACTALS) and the International Alliance of ALS/MND Associations. MND Research Australia (MNDRA) better reflects this role and further highlights our symbiotic relationship with MND Australia.

This name change will be a "business name" change (equivalent to the old "Trading Name"). The MNDRIA name will still exist on our ABN, ACNC and Incorporated Association records as well as our constitution. Documents and payments made to MNDRIA will still be valid. There will be an overlap period as we use up current stocks of printed materials carrying the MNDRIA branding but we are happy to be moving forward with this name change to more accurately reflect our role as the national MND research organisation.

Dr Nirma Perera, Florey Institute of Neuroscience and Mental Health

2018-2020 Bill Gole Fellowship Summary



Associate Professor Brad Turner and Dr Nirma Perera in their lab at the Florey Institute.

As you are reading this, there is a process going on in all your body's cells, tirelessly acting as a housekeeper, cleaning up damaged proteins and broken-down cellular machinery. This process is called autophagy, which literally means self-eating. But the housecleaning it accomplishes is much more important than you would think. For one, it achieves recycling. Cells use the broken-down material as reusable building blocks and nutrients. More importantly, autophagy purges poisonous protein clumps. This is especially important for nerve cells (neurons) in the brain and spinal cord. Our studies have shown these protein clumps accumulating inside the dying motor neurons of patients, potentially due to abnormalities in autophagy pathway.

The Bill Gole Fellowship has enabled me to comprehensively map the autophagy pathway in motor neurons of the brain and spinal cord in a MND mouse model across the lifespan of disease development. Using microscopy (Figure 1), I found that the efficiency of the autophagy pathway is chronically decreased in MND motor neurons from an early age, even before the symptoms start in mice. My findings show that this lower rate of autophagy could be due to a block in the later stages of the process rather than the initial steps.

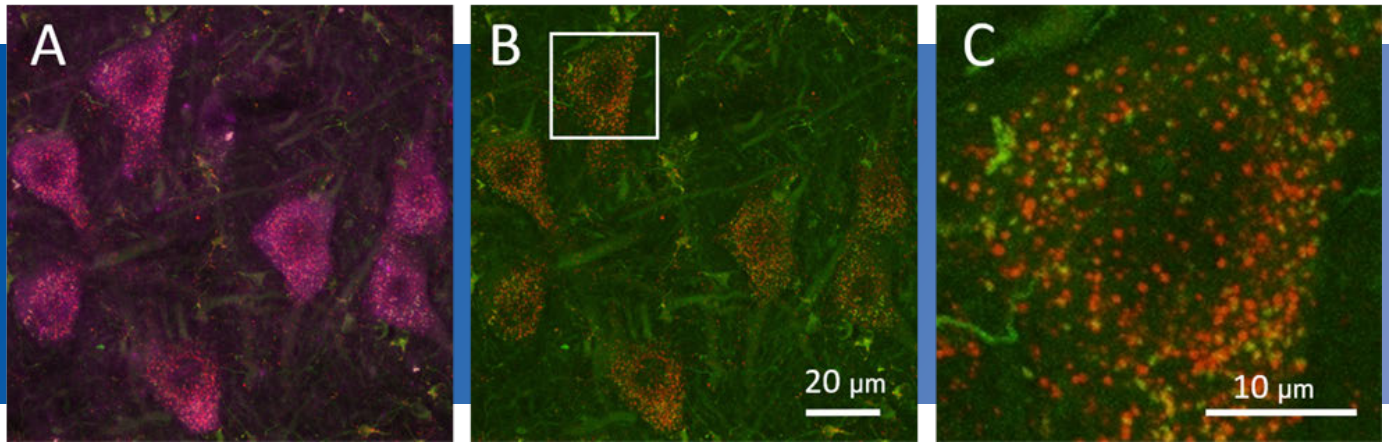


Figure 1. Microscopic images of the autophagy pathway at work inside motor neurons. (A) Shows mouse spinal cord motor neurons in purple. (B) and (C: enlargement of square in B) Shows machinery of the autophagy pathway as red and yellow dots digesting unwanted cellular material)

Now that we know the autophagy pathway is not working optimally in MND motor neurons, my next goal is to find specific drugs that can target the blockage and boost this pathway for therapeutic purposes. My future research will investigate some of these drugs in preclinical studies for their efficacy in extending the lifespan and/ or reducing symptoms of MND mouse models.

