

CURRICULUM VITAE ET STUDIORUM

Personal information

Surname, name Silvestri, Ludovico
Place and date of birth Pescia (PT), Italy, February 26th 1984
Work address University of Florence
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Marital status Married, two children
Citizenship Italian



Current position

2019-present Assistant Professor (“Ricercatore a Tempo Determinato, tipo A”), Department of Physics and Astronomy, University of Florence, Italy.
2019-present Group Leader, European Laboratory for Non-linear Spectroscopy (LENS), Sesto Fiorentino (FI), Italy.

Previous positions

2015-2019 Research Scientist, National Institute of Optics, National Research Council, Florence, Italy, Associated to the European Laboratory for Non-linear Spectroscopy (LENS), Sesto Fiorentino (FI), Italy
2012-2014 Post-doctoral research fellow, European Laboratory for Non-linear Spectroscopy, Florence, Italy
2009-2012 Graduate student, University of Florence, Italy

Education

2009-2012 Ph.D. in Atomic and Molecular Spectroscopy, University of Florence, Italy. Ph.D. Thesis: “Confocal ultramicroscopy: micron-scale neuroanatomy of the entire mouse brain”, advisor Prof. Francesco S. Pavone.
2011 International School of Physics “Enrico Fermi” – Course CLXXXI: “Microscopy applied to Biophotonics”, Italian Physical Society, Varenna (LC), Italy
2010 Parallel Computing Summer School, CINECA, Bologna, Italy
2006-2008 Master Degree in Physical Sciences, University of Pisa, Italy. Grade 110/110 *cum laude*. Master Thesis: “Renewal events and linear response in the weak turbulence of nematic liquid crystals”, advisor Prof. Leone Fronzoni.
2002-2005 Bachelor Degree in Physics, University of Pisa, Italy. Grade 110/110 *cum laude*. Bachelor Thesis: “Diffusion Entropy, a tool for studying dynamical systems”, advisor Prof. Leone Fronzoni.

Research activities

- 2007-2008 University of Pisa (Italy), Physics Department.** During my master thesis I studied experimentally the relation between noise and relaxation properties in a weakly turbulent system (liquid crystal in electroconvection regime). In detail, I found significant deviations from the standard fluctuation-dissipation theorem, and verified agreement of experimental data to a generalized theory of linear response.
- 2009-2012 University of Florence (Italy), Biophotonics Laboratory of LENS.** During my Ph.D. I started a new research line on light-sheet microscopy of cleared samples. To reduce scattering-induced blur, I coupled light sheet illumination to a spatial filter in the detection path, devising a novel technique called confocal light sheet microscopy. In this method, now widely used in the community, image contrast is increased by 100% with respect to conventional light sheet microscopy, allowing reconstructing entire murine brains with micron-scale resolution.
- 2012-2014 University of Florence (Italy), Biophotonics Laboratory of LENS.** In this period, I developed a second-generation confocal light sheet microscope, exploiting optical elements corrected for clearing solutions. I also worked on the set-up of a hardware/software platform for large datasets (> 1 TeraByte) management. I collaborated with research groups in the image analysis field, developing a method for the automatic localization of single neurons in whole-brain images obtained with light sheet microscopy. Finally, I correlated *ex vivo* light sheet microscopy with *in vivo* two-photon microscopy, allowing placing in a wider anatomical framework the same neurons whose dynamics has been observed in the living animal.
- 2015-2019 National Institute of Optics, National Research Council.** In this period, I developed a new autofocus method applicable to all wide-field optical microscopy systems, including light-sheet microscopy. This method, which I termed RAPID (Rapid Autofocus via Pupil-split Image phase Detection), allows real-time focus stabilization based only on the same image collected by the camera, without the need for any reflective surface in the sample. I also worked on the implementation of novel clearing and staining methods.
- 2019-present University of Florence (Italy), Department of Physics and Astronomy, and LENS.** I am currently working on the development of efficient and effective algorithms for the extraction of semantically relevant information from raw microscopy images, based on deep learning. Further, I am applying light-sheet microscopy and high-throughput image analysis to the study of aversive memory consolidation, using transgenic labeling of immediate early genes and *ex vivo* whole-mount immunohistochemistry.

