



03. Awareness Survey



06. Research Profiles



09. Soapbox Science



Friends

Welcome to **issue 6** of MS Research.

2019 has been a busy year in the world of MS Research and in this issue we have provided a selection of research to showcase. 2019 is the final year in MS Ireland's Strategic Plan and through the year our Strategic Planning team have been consulting with various stakeholders to formulate a new plan. Details on some of the research we conducted as part of this process can be found on **page 13**. Many thanks to all those who took part in this survey.

Earlier this year, MS Ireland launched our redeveloped website – **www.ms-society.ie**. It is important to us that we utilise this tool to it's fullest potential and with this in mind we will be dedicating a section of the website to host 'Research Profiles' which will provide the community with information on MS Researchers in Ireland. Details of this and how researchers can submit their profile can be found on **page 6**.

Page 8 highlights the programme for training researchers for which Dr Una Fitzgerald received funding earlier this year. On **page 15** you will find an update on the fantastic work of the Progressive MS Alliance. You can read about how one RCSI researcher took science to the streets in 'Soapbox Science' on **page 9**.

MS Ireland are now accepting applications for The Dean Medal, information on this can be found on **page 15**.

We hope you enjoy this issue.



Aoife Kirwan
Information, Advocacy
and Research Officer



Professor Susan Coote
Chair of MS Ireland's
Research Committee

CONTENTS

- 3 Multiple Sclerosis Awareness Survey**
- 4 MS Frontiers Report**
- 5 Retinal imaging to study MS**
- 6 Research Profiles**
- 7 Kiss Goodbye to MS Ball**
- 8 NUI Galway's European Programme**
- 9 Soapbox Science**
- 10 Disclosing MS in the Irish Workplace**
- 12 The Genomic Basis of MS in Ireland**
- 13 Strategic Planning Survey highlights**
- 14 Dean Medal**
- 15 Progressive MS Alliance**

'MS Research' is the research eZine of MS Ireland. It exists to foster informed debate and comment about issues relating to MS research. The view of contributors are not necessarily those of the Society. No treatments or therapies should be attempted or products used without qualified medical or professional advice.

Multiple Sclerosis Ireland, 80 Northumberland Rd, Dublin 4.
www.ms-society.ie | 01 678 1600 info@ms-society.ie |
Info Line: 1850 233233

EDITOR & EDITORIAL
Aoife Kirwan - aoifek@ms-society.ie

ADVERTISING
Sally Spearman Tel - 01 678 1600 – sallys@ms-society.ie

Aoife Kirwan

Professor Susan Coote

Multiple Sclerosis Awareness Survey 2019

In preparation for World MS Day 2019 MS Ireland, in association with Novartis, commissioned a public survey to gauge public awareness of the visible and invisible symptoms of multiple sclerosis (MS).



In most cases when prompted people associated with difficulty walking, pain or muscle spasms, fatigue or weakness, balance problems or dizziness, numbness and tingling and cognitive problems or forgetfulness with MS.

A representative sample of 1,000 adults were surveyed over the month of March 2019. Overall, there was a high awareness of MS amongst the public, but detailed knowledge was lacking.

When asked if MS was more prevalent

amongst men or women, 45% of participants responded that MS affects men and women equally, when research shows us that it impacts approximately twice as many women as men.

The research which was carried out by IPSOS/MRBI showed that 93% of respondents claim to be aware of MS. 75% of the respondents know someone with MS and the majority of the respondents believed their knowledge of MS to be fairly or very good.

Levels of awareness in relation to visible symptoms of MS among the general public are relatively high with almost 20% of those surveyed listing muscle degeneration, and 17% mentioning loss of mobility. 8% of people identified fatigue as a key symptom despite almost 90% of people living with MS reporting fatigue as a consequence of their condition.

When asked about the symptoms associated with Multiple Sclerosis 29% of respondents could not name any. When asked directly about a number of statements the majority agreed with the following:

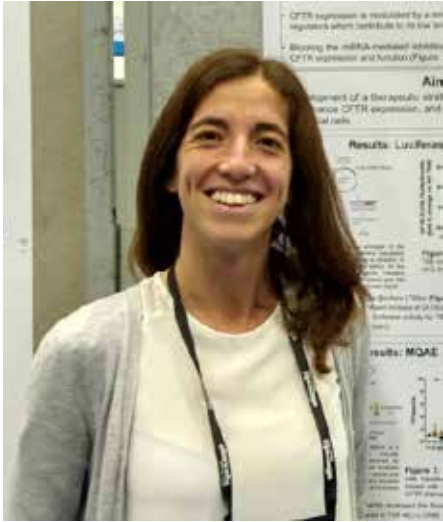
This survey can now act as a benchmark for MS Ireland over time and help direct our advocacy activities.

- **Most people with MS live active lives, enjoying most of the same pursuits as others**
- **Symptoms of MS can vary somewhat from person to person**
- **You can work if you have MS**
- **You can have a family if you have MS**
- **MS is almost always diagnosed in adults aged between 20-40 years**
- **If you have MS, you will eventually end up in a wheelchair**
- **MS is not a curable disease**



MS Frontiers Conference – A Newbie Perspective

By Dr Chiara De Santi



Dr Chiara De Santi, senior post-doctoral researcher in the McCoy lab at RCSI gives her perspective on the recent MS Frontiers conference held in Bath, 4-5th July, 2019.

Coming from a cancer research background, I am a newbie in the multiple sclerosis research field, so I was delighted to have the opportunity to participate to the MS Frontiers conference organised by the MS Society UK. I did not know what to expect as I had never attended a MS-focused conference before, and I am pleased to say that although the MS research community is small, it is very collaborative. MS patients and families are in good hands!

