



COVID-19 VACCINATIONS AND MS – EVERYTHING YOU NEED TO KNOW

Never in our history has there been such a mass vaccination program as the global COVID-19 vaccination program.

There is a mountain of information about vaccines out there and it is often confusing and complicated. Here we try to break down some of the basics on COVID-19 vaccinations and how it will affect people with MS. This article is designed to complement our more clinical advice around COVID-19 vaccination for people with MS, which you can read here: msra.org.au/covid-19-vaccination-guidance-for-people-with-ms/

WHAT IS VACCINATION?

Vaccination is the safest way, and sometimes, as in the case of COVID-19, the only way to protect yourself against certain specific infections. Vaccination aims to train your immune system against a virus or bacteria that otherwise would cause disease if you were to encounter it. In other words, vaccinations give you immunity to those bugs.

HOW DOES VACCINATION WORK?

There are many different types of vaccines, but generally they use a harmless form of the virus, or part of the virus, to train the

immune system without making you sick. The immune system remembers this bug, so if a vaccinated person encounters the virus later, the immune system already knows how to mount a suitable response.

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A NOTE FROM OUR CEO



My first two months at MS Australia have flown by.

But they have been enriched by moving and enlightening meetings with people living with MS, with the passionate and world-class research community, with our highly motivated donors, with enthusiastic carers and volunteers, with our hard-working Board members, with our outstanding state MS organisations, and our deeply committed and first-class staff.

The MS community – I have quickly learned – is a community on the move. Along with the Board and staff, a key focus of work for me will be to lead the consolidation of MS Research Australia and MS Australia together to create a single organisation dedicated to research and advocacy. This integration will help improve the lives of people living with MS and in finding a cure.

In January, we announced our annual research grants, dedicating \$2.9 million towards vital MS research projects around Australia. For the first time we were able to fund all fundable grant applications for 2021, thanks to the generous donations from the MS community. We are also approaching the Australian Government in a bid to ‘supercharge’ the research agenda building on our research roadmap and implementation plan as launched by the Prime Minister.

Our most important fundraising event, The May 50K, has just been launched and is off to a great start, with strong early interest and a trophy already in the cabinet after winning the Impact Through Events category at the Fundraising Institute of Australia 2021 Awards for Excellence in Fundraising. We are incredibly excited this year to have our state/territory organisations actively involved. With this new partnership we are looking to establish a sustainable and collaborative approach that will assist us in increasing our fundraising activities which, in turn, will result in greater returns that we can then plough into more research.

Our biennial Progress in MS Research Scientific conference is also progressing, with plans underway for the event to be held in Hobart in November.

Thank you for your warm welcome. Hold on to your hats – we have a busy and productive year ahead.

Kind regards,

Rohan Greenland

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SHOULD SOMEONE WITH MS HAVE THE COVID-19 VACCINATION?

It is currently recommended that everyone over the age of 16 years should be vaccinated against COVID-19. There is no current data related to the administration of COVID-19 vaccines to people with MS, but studies in the US, EU and Australia are underway. However, there is no theoretical reason why any of the presently available vaccines should pose any particular risk to a person with MS. The chances of developing COVID-19 are genuine, and the risks may be higher in a person with MS who also has some disability or other health conditions.

The risks in contracting the disease far outweigh any conceivable risks from the vaccines. The current advice is that people living with MS should be vaccinated, unless advised not to do so by their treating neurologist.

“ THE CURRENT ADVICE IS THAT PEOPLE LIVING WITH MS SHOULD BE VACCINATED, UNLESS ADVISED NOT TO DO SO BY THEIR TREATING NEUROLOGIST. ”

WHAT ARE THE DIFFERENT COVID-19 VACCINATIONS?

The Australian Government has invested more than \$3 billion to secure three potential COVID-19 vaccines, if they all prove to be safe and effective. The vaccines are:

- 10 million doses of the Pfizer/BioNTech vaccine
- 53.8 million doses of the University of Oxford/AstraZeneca vaccine
- 51 million doses of the Novavax vaccine

The three vaccines are all slightly different, in both composition and how they show part of the coronavirus to the immune system. The Pfizer vaccine is an mRNA vaccine. mRNA is short-lived genetic material found in all living things, similar to DNA. In this vaccine, the mRNA contains the instructions to make a segment of the SARS-CoV-2 virus spike protein. Once injected, our body then uses the mRNA instructions to trigger a response.

