

Curriculum Vitae

PERSONAL INFORMATION

Family name: de Vivo

First name: Luisa

Nationality: Italian

• CURRENT POSITION

01/11/2022 – now: Ricercatore a Tempo Determinato (art. 24 comma 3 lett. b, Legge n. 240/2010), SSD BIO/09, School of Pharmacy, University of Camerino, Italy

• EDUCATION

02/02/2010 – PhD in Neuroscience

University Politecnica delle Marche, Italy

14/07/2005 - MScR in Marine Biology, 110/110 cum laude

University Politecnica delle Marche, Italy

10/2003 - BS in Marine Biology and Oceanography, 110/110 cum laude

University Politecnica delle Marche, Italy

• PREVIOUS POSITIONS

2020-2022 - Ricercatore a Tempo Determinato (art. 24 comma 3 lett. a, Legge n. 240/2010), SSD BIO/09, School of Pharmacy, University of Camerino, Italy

2019-2020 – Independent Research Fellow

School of Physiology, Pharmacology and Neuroscience, University of Bristol, UK

2016- 2017- Assistant Scientist

Department of Psychiatry, University of Wisconsin Madison, WI

2011-2016 - Research Associate

Department of Psychiatry, University of Wisconsin Madison, WI

2010-2011 – Borsa di ricerca Telethon

NEST Laboratory, CNR Nanoscience, Pisa, Italy

• FELLOWSHIPS AND AWARDS

2020 Abilitazione Scientifica Nazionale Professore di II fascia nei settori concorsuali: 05/D1 Fisiologia, 05/B2 Anatomia Comparata e Citologia, 05/H2 Istologia

2020 Acknowledgement for "de Vivo L, Bellesi M. The role of sleep and wakefulness in myelin plasticity. *Glia*. 2019;67(11):2142-2152. doi:10.1002/glia.23667 " as the most downloaded paper among those published in *Glia* between January 2018 and December 2019.

2019 Seal of Excellence for the proposal H2020-MSCA-IF-2018 for scoring above 85%.

2017 Altmetric score 931, "High Attention Score compared to outputs of the same age (99th percentile)" and "High Attention Score compared to outputs of the same age and source (98th percentile)" for de Vivo et al. Ultrastructural evidence for synaptic scaling across the wake/sleep cycle, *Science* 2017

2016 Visiting scientist at University Politecnica delle Marche, IT, 2000€

2015	F1000 Prime (1000 international Faculty Members) recommendation for "Bellesi M, de Vivo L, Tononi G, Cirelli C. Effects of sleep and wake on astrocytes: clues from molecular and ultrastructural studies. <i>BMC Biol.</i> 2015;13:66.
2014	Italian Society of Neuroscience (SINS) Travel Award, 500€
2010	Member of Society for Neuroscience (SfN)
2008	Swiss Society for Neuroscience Travel Fellowship, 500€
2006	PhD fellowship, University Politecnica delle Marche, 36000 €

• ONGOING AND PAST RESEARCH SUPPORT

2022-2024	ERC-Unicam, University of Camerino. Budget 62.250 €. Role PI.
2020-2023	Career Development Award, Armenise-Harvard Foundation." Budget 600.000 USD. Role: PI
2019-2022	Wellcome Trust Seed Award in Science. Budget: 100.000 £. Role: PI
2019-2020	BBSRC 18 ALERT Mid-Range Equipment Initiative, 1 year. Budget: 200.000 £. Role: Co-PI