The Bill Gole Postdoctoral Fellowship was first awarded in 2005 and has been awarded and funded every year since by a philanthropist friend of Bill Gole, who died of MND in 2003. In 2020, the 19th young Australian MND researcher commenced their Bill Gole Fellowship grant, taking the total funded for this program to over $4 million. The fellowship is directed towards promising postdoctoral scientists with a track record in neuroscience related to MND. The Bill Gole fellowship scheme leaves a momentous legacy. Almost 90% of recipients of this award continue to work in the field of MND and/or neurological research and many have risen to be among Australia's leading MND researchers. Dr Perera is the 2018 recipient of this award.

Accelerating New Treatments for MND with Innovative Drug Repurposing

By 2020 MNDRIA Innovator Grant recipient, Richard Gordon, University of Queensland

Dr Richard Gordon and his research team.

Our research aims to identify key mechanisms which lead to the onset and progression of MND and target these processes using existing drugs approved to treat other diseases.

MND is a complex disease involving multiple mechanisms that contribute to its onset and progression. While our understanding of the processes that drive the progressive death of motor neurons is still limited, current evidence points to inflammation, protein aggregation and immunometabolic changes as important mechanisms that contribute to motor neuron loss. Given our limited understanding of how MND starts and progresses, it is likely that additional mechanisms are also involved which remain to be discovered. While this complex and multifactorial nature of MND is a major challenge in terms of developing effective treatments, it also provides opportunities to repurpose drugs that have been tested or approved for other diseases, where similar mechanisms and disease-causing pathways are involved.

Our project, funded by MNDRIA through the Col Bambrick Memorial MND Research Grant (funded through fundraising by the MNDandMe Foundation), is based on an exciting new target that we have recently discovered to be play a role in MND by driving both inflammation in immune cells and also the death of neurons which are lost as the disease progresses. Crucially, this pathway can be targeted by a drug that is already approved and currently in use for treating certain types of blood cancers. Further, new evidence suggests in recent human trials shows that our repurposed drug can cross the blood brain barrier at doses required for it to be effective. This overcomes one of the biggest challenges associated with developing treatments for neurodegenerative diseases such as MND.

Our MNDRIA project will evaluate the effectiveness of repurposing this drug as a new treatment for MND, by testing its effectiveness in animal models of the disease. We will determine if treatment with our repurposed drug improves disease markers and survival outcomes in MND models. We will also confirm that the pathway targeted by this drug is activated in MND patient immune cells and at the sites of motor neuron loss, as we have found already in our animal models. Our results will provide vital supporting data to guide the next steps in progressing this approved cancer drug as a potential new treatment for MND. We are collaborating with an experienced team of MND researchers and neurologists including Dr Shyuan Ngo, Dr Frederik Steyn, A/Prof. Rob Henderson and Prof. Pam McCombe who have substantial expertise to enable clinical translation of outcomes from our project.

Traditional drug development is a slow and expensive process, and usually requires around 10 to 12 years for a new drug before it reaches patients and costing over $ 1 billion. Our drug repurposing approach aims to significantly accelerate this process by focusing on drugs that have already been developed or approved for other diseases. To enable us to identify the most promising drugs that can be repurposed for diseases such as MND, we also use several innovative approaches including Artificial Intelligence and Machine Learning tools. We have also recently obtained strategic capacity-building funding from the Queensland Government's Advance Queensland program to establish a drug-repurposing clinical trials platform for brain diseases through the Queensland Drug Repurposing Initiative (QDRI). If results from our MNDRIA-funded project are positive, this will enable rapid progression of this drug towards clinical trials for MND using our established drug repurposing platform and clinical trial infrastructure.

