

# “The Brain Society”: The First Two Years of an Undergraduate Neuroscience Society in Northern Ireland

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## Abstract

The Queen’s University Belfast Brain Society was set up in September 2018 to promote interest in the human brain. There were three main goals: firstly to provide opportunities for medical students to learn from neurologists and neurosurgeons outside their formal curriculum; secondly the Brain Society aimed to organise events that included students from other disciplines and to members of the general public who were interested in learning about aspects of neuroscience; thirdly to tackle neurophobia.

In the last two years, there have been 14 events, ranging from formal lectures, to practical sessions and to patient-focused information evenings. We have sold over 1,600 tickets. This article covers how the Brain Society was set up, to inform students in other universities about the Belfast experience.

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## Introduction

Clinical neuroscience is perceived to be difficult among medical students and trainee doctors<sup>1,2,3</sup>. Short undergraduate placements in neurosciences with reduced extra-curricular exposure to neuroscience contribute to neurophobia<sup>2,4</sup>. The consequence is a limited number of people advancing to a career in clinical neuroscience and reduced confidence in the management of neurological disorders in the postgraduate stages of training and independent practice<sup>5</sup>.

Undergraduate neuroscience societies provide an opportunity to spark curiosity in neuroscience and tackle neurophobia<sup>6,7</sup>. In this paper, we describe how the QUB Brain Society was founded and detail its organisation and events. We hope this informs students elsewhere wanting to set up an undergraduate neuroscience society and confront neurophobia.

*“How something physical yields the abstract and the intangible, how structure leads to function. I am in awe by how the brain gives rise to consciousness, character and purpose”*

David Seong Hoon Lee, Founder and 2018-2019 President

## Founding of QUB Brain Society

The idea for an undergraduate neuroscience society at Queen’s University, Belfast (QUB) was conceived in 2018 by two QUB medical students, David Lee (Seong Hoon Lee) and Kah Long Aw, whilst enrolled in an intercalating MSc in Neuroscience at King’s College London. The extensive opportunities provided by London’s undergraduate neuroscience societies and research groups provided the initial inspiration for the QUB Brain society, and it was evident this approach could help to redress neurophobia<sup>8</sup>.

The QUB Students’ Union council members welcomed the proposal for the new society enthusiastically. The next step was engagement with local clinicians, (in particular Dr Stanley Hawkins, Dr Michael Kinney and Mr Vashisht Sekar) as well as other local students who shared the same vision for neuroscience in Northern Ireland.

The ‘Brain Society’ was named to reflect its interdisciplinary nature and to appeal to the wider community including such areas as diverse as social sciences, computer science, and philosophy. We also wanted to encourage the involvement of people living with neurological disorders. A name like QUB “Neuroscience Society” may have appeared too exclusive and ‘potentially could have deterred people from’ attending events.

## Events Organised

The content and style of events were chosen to have an interdisciplinary appeal with academic and non-academic events organised to get interest from the wider student body. Non-academic events explored topics not traditionally taught in the curriculum – for instance, emotional aspects of brain function (See Table 1)

## The Unique Selling Point

Despite QUB’s geographic isolation, being far away from the abundant neuroscience societies and research groups present elsewhere in the United Kingdom, we saw potential novel opportunities unique to Belfast.

Northern Ireland has one of the world’s highest prevalence rates of multiple sclerosis (MS)<sup>9</sup>, providing a valuable

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platform to conduct epidemiological and basic disease mechanisms research. QUB has world leading researchers such as Prof. Denise Fitzgerald, working in MS and remyelination mechanisms. There is a historical legacy of seminal observations in the neuroscience disciplines such as from the late Prof. Dame Ingrid Allen, who was instrumental in the discovery of the