Active collaborations

- Prof. Paolo Frasconi, University of Florence, Italy
- Prof. Patrizio Blandina, University of Florence, Italy
- Prof. Beatrice Passani, University of Florence, Italy
- Prof. Giulio Iannello, University Campus Bio-medico of Rome, Italy
- Prof. Hanchuan Peng, Allen Institute for Brain Science, Seattle, USA
- Prof. Jan Bjaalie, University of Oslo, Norway
- Prof. Renzo Guerrini, Meyer Pediatric Hospital, Florence, Italy
- Prof. Katrin Amunts, Jülich Forschungszentrum, Germany
- Dr. Markus Axer, Jülich Forschungszentrum, Germany
- Dr. Anna Kreshuk, EMBL, Heidelberg, Germany

Responsibilities in Research Projects

- 2020-present Local unit PI** in the project “Hypothalamic histaminergic modulation of brain regions involved in fear memory” (HA-CTion), funded by the Italian Ministry for Education within the Joint Transnational Call FLAG-ERA 2019.
- 2020-present Local unit PI** in the project “Advanced Morphological Reconstruction of Human Brain Tissue by Multimodal Fusion of Multiscale Optical Imaging Technologies” (SMART BRAIN), funded by the Italian Ministry for Education within the Joint Transnational Call FLAG-ERA 2019.
- 2018-present Co-PI** of the project “Imaging and analysis techniques to construct a cell census atlas of the human brain”, funded by the National Institutes of Health within the BRAIN initiative.
- 2018-2020 Principal investigator** of the project “ISOLIGHT”, funded by Ente Cassa di Risparmio di Firenze (private foundation).
- 2018-2020 Task leader** in the Sub-project “Mouse Brain Organization and Interspecies Comparisons” within the Flagship **Human Brain Project (HBP)**, funded by the European Commission
- 2016-2018 Product Leader** in the Co-design Project “Whole Mouse Brain Model and Atlas” within the Flagship **Human Brain Project (HBP)**, funded by the European Commission
- 2012-2014 Technical Director** in the project **Development and realization of multimodal imaging systems for *in vivo* and *ex vivo* reporter gene analysis in animal models (SMAG)**, funded by Regione Toscana

Teaching activities

2009-2015 Teaching assistant, University of Florence:

- General Physics (Bachelor Program in Biotechnology)
- Lasers and Applications (Bachelor Program in Physics)
- Biomedical Optics (Master Program in Physics)

2016-2019 Adjunct professor, University of Florence:

- Lasers and Applications (Bachelor Program in Physics)
- Biomedical Optics (Master Program in Physics)

2019-present Assistant professor, University of Florence:

- General Physics (Bachelor Program in Biotechnology)
- Lasers and Applications (Bachelor Program in Physics)
- Advanced Microscopy (Master Program in Physics)

Service

Board membership

I am currently member of the Reviewer Board of Neurophotonics

Reviewer

I served as reviewer for the following Journals:

- Nature Protocols
- Nature Communications
- Communications Biology
- Scientific Reports
- eLife
- Cell Reports Methods
- iScience
- Cerebral Cortex
- Neurophotonics
- Brain Structure and Function
- PLoS ONE
- Optics Letters
- Optics Express
- Journal of Biomedical Optics
- Applied Optics
- Biomedical Optics Express
- Review of Scientific Instruments
- Zoological Letters
- Journal of Neuroscience Methods
- International Journal of Obesity

Conferences organization

- Organizing Committee of the Human Brain Project 2016 Summit, Florence, Italy
- Industrial Committee of the International Conference in BioSensing and Imaging (ICOBISI) 2018, Florence, Italy
- Organizing Committee of the 2019 Annual Symposium of the National Institute of Optics, Sesto Fiorentino (FI), Italy
- Scientific Committee of the 2020 Annual Symposium of the National Institute of Optics (online).

Memberships

- Optical Society of America (OSA)
- SPIE – The International Society for Optical Engineering
- Society for Neuroscience (SfN)
- Società Italiana di Fisica

Technology transfer activities

Patents

- Patent (awarded) “System and method for measuring the focus state of an optical instrument”, n. IT102016000132604, PCT PCT/EP2017/084057. Currently licensed to Light4Tech S.r.l. (Sesto Fiorentino, Italy).

Collaborations with private companies

- Collaboration with Bioretics S.r.l. (Cesena, Italy) for the integration of image analysis methods based on deep learning with advanced microscopy systems. This activity is under a Memorandum of Understandings between LENS and Bioretics.