The AstraZeneca/Oxford vaccine uses a different technique to introduce the SARS-COV-2 virus into the body, called a viral vector. A viral vector is a modified virus unable to replicate in the body, which in this case is an adenovirus (generally associated with a cold).





The Novavax vaccine is different again; this vaccine uses part of the SARS-COV-2 virus protein together with an “adjuvant”, a chemical that stimulates the body’s immune system into action. For more detailed information about each of the three different vaccines go to our website.

WHERE DO PEOPLE WITH MS FIT INTO THE VACCINE ROLLOUT?

The Australian government have now commenced the vaccination rollout, with a plan underway dependent on the level of risk of contracting the disease.

The first group of people currently being vaccinated consists of border and quarantine staff, frontline medical staff, and aged care workers and residents (approximately 678,000 people). The second group (phase 1b) comprises of people with underlying medical conditions, which is around 2 million people. According to the Department of Health’s website, people with MS will be included in this group.

“ THE SECOND GROUP (PHASE 1B) COMPRISES OF PEOPLE WITH UNDERLYING MEDICAL CONDITIONS ”

The first rounds of vaccines have been made available in a small number of locations, gradually building to around 50 hospital hubs in urban and rural areas around Australia as experience is gained and logistics are organised. It is therefore likely that people with MS will need to go to one of these centres to be vaccinated. The location of these centres will be decided by state and territory governments. Later waves are likely to be carried at GPs and other local healthcare clinics and possibly community pharmacies.

WHAT IS HERD IMMUNITY?

Herd immunity is the idea that if a large enough percentage of the population is vaccinated, it is difficult for the virus to find an unvaccinated person to infect and spread. Not only does this limit the spread of infection, it also limits the chance of the virus mutating or changing. Herd immunity is also essential to protect people who can’t be vaccinated for various reasons, such as age or immunological diseases. It is currently unknown exactly what percentage of the population needs to be vaccinated to produce herd immunity; but experts believe it to be around 75%.

