Name	ANDREA SERIO
Position	Seconded Group Leader (King's)
Year joined *(Crick or founder institute)*	2019

Career History

2006- 2008: MSc Molecular, Medical and Cellular Biotechnology Vita - Salute San Raffaele University, Milan, Italy
2009- 2013: Doctor of Philosophy – PhD degree (Degree awarded February 5th 2014) MRC Centre Regenerative Medicine, University of Edinburgh, UK
2013- 2014: Research assistant – Prof. Molly M. Stevens group, Imperial College of London
2014- 2017: Postdoctoral research associate – Prof. Molly M. Stevens group, Imperial College of London
September 2017: Lecturer in Neural Tissue Engineering and Disease Modelling – Centre for Craniofacial & regenerative Biology, King's College London
2019: Group Leader at the Francis Crick Institute (full-time secondment)

Major Awards, Honours and Prizes

2013: PhD studentship awarded from College of Medicine, University of Edinburgh
Funding to pursue Doctor of Philosophy degree at the College of Medicine and Veterinary Medicine and Centre for Clinical Brain Studies, University of Edinburgh
2015: Newton Fund Travel Grant
Award of a travel grant to partecipate and present to the Researcher Link Workshop "Understanding and Advancing Therapies in CNS Disorders" in Florianopolis, Brazil September 2015
2015: Santander Imperial College Mobility Award 2015
Award of a travel grant to cover expenses for a visit to the University of Michigan, Ann Arbour, MI, to perform experiments in the context of a collaboration with Dr. Sami Barmada.

Membership of external committees, editorial boards, review panels, SABs etc

Lab Name	***Neural Circuit Bioengineering and Disease Modelling Laboratory***

Research programme and achievements

Summary of research program: We are creating new models of the nervous system by combining stem cell research with bioengineering. The models allow us to learn more about how our nervous system functions, and see how conditions like motor neurone disease (MND) damage it.

Using pluripotent stem cells to grow neurons in the lab and model diseases of the nervous system transformed the field of neuroscience. However, it is still difficult to create a model that comes close to the complexity seen in our own neural circuits. Our group focuses on finding ways to model the nervous system more accurately using custom-made devices and advanced bioengineering.

We use a range of techniques to support and direct the neurons' growth, including microfabricating new surfaces that resemble human tissue, with channels to 'steer' the growth of axons. Through using new imaging techniques to examine these models in real time, we are able to gain new insights into how these circuits change and develop over time, and identify new options for treatments.

Future Plans: For the bulk of my secondment at the Crick (2020-2025), I plan to grow my research portfolio by developing a novel area of comparative in vitro evolutive neurobiology, where we will use bioengineering and stem cell technology to compare the fine molecular tuning and differences occurring in neural circuits processing across different species, from mouse to primates. This research will take advantage of novel collaborations I am establishing within the Crick (e.g. Tedesco Lab, Rodrigues Lab, etc.).

Research outputs

Hagemann C, Tyzack G, Taha D, Devine H, Greensmith L, Newcombe J, Patani R*, Serio A*, Luisier R* (2021). ***Automated and unbiased discrimination of ALS from control tissue at single cell resolution.*** **Brain Pathol 11;e12937. DOI: 10.1111/bpa.12937**
This paper described a novel pipeline based on machine learning and image nalaysis to classify and analyse single cells within patient tissues, to develop a more precise tool of unbiassed phenotyping in ALS pathologies. This publication is one the first outputs from our secondment as well as from my independent laboratory. It is authored by my PhD student Cathleen Hagemann and represent the product of a collaboration with Rickie Patani at the Crick and Raphaelle Luisier (formerly at the Crick) which would not have been possible without my secondment

Harley J*, Hagemann C*, Serio A#, Patani R (2020). ***FUS is lost from nuclei and gained in neurites of motor neurons in a human stem cell model of VCP-related ALS"*** **(2020). Brain 143(12):e103. DOI: 10.1093/brain/awaa339**
One of the first senior author outputs from my lab, produced in the context of my collaboration with the Patani lab, integral for our secondment