



Parliamentary and Scientific Committee



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Brain Gain: How World-Leading UK Neuroscience Research can meet Tomorrow's Societal Challenges

Neuroscience is a discipline that connects us all and is absolutely fundamental to understanding humans. In this evening's discussion, we heard from four key speakers about the research and impact of neuroscience. Professor Tara Spire-Jones, Personal Chair of Neurodegeneration and Deputy Director of the Centre for Discovering Brain Sciences at the University of Edinburgh, spoke to us about the importance of neuroscience to society. Matt Eagles, Head of Patient Engagement and winner of the BNA's Public Engagement of Neuroscience 2020, was interviewed by Anne Cooke, Chief Executive of the British Neuroscience Association, about how developments in neuroscience had impacted his life personally. Professor Timothy Constandinou, Professor of Bioelectronics at Imperial College London, explained to us how neural interfaces are making a massive impact on human health. Lastly, Professor Masud Husain, Professor of Neurology and Cognitive Neuroscience at the University of Oxford, spoke to us about the future challenges neuroscience is trying to tackle. We had a wide-range of questions during the Q&A session, from ethical issues around testing treatments to how best to fund research.

Human brain is immensely complex, with over 100 billion neurons and 100 trillion synapses. Prof. Spire-Jones explained how this is a massive challenge to researchers. Despite neurological disorders being one of the leading sources of disability, research is highly underfunded compared to other areas; for every £10 spent caring for someone with a neurological disorder, £0.10 is spent on research. For cancer research, the ratio is £1 spent for every £10 spent caring for someone. If we wish to unlock this complex system then more funding is vital.

Prof. Constandinou explained to us how the

technological treatments for neurological disorders are rapidly progressing. Neural interface technologies are composed of a technical component directly connected to the brain or nervous system. This can be used to stop tremors for conditions like Parkinson's Disease, as well as sensory conditions like cochlear implants treating deafness. Mr Eagles is one such person that these technological treatments have greatly benefited. He was diagnosed with Parkinson's disease on his 7th birthday, and he has to cope with tremors for many years. Deep Brain Stimulation therapy has meant Mr Eagles has some control with his condition now, meaning everyday tasks are that bit easier, as well as allowing him to be an advocate for neuroscience research.

Despite all the successes, there is still a long way to go in this field. Prof. Constandinou explained to us that currently neural interface technology isn't responsive to what the individual is doing, which can lead to some difficult side-effects. Prof. Husain discussed the more wide-spread societal issues. Both dementia and ageing were identified as healthcare challenges in the UK government's Life Science Vision. During the ageing process most people see a decline in cognitive function once they pass their early 60s, and so understanding this process would be beneficial for everyone. We've made progress in discovering what lifestyle choices can lead to more serious cognitive decline; blood pressure and diabetes are both known to increase the likelihood of one developing dementia. However, to understand this process better and treat this disease effectively, more research and more funding in this sector is needed.

Alfie Hoar

P&SC Discussion Meeting, 'Brain Gain'

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