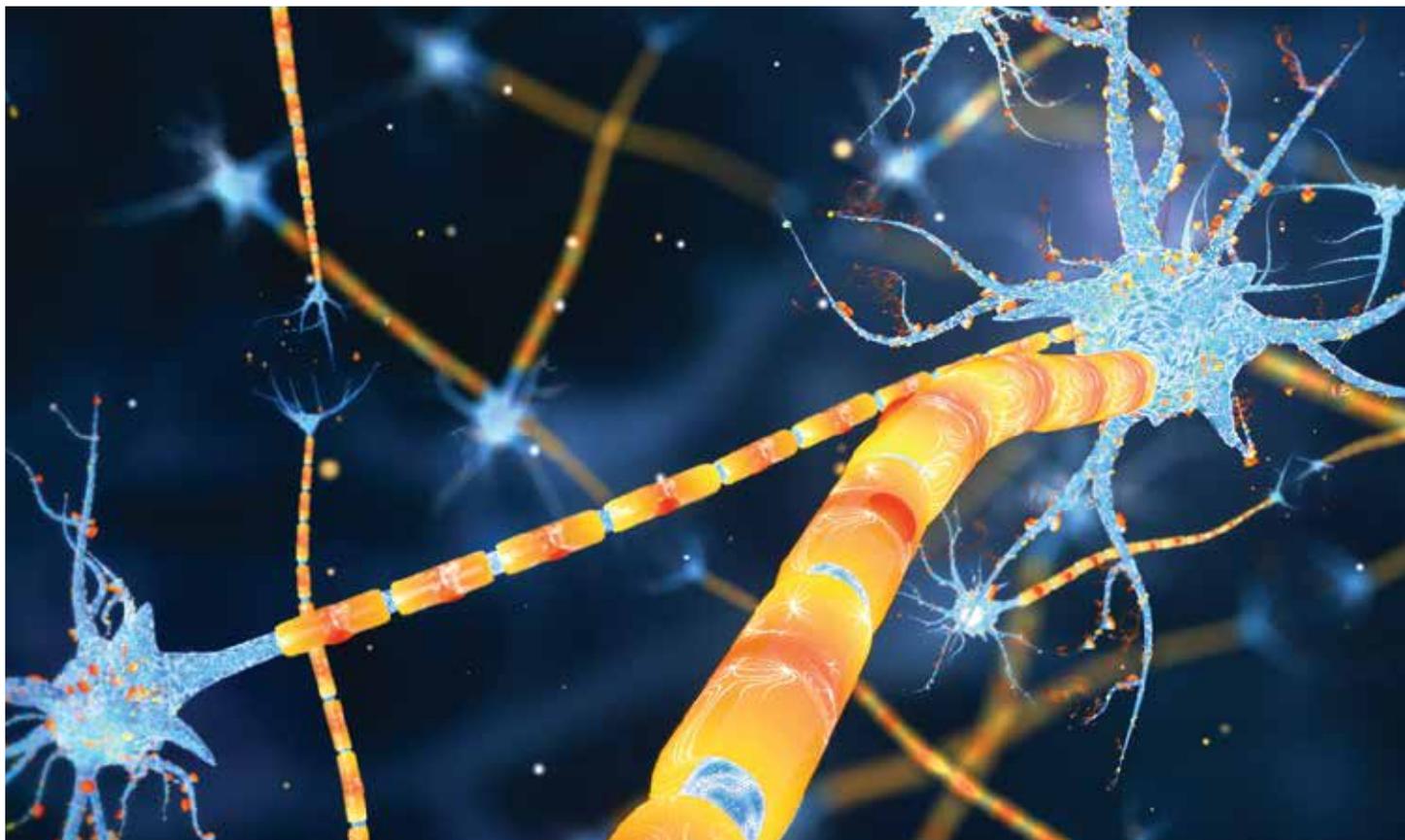
HOW EFFECTIVE ARE THE DIFFERENT VACCINES?

Like any medical intervention, no medicine is 100% effective, but vaccines are the most effective way of preventing COVID-19, especially severe COVID-19. There are variations in people’s immune systems, there are variations in the virus caused by mutations, and there are variations in the vaccines themselves. Vaccine “efficacy” is indicated by the percentage reduction of disease in a vaccinated group of people compared to an unvaccinated group.

Among the COVID-19 vaccine candidates, there have been different efficacies reported. This is varied and depends on the vaccine, the study, and the population they are being used in. But generally, they are all considered to have a significant impact on the virus responsible for COVID-19.

Previously, diseases such as smallpox and polio have been eradicated from Australia by effective vaccination strategies, and without any other options for COVID-19, vaccination is the only line of defence we have. Vaccination protects you and your community. If you have any concerns about vaccination, it is essential to talk to your healthcare team.

UNDERSTANDING MYELIN REPAIR IN THE MS BRAIN



Over the last two decades, research has delivered effective therapies to shut down the immune attack on the brain and spinal cord in multiple sclerosis (MS), reducing MS relapses. The new “holy grail” for MS research is to repair the damaged nerves in the brain and spinal cord and restore nerve function. This requires a greater understanding of how myelin is replaced, or “remyelination”, after it is lost in MS. New research funded by MS Research Australia has shown that deletion of a specific gene in the brain speeds up myelin repair in a laboratory model of MS.

WHAT CONTROLS MYELIN REPAIR IN THE BRAIN?

In MS, the immune system mistakenly attacks and damages the myelin sheath around nerves in the brain and spinal cord. In the initial stages, the body’s natural repair processes drive remyelination and repair of the nerves. Over time however, this process cannot compensate adequately, and the resulting deficits in nerve conduction cause persistent neurological symptoms in MS. The myelin sheath is produced by specialised cells in the brain known as oligodendrocytes. In new research funded by MS Research Australia, Associate

Professor Kaylene Young’s laboratory examined how a specific gene affects oligodendrocytes when myelin is damaged.