For the first time this year the conference was led by a Scientific Committee, and this helped to ensure an equal representation of talks/posters from scientists, medics, allied health care professionals, social carers etc. Collaboration between people having different perspectives on MS is crucial for the progression towards finding a cure or for coming up with ideas about how to help our patients through the different stages of the disease. In particular, I am interested in patient involvement and how this can be important to improve clinical management. I was pleased to have a chat with David, a doctor-to-be-PhD student from the Imperial College London who presented a poster about the role of patients in disease-modifying treatment (DMT) decision-making. I was not fully aware of the process that leads to the choice of a specific DMT, and by talking to him I understood how

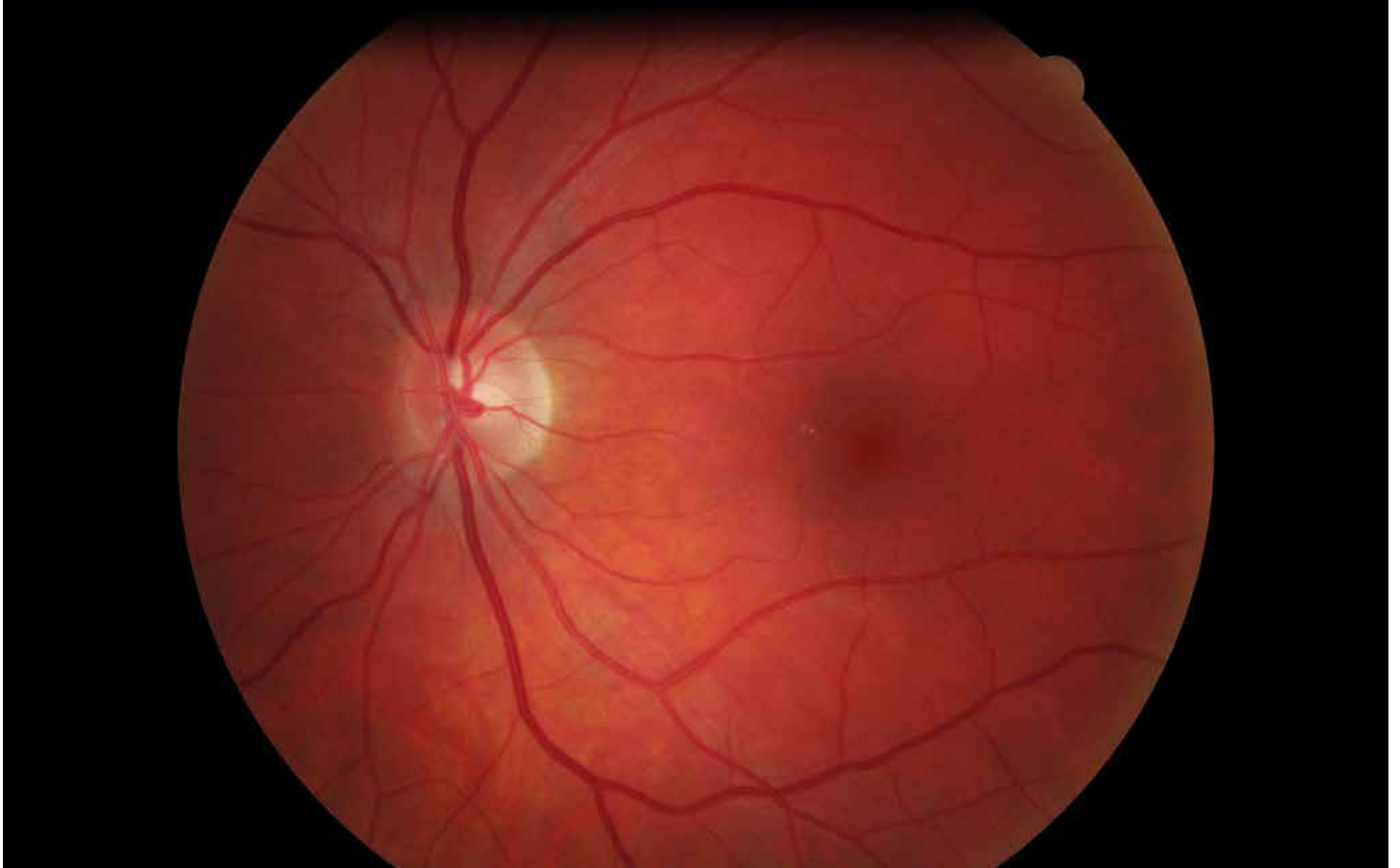
important the conversation about life goals, disease course, side effects etc that needs to happen between patients and health care professionals in order to make an informed choice on the right DMT.

But at the end of the day, I am still a nerdy scientist – so the moment of the conference that I enjoyed the most was when I could learn from the people who dedicated their career to understand the biological mechanisms underneath the onset and progression of MS. In particular, Professor Catherine Lubetzki from the Sorbonne University gave an inspiring plenary lecture entitled “Repair in MS: from biology to clinical translation”. She basically condensed 50 years of research in one hour. She explained that while the current DMTs are able to work against the autoimmune response in MS patients, the holy grail would be promoting recovery of the already injured neurons, a phenomenon also being investigated in the McCoy lab and is the focus of my own research. Prof Lubetzki explained how basic science discoveries (like the regulation of the myelin production by oligodendrocytes) led to the development of molecules that are now in clinical trials, and she left the audience with a hopeful take-home message that I am sure inspired not only the scientists but everybody in the room.

In conclusion, being a lab-based scientist sometimes does make me feel a bit far from the reality of the MS disease, but going to the MS Frontiers exposed me to people that have to deal with MS on a daily basis and gives me further motivation to do my research job. Moreover, seeing all the progress generated from MS research that was presented at the conference, patients and their families can be reassured that a massive and communal effort is ongoing towards finding a cure for MS, ensuring a better quality of life for people affected by this debilitating disease.

Retinal imaging to study multiple sclerosis

By Lajos Csincsik



Researchers at The Wellcome-Wolfson Institute for Experimental Medicine and the Centre for Public Health at The Queen's University Belfast (QUB) started a unique project studying aspects of Multiple Sclerosis (MS) using eye imaging and testing visual functions. Sensitive markers to monitor disease development and progression and assess therapeutic efficacy in MS is an unmet medical need. Measuring changes in the retina (back of the eye) has the potential to track broader neurodegeneration in MS. In this study the researchers at QUB use 3-dimensional imaging techniques (OCT) to monitor changes in the structure of the retina as well as collect information about changes in retinal blood circulation. In addition, widefield imaging of the back of the eye (ultra-widefield ophthalmoscopy) as well as assessments of visual field deficits (widefield perimetry) are performed. Tear samples are also collected to study metabolic and proteomic markers.