Talks, Lectures and Publications

Talks

1. L. Silvestri, L. Sacconi, F. Biamonte, F. Giorgi, F. Keller and F. S. Pavone, “Optical mapping of fine brain anatomy with multi-view ultramicroscopy”, Fotonica 2010 – 12° Convegno Nazionale delle Tecnologie Fotoniche, Pisa, Italy, 2010.
2. L. Silvestri, L. Sacconi, A. Bria, G. Iannello and F. S. Pavone, “High-resolution imaging of whole mouse brains with confocal ultramicroscopy”, Photonics Europe 2012, Bruxelles, Belgium, 2012.
3. L. Silvestri, L. Sacconi, A. Bria, G. Iannello and F. S. Pavone, “Whole-brain neuroanatomy on the micron-scale with confocal light sheet microscopy”, OWLS 2012, Genoa, Italy, 2012.
4. L. Silvestri, L. Sacconi, A. Bria, G. Iannello and F. S. Pavone, “Confocal light sheet microscopy: Micron-scale neuroanatomy of the entire mouse brain”, Society for Neuroscience Annual Meeting 2012, New Orleans, LA, United States, 2012.

5. L. Silvestri, L. Sacconi and F. S. Pavone, "Light sheet microscopy of cleared mouse brains: aberrations effects caused by refractive index mismatch", European Conferences on Biomedical Optics 2013, Munich, Germany, 2013.
6. L. Silvestri, I. Costantini, L. Sacconi and F. S. Pavone, "Exploring whole-brain anatomy on the micron-scale with confocal light sheet microscopy", FisMat 2013, Milan, Italy, 2013.
7. L. Silvestri, A. L. Allegra Mascaro, I. Costantini, L. Sacconi and F. S. Pavone, "From single synapses to the whole brain: correlative approaches to explore brain on multiple scales", Focus on Microscopy 2014, Sydney, Australia, 2014.
8. L. Silvestri, A. L. Allegra Mascaro, I. Costantini, L. Sacconi and F. S. Pavone, "The big and the small: correlative approaches to study the brain on multiple scales", 100° Congresso Nazionale della Società Italiana di Fisica, Pisa, Italy, 2014.
9. L. Silvestri, I. Costantini, A. P. Di Giovanna, L. Onofri, A. L. Allegra Mascaro, J. P. Ghobril, M. C. Müllenbroich, V. Conti, F. Vanzi, L. Sacconi, R. Guerrini, H. Markram, G. Iannello and F. S. Pavone, "A new versatile clearing method for brain imaging", BIOS, part of SPIE Photonics West, San Francisco, CA, United States, 2015.
10. L. Silvestri, N. Rudinskiy, M. Paciscopi, M. C. Müllenbroich, I. Costantini, L. Sacconi, P. Frasconi, B. T. Hyman and F. S. Pavone, "Brain-wide charting of neuronal activation maps with cellular resolution", OSA Optics and the Brain 2015, Vancouver, Canada, 2015.
11. L. Silvestri, N. Rudinskiy, M. Paciscopi, I. Costantini, M. C. Müllenbroich, L. Sacconi, P. Frasconi, B. T. Hyman and F. S. Pavone, "Optical mapping whole-brain neuronal activation with cellular resolution", Fotonica 2015 – 17° Convegno Nazionale delle Tecnologie Fotoniche, Turin, Italy, 2015.
12. L. Silvestri, N. Rudinskiy, M. Paciscopi, M. C. Müllenbroich, I. Costantini, L. Sacconi, P. Frasconi, B. T. Hyman and F. S. Pavone, "Optical mapping of neuronal activity with cellular resolution on a brain-wide scale", European Conferences on Biomedical Optics 2015, Munich, Germany, 2015.
13. L. Silvestri, N. Rudinskiy, M. Paciscopi, M. C. Müllenbroich, I. Costantini, L. Sacconi, P. Frasconi, B. T. Hyman and F. S. Pavone, "Mapping whole-brain activity with cellular resolution by light-sheet microscopy and high-throughput image analysis", BIOS, part of Photonics West, San Francisco, CA, United States, 2016.
14. A. P. Di Giovanna, L. Silvestri, M. C. Müllenbroich, A. L. Allegra Mascaro, L. Sacconi and F. S. Pavone, "High-resolution reconstruction of whole mouse brain vasculature with light-sheet microscopy", OSA Optics and the Brain 2016, Fort Lauderdale, FL, United States, 2016.
15. L. Silvestri, M. C. Müllenbroich, I. Costantini, A. P. Di Giovanna, L. Sacconi and F. S. Pavone, "A general-purpose system for real-time focus correction in optical microscopy", European Conferences on Biomedical Optics 2017, Munich, Germany, 2017.
16. L. Silvestri, A. P. Di Giovanna, G. Mazzamuto, T. Leergard, F. Orsini, I. Costantini, J. Bjaalie, P. Frasconi and F. S. Pavone, "Mapping the quantitative cytoarchitecture of the whole mouse brain by light-sheet microscopy and digital brain atlasing", BIOS, part of Photonics West, San Francisco, CA, Stati Uniti, 2018.
17. L. Silvestri, M. C. Müllenbroich, F. Orsini, I. Costantini, A. P. Di Giovanna, P. Frasconi, L. Sacconi, and F. S. Pavone, "Real-time autofocus for high-resolution light-sheet microscopy", Wyss Center Light-sheet Microscopy Workshop, Geneva, Switzerland, 2018.
18. L. Silvestri, "Whole-brain imaging at cellular resolution: optical and computational challenges", International Conference on BioSensing and Imaging (ICOBISI 2018), Florence, Italy, 2018.