Supporting Emerging MND Researchers

MND Research Australia encourages researchers to move into the challenging field of MND research through the award of PhD top-up grants provided to promising young Australian researchers. In 2020, two PhD scholarship top-up grants were awarded by MND Research Australia to the University of Tasmania's Courtney Clark (left) and Laura Reale (right).

Courtney Clark, left, and Laura Reale, right, from the University of Tasmania.

Courtney Clark, University of Tasmania

Inhibitory Regulation of Motor Neurons: A new target mechanism for MND.

Currently there are few treatments available to motor neuron disease patients, which provide substantial improvement in lifespan and quality of life. Previously therapies have focused on improving motor neuron pathology. However, in MND, inhibitory network activity, which is vital for supporting motor neuron function, is dysfunctional. Through the use of mouse models and induced-motor neurons, interneurons and glia derived from patient cells, this project aims to understand how inhibitory interneurons can be used as a therapy to improve motor neuron health in MND.

Laura Reale, University of Tasmania

Can we stop the spread of TDP-43 pathology in MND?

MND is caused by a destruction of neurons that are part of the motor system in the brain and spinal cord. It is not known how disease moves through this system and we have few effective treatments to stop the spread. In my PhD, I aim to discover why one population of neurons can make another population stop working, i.e., how the disease spreads, and test a non-invasive intervention to stop this destruction from spreading. If we can better understand why the whole system fails and how to protect against this, then we can develop new effective treatments for MND.

MND Research Australia is very grateful to the MND Association of England, Wales and Northern Ireland for the images featured in this newsletter, which were taken at the 2019 30th International Symposium on ALS/MND, Alliance meeting, Allied Professionals Forum and at the Global Walk to D-Feet in Perth.

Governance

MND Australia is the principal member of MND Research Australia. The governance and operations of both organisations are the responsibility of MND Australia.

Directors

The board of MND Australia consists of an independent elected President and a nominated representative from each member MND Association board, the chair of the MND Research Australia Research Committee and up to three independent directors.

Research Committee

The MND Research Australia Research Committee reviews research grant applications and determines the distribution of funds within the set policies and criteria for scientific assessment.

Research Committee Members:

- Chairman: Professor David Burke AC, NSW
- Professor Samar Aoun, WA
- Professor Ian Blair, NSW
- Professor Tracey Dickson, TAS
- Professor Simon Foote, ACT
- Professor Glenda Halliday, NSW
- Professor Matthew Kiernan, NSW
- Dr Susan Mathers, VIC
- Professor Pamela McCombe, QLD
- Dr Shyuan Ngo, QLD
- Professor Dominic Rowe AM, NSW
- Professor Dominic Thyagarajan, VIC
- Associate Professor Bradley Turner, VIC
- Professor Steve Vucic, NSW
- Professor Naomi Wray, QLD

Bequests

Your Will can provide an important way of making a gift that can have lasting influence on MND research and give hope for the future.

If you would like to consider the MND Research Australia in your Will by providing a Bequest from your Estate, please contact your solicitor.

For more details on how your bequest can help MND research

Contact Dr Gethin Thomas, Executive Director Research:

Phone: 02 8287 4989
Email: research@mndaustralia.org.au

Donations

Research funded by the MND Research Australia is dependent on donations. To contribute to this vital work, please send your gift to:

MND Research Australia
PO Box 117, Deakin West, ACT 2600

Donations can be made by cheque (payable to MND Research Australia).

Visa or MasterCard donations can be made by phone **(02 8287 4989)** or online at: **www.mndaustralia.org.au/donate-research**

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We wish to thank Snap Printing, North Ryde, NSW, for their generous support in printing this newsletter.