The research teams of Prof Tunde Peto and Dr Imre Lengyel are closely collaborating with the group of Prof Denise Fitzgerald to determine the feasibility of how to use the different imaging and functional testing for monitoring MS. The work will help to elucidate whether the simple and inexpensive but well tolerated eye testing could complement more complex and expensive neurological tests. This study will also help to train staff on new, innovative but still simple and informative functional tests for future major studies. The study is supported by studentships from Optos Plc, a Scottish company, for Mr Lajos Csincsik and Ms. Gemma McIlwaine who are undertaking their PhD training through this study.

Further links:

<https://www.qub.ac.uk/research-centres/wwiem/>

Research Profiles

Earlier this year, MS Ireland's website was redeveloped. We are hoping to grow the Research section of this website. Supporting research and researchers is important to MS Ireland as is making our community aware of the work that is being carried out by the research community and signposting them to research opportunities as appropriate. The new website has a dedicated Research section which can be clearly accessed by visitors to the site.

In an effort to increase awareness of the incredible research that's happening in Ireland, we want to create a space where researchers' profiles can be accessed on our website. This will help those interested in research to learn more about each other, showcase their work and to gain an insight into the other research projects that are being conducted around the country.



The format of this profile can be seen in the example below which was kindly provided by Dr Claire Mc Coy in RCSI.

Dr Claire McCoy,
Lecturer in Immunology, RCSI

Short Description of research:

Dr Claire McCoy investigates the impact of the immune system in Multiple Sclerosis, with the aim to identify novel avenues for therapeutics. She leads a research team of 6 scientists in RCSI.

For more information, go to
<https://www.mccoyleab.com/>

Links: <https://www.mccoyleab.com/>
Twitter: [clairemccoy_dub](#), [RCSI_McCoyLab](#)



If you would like to have your profile included in this section of the website, please send the following to:

Aoife Kirwan – aoifek@ms-society.ie

- **Title**
- **A short description of your work**
- **Any links you wish to share to social media or research blogs**
- **A high quality image**

Kiss Goodbye to MS Research Ball

On May 25th, the 2nd Annual Kiss Goodbye to MS Ball was held. MS Ireland were delighted to welcome 130 guests to a wonderful night in the Morrison Hotel in an aim to raise funds for MS research. Kiss Goodbye to MS is an international fundraising campaign which aims to raise funds specifically for MS research.

On the night, Helen Murray, gave a beautiful speech about her experiences living with MS and her hopes for research now and into the future. The end of her speech was met with thunderous applause from the crowd. Our MC for the night was Emily Glen. Emily, whose father lived with MS for many years, is the host and co-founder of the 'Fair Game' podcast. This podcast gives women in sport a platform and invites them to chat about some of the important topics that effect them in their sporting lives.

Entertainment was provided by The Luna Boys who kept the crowd entertained and on the dancefloor. Fundraising activities such as a raffle and silent auction helped to make the night a great success, raising almost €22,000 which will fund national and international research projects. MS Ireland would like to thank all those who supported this event.



Special thanks to our wine sponsors on the night, Genomics Medicine Ireland, who were also in attendance. Many thanks also to our absentia tables, Biogen, Deloitte and ASTI.



€3.9 million NUI Galway - led European programme to train researchers in developing new treatments for multiple sclerosis

By Jill McMahon



Dr Una Fitzgerald

Dr Una Fitzgerald, Principal Investigator of the Multiple Sclerosis Research Lab at NUI Galway and Director of the Galway Neuroscience Centre, has secured €3.9 million in funding from the EU to lead a consortium of researchers across Europe.

In collaboration with CÚRAM, the Science Foundation Ireland Centre for Research in Medical Devices and the College of Engineering and Informatics at NUI Galway, Dr Fitzgerald has brought together a team of experts from all over Europe to develop novel devices and therapeutics aimed specifically at treating the progressive phase of MS. The project participants, from universities and small private companies in Denmark, Germany, Belgium, France, Italy, Spain and the Czech Republic, will train a new generation of scientists whose focus is on slowing the progression of pathology in MS.

In all, 15 researchers will be recruited (5 of which will be based at NUI Galway) and will receive world-class training in biomaterials, stem cell biology, neurological disease pathology, biomarkers, computer modelling of cerebrospinal fluid flow and design of medical devices.

This multi-disciplinary approach will allow coordination of resources and expertise to focus on the unmet need of effective treatments for progressive MS. Committed to the sharing of data and approaches throughout the consortium, the researchers will also make concerted efforts to get involved in public engagement. Outreach events, where researchers can explain their work and the technologies that support their research to patients, families and caregivers, have been scheduled to coincide with the annual summer schools that all members of the consortium must attend. The first of these is scheduled for Summer 2020 and will take place in Galway.

Dr Fitzgerald's group at NUI Galway has been carrying out research on MS for more than 15 years and her concern about the lack of treatment options for people with progressive MS prompted her to work on assembling a consortium to focus on this problem. Her initial collaborations with colleagues from NUI Galway (Professor Abhay Pandit, CURAM and Dr Nathan Quinlan, College of Engineering and Informatics) led her to realise that formation of a Europe-wide network, incorporating diverse areas of expertise, was the most effective way to move forward. Commenting on the award from the EU, Dr Fitzgerald said:

“This award is a huge boost to our multiple sclerosis research efforts here at NUI Galway. By combining our university's expertise in MS, biomaterials, medical devices and fluid dynamics and computer modelling with that of our partners across Europe, this project could yield PhD graduates who are MS experts and who have helped pioneer a new medical device that could eventually help those suffering from the later stages of MS.”

Recruitment of students is currently underway and the project will begin in autumn 2019. For progress reports and further information on the consortium, watch this space!

This project has been funded by the European Union Horizon 2020 Programme (H2020-MSCA-ITN-2018) under the Marie Skłodowska-Curie Initial Training Network and Grant Agreement No. 813263.