Invited talks

1. L. Silvestri, “3D reconstruction of neuronal networks in the whole brain”, School of Physiology and Biophysics of the Italian Society of Physiology, Florence, Italy, 2010.
2. L. Silvestri, A. Bria, L. Sacconi, G. Iannello and F. S. Pavone, “Confocal ultramicroscopy: high resolution fluorescence imaging of the entire mouse brain”, Fotonica 2012 – 14° Convegno Nazionale delle Tecnologie Fotoniche, Florence, Italy, 2012.
3. L. Silvestri, “Applicazioni della microscopia a foglio di luce: dal cervello all'occhio”, Workshop “Nuove strategie mirate allo studio della fisiopatologia dell'occhio: dal bio-molecolare all'Imaging”, IRCCS Fondazione G. B. Bietti, Rome, Italy, 2012.
4. L. Silvestri, I. Costantini, L. Sacconi and F. S. Pavone, “Whole brain optical imaging by light sheet microscopy”, XV Congress of the Italian Society of Neuroscience, Rome, Italy, 2013.
5. L. Silvestri, “Confocal light sheet microscopy: micron-scale imaging of cleared whole mouse brains”, Technology Workshop Lightsheet Z.1, Zeiss Italia, Arese (MI), Italy, 2013.
6. L. Silvestri, A. L. Allegra Mascaro, I. Costantini, L. Sacconi and F. S. Pavone, “Exploring the brain on multiple scales with correlative microscopy”, Fotonica 2014 – 16° Convegno Nazionale delle Tecnologie Fotoniche, Naples, Italy, 2014.
7. L. Silvestri, “Micron-scale neuroanatomy of the whole mouse brain by confocal light sheet microscopy”, Zeiss on Your Campus 2014, Sesto Fiorentino (FI), Italy, 2014.
8. L. Silvestri, A. L. Allegra Mascaro, I. Costantini, L. Sacconi and F. S. Pavone, “Brain imaging from the nano to the macro-scale”, 7th International IEEE EMBS Neural Engineering Conference, Montpellier, France, 2015.
9. L. Silvestri, “Optical mapping of neuronal activation across the entire brain with single-cell resolution”, INO Annual Symposium, Naples, Italy, 2015.
10. L. Silvestri, “Challenges in whole-brain imaging: from optics to image analysis”, University Campus Bio-medico of Rome, Italy, 2016.
11. L. Silvestri, “Mapping the quantitative cytoarchitecture of the whole mouse brain by light-sheet microscopy and digital brain atlasing”, Intel Workshop “Deep learning for scientific research”, CINECA, Bologna, Italy, 2017.
12. L. Silvestri, “Advanced light-sheet microscopy to investigate brain structure and function”, Advanced Training School “Molecule in(ter)action: from in vitro to zebrafish”, Palermo, Italy, 2018.
13. L. Silvestri, “Effective management and analysis of ultra-terabyte brain images”, Neuron Reconstruction and Applications (NRA'2018), Nanjing, China, 2018.
14. L. Silvestri, “Scalable analysis of ultra-terabyte brain images: from low-level data management to deep learning”, Advanced Training School STIMULATE, Ferrara, Italy, 2019.
15. L. Silvestri, “Brain mapping at subcellular scale with light-sheet microscopy: opportunities and challenges”, IEEE 18th International Symposium on Biomedical Imaging (ISBI), online, 2021.

