europass Curriculum vitae

PERSONAL INFORMATION

Riccardo Parra

[redacted]

Sex Male | Date of birth [redacted] | Nationality Italian

WORK EXPERIENCE

01/01/2019–Present

Student: HarvardX Data Science Professional Certificate

HarvardX, Cambridge, MA (United States)

I attended the courses for the Data Science Professional Certificate (still ongoing).

To date I completed the modules:

Data Science: R Basics

https://courses.edx.org/certificates/36b26450e9a6407aa6948e3cb2d0aff2

Data Science: Visualization

https://courses.edx.org/certificates/203556a659654b93a41fbce786a32a91

Data Science: Probability

https://courses.edx.org/certificates/35a54e7e71624963bcaabb221a73239e

Data Science: Inference and Modeling

https://courses.edx.org/certificates/ba2221182feb4438ae230a0c2e22f26d

Data Science: Productivity Tools

https://courses.edx.org/certificates/61f25ae6baa94e33a01a247206aaaeb9

28/09/2016–02/10/2018

Post Doctoral Associate: Development of a 3-dimensional human iPSC model (organoid) suitable for longitudinal live-imaging of synaptic structure using 2-photon microscopy

Yale University - School of Medicine
333 Cedar Street - New Haven, CT 06510 New Haven (United States)
https://medicine.yale.edu/

http://higleylab.org/people/

https://medicine.yale.edu/lab/vaccarino/people/

I generated 3D cultures of human brain cells and I followed their growth and development by means of 2-photon imaging. I performed all the procedures required from the iPS expansion up the whole organoid formation. With Molecular Biology techniques, I adapted commercially available genetically-encoded constructs to make them suitable to specifically label inhibitory synapses and excitatory synapses *in vivo*. Finally, I performed the deep layers 2-photon imaging of the alive organoids.

Acquired Skills: Induced Pluripotent Stem cells (iPS) expansion, development of human 3D brain organoids, 2-photon imaging on organoids.

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Business or sector Education

01/09/2012–31/07/2016

Post Doctoral Fellowship: Generation and two-photon analysis of a sensor for Cre recombinase activity in vivo.

NEST - Istituto di Nanoscienze CNR
Piazza San Silvestro, 12, 56127 Pisa (Italy)
http://www.laboratorionest.it/

I generated the sensor through PCR amplifications, digestions with restriction enzymes and ligations. I assayed the activity of the sensor through two-photon *in vivo* imaging.

The sensor I generated is a sensor for Cre recombinase activity. The tool was realized to detect *in vivo* the presence of the intact MeCP2 gene in an MeCP2 floxed mouse model of Rett syndrome.

Rett syndrome is a rare disease caused by mutations in MeCP2 and since this gene is located on the X chromosome, due to the inactivation of the Barr body, cells of heterozigous females randomly block the expression either of the mutated allele or of healthy allele. This process creates the mosaic of healthy and diseased cells which causes the disease.

My tool is capable not only to create and reveal the mosaic *in vivo* by expressing GFP in healthy cells and a Red fluorescent protein in diseased ones, but it is also capable to amplify the Cre effect, so that the genomic floxed gene is cut with 100% of accuracy, avoiding the case of false positives.

It is worth noting that the tool is a sensor for Cre, so it is suitable to detect EVERY floxed gene. In addition, thanks to its amplifying effect, it can also be used it to induce and detect double or triple floxed recombinations, with very low doses of tamoxifen.

Finally, as a side project, I also used such molecular biology techniques to improve a genetically-encoded fluorescent Chloride sensor (ClopHensor) to visualize the intracellular Chloride currents *in vivo*. The sensor will be used to measure (for the first time *in vivo*) the shift in the role of GABA from excitatory to inhibitory, which occurs during development.

Acquired skills: *In vivo* two-photon imaging of intact mouse brain, *In vivo* plasmid iontoporation, Two-photon imaging, Brain slice preparation.

Business or sector Professional, scientific and technical activities

01/01/2005–06/03/2013

Ph. D. project: Trafficking properties of ERK1 and ERK2 in neural cells

Scuola Normale Superiore and Istituto di Neuroscienze CNR
Piazza dei Cavalieri, 7, 56126 Pisa (Italy)
http://www.sns.it/en/ and http://www.in.pi.cnr.it/

I studied two proteins involved in synaptic plasticity (ERK1 and ERK2) by analyzing their properties of nuclear-cytoplasmic trafficking by means of confocal imaging of fluorescent chimaeric constructs.