For more information about the programme contact Dr Una Fitzgerald, Principal Investigator of the Multiple Sclerosis Research Lab, NUI Galway at una.fitzgerald@nuigalway.ie

Soapbox Science




On June 30th 2019, Remsha Afzal, from Dr. Claire McCoy's lab based in RCSI, took to the streets of Dublin to inform the general public about their research on Multiple Sclerosis (MS). Standing on a literal wooden box (the 'soapbox') as her stage, Remsha and 12 other female scientists from various fields in science, engineering and mathematics used this platform, like many other female scientists before them, as a means of communication to have a scientific discourse with the public. This event, officially termed Soapbox Science, was originally conducted to increase visibility of women working in science. It follows the format of Speaker's Corner in Hyde Park, London, which is historically an arena for public debate.

Since its launch in 2011 in London, Soapbox Science now holds events internationally every year, with nearly 1000 scientists having taken part in the occasion. These 1000 scientists have gone on to communicate science to a whopping 140,000 members of the public collectively. This year will see over 40 Soapbox events, including the one that was held in Dublin, across 13 countries. The Dublin event was kindly supported by University College Dublin (UCD), through their Research and Innovation seed funding program.

For her talk entitled 'Those big eaters do damage!', Remsha used a two-sided (hangry vs happy) Pacman® prop to explain the research being conducted in the McCoy lab. The prop alluded to the ability of macrophages behaving in contrasting ways in our body, depending on the body's needs. A macrophage is a type of immune cell integral to the body's defence system. It is normally 'activated' when it senses danger, such as a disease-causing pathogen. Just as a Pacman can devour little ghosties, macrophages

Remsha Afzal using props to explain the abilities of macrophages

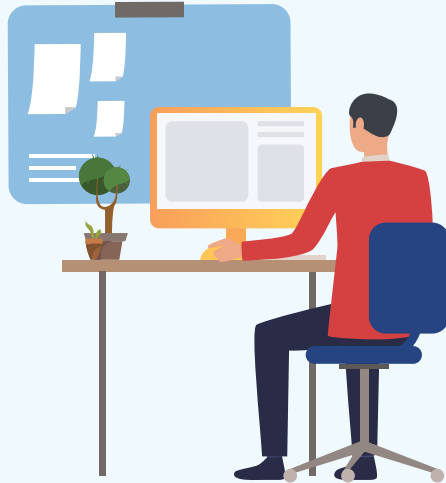
can ingest and fight off various pathogens by converting to a 'hangry' or inflammatory mode. Once the infection is cleared, they then resort to a 'happy' or anti-inflammatory mode, where they help in tissue repair and wound healing. In chronic inflammatory diseases like MS, macrophages are found in a constant inflammatory state, aggravating the disease by causing damage to our own nerve cells (neurons). Remsha then went on to explain how the McCoy lab research is investigating possible ways to manipulate a macrophage therapeutically, as part of a concerted global effort to identify novel therapeutics for MS. These therapeutics are designed with the idea that they will not only limit inflammation but promote repair and regeneration of damaged neurons as well. The McCoy lab specifically plan to use nanoparticles that 'flip the switch' in inflammatory macrophages to turn them into tissue repairing anti-inflammatory macrophages.

For more information about the programme contact Dr Una Fitzgerald, Principal Investigator of the Multiple Sclerosis Research Lab, NUI Galway at una.fitzgerald@nuigalway.ie



Disclosing MS in the Irish workplace

By Laura Gill



Background:

MS Ireland (2016) reported that nine out of ten individuals with MS in Ireland are of working age. Early withdrawal from the workforce is associated with a diagnosis of MS. The average general EU employment rate is 70%, with an average employment retention rate of 60% for people with MS living in the EU, compared to the employment retention rate of 43% for people with MS living in Ireland. The lower employment rates for people with MS in Ireland may be indicative of cultural or systematic barriers associated with this diagnosis.

The Employment Equality Act (1998, 2015) safeguards individuals in Ireland ensuring equal opportunity in employment roles. Despite these legal requirements, equality in the workplace has not always been achieved. Disclosure of MS in the workplace is essential for the implementation of accommodations enabling employment retention. Research has also found positive work participation increases quality of life in turn supporting symptom management associated with MS.

Here we looked at the experience of people disclosing their MS diagnosis in an Irish workplace.

Method:

Six participants were recruited through MS Ireland. Interviews were carried out in the study that explored their decision to disclose or not disclose their diagnosis of MS and the implications which this had on work participation and working relationships. Semi-structured interviews were completed in person and over the phone/Skype. Thematic analysis was used to analyse the data of the six participants.

Results:

Four themes were identified in the data:

1. **Symptoms impacting work ability**
2. **Accommodations**
3. **Workplace relationships**
4. **Work-life balance**

Findings supported the implementation of workplace accommodations including physical, cognitive and structural supports. Concealment of MS was associated with fear of workplace stigmatisation for some participants but not for all, as can be seen from Participant 3 (P3) here:

'All my work colleagues are great I'll tell anyone that will listen. I don't care who knows. Like I said I'm from a small place so everyone knows anyways'. [P3]

One participant provided rationale to why they believed concealing their diagnosis was necessary, as it did not directly impact their productivity.

'I didn't think it was relevant to my ability to do the job, primarily because I was good. So my concern would have been that people would have reacted to me in a manner that was coloured by the fact that I had an illness'. [P5]



One participant discussed how their friendships with colleagues were impacted from disclosure due to their MS being incorporated into conversations when it was unnecessary.

'Yah, I think that the main topic of conversation now is 'how you feeling, are you okay' and like it's been four years now, I'll tell you when I'm having a bad day. Sometimes it would be nice to chat about something else you know but sure they mean well, I can't fault them really'. [P6]

Work-life balance is fundamental for quality of life and at times participants reported that having a diagnosis of MS impacted on that balance. Some participants felt that they had to overcompensate their work abilities to continue to be respected by peers.