**TABLE 1: BRAIN SOCIETY EVENTS ORGANISED IN 2018-2020**

Event name	Speakers	Event description	Attendance
The Inaugural Event: What is the Brain to You? (15/10/18)	Dr Stanley Hawkins, Professor Denise Fitzgerald, Dr Ciaran Mulholland (All QUB)	Lecture series by a neurologist, neuro-immunologist, and a psychiatrist about how they view the brain from their respective fields.	242
Memories (3/11/18)	Dr Stanley Hawkins, Peter Rogan, Caitlin O'Callaghan, Chloe Gilkinson, Emma McIvor (All QUB)	A neurologist speaking about the neural basis of memories followed by 'History of Neuroscience' SSC module student presentations on the neuroscience of language, vision, law, and savant syndrome.	83
I am Not MS (29/1/19)	Sean O'Callaghan, Anna Magennis, Dr Stanley Hawkins, Dr Gavin McDonnell, Dr Stella Hughes, MS Society NI (QUB, Belfast Trust)	Individuals sharing their personal stories on living life with MS. Joined by their neurologists and the national MS society speaking about their work. Held in a talk-show question and answer format.	165
Beyond the Scalpel: Life of a Neurosurgeon (26/2/19)	Mr Vashisht Sekar (Belfast Trust)	A neurosurgeon sharing his day-to-day experience of neurosurgery. Followed by careers advice and neuro-imaging tutorials.	113
Psilocybin, Epilepsy & God: The Neuroscience of Belief (26/3/19)	Professor Alasdair Coles (University of Cambridge)	An academic neurologist speaking about the neural basis underlying religious experiences and belief.	300
Neurosurgery Bootcamp (27/4/19)	Mr Vashisht Sekar, Mr Jonathan Poots (Belfast Trust)	A practical neurosurgical workshop with stations on suturing, burr-holes, dural patching, microsurgery, and neuroanatomy.	11
Through The Looking Glass: An Evening with a World-leading Neurologist (14/10/19)	Professor Allan Ropper (Professor of Neurology Harvard University and Author of 'Reaching Down The Rabbit Hole')	A world-leading academic neurologist sharing his day-to-day experience of neurology and teaching medical students at Harvard. This was delivered virtually online.	60
More Than Human – A.I. and Neuroscience (29/10/19)	Dr Barry Devereux (QUB lecturer)	A computer scientist speaking about the link between artificial intelligence and neuroscience, the use of computers and robotic devices in the future medical profession.	95
Mental Health – The Blurred Lines Between Neurology and Psychiatry (13/11/19)	Dr Stanley Hawkins and Dr Conor Barton (Both QUB and Belfast Trust)	A neurologist and a psychiatrist sharing their insights into the impact of mental health and how mental health is treated in both professions. Followed by case studies and career advice.	75
What Can We Do With Sound? (3/12/19)	Dr Matthew Rodgers (QUB Lecturer)	A psychologist sharing his insight into research in the use of auditory-motor and auditory-visual advances and their uses in the medical profession.	Cancelled due to Union Strike restrictions.
The Evolution of Human Consciousness (29/01/20)	Dr Derek Tracy (King's College London)	An academic neuropsychiatrist speaking about the neural basis underlying the evolution of human consciousness.	216
Half The Battle: Neuroscience Behind The Northern Ireland Troubles (10/02/20)	Dr Ciaran Mulholland (QUB Lecturer) and WAVE (Widows Against Violence Empower) representatives	A psychiatrist sharing his research into the psychological trauma of the NI Troubles, followed by two personal experiences of living with the trauma	127
Life Beyond Epilepsy (4/03/20)	Dr Michael Kinney (Belfast Trust) Dr Jim Morrow Ms Sue Wilde Maeve Cassidy Sharon Karatas (All Epilepsy Action)	A neurologist sharing his research into advances in Epilepsy treatment, followed by four personal experiences of living with Epilepsy.	39
A Day in The Life of a Neurologist (27/03/20)	Dr Thomas Peukert (Belfast Trust)	A neurologist sharing his day-to-day experience of neurology and his career advice.	Cancelled due to COVID-19 restrictions.



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neurological complications of the measles virus. Northern Ireland’s cultural and historical context yields important perspectives for neuropsychiatry and psychology, and its interaction with neurology. Important contributions were also made in the field of neurotrauma in the context of the NI troubles.