Posters

1. L. Silvestri, L. Sacconi, A. Bria, G. Iannello and F. S. Pavone, “A novel, fast approach to light-sheet microscopy to perform high-resolution fluorescence imaging on whole brains”, BIOS 2012 – Part of Photonics West, San Francisco, CA, United States, 2012.
2. L. Silvestri, A. Bria, L. Sacconi, G. Iannello and F. S. Pavone, “Confocal ultramicroscopy for micron-scale neuroanatomy of the entire mouse brain”, Biophysical Society 56th annual meeting, San Diego, CA, United States, 2012.

3. Bria, L. Silvestri, L. Sacconi, F. S. Pavone and G. Iannello, "Stitching terabyte-sized 3D images acquired in Confocal Ultramicroscopy", 9th IEEE International Symposium on Biomedical Imaging (ISBI), Barcelona, Spain, 2012.
4. L. Silvestri, A. Bria, L. Sacconi, G. Iannello and F. S. Pavone, "Confocal ultramicroscopy: micron-scale neuroanatomy of the entire mouse brain", 8th FENS Forum of Neuroscience, Barcelona, Spain, 2012.
5. L. Silvestri et al., "Projectome: Set up and testing of a High Performance Computational Infrastructure for processing and visualizing neuro-anatomical information obtained using confocal ultra-microscopy techniques", 5th INCF Congress of Neuroinformatics, Munich, Germany, 2012.
6. J.-P. Ghobril, L. Silvestri, L. Sacconi, J. Ryge, F. S. Pavone and H. Markram, "Whole-mount preparation for high-resolution whole brain scanning: A new tool for high-speed deep tissue imaging", Society for Neuroscience Annual Meeting 2012, New Orleans, LA, United States, 2012.
7. L. Silvestri, L. Sacconi and F. S. Pavone, "Investigation of aberration effects in light sheet microscopy of cleared specimens", Focus on Microscopy 2013, Maastricht, The Netherlands, 2013.
8. L. Silvestri, A. L. Allegra Mascaro, I. Costantini, L. Sacconi and F. S. Pavone, "Correlative light-sheet and two-photon microscopy: An integrated approach to explore mouse brain on multiple scales ", Society for Neuroscience Annual Meeting 2013, San Diego, CA, United States, 2013.
9. I. Costantini, L. Silvestri, A. L. Allegra Mascaro, L. Sacconi and F. S. Pavone, "Multiple-scales brain imaging with correlative two-photon and light sheet microscopy", 9th FENS Forum of Neuroscience, Milan, Italy, 2014.
10. L. Silvestri, N. Rudinskiy, M. Pacisopi, I. Costantini, L. Sacconi, P. Frasconi, B. T. Hyman and F. S. Pavone, "Quantitative whole-brain mapping of neuronal activity with cellular resolution", Society for Neuroscience Annual Meeting 2014, Washington, DC, United States, 2014.
11. I. Costantini, A. P. Di Giovanna, L. Onofri, A. L. Allegra Mascaro, J. P. Ghobril, L. Silvestri, M. C. Muellenbroich, V. Conti, F. Vanzi, L. Sacconi, R. Guerrini, H. Markram, G. Iannello and F. S. Pavone, "New versatile clearing method for human brain imaging", Society for Neuroscience Annual Meeting 2014, Washington, DC, United States, 2014.
12. L. Silvestri, M. C. Muellenbroich, A. P. Di Giovanna, L. Sacconi and F. S. Pavone, "Adaptive correction of defocus in light sheet microscopy of cleared mouse brains", Society for Neuroscience Annual Meeting 2016, San Diego, CA, United States, 2016.
13. M. C. Muellenbroich, L. Silvestri, L. Turrini, A. P. Di Giovanna, T. Alterini, A. Gheisari, P. Ricci, L. Sacconi, F. Vanzi and F. S. Pavone, "Artefacts-free functional and structural whole-brain imaging with Bessel-beams light-sheet microscopy", Society for Neuroscience Annual Meeting 2016, San Diego, CA, United States, 2016.
14. I. Costantini, L. Silvestri, M. Axer, M. Menzel, D. Graessel, K. Amunts and F. S. Pavone, "Integrated dual approach for 3D reconstruction of myelinated fibers orientation: combination of polarized light imaging and two-photon fluorescence microscopy", Society for Neuroscience Annual Meeting 2016, San Diego, CA, United States, 2016.
15. A. P. Di Giovanna, A. Tibo, L. Silvestri, M. C. Muellenbroich, L. Sacconi, P. Frasconi and F. S. Pavone, "High-throughput whole mouse brain vasculature imaging with micrometric resolution using light sheet microscopy", Society for Neuroscience Annual Meeting 2016, San Diego, CA, United States, 2016.
16. L. Silvestri, M. C. Muellenbroich, I. Costantini, A. P. Di Giovanna, L. Sacconi and F. S. Pavone, "Fast, image-based autofocus system for high-resolution optical microscopy of whole mouse brains", OSA Optics and the Brain 2017, San Diego, CA, United States, 2017.