SWITCHING OFF A GENE IMPROVES MYELINATION IN AN MS MODEL

Using a laboratory model of MS, the team “switched off” this gene specifically in precursors of oligodendrocytes. This caused oligodendrocytes to mature faster, resulting in better myelin coverage of the brain after disease onset. In the non-MS brain, switching off the gene had a different effect. Rather than affecting maturation, more new oligodendrocytes were produced. This illustrates that myelin producing cells are regulated differently in the brain in response to an MS-like disease.

Overall, the team has shown that this gene, called LRP1, suppresses remyelination in a model of MS and have shown different effects of LRP1 in the non-MS brain versus the MS brain. Their work was published in the prestigious journal *Frontiers in Cell and Developmental Biology* and uncovers another potential process in the complex regulation of myelin repair. It is hoped that a greater understanding of this process will ultimately enable development of new therapeutic strategies to enhance remyelination.

HOW IS MS RESEARCH AUSTRALIA WORKING TO ACCELERATE THERAPIES FOR MYELIN REPAIR?

For the last three years, MS Research Australia with support from Macquarie Group Foundation has funded Associate Professor Young’s “Paired Fellowship” to work on remyelination in the brain. The Paired Fellowship funds a laboratory scientist and a clinical researcher (in this case, neurologist Professor Bruce Taylor, also from the Menzies Institute for Medical Research) to collaborate on a shared research program to translate research findings into new treatments.

Applications will open soon for the next Paired Fellowship to fund discoveries translating to new treatments for MS. Also opening soon is MS Research Australia’s new targeted call for research into protecting and repairing the brain in MS, including a focus on myelin repair. Finally, MS Research Australia is investing in international research into myelin repair for progressive MS as a managing member of the International Progressive MS Alliance.

It is our great hope that these initiatives accelerate the path to effective therapies promoting remyelination and repair for MS.

FAST-TRACKING THERAPIES FOR PROGRESSIVE MS

Effective treatments for progressive MS are urgently needed, and their development is a major challenge for research. The International Progressive MS Alliance, of which MS Research Australia is a managing member, was formed in 2013 to fast-track treatments for progressive MS, and over the last year has made significant progress despite unprecedented challenges.

NEW DRUG CANDIDATES AND TARGETS FOR PROGRESSIVE MS

As part of the ongoing work of the two 2016 Collaborative Network Awards focussing on progressive MS research, the Alliance has now conducted formal independent assessments of new drug candidates for progressive MS. It is hoped these candidates could go on to be new therapies for progressive MS.

PEOPLE WITH MS AS ‘CO-PILOTS’ OF CLINICAL TRIALS

The Alliance recognises the critical importance of input from people with MS in clinical trials, beyond participation in the studies. Study priorities should reflect what is important for people with MS. As people with MS become more familiar with the scientific method and the research landscape, they ask insightful questions that help guide these priorities.

BETTER DIAGNOSTIC TESTS FOR PROGRESSIVE DISEASE

A substantial difficulty in trialling new therapies for progressive MS has been the lack of ways to reliably measure disease progression. One of the processes involved in disease progression is the breakdown of nerves in the brain and spinal cord, known as “neurodegeneration”. The Alliance has been working towards developing a blood test to measure neurodegeneration and predict disease activity in progressive MS. In 2020 the Alliance published an extensive review of “serum neurofilament light” (a product of nerve damage that can be detected in the blood), which it is hoped may prove a useful marker of neurodegeneration in MS, including in clinical trials.

“ AN “ADAPTIVE” CLINICAL TRIAL ALLOWS FOR CHANGES DURING THE TRIAL, SUCH AS CLOSING DOWN A TRIAL ARM IF THAT DRUG IS CLEARLY INEFFECTIVE, AND REASSIGNING PARTICIPANTS TO A MORE PROMISING DRUG CANDIDATE. ”

REWORKING CLINICAL TRIALS TO IDENTIFY EFFECTIVE THERAPIES FASTER

The Alliance is also exploring the establishment of clinical trial programmes for two key therapeutic strategies: protective or regenerative drugs for nerve cells and myelin-producing cells; and dampening inappropriate activation of “support cells” in the brain (called microglia and astrocytes) that can injure neurons.