Undergraduate students in other locations wanting to set up a neuroscience society should identify relevant local research groups and the principal investigators. Each university has its own research strategies and strengths and they focus resources towards them. Identifying a university’s unique selling point in neuroscience research will help to organise events which are relevant and meaningful to the local community.

### Putting a Face to Neurology and Neurosurgery

Medical students are quite rightly focused significantly on assessment driven learning, but we sought to bring out the personal stories and experiences of patients for students. This gives a deeper insight of how neurological diseases affect patients, promoting a biopsychosocial view.

In collaboration with the Multiple Sclerosis Society, we hosted a popular event (“I am Not MS”), with two patients with MS and their consultants (See figure 1). It was in the format of a talk show, with significant audience participation. Anna (one of our volunteer patients) spoke about her personal struggles and victories as an undergraduate student with MS. One audience member found this useful reflecting the comfort of knowing her own daughter was not alone in her struggles.

Later that year working with Dr Mulholland we invited the organisation Widows Against Violence Empower (WAVE), Trauma Centre to speak at our event ‘Half The Battle’. We heard about the issue of post-traumatic stress disorder (PTSD) in victims of the NI Troubles and how it continues to affect their everyday lives. The issue of PTSD, no matter what the context, has a financial burden on the National Health Service (NHS). Additionally, WAVE Trauma and other



**Figure 1** - Brain Society 2018-2019 Committee members at MS event. Back row - (Maran Fearon, Peter Rogan, Caitlin O’Callaghan and Ger Mullan), Marian Mawhinney (MS Society representative), Dr Gavin McDonnell, Dr Stella Hughes and Dr Stanley Hawkins (Belfast Trust). Front row - Sean O’Callaghan and Anna Magennis (MS speakers) and David Lee (President)

organisations helping people affected by the NI Troubles have also been affected by recent budget cuts. QUB Brain Society was able to provide representatives from WAVE Trauma with a valuable platform enabling them to speak about their personal experiences from the Troubles and how they continue to affect their lives. We, unknowingly, brought together a victim of the NI Troubles and their neurologist who played a part in saving their life many years previously.

In March 2020, we held a joint event with Epilepsy Action called ‘Life beyond Epilepsy’. Dr Jim Morrow, retired neurologist and epilepsy advocate, spoke about developing epilepsy and limbic encephalitis whilst working as a consultant neurologist (we would encourage all students to read his own fascinating account of his illness<sup>10</sup>). He was instrumental in setting up a specialist epilepsy service in Northern Ireland and was the principal investigator of the globally respected UK Epilepsy and Pregnancy Register. Dr Morrow’s wife, Sue, gave an account of working with Epilepsy Action and living with Dr Morrow at the time he was diagnosed with epilepsy. Other fascinating and moving stories were told by a university student with epilepsy and the mother of a child with epilepsy.

Epilepsy not only affects the individual but family members and friends. Our event created a unique platform for the speakers to connect with the audience in sharing personal experiences with epilepsy. Many memorable comments were made but one that stands out was from a student who delayed their medical studies after being diagnosed with epilepsy. Dr Morrow was able to provide reassurance that they should not let epilepsy hold them back from medicine.

Personal engagement events with patients and students need careful design, being sensitive to the needs of the participants. Wireless microphones and a coffee table seating arrangement can create a more relaxed environment to promote active audience participation. Events like these help to put a face to neurological conditions so students can appreciate how brain diseases impact people’s personal lives.

### Tackling Neurophobia

Apart from Student Selected Components (SSCs), undergraduate clinical neuroscience exposure at QUB is limited to a two-week attachment. This poses a challenge to explore neurology and neurosurgery at a deeper level. Studies have indicated limited clinical exposure and short clinical rotations to be a major contributing factor towards neurophobia<sup>2,3,8,11,12</sup>. By giving students extracurricular opportunities to further explore the field and interact with experts, we strove to foster an atmosphere and academic culture of learning. We promoted our events to high school students, patient support groups, and families of patients, as we feel it is essential to tackle neurophobia in the wider community. Events focusing on the personal or emotional aspects of neuroscience not taught within the medical curriculum (e.g. “Psilocybin, epilepsy & God: The neuroscience of belief”) attracted large diverse audiences, including students with little exposure to neuroscience.