My work was under the supervision of Dr. Gian Michele Ratto and Prof. Lamberto Maffei.

Acquired skills: Cell Culture of cell lines, Primary neurons cell culture, Transfection, Confocal Imaging, FLIP, FRAP, StripFRAP, Data analysis with ImageJ, Immunocytochemistry.

Business or sector Professional, scientific and technical activities

07/01/2002–06/05/2004

M. Sc. project: Functional analysis of the C-terminal domain of XOtx2 and XOtx5b in Xenopus laevis early development

Università di Pisa
Lungarno Antonio Pacinotti, 56126 Pisa (Italy)
http://www.unipi.it/index.php/english

I performed a molecular dissection of XOtx2 and XOtx5b to find the domain responsible for anterior fate specification and induction in *Xenopus laevis* gastrulation. Through Molecular Biology techniques, I generated deletion constructs and I assessed their capability to induce the development of an anterior marker in *Xenopus*.

My work was under the supervision of Prof. Robert Vignali and Prof. Giuseppina Barsacchi.

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Acquired skills: Molecular cloning, PCR, restriction digestion, DNA Electrophoresis, Production and purification of DNA, RNA and proteins, PAGE, Western Blot, Micromanipulation, Microinjection of *Xenopus* oocytes and embryos, "whole mount" *in situ* hybridization of *Xenopus* embryos.

Business or sector Professional, scientific and technical activities

EDUCATION AND TRAINING

01/01/2005–06/03/2013

Ph. D in Neurobiology

EQF level 8

Scuola Normale Superiore, Pisa (Italy)

During my Ph. D. School I followed the courses of Neurobiology, Seminars in Neurobiology and Molecular Medicine and I performed the experimental activity on ERK1 and ERK2 described in the work experience section.

Ph. D. degree in Neurobiology with a final graduation of 70/70 cum laude.

05/11/1998–06/05/2004

MSc. in Biological Sciences: Molecular Biology curriculum

EQF level 7

University of Pisa, Pisa (Italy)

At University of Pisa I focused on Molecular Biology courses and I performed the MSc. thesis on XOtx2 and XOtx5b at the Cellular and Molecular Laboratory (see work experience for details).

MSc. degree in Biological Sciences with a final graduation of 110/110 cum laude.

15/09/1993–15/07/1998

High School Degree (Diploma di Maturità Scientifica)

EQF level 5

Liceo Scientifico Ulisse Dini, Pisa (Italy)

I choose a High School focused on scientific courses. There, I learned integrals, derivatives and study of functions, basic Physics, history of phylosophy from Taletes to Hegel. I learned also basic Latin and German.

High School degree with 60/60.

PERSONAL SKILLS

Mother tongue(s) Italian

Foreign language(s)

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken interaction	Spoken production	
English	C1	C1	C1	B2	C1
German	B1	B1	B1	B1	B1
French	A2	A2	A2	A2	A2

Levels: A1 and A2: Basic user - B1 and B2: Independent user - C1 and C2: Proficient user
Common European Framework of Reference for Languages - Self-assessment grid

Organisational / managerial skills Ability to manage a research project, choosing the experiments to do and the appropriate strategy to solve the problems. Ability to work independently as well as a part of a team.

Job-related skills **Microscopy related skills:**

In vivo two-photon imaging of intact mouse brain, Two-photon imaging of brain slices and cell cultures, Confocal Imaging, FLIP, FRAP, StripFRAP, Data analysis with ImageJ.

Cell culture related skills:

Cell Culture of cell lines, Primary neurons cell culture, Cell culture Transfection, Immunocytochemistry.

iPS and organoids related skills:

iPS expansion, generation of human brain organoids, embedding, cryosectioning and immunostaining

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of organoids. Longitudinal 2-photon imaging of living human brain organoids.

Molecular Biology skills:

Molecular cloning, Production and purification of DNA, RNA and proteins, PAGE, Western Blot.

Other skills:

In vivo plasmid iontoporation, Micromanipulation, Microinjection of *Xenopus* oocytes and embryos, "whole mount" in situ hybridization of *Xenopus* embryos, Brain slice preparation.

ADDITIONAL INFORMATION

Other certificates

Participation to "International Astrocytes School 2013" Bertinoro, Italy (March 17-23, 2013)http://ias2013.azuleon.org/

Participation to course of "Tridimensional Microscopy in Fluorescence: methods and applications" Institute for Neuroscience CNR (June 14, 2007).