The Alliance has just published an innovative strategy paper on reworking clinical trials as an important step in fast-tracking effective treatments. To improve speed and efficiency, new clinical trial designs allow testing of multiple drugs, and multiple drug combinations, in the one trial. An “adaptive” clinical trial allows for changes during the trial, such as closing down a trial arm if that drug is clearly ineffective, and reassigning participants to a more promising drug candidate. This is a departure from previous more rigid trial designs, where people could have remained on a placebo or ineffective drug for years. The Alliance has also recommended that new therapies for progressive MS be tested in conjunction with one of the currently approved MS medications that targets the immune system. This means that the immune system can be held in check while the new medication’s ability to protect or repair the brain is tested.



UNIQUE INSIGHTS FROM THE “HUMAN MODEL” OF MS

One of the most frustrating elephants in the room for drug development is that effectiveness in laboratory models of MS rarely translates to effective medications for the human disease. Given the huge leap from laboratory models to humans, it is surprising that many early drug trials have not focussed on deeply characterising the biological response to a new drug. If a new drug is not effective in people with MS, working out “why not?” may be the fastest way to identify new drug targets, and provide a better understanding of the underlying disease processes.

To address this, the Alliance is developing a new funding program for experimental medicine trials. These trials will not only test the safety and effectiveness of new treatments, but also conduct comprehensive biological and clinical testing to better understand the effects of the treatment in MS. Researchers are doing this by measuring the expected effects of a drug (e.g. on immune function), and also by conducting broad “unbiased” testing (e.g. screening activity of thousands of genes at once) to uncover previously unknown effects of the drug. These studies require close collaboration with people living with MS.

WHAT DOES THIS MEAN FOR PEOPLE WITH PROGRESSIVE MS?

The Alliance is thinking carefully about all parts of the pipeline required to bring effective therapy for progressive MS as quickly as possible. MS Research Australia is actively engaged in this process and will continue to provide updates as we continue to make headway.

TAKE ON THE MAY 50K 2021 WITH YOUR WORKPLACE!



KATE ROBERTS

After working from home for the majority of 2020, most of us had to settle for virtual catch ups with colleagues rather than a quick chat in the kitchen or going for a walk at lunch.

In 2021 it is more important than ever to keep workplace morale high, and The May 50K is the perfect opportunity to look after our workplace health and wellbeing.

Long-time Kiss Goodbye to MS supporter, Kate Roberts, saw The May 50K 2020 as an invaluable opportunity to keep her workplace, nib health funds, connected despite being physically separated – and they plan to do it all again this year!

The May 50K is a virtual fitness challenge which encourages Australians to run or walk 50 kilometres throughout May, to raise funds for life-changing MS research. The challenge has quickly become one of the largest virtual fitness and workplace engagement challenges in Australia, raising over \$8.7 million for MS research in less than two years.

What makes it so amazing? The May 50K can be completed anywhere in Australia and provides a unique opportunity for workplaces to prioritise physical and mental health whilst enjoying some friendly competition. It was this aspect that motivated Kate to get her workplace involved.

Kate has been living with MS for almost 8 years, so MS research is a cause close to her heart. Kate was our top individual fundraiser in The May 50K 2019, raising \$21,317.52 for life-changing MS research! In 2020 she was keen to participate again and boost her fundraising efforts, so she invited her work colleagues to take on the challenge too. We are so grateful they did! 'Team nib' collectively raised an outstanding \$32,557.55 for MS research! We spoke to Kate to find out how they did it.

HOW DID YOU GET THE NIB HEALTH FUNDS TEAM INVOLVED INITIALLY?

Once I signed up to the challenge, I sent a personal email out to the team explaining why I decided to participate in The May 50K. nib health funds has always been very supportive of my MS since I started, and they are also very proactive in being part of the community. So, when The May 50K was in my sights it was a perfect match!

WHAT APPROACH DID YOU TAKE WHEN SIGNING UP YOUR COLLEAGUES?