### Practical Academic Learning Opportunities

Academic-focused events were organised to allow keen students with a passion for neuroscience to further their interests. These events provided opportunities for revision for examinations and exposure to more in-depth material.

Previously, an evaluation of the contribution of attendance at operating theatres in medical undergraduate neuroscience teaching at QUB, proposed a need to explore medical student perceptions of clinical neuroscience teaching<sup>13</sup>. Our practical events complemented traditional theatre-based learning, by allowing students to perform basic neurosurgical procedures. This year we collaborated with ‘Scrubs’, a student surgical skills society, and ran a full-day surgical skills conference for medical students. The neurosurgery section was run by Mr Tom Flannery and “Tekno Surgical”. The Neurology and Neurosurgery Special Interest Group (NANSIG) sponsored this event and provided the neurosurgical equipment. This allowed 40 students to perform burr holes, craniectomies, micro-suturing, dural closures and the insertion of pedicle screws (See figure 2). This provided tangible experience with surgical tools and a unique opportunity to consolidate neuroanatomical knowledge. We hope events like these



**Figure 2** - Medical students demonstrating neurosurgical skill

provide a useful learning platform for students to understand neurosurgical conditions that they may not otherwise encounter in training.

With support from NANSIG we set up a mentorship scheme for medical students in Northern Ireland. We recruited 15 consultants from neurology, neurosurgery and neuroradiology who were paired with a student to give them clinical and research opportunities.

We have also facilitated networking opportunities with leading experts in international centres of excellence. Dr Allan Ropper, Professor of Neurology at Harvard University, spoke about his career in neurology through a video link. In 2019, we hosted Alasdair Coles, Professor of Neurology at the University of Cambridge who spoke about the neural basis underlying religious experiences.

### Publicising The QUB Brain Society

Effective promotion is key for the success of a student society.

Great promotion leads to large audience numbers and in turn society membership but more importantly, it leads to a shift from us contacting potential speakers to them contacting us. Creating contacts is beneficial not only for the events but for future (medical) opportunities. As QUB Brain Society is still relatively new, we explored various methods of publicising our events to both potential speakers and future audience members.

### Reaching Out To Speakers

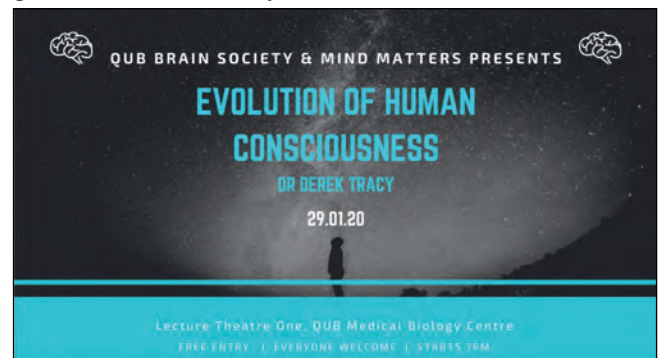
Particularly in our first year, reaching out to speakers was a daunting experience. We picked relevant and interesting topics, after carefully selecting one or two potential speakers based on availability. Understanding that clinicians and academics have busy schedules, it was important to have numerous options available. Recently we have been contacted by local experts wanting to promote their research areas, which is a great privilege to be able to showcase their work.

Collaborating with The MS Society, WAVE Trauma and Epilepsy Action, allowed us to further promote our society to the general public. Social media promotion and informing members of these organisations played a key role in promoting the events. We are indebted to these organisations for the success of the events.

### Reaching Out To A Potential Audience

Having secured a speaker, it was vital to promote the event and the speaker. In our second year, we organised all of the events in advance of the respective academic year in order to create a programme which we could then promote.

