



**DEMENTIA RESEARCH
NETWORK IRELAND**

Prevention, Cure & Care for
Neurodegenerative Diseases

Researcher In Focus Series – September 2020

This month's Researcher in Focus is Dr Tobias Engel, who is a Lecturer at the Royal College of Surgeons in Ireland.



What is your area of research?

My PhD studies were carried out at the laboratory of Prof Jesus Avila at the Molecular Biology Centre "Severo Ochoa" in Madrid characterizing different mouse models of Alzheimer's disease, with a particular focus on the microtubule-associated protein Tau and the enzyme GSK-3. In 2006, after the completion of my PhD, I took on a post-doc position at the Royal College of Surgeons (RCSI, Dublin, Ireland) in the laboratory of Prof David Henshall studying molecular pathomechanisms during epilepsy and how neurodegeneration impacts on the epileptic phenotype.

Since 2014 I have established my own research group at RCSI with the main focus on the identification of new diagnostics and therapeutics for epilepsy based on purinergic signalling. I have, however, maintained a strong interest in neurodegenerative diseases, in particular Alzheimer's disease. Here, a second research focus of my laboratory is the identification of novel biomarkers for Alzheimer's disease, with the main focus on circulating microRNAs (*e.g.*, Kenny et al., Scientific Reports, 2019; Kenny et al., Biomolecules, 2019).

What sparked your interest in this area?

Since starting my undergraduate studies, my main interest was always in neuroscience and how the brain works. Why I finally chose Alzheimer's disease as the topic of my PhD has probably various reasons. One of the main reasons without doubt was the prospect of working in the research team of Prof Jesus Avila, one of the top neuroscientists in Spain and known internationally for his work on Alzheimer's disease.



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What stage are you at in your career and are there any achievements you are particularly proud of?

I established my own line of research at RCSI in 2014 and my current research team includes several pre- and post-doctoral researchers. While the main focus of my current research is the study of epilepsy, I have kept a strong interest in Alzheimer's disease and current research is investigating how to identify patients before the onset of symptoms. Scientific achievements I am particularly proud of include being the coordinator of a European-wide PhD training network on brain diseases "PurinesDX", supervising to completion several PhD studies and having contributed to several studies with the potential to be translated into the clinic.

What impact would you like your research to have?

I would like my research to have an impact beyond being published in scientific journals. For example, we have recently identified several biomarkers for pre-clinical Alzheimer's disease. It would be outstanding if some of these would find their way into the clinic.

Who has helped or inspired you in your area of research?

My biggest inspiration to pursue a career in research were without doubt my PhD supervisors. Working under their guidance I have learnt how to remain passionate about science despite all of the hard work and setbacks involved.

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