17. G. Mazzamuto, L. Silvestri, P. Frasconi, L. Sacconi, and F. S. Pavone, "Software tools for high-throughput stitching and processing of micron-resolution 3D images of brain samples", Society for Neuroscience Annual Meeting 2017, Washington, DC, United States, 2017.
18. I. Costantini, L. Silvestri, V. Conti, C. Del Torto, G. Mazzamuto, L. Sacconi, R. Guerrini, and F. S. Pavone, "Three-dimensional investigation of neuronal layer distribution in human brain cortex", Society for Neuroscience Annual Meeting 2017, Washington, DC, United States, 2017.
19. L. Silvestri, A. P. Di Giovanna, G. Mazzamuto, T. Leergard, F. Orsini, I. Costantini, J. Bjaalie, P. Frasconi, and F. S. Pavone, "Towards a Full Volumetric Atlas of Cell-specific Neuronal Spatial Organization in the Entire Mouse Brain", OSA Optics and the Brain 2018, Fort Lauderdale, FL, United States, 2018.
20. G. Mazzamuto, F. Orsini, M. Roffilli, P. Frasconi, F. S. Pavone, and L. Silvestri, "Scalable analysis of ultra-terabyte brain images with deep learning", Quantitative Bioluminescence Imaging 2019, Rennes, France, 2019.
21. A. Franceschini, A. Costa, I. Costantini, B. Rani, G. Mazzamuto, A. P. Di Giovanna, P. Blandina, M. B. Passani, F. S. Pavone, and L. Silvestri, "Whole-brain mapping of neuronal activation in active neurons during aversive memory consolidation", National Congress of PhD Students of Neuroscience, Naples, Italy, 2019.
22. G. Mazzamuto, F. Orsini, M. Roffilli, P. Frasconi, F. S. Pavone, and L. Silvestri, "3D Stitching of Ultra-Terabyte Brain Images and Feature Extraction with Deep Learning", Focus on Microscopy 2019, London, United Kingdom, 2019.
23. A. Franceschini, A. Costa, I. Costantini, B. Rani, G. Mazzamuto, A. P. Di Giovanna, P. Blandina, M. B. Passani, F. S. Pavone, and L. Silvestri, "Whole-brain mapping of neuronal activation in histaminergic neurons during aversive memory phases", 48th meeting of the European Histamine Research Society, Krakow, Poland, 2019.
24. L. Silvestri, M. C. Muellenbroich, I. Costantini, A. P. Di Giovanna, G. Mazzamuto, F. Orsini, A. Franceschini, P. Frasconi, L. Sacconi and F. S. Pavone, "Quantitative light-sheet microscopy of whole mouse brains with a universal autofocus system", Society for Neuroscience Annual Meeting 2019, Chicago, Illinois, United States, 2019.
25. I. Costantini, G. Mazzamuto, A. Laurino, L. Pesce, E. Lazzeri, A. Simonetto, M. Roffilli, L. Silvestri and F. S. Pavone, "Three-dimensional cytoarchitectonic analysis of the human brain", Society for Neuroscience Annual Meeting 2019, Chicago, Illinois, United States, 2019.
26. G. Mazzamuto, I. Costantini, L. O. H. Z. Toresano, V. Gavryusev, M. Roffilli, P. Frasconi, L. Silvestri and F. S. Pavone, "A software pipeline for image processing and cell segmentation in biomedical microscopy", Society for Neuroscience Annual Meeting 2019, Chicago, Illinois, United States, 2019.
27. A. Franceschini, A. Costa, I. Costantini, C. Checchucci, B. Rani, G. Mazzamuto, A. P. Di Giovanna, P. Blandina, M. B. Passani, F. S. Pavone, and L. Silvestri, "Whole-brain mapping of neuronal activation during formation, consolidation and retrieval of aversive memories", Society for Neuroscience Annual Meeting 2019, Chicago, Illinois, United States, 2019.