'Sometimes I don't even bother eating you know, so work takes it out of me, so I work on Monday, Wednesday and Friday and then the days in-between I keep for appointments or sleep'. [P6]

'I was there six months because I was doing late nights, I was still working at four o'clock in the night, which I will be doing in the next few weeks, I will still be working at four o'clock at night, they could get an email from me or a text message so they know well that I throw everything at it if something needs to be done, so'. [P4]

Finally, one participant emphasised the importance of maintaining balance in daily life, enabling successful engagement in all aspects of participation.

'When you do find a way of managing it that works for you, it definitely makes life a lot easier. It's about finding balance, really balance is the key word. It's actually true. If you keep the balance in the middle it's a lot easier'. [P3]



Conclusion:

The results indicated that individuals' experiences of disclosing or not disclosing MS in the workplace is subjective based on personal circumstances. Participants may be forced to disclose due to the impact of symptoms including fatigue, cognition and mobility. Some participants outlined the limited influence they had on others awareness of their diagnosis. There is a need for further research on workplace disclosure to enable appropriate supports for both the individual with MS, employers, colleagues and families. This would facilitate productivity and support workplace stability. Disclosure is multi-dimensional and subjective based on personal, systematic and social factors.

Supervisor: Dr Sinéad Hynes, NUI Galway

Note: I would like to thank all participants involved in this study who voluntarily took time out of their schedules to provide their honest views. I am grateful to MS Ireland for their support and interest throughout this study.

The Genomic Basis of Multiple Sclerosis in Ireland

By Kate O'Brien, PhD - MS Programme Manager, Genomics Medicine Ireland

What is the research study?

To find out more watch our video

<https://www.youtube.com/watch?v=gpLrgmOQr68>

What is Genomics?

Our genetic code is like a complete instruction manual containing the information needed to make, run and repair each person. Differences and changes in our genetic code can influence things such as development of disease, disease progression and response to different treatments.

In this research we will study medical, lifestyle and genetic information of thousands of people with MS and compare it to information from thousands of people without MS. We aim to identify patterns that help us to better understand the disease.

Who can take part?

People (aged 18 and over) that have been diagnosed with MS are invited to take part in this research study.

We hope to use this information to improve future health by:



Identifying novel drug targets which may be used to develop more effective & tailored therapeutics



Earlier diagnosis of MS



Better our understanding of how MS is likely to progress

What is involved if I take part in the study?

Participation involves:

- Donating a blood sample for genetic analysis
- Completing a lifestyle and a MS questionnaire
- A brief assessment that involves blood pressure, height and weight, and waist and hip measurement

To find out more watch our video

<https://www.youtube.com/watch?v=1EyhAYvqWgk>

An Overview of GMI Research Study Participation

How to enrol in this study?
Ask your consultant or GP at your next appointment

Current Hospital Sites

1. St Vincent's University Hospital, Dublin
2. Cork University Hospital
3. Tallaght Hospital, Dublin
4. Altnagelvin Hospital, Derry run through the Clinical Translational Research and Innovation Centre (C-TRIC)
5. The Hermitage Medical Clinic, Dublin
6. Craigavon Area Hospital, Co. Armagh

The study is expanding across the island of Ireland and has ethical approval/ethics submitted at:

7. University Hospital Limerick
8. Mercy University Hospital, Cork
9. Sligo University Hospital
10. Letterkenny University Hospital
11. The Ulster Hospital, Dundonald

Current Primary Care Sites

1. Carrig Medical Centre, Greystones
2. Castlerea Medical Centre, Co. Roscommon
3. Cooper Medicare Kerry, Tralee
4. College Road Medical, Cork
5. Carrick Road Medical, Dundalk
6. Gorey Medical Centre, Gorey
7. Millbrae Surgery, Carndonagh
8. Mallow Primary Healthcare Centre
9. Oakwood Medical Clinic, Clonsilla, Dublin
10. Orchard Road Medical Centre, Clondalkin, Dublin
11. Stepside Medical, Dublin
12. The Palms Surgery, Gorey



Hospital Sites



Primary Care Sites

To find out more about participating visit www.genomicsmed.ie

Strategic Planning Survey

This year brings MS Ireland to the end of our current strategic plan. As an organisation, we use this plan to guide the work we undertake. This year, our Strategic Planning team has been working on a new plan for the period 2020-2024. An important part of the strategic planning process was stakeholder engagement. In order to seek feedback from multiple stakeholders, MS Ireland undertook a number of activities including focus groups, one-to-one meetings and surveys. The largest survey we conducted aimed to gather information on the views and experiences of a range of stakeholders.

This survey was conducted online using Survey Monkey. It was shared on MS Ireland's website, social media and via an email campaign. Our network of Regional Community Workers and Branches were also provided with a printable PDF version of this survey to facilitate those who may not be able to take the survey online. 1,000 participants took part in the survey including; people living with MS (80.5%) family members of people living with MS (10.2%), MS Ireland staff (2.9%), healthcare professionals (2.4%), volunteers (2.2%), carers (1%) and independent contractors (0.8%). We asked respondents to provide information on topics including the ways in which MS impacts their lives, how they value our current service provision and what they feel MS Ireland should know as we designed our new Strategic Plan for the period 2020-2024. Here we give you a glimpse of some of the key findings from this survey. Further details on the survey results will be available in early 2020.

5 most common 'severe' problems

1. Fatigue
2. Employment
3. Financial
4. Sexual Function
5. Mobility

5 most common 'moderate' problems

1. Fatigue
2. Continence (bladder and bowel)
3. Financial
4. Mobility
5. Social participation

Services

Our Regional Community Workers were the service respondents rated as the most important to them. This was followed by Physiotherapy Assistants/Exercise Buddies as the second most important service.

Communications

Our most popular communications service was the MS Ireland website followed by our social media platforms.

Email was the most popular way in which respondents wished to be contacted by MS Ireland.

Programmes

Getting the Balance Right, a physiotherapy and exercise based programme developed for people living with MS was rated as the most important programme to our respondents. Symptom Management programmes was the second highest rated programme followed by programmes for those newly diagnosed.

