Luca Della Santina, Ph.D., Pharm.D.

(415) 840-4167 | San Francisco, CA | luca.dellasantina@gmail.com

Neuroscience Research | Project Management| Basic Science| Laboratory Devices | Big Data

A **Management-level Scientist & Academic Researcher** with 15+ years of proven experience in neuroscience research and communicating research to the scientific community and general public alike. Experienced working in large collaborative environments and effectively managing personnel and deadlines – as part of publicly and privately funded scientific projects. Demonstrated success in: **(1) developing Subject Matter level knowledge of ophthalmology and neuroscience**, **2) incorporating project management skills to improve deliverables, timelines and budgets, (3) designing new software to identify big data trends and (4) establishing productive collaborations between scientific institutions and professional expertise.**

CORE COMPETENCIES

▪ **Laboratory Testing and Skillset**	▪ **Digital Pathology and Image Analysis**	▪ **MATLAB, Python, C++, Java**
▪ **Data Analysis & Reporting**	▪ **Regulatory/Quality Compliance**	▪ **Strategic Planning & Prioritization**
▪ **Research & Information Management**	▪ **Grant Writing & Budgeting**	▪ **Team Building & Leadership**

PORTFOLIOS

Programming: https://github.com/lucadellasantina | Photography: https://www.flickr.com/photos/kaiousama/

MEDICAL RESEARCH & FACULTY EXPERIENCE

University of California, San Francisco – Department of Ophthalmology July 2018 – Present
Assistant Professor

- Developed grant proposal, pharmacological reports and scientific publications
- Managed delocalized open-source software projects as well as created and deployed multi-platform software
- Supervised postdoctoral researchers and graduate students
- Developed and conducted multi-electrode array (MEA) recording and analysis of neuronal activity from retinal tissue
- Performed in-vivo electroretinogram recording (ERG) of retinal activity in rodents.
- Managed patch-clamp recording and analysis of tissue slices and cell cultures
- Supervised vibratome slice and whole mount preparations of neuronal tissue for imaging and physiological recording

University of California, San Francisco – Department of Ophthalmology 2017 – 2018
Assistant Professional Researcher, Department of Ophthalmology

- Developed novel tools for automatic synaptic quantification in large regions of the central nervous system
- Investigated early synaptic rearrangements in the retina of mouse models of glaucoma
- Developed tools for the quantification of retinal blood vessel properties from clinical OCT angiography data
- Developed methods for screening early functional alterations in suspects of glaucoma, using clinical electroretinogram recording

University of Pisa – Department of Pharmacy 2014 – 2017
Tenured Assistant Professor of Physiology

- Discovered a novel class of excitatory interneurons in the mouse retina (GluMI) that directly drive retinal ganglion cells
- Demonstrated the interaction between TMEM and Calcium channels in synaptic terminals of mouse photoreceptors
- Demonstrated that dysregulated autophagy is involved in early synaptic degeneration occurring in diabetic retinopathy
- Established novel methods for the analysis of synaptic distribution and co-localization in dystrophic retinas

ACADEMIC RESEARCH EXPERIENCE

University of Washington – Department of Biological Structure 2010 – 2014
Postdoctoral Fellow in the Laboratory of Rachel Wong, Ph.D.

- Demonstrated that different types of retinal ganglion cell undergo differential patterns of degeneration in glaucoma.
- Demonstrated that establishment of synaptic connectivity between retinal ganglion cells and bipolar cells is modulated by both activity-dependent and independent mechanisms.
- Established methods for electrophysiological recording of retinal ganglion cells in animal models of glaucoma.
- Designed and coded laboratory database to manage reagents
- Developed laboratory budgets and maintained grant deliverables

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University of Pisa – Department of Physiological Sciences 2007 – 2009
Graduate Student in the Lab of Luigi Cervetto, M.D.