I put together a summary of my MS experience and shared it via the company intranet. I also created videos leading up to the challenge, encouraging my colleagues from all over Australia and New Zealand to participate and/or donate to MS research. The Community Engagement department also got involved to make sure everything ran smoothly and got our senior management registered! Not long after this, the nib foundation got wind of the challenge and agreed to match dollar for dollar to encourage more employees to sign up. This made a huge impact on our fundraising and motivated us to push ourselves.

WHAT ADVICE DO YOU HAVE FOR PEOPLE WANTING TO GET THEIR WORKPLACES INVOLVED?

Make it personal! Explain how the donations and the awareness that The May 50K raises is for life-changing research. MS researchers believe that with sufficient funding, we are just 10 years away from stopping and reversing MS! It's also a fun team-building exercise, as you can meet new people and it's a great way to get active!

We couldn't achieve a future free from MS without the incredible support of workplaces like nib health funds. Their determination, perseverance and collective efforts are changing the future lives of people living with MS like Kate.

You can sign up your workplace for The May 50K 2021 by heading to www.themay50k.org or reach out to our team at themay50k@msra.org.au or call 1300 785 717. Together we will leave MS where it belongs, behind us.

PEARL HAS THE POWER TO HELP CURE MS. YOU DO TOO.

When Pearl was diagnosed with MS in 1993, there were no treatments available. None. Since then, she's seen research transform the lives of people with MS – including her own.

Now, Pearl is determined to help find a cure by leaving a gift in her Will to MS Research Australia.

Pearl's MS symptoms started suddenly, and without warning.

"I went for a swim before work and kept swimming into the left-hand side of the pool. Then later that day I was talking to one of my staff. She was standing on my left and I couldn't see her. I walked out right away and went straight to the doctor," Pearl said.

Back then, little was known about MS and Pearl was misdiagnosed. She was told she'd had a stroke. After getting a second opinion, Pearl learned the truth – she had MS, and her life was about to change forever.

"It was a relief to finally know what it was, but it was upsetting. I sat in the doctor's surgery with my head in my hands. Then I went across the road to eat, and sobbed for an hour through dinner," Pearl remembered.

With no medications or treatments available for MS, Pearl had to let the disease run its natural course. Within a year, her neurologist told her she could no longer work.

“ WITH NO MEDICATIONS OR TREATMENTS AVAILABLE FOR MS, PEARL HAD TO LET THE DISEASE RUN ITS NATURAL COURSE. ”

"Everything was just too hard," Pearl said. *"I'm used to doing things well and kept trying to do everything despite my MS symptoms. It got to the point where my neurologist said, 'stop work NOW, don't go back' – and that was it."*

Pearl also had to give up many of her hobbies. She'd always loved running and bush walking, but Pearl's MS made her fatigued and unsteady on her feet. Tap dancing and line dancing had to stop too, in case she had a fall.

“ SINCE HER DIAGNOSIS, PEARL HAS BEEN FASCINATED BY MS RESEARCH, AND HAS PLAYED AN IMPORTANT PART IN MAKING IT HAPPEN – WITH REGULAR DONATIONS TO MS RESEARCH AUSTRALIA. ”



Pearl 78, was diagnosed with MS in 1993.

Today, Pearl says she can still walk...just. She uses a walking stick and needs to hold her husband Ted's hand when she's out and about.

"I have to be careful all the time. I can't go out by myself anymore. Getting about is hard work," said Pearl.

MS has taken so much away from Pearl, but research has given her hope. There were no treatments available when she was diagnosed nearly 30 years ago. But thanks to breakthroughs in medical research, there are now 14 different drugs to treat MS – including one that helps Pearl manage her symptoms.

Since her diagnosis, Pearl has been fascinated by MS research, and has played an important part in making it happen – with regular donations to MS Research Australia.

She hopes to power research into finding a cure by leaving a gift in her Will.

Pearl says the whole process was quick and simple. First, she and Ted had a confidential chat with the Gifts in Wills Manager at MS Research Australia who

gave them some helpful advice on how to leave a gift in her Will.

Pearl and Ted decided to set aside some money for their closest relatives and leave the rest to causes they care about most – including MS Research Australia.