The publicity team created posters and speaker profiles for each event. These were then disseminated on social media platforms (Facebook, Instagram and Twitter) on a regular basis running up to the event. We also informed all the grammar and secondary schools within Belfast, faculties/



**Figure 3** - Advertising poster for the event on Evolution of Human Consciousness

schools within QUB and to contacts in the Ulster University. A number of school students and their teachers came to the events. For example, one school sent 40 of their pupils and a teacher to our first event ‘What is the Brain to you?’ (See figure 3).

### The Benefits of Post-event Feedback

Tickets for our events were sold on Eventbrite, allowing us



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to monitor sales and in turn focus our promotional drive. Trends in both years have shown that sales in the second semester are higher than first semester which could be due to increased promotional drive. In the second semesters, more students have had time to visit the Student’s Union, hear about student societies through Fresher’s Fair and through their fellow students or lecturers. Post-event surveys show the diverse audience members these events have appealed to (See figure 4). We found that social media was the main platform by which people heard about our events. It is crucial for student societies to regularly update the social media

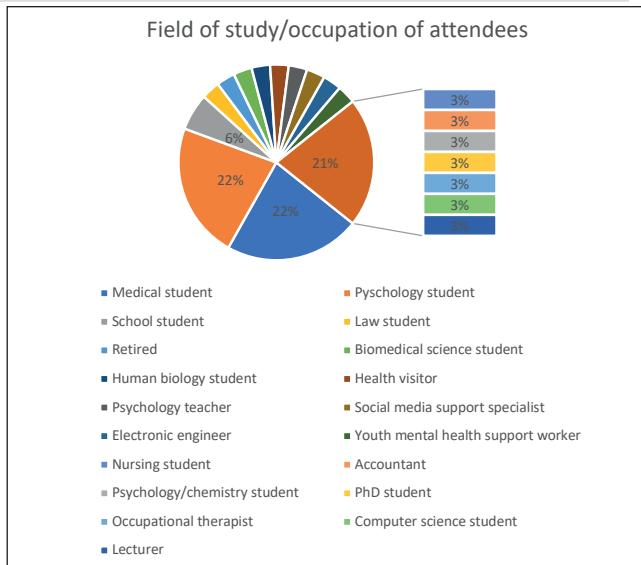


Figure 4 - Pie chart showing the spectrum of disciplines attending our ‘What is the Brain to you?’ event

platforms to attract more attention for the events.

### Membership Benefits

Fresher’s Fair is held every year and allows student societies to showcase their work to new university students in order to promote their events and membership for their societies. The QUB Brain Society members receive a monthly newsletter which is created by our first year representatives and Vice President. The newsletter covers our upcoming events and interesting facts about the brain and the Brain Society. QUB Brain Society also has links with NANSIG who offer a mentorship programme with neurologists and neurosurgeons in Northern Ireland and we regularly update our members with information about courses or training programmes that NANSIG offer.

### Achievements and Future Aspirations

Now in its second year the Brain Society has 10 committee members, 150 subscribers to our monthly newsletter, and had over 1,000 attendances at our various events. These numbers have grown from the previous year and will hopefully continue to grow.

In the first two years of the society’s existence we feel that we were able to achieve this through the fourteen interesting events we held. As a result of our efforts in our inaugural

year this led to the society being awarded runner-up for the ‘Best New Society’ in the Student Union awards for 2018-2019 academic year.

Despite the COVID-19 era we now live in, the business of the committee rolls on (See figure 5), and a new committee was selected by an annual general meeting held virtually. This will allow strategic planning for the best possible start to the 2020-21 academic year. While our new elected committee face a few difficulties in organising events with the current



Figure 5 - Brain Society Committee 2019-2020 – Caitlin O’Callaghan, Naairah Khan, Peter Rogan, Nikita Tokarev, Sarah Collis, Maran Fearon, Ger Mullan, Hannah Kerr, Michael McLarnon, Sabina Pogason and David Lee with Dr Stanley Hawkins at Dr Ropper’s event

social distancing measures in place, there is the potential to run sessions by webinar format.

### Neurologists’ Perspectives

Drs Michael Kinney and Stanley Hawkins share their perspectives on the value that student societies can bring to the local neuroscience community.