Advocacy priorities in order of importance to our respondents

1. Healthcare professionals
2. Medical Cards
3. Access to medicines
4. Access to services
5. Awareness of MS

Ways in which respondents felt MS Ireland could support them

1. Counselling
2. Family support
3. Information and support when applying for Medical Card or Long Term Illness Scheme
4. Community engagement

DEAN MEDAL

THE DEAN MEDAL TRAVEL BURSARY 2019 APPLICATIONS NOW OPEN

A travel bursary to encourage the understanding of MS among young researchers, in memory of Geoffrey Dean, MD (1918 – 2009)

Geoffrey Dean was an internationally regarded epidemiologist who in several seminal studies established the importance of environmental influences on the pathogenesis of multiple sclerosis. His work continues to have relevance to this day. Active in research up to his death, Dr Dean published a total of 120 papers during his illustrious career. His last was published in 2008 at the age of eighty-nine.

The Dean Medal award, established in 2010, is intended to enable new MS researchers to travel to centres of excellence to enhance their understanding and knowledge of MS. MS Ireland wishes to encourage the dynamic and innovative work so keenly exemplified by Dr Geoffrey Dean. The third Dean Medal Travel Bursary is now open for applications. Details of the application process are below.

GRANT

- MS Ireland offers the Dean Medal to young MS researchers to enable them to undertake short visits to other MS research centres, to learn new techniques or to further joint research projects
- The aim is to encourage cross-fertilization of skills through collaborative research projects
- One award, every two years approximately, to the value of €2,000
- The funds are intended to contribute towards travel and living costs or to top-up an existing grant to extend a visit

ELIGIBILITY

- Individuals working in Ireland, preferably young researchers who are directly involved in a MS research project are eligible for nomination
- Before nomination, candidates need to have identified a suitable project and discussed their involvement with the project supervisor of the host institution
- Projects must be related to MS

NOMINATION OF CANDIDATES

Individuals can self-nominate but the nomination should include:

- A letter from the candidate detailing their reasons for the nomination

- His or her curriculum vitae
- Testimonies (references) from at least two people with whom the candidate has worked
- A description of the field of research that the candidate wishes to be trained in or the research project that he or she wishes to carry out. This should be written by the applicant and should be a maximum of two A4 pages including the background to project, aims and methodology to be used. A list of references should be added as an appendix which may also include figures
- A signed letter of support from the project supervisor of the host institution, indicating that appropriate facilities will be made available. The letter should be on institution-headed notepaper
- Candidates are required to submit both electronic and hard copies of all the above documents.

Electronic copies are to be emailed to Aoife Kirwan – aoifek@ms-society.ie

Hard copies should be posted to:

Aoife Kirwan, Information, Advocacy & Research Officer, MS Ireland, 80 Northumberland Road, Dublin 4

DEADLINE

The deadline for receipt of applications is April 25th January 2020

SELECTION

The members of the MS Ireland's Research Committee consider and select successful candidates. Please allow eight weeks.

EVIDENCE OF RESULTS

After the Dean Medal has been awarded and the research took place, a short report will be required for submission to the MS Ireland's Research Committee and for publication in MS Ireland's bi-annual research eZine. Electronic copies of reports, papers, abstracts and posters resulting from the visit should also be submitted.

Papers produced as a result of or in connection with Dean Medal funded research should acknowledge MS Ireland's Research Committee. If possible, such acknowledgements should also reference MS Ireland's website www.ms-society.ie

CONTACT

Queries and nominations for the Dean Medal should be submitted by email to Aoife Kirwan aoifek@ms-society.ie

News from the Progressive MS Alliance

By Alexis Donnelly

INTERNATIONAL
PROGRESSIVE MS ALLIANCE

CONNECT TO END PROGRESSIVE MS

The Alliance is an unprecedented global coalition of MS Societies (including MS-Ireland!) acting in concert with scientists, clinical neurologists, therapists, donors, pharmaceutical companies and people themselves with/affected by MS to:

- understand the underlying pathology of progressive MS;
- accelerate the search for therapies and the start of clinical trials;
- develop and evaluate new therapies to improve symptom management and well-being and quality of life of people with progressive MS worldwide.

Each of these objectives generates detailed actions sometimes undertaken jointly with other organisations. One thing which the Alliance does superbly well (and which no single government can do) is to coordinate the research of the world's foremost experts in certain key areas. The alliance funds three international collaborative research networks. Each network receives €1,000,000 per annum for four years (€12,000,000 in total). The Alliance has been particularly lucky in that two of these networks are now being funded in full by impressed, significant private donors.

The Alliance is managed by its six founding members (The MS Societies of Canada, Italy, UK and US, MS Research Australia and the MS International Federation) who each contribute a significant amount generated from fundraising. Every contribution coming from Ireland is hereby gratefully acknowledged! (both by me

personally and by the Alliance). I know that these days, there are many demands on funds raised! Thank you again.

The scientific committee meets every month by teleconference to discuss, plan and coordinate activities. Three people with or affected by progressive MS, participate actively and are listened to in these discussions. Caroline, from Glasgow, Jon from Long Beach, California and myself are very much part of the team. Our perspectives are valued and the difference they make is recognized and valued by all. As Monty Python's Yorkshire miners would say "I used to dream about that when I were a lad". There also have been several face-to-face meetings in which I have participated.

Toronto Congress (May 2018)

This was covered in a previous report and the second part (concerning initiatives at the Toronto Rehabilitation Institute) will follow in the next edition of the Research e-zine.



Washington (January 2019)

This meeting was convened to further integrate people with/ MS in the planning and execution of future clinical trials. It was memorable for the impressive opening presentation by my colleague, Caroline Sincock (from Glasgow), on living with MS and related matters. It is fair to say that significant progress followed from it and I expect to see the fruits several years from now - in the form of clinical trials that get under way promptly and without snags - thanks to early participation and co-design by people with

MS. The meeting was located in Washington to facilitate meetings with the FDA (whose staff are not allowed to accept funds for travel to meetings). Unfortunately, the timing coincided with a stand-off between President Trump and the US Congress resulting in a government shutdown! Luckily, our US colleagues are keeping the FDA up to date with Alliance activities.



