# Francesca Macchi

## WORK EXPERIENCE

June 2021 – May 2022

### Postdoctoral researcher

CNR Neuroscience Institute, Pisa, (Italy)

- Functional study of parvalbuminergic activity and gamma rhythm changes after stroke

February 2020 – May 2021

### Postdoctoral researcher

Neurobiology of miRNAs lab, Italian Institute of Technology (IIT), Genoa (Italy)

- Differentiation therapy for GBM through synergic action of 11 miRNAs delivered via lipid polymeric nanoparticles
- Writing of research projects, scientific publications and scientific reports

October 2016 – January 2020

### Postdoctoral researcher

Laboratory of Nanotechnology for Precision Medicine, Italian Institute of Technology (IIT), Genoa (Italy)

- Development of polymeric nanoconstructs for combination therapy of glioblastoma multiforme (chemotherapeutic and anti-inflammatory molecules)
- Daily supervision and training of PhD students and master students
- Writing of research projects, scientific publications and scientific reports

September 2010 – April 2016

### PhD in Biomedical Sciences

Laboratory of Neurobiology and Gene Therapy, Department of Neuroscience, KU Leuven, Leuven, Belgium

Thesis: “Characterization of α-synuclein aggregation, neuroinflammation and neurodegeneration in models of Parkinson’s disease”

- Development of cell-based assays for high content screening and validation of compounds against Parkinson’s disease
- Characterization of neuroinflammatory response in cellular and in vivo models of Parkinson’s disease
- Daily supervision and training of PhD students, master students and lab technicians
- Science communication through international conferences and publications

February 2009 – August 2009

### Research fellow in Neuroscience

Laboratory of Neurobiology, Italian National Research Council, Pisa, Italy

- Analysis of gene expression profiles in mouse models of seizure susceptibility
- Characterization of murine models for autism spectrum disorders
- Daily supervision and training of master students

## EDUCATION AND TRAINING

September 2010 – April 2016

### PhD in Biomedical Sciences

Laboratory of Neurobiology and Gene Therapy, Department of Neuroscience, KU Leuven, Belgium

Thesis: “Characterization of α-synuclein aggregation, neuroinflammation and neurodegeneration in models of Parkinson’sdisease”

Supervisor: Prof. Veerle Baekelandt (veerle.baekelandt@med.kuleuven.be)

Principal subjects covered: drug discovery, neuroinflammation, animal models of Parkinson’s disease

2006 – 2008

### Master in Molecular and Cellular Biology

Laboratory of Cellular and Developmental Biology, Department of Biology, University of Pisa,Italy

Thesis: “Generation of a mouse model with a GCG triplet expansion in the ARX gene, identified in West Syndrome patients”

Degree: magna cum laude

Supervisor: Massimo Pasqualetti (massimo.pasqualetti@unipi.it)

Principal subjects covered: cellular biology, stem cells, transgenic organisms, development of the central nervous system

2002 – 2006

### Bachelor in Molecular Biology

Laboratory of Neurobiology, Italian National Research Council, Pisa, Italy

Thesis: “Characterization of BCATc expression in the hippocampus of BDNF transgenic mice”

Degree: magna cum laude

Supervisor: Yuri Bozzi (yuri.bozzi@unitn.it)

Principal subjects covered: molecular biology, developmental biology, neurobiology, biochemistry, cytology, genetic, microbiology

## PERSONAL SKILLS

Mother tongue: Italian

Other languages

| | UNDERSTANDING | | SPEAKING | | WRITING |
|---|---|---|---|---|---|
| | Listening | Reading | Spoken interaction | Spoken production | |
| **English** | C1 | C1 | C1 | C1 | C1 |
| **French** | B2 | B2 | B1 | B1 | A2 |

Levels: A1/A2: Basic user - B1/B2: Independent user - C1/C2 Proficient user

Communication skills

- Experienced in presenting research results during team meetings and international conferences
- Strong capability to write scientific reports and publications
- Excellent communication skills gained through the interaction with colleagues and external collaborators

Organisational skills

- Excellent capability to work both independently and as part of a multidisciplinary team
- Experienced in planning and managing multiple research projects at the same time
- Good capability to adapt to changes and stay efficient under pressure

Technical skills

- Molecular biology (cloning, sequencing, genomic and plasmid DNA extraction, RNA and protein extraction from cells and tissues, PCR, RT-PCT, q-PCR, Southern and Western blot, viral vector production)
- Cellular Biology (cell culture, primary neuronal culture, primary microglial culture, transfection, transduction, immunocytochemistry)
- Histology (cutting fresh and frozen tissues, in situ hybridization, immunohistochemistry, cresyl violet staining, stereological quantification)
- Animal research (breeding and maintenance of rodent colonies, stereotactic injections, craniotomy, rodent embryos manipulation, transcardial perfusion, microdissection)
- Microscopy (light and epifluorescence microscopy, confocal microscopy)

Digital competence

- excellent command of Microsoft Office suite (Word, Power Point, Excel)
- good command of image editing software (Photoshop, Adobe Illustrator, ImageJ)
- excellent command of internet browsers and tools

Driving licence: B

## ADDITIONAL INFORMATION

### Publications

Di Mascolo D, Palange AL, Primavera R, **Macchi F**, Catelani T, Piccardi F, Gallotti A, Galli R, Wilson C, Grant G and Decuzzi P "Conformable Hierarchically-Engineered Polymeric microMeshes Enabling Combinatorial Therapies in Brain Tumors" Nat Nanotechnol. 2021 Apr 1. doi: 10.1038/s41565-021-00879-3. Epub ahead of print. PMID: 33795849.