*“The Brain Society offers a tremendous opportunity to allow additional educational opportunities throughout the entire undergraduate journey. The students are to be admired for their ambitious project, enthusiasm, and high aspirations”*

Dr Michael Kinney (Consultant Neurologist/Epileptologist)

*“At an early stage in my undergraduate medical career I became interested in the workings of the brain - the delicate organ that makes us unique, conscious, sentient, insightful individuals. Through the Brain Society it has been a great honour to be able to share my enthusiasm with highly motivated intelligent students, to inspire some of them to become the next generation of neuroscientists.”*

Dr Stanley Hawkins, (Retired Consultant Neurologist)

### Moving forward

Looking towards the future of The Brain Society, we hope it continues to provide a platform for students, patients and the wider public to engage informally with neuroscience experts. We hope to continue advocating for the establishment of



a formal interdisciplinary neuroscience centre at QUB, incorporating basic and clinical neuroscience.

We hope that student-led initiatives like these will help tackle neurophobia and help inspire the next generation of neuroscience clinicians and scientists. Neuroscience is one of the last great “undiscovered countries” of the body and is one of the final frontiers which is calling out for a motivated generation of researchers and clinicians.

#### REFERENCES

1. Schon F, Hart P, Fernandez C. Is clinical neurology really so difficult? *J Neurol Neurosurg Psychiatry*. 2002;**72**(5):557–9.
2. Flanagan E, Walsh C, Tubridy N. “Neurophobia” - Attitudes of medical students and doctors in Ireland to neurological teaching. *Eur J Neurol*. 2007;**14**(10):1109–12.
3. Zinchuk AV, Flanagan EP, Tubridy NJ, Miller WA, McCullough LD. Attitudes of US medical trainees towards neurology education: “Neurophobia” - A global issue. *BMC Med Educ*. 2010;**10**(49).
4. Pakpoor J, Handel AE, Disanto G, Davenport RJ, Giovannoni G, Ramagopalan SV. National survey of UK medical students on the perception of neurology. *BMC Med Educ*. 2014;**14**(1):1–5.
5. Amarouche M, Neville JJ, Deacon S, Kalyal N, Adams N, Cheserem B, *et al*. Referrers’ point of view on the referral process to neurosurgery and opinions on neurosurgeons: A large-scale regional survey in the UK. *BMJ Open*. 2017;**7**(11):1–8.
6. Hanrahan J, Burford C, Ansaripour A, Smith B, Sysum K, Rajwani KM, *et al*. Undergraduate neurosurgical conferences—what role do they play? *Br J Neurosurg*. 2019;**33**(1):76–8.
7. Geoghegan K, Payne DR, Myers MA, Hall S, Elmansouri A, Parton WJ, *et al*. The National Undergraduate Neuroanatomy Competition: lessons learned from partnering with students to innovate undergraduate neuroanatomy education. *Neuroscientist*. 2019;**25**(3):271–80.
8. Jozefowicz RF. Neurophobia: The fear of neurology among medical students. *Arch Neurol*. 1994;**51**(4):328–9.
9. McDonnell GV., Hawkins SA. Multiple sclerosis in Northern Ireland: A historical and global perspective. *Ulster Med J*. 2000;**69**(2):97–105.
10. Morrow J. Autoimmune limbic encephalitis due to VGKC-AB. Thanks for the memory. Leo Robin (Title of song, 1937). *Pract Neurol*. 2016;**16**(2):162–5.
11. Lim EC, Seet RC. Demystifying neurology : preventing ‘neurophobia’ among medical students. *Nat Clin Pract Neurol*. 2008;**4**(8):462–3.
12. Wills AJ. Neurology postgraduate training: what is to be done? *J Neurol Neurosurg Psychiatry*. 2004;**75**(11):1513–9.
13. Flannery T, Gormley G. Evaluation of the contribution of theatre attendance to medical undergraduate neuroscience teaching – A pilot study. *Br J Neurosurg*. 2014;**28**(5):680–4.



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