At 78, Pearl isn't expecting a cure for MS to come within her lifetime. But she's doing all she can to create a world free from MS – and knows her gift to MS Research Australia will help make it a reality.

"MS Research Australia know what they're doing – so I know the money will be used well. I hope it helps find a cure."

If you're interested in leaving a gift in your Will to MS Research Australia, our friendly Gifts in Wills Manager Janene will be happy to answer any questions you may have.

You can get in touch with Janene by calling her on 0456 019 758 or you can send her an email at fgontier@msra.org.au



MEET THE RESEARCHER

PROFESSOR JONATHON BAELL

MONASH UNIVERSITY, VIC



LET'S GET STARTED! TELL US AN INTERESTING FACT ABOUT YOURSELF...

I was born in a town called Mbeya, in Tanzania, East Africa. If I lost my birth certificate I don't know if I would ever be able to get another. I was born to Caucasian parents of English heritage but being born in Africa has occasionally caused amusing confusion over the years. Growing up in Tasmania can add a further level of confusion when "Tanzania" and "Tasmania" are mistaken for each other. I remember my father (a Government doctor in Tanzania) telling me once that MS rates in Tanzania were relatively low, and that this is the case for all countries near the Equator, for reasons at the time unknown.

WHAT INSPIRED YOU TO GET INVOLVED IN MS RESEARCH?

Well interestingly it was learning about rates of MS in equatorial countries that led to MS being imprinted in my mind from an early age. Over the years several friends and family acquaintances suffered from MS, which made a strong impression. So when one's skill is in design and development of small molecules, when one appreciates how dire and complicated MS is and how long it has remained without a cure, and when a world-leading MS clinician such as Professor Trevor Kilpatrick from Howard Florey Neuroscience approaches one to collaborate for advances in the field, one acts positively!

WHAT DO YOU THINK HAS BEEN THE MOST EXCITING DEVELOPMENT IN MS RESEARCH?

I am most excited about the approaches currently in development and heading towards clinical trials or in clinical trials. I really hope one or more breakthrough treatments emerges from these efforts.

TELL US ABOUT YOUR CURRENT RESEARCH PROJECT...

I am very excited by our project to develop better non-invasive diagnostics that could really help improve the success of clinical development, which in MS has a poor track record. We are developing Positron Emission Tomography (PET) radiotracers that will allow us to distinguish, for the first time, between microglia (the brain's immune

cells) that are either destructive or reparative. Currently there is no way to do this!

WHY IS YOUR RESEARCH IMPORTANT AND HOW WILL IT INFLUENCE THE UNDERSTANDING AND TREATMENT OF MS?

Our focus is on progressive MS, which is in dire need of a cure. Clinical trials are difficult and imprecise. By being able to distinguish between different types of microglia during clinical trials with a new proposed treatment, we will be able to stratify patients appropriately, be able to discern how a proposed new treatment is affecting the disease, when and with what to apply treatments, and so on.

WHAT DO YOU ENJOY MOST ABOUT WORKING IN THE LAB AND WHAT ARE SOME OF THE CHALLENGES YOU FACE?

Well, the enjoyment of medicinal chemistry – the science that discovers new treatments – is that you are always entering new territory, making and testing compounds that have never been made before by anyone...in the whole Galaxy! Applying chemistry expertise to the greater good makes it seem worthwhile. The challenges are two-fold: drug discovery and development is very tricky, requiring knowledge in a raft of areas beyond chemistry. Chemistry is very labour-intensive, which makes funding a continual challenge, which is why we are so appreciative for this MS Research Australia grant.

HELP MS RESEARCH AUSTRALIA FIND A CURE FOR MS

Donate (Donations over \$2 are tax deductible)

To support MS Research Australia's vital work I would like to:

- Make a one off donation of \$
- Make a monthly donation of \$
- Learn more about leaving a gift in my Will
- I have already left a gift in my Will to MS Research Australia

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Payment method:

Cheque (made payable to MS Research Australia)

Direct Debit Request (copy of service agreement can be provided on request)

Financial institution:

BSB number:

Account number:

Account holder's name:

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