Copenhagen (May 2019)

This was a key meeting for the Alliance since the three international collaborative networks were due to report at the exact halfway point in their programmes. Scientific research has periods of steady work with sometimes unexciting rewards and then... greater leaps forward. The breakthroughs are often not appreciated at the time. I am delighted to report that all three networks are making steady progress and are on track with their programmes. While it is far too early to claim the title “breakthrough”, there have been some significant advances.

Two of the networks are searching for new drugs that may help in the treatment of progressive MS (albeit using different approaches). The third network is looking for an imaging biomarker of progression (reminder: a biomarker is any measureable biological quantity that reliably indicates one’s health state - e.g. elevated numbers of white blood cells indicates infection).

This third network, led by Professor Douglas Arnold (McGill University, Montreal), has put

together an unrivalled collection of some 50,000 MRI images with matching clinical data all extracted from MS clinical trials. Work is now beginning to use advanced (AI) machine learning techniques to identify image features that may signify progression. If this hope is realised, we will have an unbiased means of seeing whether a new drug is arresting progression or not. At present, a doctor-rated scale called EDSS is used in clinical trials. While this scale is familiar and trusted (and the trials are double-blinded - neither you as a participant nor the treating doctors know whether you are on the real drug or a placebo), it does make clinical trials longer and more expensive. An imaging biomarker would speed things up quite significantly and probably reduce the number of participants required. For the same expenditure, more drugs could be tested.

One of the first data sets acquired was from a trial in a relapsing-remitting MS (RRMS). As a shake down test of the machine learning algorithms, the RRMS data were used and image features were identified that reliably indicated treatment responders to the drug [1]. While this result is a long way from routine use in a typical clinic population (and has yet to be applied to progression) it does provide preliminary confidence for the remainder of the work programme of this network. Further significant work is emerging from the computer vision group in Montreal that complements this confidence. Preliminary statistical work is also under way on the clinical data side of the collection. This will be used later in the programme. Unrelated, serendipitous results are beginning to emerge from one of the partners (University College London) [2] in this network. Applying entirely different image processing and AI techniques, it may be possible to group people with MS based on the way imaging abnormalities spread - entirely automatically. It is far too early to assess the significance of this work but it is extremely novel and interesting!

Another network, led by Gian Vito Martino in Milan, is working hard to identify compounds

that may be promising therapies in progressive MS. This work began with trawling through pharmaceutical databases of drugs to identify possible candidates. Beginning with thousands of compounds, the search has narrowed to less than 40 frontrunner compounds. At this point, work will return to the laboratory and these compounds will be tested in several ways - including with animals and with human cells grown in a Petri dish. The cells chosen are typical ones that occur in human brain tissue and are damaged by the pathological processes in MS. It is a good way of testing larger numbers of these compounds quickly. Again, everything is on track and it is fantastic to see so many compounds identified. Rigorous laboratory testing will now take centre stage. The testing pipeline is being set up in various laboratories and we await results with great interest!



in detail and the signals influence the posture of the immune system in the brain - whether it is just maintaining usual surveillance for possible pathogens or being overly aggressive and attacking everything. Another interesting bit of work [4] has focused on the “conversation” that takes place between two important cell families (astrocytes and microglia). When it behaves normally, this conversation influences the posture of the immune system (again!). However, some common pollutants (known as endocrine disruptors) interfere with this conversation. The researchers focused on a herbicide called Linuron and its effects that nudge the immune system towards aggression. This work is very important in the search for MS therapies as we now have a far better picture of the relevant cell families and how they can be influenced. The team are carrying out searches in parallel to identify relevant compounds. As

yet, results are far from complete but everything so far has been very encouraging indeed. It is abundantly clear that we have a world class team working for us.

The work of these three networks, composed of world leaders on different continents, has been superb by any measure. Progressive MS can be so devastating in its effects especially in the knowledge that there are so few disease-

The remaining network, led by Professor Francisco Quintana in Boston, is taking a different approach. Starting with the behaviour of the innate immune system, the team are exploring the molecular mechanisms controlling innate immunity of the central nervous system in MS. This is painstaking, laboratory work but it has produced several insights. One of these [3] centres on how the bacteria in our gut can send signals to the immune system in the brain. The detailed steps involved have been checked

modifying therapies. However, this picture is slowly changing. The Progressive MS Alliance is a key player in these developments. The research results above, though they may sound boring, are making a real difference. I have no hesitation, given my own background in research that we are now in a very different place in such a short time. It is really exciting (and quite humbling) to have a front row seat.

Amsterdam (November 2019)

Five new people with MS have been recruited and will participate in future activities of the Alliance. They are from Australia, Canada, Denmark, Italy and Morocco. The purpose of this meeting was to meet and gel as a team and acquaint the new members of the team with the workings of the Alliance. The “newbies” at almost fully fledged and there is a great team spirit among us. The Amsterdam meeting was remarkable for the informal conversations that took place outside the schedule and the different languages that were being used. The alliance will be well served.



Another recent work package is focusing on improved communication to disseminate results far and wide. Our new recruits will be playing a key role of ambassadors for the Alliance.

In the meantime, monthly teleconferences continue with discussions and planning of the next phase of Alliance work. The focus of these activities will be to prepare for future clinical trials. Detailed, good planning is key here to ensure that results from the three networks (and elsewhere) are smoothly and faultlessly integrated into the next steps.

As a member of the main scientific steering committee of the Progressive MS Alliance, I am privileged to see first hand and have the opportunity to shape the overall strategy of the Alliance. I have lived with progressive MS for over 20 years and most of that has been without any disease-modifying therapies. I can truly say that I have never seen an initiative like it that provides so much reason for hope.

Stay tuned!