Participation to course of "Molecular Genetics of Cancer" held by Prof. Martyn Smith of School of Public Health, University of California, Berkeley, (June 3-6, 2002).

Publications

A Cre amplifier to generate and detect genetic mosaics in vivo

Trovato F.*, **Parra R.***, Pracucci E., Landi S., Cozzolino O., Nardi G., Cruciani F., Mosti L., Cwetsch A., Cancedda L., Gritti L., Sala C., Verpelli C., Maset A., Lodovichi C., Ratto GM.

* ***Equal contributors.***

bioRxiv (Nature Communications under review)

doi: https://doi.org/10.1101/715490

Simultaneous two-photon imaging of intracellular chloride concentration and pH in mouse pyramidal neurons in vivo

Sulis Sato S., Artoni P., Landi, S., Cozzolino O., **Parra R.**, Pracucci E., Trovato F., Szczurkowska J., Luin S., Arosio D., Beltram F., Cancedda L., Kaila K., Ratto GM.

Proc Natl Acad Sci U S A 2017 Oct 10;114(41):E8770-E8779.

PMID: 28973889

Trafficking properties of ERK1 and ERK2 in neural cells.

Parra R., Zotter A., Ratto GM.

ISBN-13:978-3-639-51279-3

ISBN-10:3639512790

EAN:9783639512793

Published on: 2013-03-16

Localization and trafficking of fluorescently tagged ERK1 and ERK2.

Marchi M*, **Parra R***, Costa M, Ratto GM.

Methods Mol Biol. 2010;661:287-301.

PMID: 20811990

* ***Equal contributors.***

The N-terminal domain of ERK1 accounts for the functional differences with ERK2.

Marchi M, D'Antoni A, Formentini I, **Parra R**, Brambilla R, Ratto GM, Costa M.

PLoS One. 2008;3(12):e3873. Epub 2008 Dec 4.

PMID: 19052640

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Posters Poster for Neuroscience 2014 Annual Meeting

TT46 269.07 "*In vivo* measurement of intracellular Chloride and pH during neuronal development by means of 2-photon spectroscopy"

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(*) ai sensi dell'art. 15, comma 1 della Legge 12/11/2011, n. 183 le certificazioni rilasciate dalla P.A. in ordine a stati, qualità personali e fatti sono valide e utilizzabili solo nei rapporti tra privati; nei rapporti con gli Organi della Pubblica Amministrazione e i gestori di pubblici servizi, i certificati sono sempre sostituiti dalle dichiarazioni sostitutive di certificazione o dall'atto di notorietà di cui agli artt. 46 e 47 del DPR 445/2000

N.B:

1) Datare e sottoscrivere tutte le pagine che compongono la dichiarazione.

2) Allegare alla dichiarazione la fotocopia di un documento di identità personale, in corso di validità.

3) Le informazioni fornite con la dichiarazione sostitutiva devono essere identificate correttamente con i singoli elementi di riferimento (esempio: data, protocollo, titolo pubblicazione ecc…).

4) Il CNR, ai sensi dell'art. 71 e per gli effetti degli artt. 75 e 76 del D.P.R. 445 del 28/12/2000 e successive modifiche ed integrazioni, effettua il controllo sulla veridicità delle dichiarazioni sostitutive.

5) La normativa sulle dichiarazioni sostitutive si applica ai cittadini italiani e dell'Unione Europea.

6) I cittadini di Stati non appartenenti all'Unione, regolarmente soggiornanti in Italia, possono utilizzare le dichiarazioni sostitutive di cui agli artt. 46 e 47 del D.P.R. 445 del 28.12.2000 limitatamente agli stati, alla qualità personali e ai fatti certificabili o attestabili da parte di soggetti pubblici italiani, fatte salve le speciali disposizioni contenute nelle leggi e nei regolamenti concernenti la disciplina dell'immigrazione e la condizione dello straniero. Al di fuori dei casi sopradetti, i cittadini di Stati non appartenenti all'Unione autorizzati a soggiornare nel territorio dello Stato possono utilizzare le dichiarazioni sostitutive nei casi in cui la produzione delle stesse avvenga in applicazione di convenzioni internazionali fra l'Italia e il Paese di provenienza del dichiarante.

Data 05/03/2020 Firma [redacted]