Publications

Proceedings

1. L. Silvestri, L. Fronzoni, A. Gemignani, P. Grigolini, D. Menicucci and P. Allegrini, "Event-driven power-law relaxation in weak turbulence: a liquid crystal mesoscopic experiment bridging quantum dots and the integration theory for the brain", *Journal of Physics: Conference Series* **174**, 012070 (2009).
2. L. Silvestri, L. Sacconi, F. Biamonte, F. Giorgi, F. Keller and F. S. Pavone, "Optical mapping of fine brain anatomy with multi-view ultramicroscopy", *Atti di Fotonica 2010*, C4_3 (2010).
3. L. Silvestri, A. Bria, L. Sacconi, G. Iannello and F. S. Pavone, "Confocal ultramicroscopy: high resolution fluorescence imaging of the entire mouse brain", *Atti di Fotonica 2012*, B1_1 (2012).
4. A. Bria, L. Silvestri, L. Sacconi, F. S. Pavone and G. Iannello, "Stitching terabyte-sized 3D images acquired in Confocal Ultramicroscopy", *Biomedical Imaging (ISBI), 2012 9th IEEE International Symposium on*, pp. 1659-1662, (2012).
5. L. Silvestri, L. Sacconi and F. S. Pavone, "Light sheet microscopy of cleared mouse brains: aberrations effects caused by refractive index mismatch", *Proc. of OSA Biomedical Optics-SPIE* **8804**, 880405 (2013).
6. A. L. Allegra Mascaro, L. Silvestri, I. Costantini, L. Sacconi, B. Maco, G. W. Knott and F. S. Pavone, "Neural plasticity explored by correlative two-photon and electron/SPIM microscopy", *Proc. of OSA Biomedical Optics-SPIE* **g**, 87970G (2013).
7. L. Silvestri, A. L. Allegra Mascaro, I. Costantini, L. Sacconi and F. S. Pavone, "Exploring the brain on multiple scales with correlative two-photon and light sheet microscopy", *Proc. SPIE* **8948** (2014).
8. A. Bria, G. Iannello, P. Soda, H. Peng, G. Erbacci, G. Fiameni, G. Mariani, R. Mucci, M. Rorro, F. S. Pavone, L. Silvestri, P. Frascioni and R. Cortini, "A HPC infrastructure for processing and visualizing neuro-anatomical images obtained by Confocal Light Sheet Microscopy", *High Performance Computing & Simulation (HPCS), 2014 IEEE International Conference on*, pp. 592-599, (2014).
9. L. Silvestri, A. L. Allegra Mascaro, I. Costantini, L. Sacconi and F. S. Pavone, "Whole brain optical imaging", *Proc. SPIE* **9305** (2015).
10. I. Costantini, A. P. Di Giovanna, A. L. Allegra Mascaro, L. Silvestri, M. C. Müllenbroich, L. Sacconi and F. S. Pavone, "A new versatile clearing method for brain imaging", *Proc. SPIE* **9305** (2015).
11. A. L. Allegra Mascaro, L. Silvestri, I. Costantini, L. Sacconi, B. Maco, G. W. Knott and F. S. Pavone, "Multiphoton microscopy in brain imaging", *Proc. SPIE* **932903** (2015).
12. I. Costantini, A. L. Allegra Mascaro, A. P. Di Giovanna, L. Silvestri, M. C. Müllenbroich, L. Sacconi, and F. S. Pavone, "A multi modal clearing method for brain imaging", *Optics in the Life Sciences BrM3B.2* (2015).
13. L. Silvestri, N. Rudinskiy, M. Paciscopi, M. C. Müllenbroich, I. Costantini, L. Sacconi, P. Frascioni, B. T. Hyman, and F. S. Pavone, "Brain-wide charting of neuronal activation maps with cellular resolution" *Optics in the Life Sciences BrM3B.6* (2015).
14. I. Costantini, A. P. Di Giovanna, A. L. Allegra Mascaro, L. Silvestri, M. C. Müllenbroich, L. Sacconi and F. S. Pavone, "A versatile new technique to clear mouse and human brain", *Proc. of OSA Biomedical Optics-SPIE* **9536** (2015).

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