Driven by neuroscience

Name: Dr Erica Barini

Career stage: Postdoctoral researcher

Dr Erica Barini is a postdoc in Dr Miratul Muqit's lab where she is mixing her skills in neurodegeneration research with biochemistry techniques to learn more about Parkinson's disease. Erica's long-held ambition has been to make the move to industry, in September she'll take up a new research role in the pharmaceutical industry in Germany.

Erica says: "I'm investigating the activation and regulation of a protein called PINK1 and its role in Parkinson's disease."

About PINK1: *PTEN-induced* putative kinase, or PINK1, is a protein linked to an early-onset form of Parkinson's disease. PINK1 recruits Parkin that tags damaged mitochondria for destruction. Mitochondria are the power houses of the cell so PINK1 helps to protect cells from stress by exerting a quality-control role over mitochondria.

Top paper
Erica has a first author paper based on her Parkinson's work at PPU under review right now so has chosen to highlight a paper published on her PhD research.

[*Metformin promotes tau aggregation and exacerbates abnormal behavior in a mouse model of tauopathy*](#) is published in *Molecular Neurodegeneration.*

Favourite research tool: Neuronal cell cultures. Follow @mrcppu on Twitter or Instagram to see pictures of Erica in action in the tissue culture suite.

Route to the lab
2006: Graduated from high school (Liceo classico G .Chiabrera) in Savona, Italy, studies focused on humanities.
2009: Undergraduate degree in Biology Università degli Studi di Genova
2011: Master's degree in Molecular Biology in Università degli Studi di Genova
2015: PhD course in Neuroscience and Brain Technologies at the Italian institute of Technologies in Genova

I started my master's degree already knowing that I would love to get into the neurodegeneration field. I am a passionate neuroscientist and am interesting in investigating neurodegenerative mechanisms from different perspectives. I started in Alzheimer's disease focusing my attention on ß-amyloid in first instance and then on tau. At the end of my PhD, I started working on mitochondrial dysfunction thanks to my main project, published last year. I really love the field and wanted to see it from a different perspective by looking into another kind of neurodegeneration disorder. That's what brought me to Miratul's lab in Dundee to study Parkinson's disease.

The MRC PPU unit is known to be one of the best places to learn biochemistry. I've been here 18 months and I already have a first author paper under review and other authorships based on the collaborations I've run. I'm very happy to have had the chance to work here. I've enjoyed working with Miratul and members of his group. I've also had the chance to learn state of the art biochemistry and mix this with my neuroscience skills.

I published two first author papers last year from my PhD and I'm really proud of them. I did my PhD at the Italian Institute of Technology. There I learnt state of the art neuroscience research techniques from electrophysiology *in vivo* to *in vitro* neuronal cultures.

It's the science that is driving me. I moved here because of MRC PPU's reputation in biochemistry. It's quite unique working here since you have the chance to learn skills in a dynamic environment that allows you to have collaborations within university and industry. Scotland is also a great place to live.

Brexit made me think a lot about what could happen in the years to come. I believe that the research funding that comes from the European Union is very important and overall research needs to be based on collaboration. I am Italian, I am working hard, giving all my effort and passion to the job I am doing in UK. I think Brexit will create some discomfort to people like me that have come from a different country to give their best in the UK.

It is important to me that my work has a link back to human health. My aim is to solve a piece of the huge puzzle that could one day help to solve terrible neurodegenerative disorders such as Alzheimer's and Parkinson's disease. Working in basic research in a university setting has given me the chance to study complex mechanisms of neurodegeneration and to become passionate about it. I think moving to industry will make it possible to get closer to patients and to therapies that someday will cure diseases.

I would like to tell anyone who wants to be a scientist three things; be enthusiastic, be passionate and be patient. Every time you have the chance to learn take it, follow your enthusiasm and let even the smallest of the achievements motivate you. Every step is important, and mistakes sometimes become great discoveries. For me, I hope never to lose my passion for science. Passion is what will drive you from the first day you enter the lab.

Perseverance is important in science. Most of the time experiments do not work and so you have to be motivated and passionate to continue doing what you are doing without losing your determination. There will be bad moments where you would like to quit or to throw everything away. In these moments, your determination is fundamental and your passion for science will guide you to retrieve your persistence and achieve success in an experiment.

Science is the joint effort of many people in many labs working at the details. Do not think that if you are starting as a scientist you will one day be the one who will discover a cure for a complex disease. It takes many years and a huge effort from scientists all over the world to discover a treatment that could reach patients. In the 1900's people died of common infections, today thanks to science many people live to be older than 100. Nowadays, neurodegenerative disorders, cancer and heart diseases are the top leading causes of death. I think that scientists are making great steps forward and they are investing their entire lives

in their work. I do believe that there will be effective treatments in the future to cure these terrible diseases, we will get there.

As told to [Hazel Lambert](#)

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