LUIGI MONTIBELLER

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Profile

A Biotechnologist with 5 years experience of using wet-lab and bioinformatics techniques to generate and test novel hypotheses. As an early stage researcher, I have a wealth of experience in cell culture techniques, working with both commercial and patient-derived cell lines (including iPSCs). I specialise in cellular and molecular biology techniques in order to test hypotheses and generate novel insights. I particularly enjoy creative problem solving, tackling technical and biological questions. While I am a capable independent worker, I frequently collaborate with multidisciplinary teams to advise on experimental setup and statistical analysis or to communicate the results of my analysis. I also supervise the training and projects undertaken by MSc students in my group. I am currently looking for opportunities to apply and expand my skills in biomedical research towards better understanding of biology and advancement of medical therapies.

Molecular Biology Skills
- Gene/Protein expression ■■■■■
- Statistics ■■■■□
- Bioinformatics (R) ■■■□□

Cell biology skills
- Cell culture ■■■■■
- Human tissue handling ■■■■□
- Animal model ■■□□□

Languages
- Italian (native) ■■■■■
- English (fluent) ■■■■□
- German (B1) ■■□□□

Skills

Laboratory Skills
- Human tissue handling
- Cell culture (patient-derived cell lines, commercial cell lines)
- Protein analysis (western blot, (co-)immunoprecipitation, immunofluorescence)
- Plasmid cloning, ligation, transformation in bacteria (*E.Coli*)
- Maintenance of patient-derived iPSCs and differentiation to neurons
- Gene silencing in cell lines and animal models (siRNA, RNAi)

- ELISA
- Gene expression (qPCR)
- Microscopy (confocal)
- FACS
- Enzymatic assays

Data analysis
- Bioinformatics: use programming languages as R and Python in Linux environment for data analysis
- Integration of multiple RNA-Seq datasets to identify regulators of gene sets and pharmaceuticals
- Proficient in statistical software (e.g. Graphpad, R) and platforms for network analysis and visualization (e.g. Cytoscape)
- Proficient in Photoshop graphical tools; Microsoft Office (Word, PowerPoint and Excel)

Professional Experience

Associate Scientist
Verona, IT
University of Verona, Policlinico G.B. Rossi
May 2019 – present

Longitudinal multi-parametric clinical, CSF and MRI study aimed at predicting disability progression in Multiple Sclerosis (MS).
- Proteomics analysis using multiplex techniques based on the Luminex technology (Bio-Plex X200) for early detection of putative biomarkers in longitudinal clinical profile
- Bioinformatics tools to investigate pathological mechanisms in CSF derived from patients affected by MS
- Correlation with multi-parametric assays to integrate data derived from biological material (cerebrospinal fluid - CSF, Blood) and MRI scans.

Early Stage Researcher, part of a Marie Skłodowska-Curie Actions
London, UK
Imperial College, Department of Medicine
April 2016 – present

Elucidation of molecular pathogenesis in neurodegenerative disorders (ND) and discover gene targets for therapeutic intervention.
- Used Bioinformatics tools to prioritise candidate genes from a set of co-regulated genes
- Validation of the bioinformatics results by using human neuronal post-mortem tissues in combination with functional genomics, focus on candidate proteins and homeostasis mechanisms in ND.
- Integrated clinical data with gene expression (qPCR) and protein analysis (western blot) in human tissue.
- Identified disease-specific activation of homeostatic pathways, which resulted in a peer-reviewed publication.

Functional characterisation of a genetic mutation in Motor Neurone Disease (MND).
- Integrated multiple RNA-Seq datasets to identify key regulatory genes associated with C9orf72 mutation in MND.
- Used small molecules to induce selective alteration of cellular mechanisms (autophagy, ER and oxidative stress) in patient-derived cell culture (EBV-transformed lymphoblastoid cell lines) to functionally characterise the effect of the disease-associated mutation on stress granules formation and RNA metabolism.
- Integrated gene and protein level and cell viability (FACS) data obtained from human cell lines with gene and protein expression in human post-mortem tissue.

Industrial Secondment
e-NIOS

Athens, GR
Feb 2019 – Mar 2019

- Processed raw data and performed a cross region analysis on three publicly available RNA-Seq datasets
- Used protein-protein interaction (PPI) and the pathway analyses for the identification of new disease-relevant candidates
- Single cell expression analyses through the investigation of gene co-expression networks.

Industrial Secondment
Randox Teoranta

Ireland, IRL
June 2018 – July 2018

- Optimised Biochip Immunoassay for simultaneous multi-analytes diagnostic testing. Analysed cytokine secretion through an ELISA-based approach using patients-derived cell lines carrying disease-associated mutation.
- Investigated the effect of drugs and pathogenic mutation on the production and secretion of a range of cytokines by perturbing cell lines with different types of drugs.
- Quality control tests following the Good Manufacturing Practices (GMP).