Lobbestael E, Van den Haute C, **Macchi F,** Taymans JM, Baekelandt V (2020) "Pathogenic LRRK2 requires secondary factors to induce cellular toxicity." Biosci Rep. 40(10):BSR20202225.

**Macchi F**, Deleersnijder A, Munck S, Pottel H, Debyser Z, Gerard M and Baekelandt V (2015) "High content analysis of α-synuclein aggregation and cell death in a cellular model for Parkinson's Disease." J Neurosci Methods 261:117-127.

Van der Perren A, **Macchi F**, Toelen J, Carlon M, Maris M, de Loor H, Kuypers D, Gijsbers R, Van den Haute C, Debyser Z and Baekelandt V (2015) "FK506 prevents neuroinflammation and dopaminergic neurodegeneration in an α-synuclein-based rat model for Parkinson's disease." Neurobiol Aging 36(3):1559-68.

Van der Perren A, Toelen J, Casteels C, **Macchi F**, Van Rompuy AS, Sarre S, Casadei N, Nuber S, Himmelreich U, Osorio Garcia MI, Michotte Y, D'Hooge R, Bormans G, Van Laere K, Gijsbers R, Van den Haute C, Debyser Z and Baekelandt V (2015) "Longitudinal characterization of a robust rat model for Parkinson's disease based on overexpression of alpha-synuclein with rAAV2/7 viral vectors." Neurobiol Aging 36(3):1543-58.

Aelvoet SA, Ibrahimi A, **Macchi F**, Gijsbers R, Van den Haute C, Debyser Z and Baekelandt V. (2014) "Non-invasive bioluminescence imaging of alpha-synuclein oligomerization in mouse brain using split firefly luciferase reporters." J Neurosci. 34(49):16518-32.

Oliveras-Salvá M, **Macchi F**, Coessens V, Deleersnijder A, Gérard M, Van der Perren A, Van den Haute C, Baekelandt V. (2014) "Alpha-synuclein-induced neurodegeneration is exacerbated in PINK1 knockout mice." Neurobiol Aging 35(11):2625-36.

Büttner S, Habernig L, Broeskamp F, Ruli D, Vögtle FN, Vlachos M, **Macchi F**, Küttner V, Carmona-Gutierrez D, Eisenberg T, Ring J, Markaki M, Taskin AA, Benke S, Ruckenstuhl C, Braun R, Van den Haute C, Bammens T, van der Perren A, Fröhlich KU, Winderickx J, Kroemer G, Baekelandt V, Tavernarakis N, Kovacs GG, Dengjel J, Meisinger C, Sigrist SJ, Madeo F. (2013). "Endonuclease G mediates α-synuclein cytotoxicity during Parkinson's disease." EMBO J. 32(23):3041-54.

Sgadò P, Genovesi S, Kalinovsky A, Zunino G, **Macchi F**, Allegra M, Murenu E, Provenzano G, Tripathi PP, Casarosa S, Joyner AL, Bozzi Y. (2013). "Loss of GABAergic neurons in the hippocampus and cerebral cortex of Engrailed-2 null mutant mice: Implications for autism spectrum disorders." Exp Neurol. 247:496-505.

Manno I, **Macchi F**, Caleo M, Bozzi Y.(2011). "Environmental enrichment reduces spontaneous seizures in the Q54 transgenic mouse model of temporal lobe epilepsy." Epilepsia. 52(9):113-7.

Castellano S, **Macchi F**, Scali M, Huang JZ and Bozzi Y. (2006). "Cytosolic branched chain aminotransferase (BCATc) mRNA is up-regulated in restricted brain areas of BDNF transgenic mice." Brain Res.1108(1):12-18.

### Conferences

Alzheimer's & Parkinson's Diseases Conference (AD/PD), Florence (Italy), March 6$^{th}$ - 10$^{th}$ 2013
Poster: "High content analysis of synucleinopathy in a cell culture model for Parkinson's disease"
Macchi F, Deleersnijder A, Munck S, Pottel H, Debyser Z, Gérard M and Baekelandt V

Fourth Conference on Epileptogenesis, Pisa (Italy), May 23$^{th}$ – 26$^{th}$ 2007

## Founding

DBOF PhD fellowship, KU Leuven, Belgium

## Courses

Advances in Neuropathology and Neurobiology - Neuroinflammation, Cirencester, UK (July 3th - 5th 2013)

Laboratory of Animal Science (March 2012)