References

- [1] Doyle, Andrew, Doina Precup, Douglas L. Arnold, and Tal Arbel. 2017. “Predicting Future Disease Activity and Treatment Responders for Multiple Sclerosis Patients Using a Bag-of-Lesions Brain Representation.” In *Medical Image Computing and Computer Assisted Intervention – MICCAI 2017*, 186–94. Springer, Cham. https://doi.org/10.1007/978-3-319-66179-7_22.
- [2] Garbarino, Sara, Marco Lorenzi, Neil P Oxtoby, Elisabeth J Vinke, Razvan V Marinescu, Arman Eshaghi, M Arfan Ikram, et al. 2019. “Differences in Topological Progression Profile among Neurodegenerative Diseases from Imaging Data.” Edited by Floris P de Lange. *ELife* 8 (December): e49298. <https://doi.org/10.7554/eLife.49298>.
- [3] Rothhammer, Veit, Davis M. Borucki, Emily C. Tjon, Maisa C. Takenaka, Chun-Cheih Chao, Alberto Ardura-Fabregat, Kalil Alves de Lima, et al. 2018. “Microglial Control of Astrocytes in Response to Microbial Metabolites.” *Nature*, May, 1. <https://doi.org/10.1038/s41586-018-0119-x>.
- [4] Wheeler, Michael A., Merja Jaronen, Ruxandra Covacu, Stephanie E. J. Zandee, Giulia Scalisi, Veit Rothhammer, Emily C. Tjon, et al. 2019. “Environmental Control of Astrocyte Pathogenic Activities in CNS Inflammation.” *Cell* 176 (3): 581-596.e18. <https://doi.org/10.1016/j.cell.2018.12.012>.

MS Ireland National Office

Tel: (01) 678 1600

Email: info@ms-society.ie

MS Ireland Care Centre

Tel: (01) 490 6234

Email: carecentrer@ms-society.ie

Dublin North & Fingal

Tel: (01) 4905933

Email: na@ms-society.ie

South Dublin & Wicklow

Tel: (01) 678 1600

Email: eca@ms-society.ie

South West Dublin & Kildare

Tel: (01) 4905933

Email: swa@ms-society.ie

Midlands

Tel: (090) 6471137

Email: midlands@ms-society.ie

Mid West

Tel: (061) 303802

Email: midwest@ms-society.ie

North East

Tel: (042) 9754304

Email: northeast@ms-society.ie

North West

Tel: (074) 9189027

Email: northwest@ms-society.ie

South

Tel: (021) 4300001

Email: southern@ms-society.ie

South East

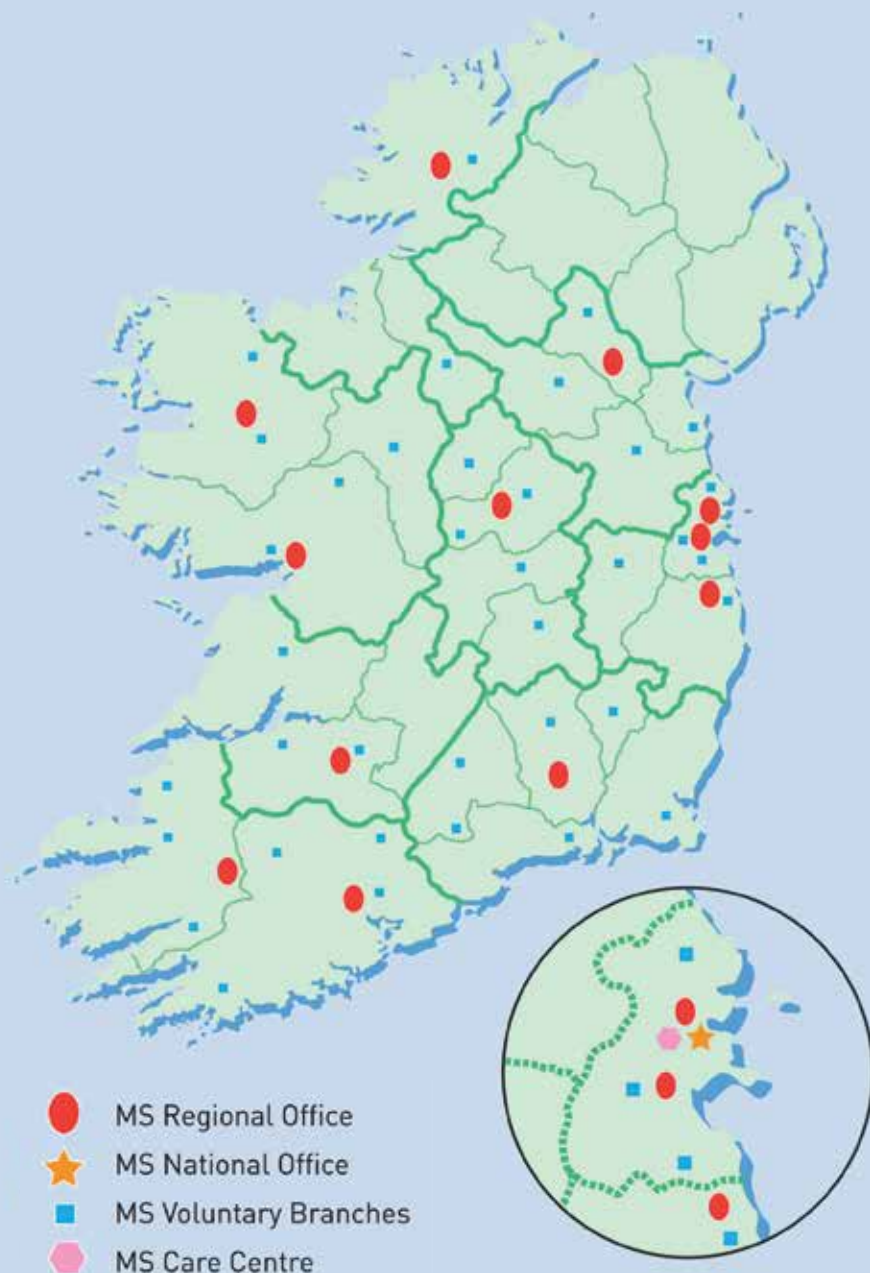
Tel: (056) 77 77 771

Email: southeast@ms-society.ie

West

Tel: (091) 768630

Email: western@ms-society.ie



**Multiple Sclerosis Ireland,
80 Northumberland Road, Dublin 4**

Charity Number 05365

Charities Regulatory Number: 20007867