

Welcome Career Development Fellow
and Q-BIOMED Deputy Director and
Deputy Chair of the Clinical Steering
Group at University College London

**CAN YOU TELL US ABOUT YOUR CURRENT
RESEARCH AND WHAT EXCITES YOU MOST
ABOUT IT?**

As an academic neurologist my research is closely connected to the patients I look after, in this case people with epilepsy. My group use cutting edge technology across scale from recording single nerve cells, to whole brain imaging using quantum methods like optically pumped magnetoencephalography (OP-MEG), in order to understand epilepsy better and drive future therapy.



More recently we have been focussing on common associated features of epilepsy such as memory decline and mood disturbance. What excites me is that the work we do directly benefits patients, from creating mobile Apps to assess mood state, to recording the first people with epilepsy using OP-MEG, which will hopefully be validated in the near future as a clinical investigation.

**WHAT ARE YOU MOST EXCITED ABOUT IN THE FUTURE OF
QUANTUM BIOMEDICAL SENSING?**

It is certainly a field that is developing at an accelerated rate and the challenge for us as clinicians is to keep up! There is untapped methodological advance both in terms of quantum biosensing and computing that will undoubtedly shape future clinical practice; for me that would encompass high resolution neuroimaging and neurophysiology. To be part of the journey in delivering such technology in the NHS setting is very exciting.

**WHAT ADVICE WOULD YOU GIVE TO EARLY-CAREER
RESEARCHERS OR STUDENTS INTERESTED IN THE FIELD?**

I would say that where we are now in terms of quantum potential is just the start. I believe this area of technology will be increasingly used within the clinical space and so knowledge of it will be essential. I would strongly encourage being involved in this area of research; from personal experience being able to develop novel sensing techniques and applying it to medical conditions of interest has been hugely rewarding.

WHAT DOES A TYPICAL DAY LOOK LIKE FOR YOU IN THE LAB?

As a clinical academic I split my time between seeing patients (typically with epilepsy) and working with my amazing computational epilepsy lab (<https://computationalepilepsy.com/>). The work we do has a wide breadth from cellular neuroscience, either in vivo in patients undergoing intracranial EEG (that is electrodes placed within the brain), and ex vivo in tissue that has been resected during epilepsy surgery. Separately we have contributed in translating OP-MEG, a form of whole brain functional imaging with high temporal and spatial resolution. This means I get to collaborate with amazing scientists across the Hub including physicists, engineers, biologists and industry.

WHAT DO YOU ENJOY DOING OUTSIDE OF RESEARCH?

Having two small children doesn't afford much time! But I love music, and can play trombone, cello, and piano to a reasonable degree. I also love watching sport and have just installed a dart board in my office being swept by Littler-mania! I think living in London gives the opportunity to see exceptional art be it in theatre or exhibitions.