Junior Researcher
European Academy of Bolzano (EURAC Research)

Bolzano, IT
Jan 2014 – Dec 2015

Investigation of molecular functions of a protein-protein interaction in Parkinson's disease.
- Used patient-derived induced pluripotent stem (iPS) cells and subsequently differentiated into dopaminergic neurons to confirm the predicted *in silico* protein-protein interaction (PPI) through PLA, immunofluorescence.
- Subsequent functional validation and characterisation of the PPI in commercial neuronal cell lines (HeLa, SH-SY5Y). PLA and co-IP were used to confirm the PPI, in combination with gene silencing using siRNA.
- Characterisation molecular mechanisms by gene and protein expression (qPCR, western blot), organelles isolation (nuclear and mitochondrial fractioning) and neuronal functions by Ca^{2+} homeostasis and mitochondrial metabolism analyses.
- Identified the PPI mechanism involved in translocation of the protein of interest. Submitted publication.

Research Internship
Institute of Neurogenetics, University of Lübeck

Lübeck, DE
Oct 2014 – Aug 2015

Transgenic RNAi fly lines to investigate molecular functions of a gene associated to movement disorders.
- Use of RNAi technology to perform tissue-specific knock-down (neuronal, muscular and ubiquitous KD) in *Drosophila Melanogaster.*
- Implemented the genetic mating scheme, handling and maintenance of fly lines investigating viability, behavioural and physical impairments in transgenic larvae and adult flies.
- Prepared samples to investigate lipid composition (lipidomics) and ATP consumption in different tissues by dissecting and preparing larvae and adult flies.

Contributor
Newspaper "QuestoTrentino"

Trento, IT
Feb 2013 – May 2016

Science and technology writer at QuestoTrentino, an editorial newspaper. Responsible for the section examining local and national issues related to science. Editor: Ettore Paris

Additional Skills

Teaching and mentoring
- MSc student – mentoring, teaching, assigning tasks and guided trouble-shooting for a new student with no prior experience. The student was able to work independently in the lab and to analyse own data within 2

weeks – cell culture, human tissue handling, gene expression (qPCR) and statistical tools for data analysis. Completely self-sufficient after 2 months, able to write and interpret critically the results.
- PhD representative at the Division of Brain Sciences (Imperial College London) – communicate students issues/proposes to key stakeholders such as Postgraduate students coordinator and head of department.

Communication
- Science communication to peers, through talks and poster presentations at international conferences, and to lay audience as a member of dissemination committee within Marie Skłodowska-Curie Actions consortium, administrator of professional twitter accounts (@TRAINERS, @deBellerocheLab) and organizer of outreach activities (e.g. Pint of Science, Meet the Scientist) – involved in fundraising and administration.
- Member of exploitation committee where findings generated within Marie Skłodowska-Curie Actions consortium are reviewed towards commercial application
- Scientific writing through peer-reviewed publications and reviews, and newspaper articles related to science

Extra-curricular Activities
- Volunteer for the Red Cross - Croce Rossa Italiana (CRI)
- Member of Biochemical Society and British Neuroscience Association
- Member of **O.W.L.** (Open Wet Lab - the first bio-hacking association in Italy)

Education

PhD in Neurogenetics	London, UK
Marie Skłodowska-Curie Actions fellowship	*Apr 2016 – Present*
Imperial College London	
MSc Science in Cellular and Molecular Biotechnology (LM-9)	Trento, IT
University of Trento - Center of Integrative Biology (CIBIO)	Oct 2013 – Oct 2015
Final degree mark: 110/110 cum laude	

MSc Molecular Life Science	Lübeck, DE
Universität zu Lübeck (University of Luebeck) - Institute of Chemistry	Oct 2014 – Apr 2015
Erasmus+ Program	

BSc Biomolecular Sciences and Technology (L-2)	Trento, IT
University of Trento - Center of Integrative Biology (CIBIO)	Sept 2010 – Sept 2013
Final degree mark: 110/110	

Selected publications:

- **Montibeller L.**, Almanza A., Carlesso A., et al. "**Endoplasmic reticulum stress signalling - from basic mechanisms to clinical applications**" FEBS J., 2019;286(2):241-278

- **Montibeller L.**, de Belleroche J., "**Amyotrophic lateral sclerosis (ALS) and Alzheimer's disease (AD) are characterised by differential activation of ER stress pathways: focus on UPR target genes**" Cell Stress Chaperones. 2018; 23(5):897-912.

- Guida M., Zanon A., **Montibeller L.**, et al. "**Parkin Interacts with Apoptosis-Inducing Factor and Interferes with Its Translocation to the Nucleus in Neuronal Cells**" Int J Mol Sci. 2019;20(3). pii: E748. doi: 10.3390/ijms20030748