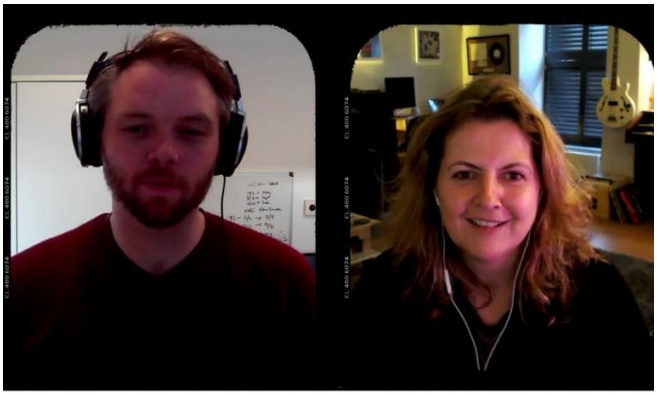
GW4-CAT Fellow Jack Underwood has been awarded the Gene People Leadership Symposium 2022, Best Research Partnership Award with the Timothy Syndrome Alliance

"This award is a wonderful recognition of this joint-working and co-production, which would not be possible without the hard work of Sophie and the TSA, and the input of all the individuals with CACNA1C-Related Disorders and their families." *(Jack Underwood, Cardiff Universoty)*

Since 2019, I've been working with Sophie Muir and the Timothy Syndrome Alliance (UK Charity; TSA) to raise awareness, encourage public engagement, pursue co-produced research, and change healthcare policy.



Jack Underwood (L) and Sophie Muir

Sophie approached Prof Jeremy Hall and our lab at the Neuroscience and Mental Health Innovation Institute on behalf of a Facebook group for a community of families of children with Timothy Syndrome or *CACNA1C* gene variants. Timothy Syndrome is caused by a pathognomonic G406R protein change in the *CACNA1C* gene, while other variants in the *CACNA1C* gene are less well understood but appear to have pathological phenotypes. These are multi-system, but typically present with autism spectrum disorder, developmental delay, prolonged cardiac QT interval, syndactyly/ hip dysplasia, hypotonia, epilepsy and hypoglycaemia. We began by holding a conference for these families, getting them together for the first time, which included inviting the eponymous Kathryn Timothy over from the US. This led to the launch of the Timothy Syndrome Alliance charity.

From there we have undertaken a co-produced clinical phenotyping research study, listening to concerns from families and formally assessing for clinical features using standardised measures, as well as taking patient cell lines for future iPSC modelling of pathological processes. Part of this work was conducted as a collaboration with Stanford University, and has been recently published in Paediatric Neurology https://doi.org/10.1016/j.pediatrneurol.2022.10.013. We have continued our public conference programme, running a bi-annual joint international Brain Research Conference with global attendance and speakers (https://www.cardiff.ac.uk/news/view/2530644-nhmri-co-hosts-successful-annual-brain-research-conference-with-timothy-syndrome-alliance-to-a-worldwide-audience). We have received a small grant for a public engagement film, which is being co-produced with the TSA, encouraging members of the public to engage with rare disease research. We have been able to influence national NHS policies, including updates to the Genomics England PanelApp and adding *CACNA1C* variants on further standardised genetic testing. We have provided support to patients and local clinical teams, with guidance on the specifics of the disorder given it's rarity. We have updated a broad range of widely used online clinical genetic resources, expanding OMIM, Medline Plus, NORD, Orphanet and Wikipedia. We are currently developing a Scientific Advisory Board, planning our next international conference, and beginning a number of international research collaborations, with the research partnership going from strength to strength.

Dr JackUnderwood
GW4-CAT Fellow, Cohort IV
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