- Characterized the role of HCN channels in the mouse retina
- Pre-clinically tested the efficacy of small molecules as potential novel therapeutic agents
- Discovered a novel mechanism of light adaptation in photoreceptors
- Developed a complete *in-vivo* recording and data analysis software

University of Pisa – Department of Physiological Sciences 2004 – 2006
Graduate Student in the Lab of Claudia Gargini, Ph.D.

- Characterized the role of HCN channels in the mouse retina
- Developed ERG recording methods for rodents

EDUCATION

Ph.D., Neuroscience University of Pisa – Italy
Pharm.D. University of Pisa – Italy
Master of Science, Medicinal Chemistry University of Pisa – Italy

FORMAL TEACHING

Vision Science Mini Course (BSM270), University of California – San Francisco, *School of Medicine* 2020 – Present
Human Anatomy and Physiology, University of Pisa – Italy, *Department of Pharmacy* 2014 – 2017
Analytical Methods for the Investigation of Biological Samples, University of Pisa – Italy, *Department of Pharmacy* 2016 – 2017
Teaching Assistant of Human Physiology, University of Pisa – Italy, *Faculty of Pharmacy* 2007 – 2009
Practice Laboratory of Human Physiology, University of Pisa – Italy, *Faculty of Medicine* 2006 – 2009

GRANTS & FUNDING

That Man May See Foundation – Deep learning-assisted synapse quantification in retinal diseases; Role: P.I. 2019 – 2021
NIH RO1 EY028148 Grant – Neuronal Plasticity in Glaucoma; Role: Co-Investigator 2018 – 2022
NVIDIA Corporation GPU Grant – Deep Learning-Assisted Synapse Recognition; Role: P.I. 2018 – 2020
Bright Focus Foundation – Retinal Synapse Disassembly in Glaucoma; Role: Co-P.I. 2016 – 2018
Matlida E. Ziegler Foundation for the Blind – Circuit Disassembly in Glaucoma; Role: International Coordinator 2015 – 2018
Rome Foundation Call for Retinitis Pigmentosa Grant; Role: Co-Investigator 2015 – 2018
University of Pisa Intramural Funding – Connectivity and Functionality of Retinal Circuits; Role: P.I. 2014 – 2018

PUBLICATIONS *(full publication list on PubMed)*

Care RA, Anastassov IA, Kastner DB, Kuo Y, Della Santina L, Dunn FA. (2020) Mature retina compensates functionally for partial loss of rod photoreceptors. Cell Reports. (2020) In press. Corresponding author.

Della Santina L, Ou Y. (2018) Biolistic Labeling of Retinal Ganglion Cells. *Glaucoma: Methods and Protocols*. Edited by Prof. Tatjana Jakobs. 2018 **Springer**. 1695:161-170. ISBN: 978-1-4939-7407-8

Ou Y, Jo RE, Ullian EM, Wong RO, Della Santina L. (2016) *Selective Vulnerability of Specific Retinal Ganglion Cell Types and Synapses after Transient Ocular Hypertension*. **J Neurosci**. 36:9240-52.

Della Santina L, Kuo SP, Yoshimatsu T, Okawa H, Suzuki SC, Hoon M, Tsuboyama K, Rieke F, Wong ROL. *(2016) Glutamatergic Monopolar Interneurons Provide a Novel Pathway of Excitation in the Mouse Retina.* ***Curr. Bliol.*** *26:2070-2077.*

SYMPOSIUMS *(not an exhausted list)*

2019 SfN annual meeting 2019, Chicago (IL) Presenting author
2019 AOPT annual meeting 2019, New Orleans (LA) Invited speaker
2018 ARVO annual meeting 2018, Honolulu (HI) Podium presentation
2017 ISER / Bright Focus meeting, Atlanta (GA) Presenting author
2016 ARVO annual meeting 2016, Seattle (WA) Invited moderator
2015 ERM European Retina Meeting. Brighton U.K., Presenting author