• SUPERVISION OF STUDENTS AND POSTDOC FELLOWS

2022-now	Supervision of Matteo Andreozzi, PhD student in Theoretical and Applied Neuroscience, University of Camerino, IT
2021-now	Co-supervision of <i>Reyila Simayi</i> , PhD student in Molecular Biology and Cellular Biotechnology University of Camerino, IT
2020-now	Co-supervision of <i>Oluwatomisin Fanyan</i> , PhD student in Molecular Biology and Cellular Biotechnology, University of Camerino, IT
2021-2022	Co-supervision of <i>Andrea Canini</i> and <i>Noemi Favro</i> , <i>Benedetta Torbidoni</i> for their Bachelor thesis in Bioscience and Biotechnology, University of Camerino, IT
2020-2021	Co-supervision of <i>Marco Rendine</i> for his Master thesis in Biologia della Nutrizione, University of Camerino, IT
2019-2020	Supervision of <i>Daniela Franchini</i> as postdoc, School of Physiology, Pharmacology and Neuroscience, University of Bristol, UK
2017	Training of <i>Kelsey Nemec</i> during her job as Research assistant, Department of Psychiatry, University of Wisconsin Madison, USA
2017	Training of <i>Sebastian Weyn Banningh</i> during his master's project, Department of Psychiatry, University of Wisconsin Madison, USA
2017	Training and cosupervision of <i>Shannon Schiereck</i> during her undergraduate project, Department of Psychiatry, University of Wisconsin Madison, USA
2016-2017	Training and supervision of <i>Giovanna Spano</i> for her job as research associate Department of Psychiatry, University of Wisconsin Madison, USA
2015-2017	Training and everyday supervision of <i>Douglas Haswell</i> during his job as Research assistant, Department of Psychiatry, University of Wisconsin Madison, USA
2014-2017	Training and everyday supervision of <i>Sophia Loschky</i> and <i>Midori Nagai</i> during their job as Research assistant, Department of Psychiatry, University of Wisconsin Madison, USA
2013-2017	Training and everyday supervision of <i>Andrea Schroeder</i> during her job as research assistant, Department of Psychiatry, University of Wisconsin Madison, USA

2013-2015 Training and everyday supervision of *Ryan Massopust* and *Tricia Horvath* during their job as Research assistant, Department of Psychiatry, University of Wisconsin Madison, USA

- **TEACHING**

2022-2023 Physiology (49hr) CTF course, School of Pharmacy, University of Camerino
2021-2022 Microscopy (7hrs), International School of Advanced Studies, University of Camerino
2021-2022 Physiology (49hr) CTF course, School of Pharmacy, University of Camerino
2020-2021 Microscopy (7hrs), International School of Advanced Studies, University of Camerino

- **INSTITUTIONAL RESPONSABILITIES**

2020-2022: Member of Faculty Committee for PhD in "Life and Health Sciences", XXXVI-XXXVII cycles at the International School of Advanced Studies, University of Camerino
May 2022 Polling Station supervisor for "Consiglio Nazionale degli Studenti Universitari", Seggio n.1 Camerino

- **REVIEWING ACTIVITIES**

2021 PhD Dissertation of Giorgio Corsi, Sapienza University of Rome
Since 2018 Member of the editorial Board of *Frontiers in Psychopharmacology*
Since 2019 Member of the editorial Board of *Frontiers in System Neuroscience*
Since 2015 Ad hoc reviewer for Annual Meeting of the Associated Professional Sleep Societies, *Journal of Sleep Research*, *Archives Italiennes de Biologie*, *PNAS*

- **MAJOR PAST AND PRESENT COLLABORATIONS**

2013- 2017 Dr. Ellisman, National Center for Microscopy and Imaging Research, University of California San Diego, CA, USA: 3D electron microscopy
2014 – 2017 Prof Bito, University of Tokyo, Department of Neurochemistry, Japan: Arc in the cerebral cortex of sleeping and sleep deprived mice
2014 – 2016 Dr. Koch, Allen Institute for Brain Science, Seattle, USA: sleep deprivation and brain connectivity
2014– 2017 Prof. Ghilardi, CUNY, City College of New York, NY, USA: sleep deprivation and motor learning
2015 -2017 Prof. Gilli, Dartmouth Geisel School of Medicine, Hanover, NH, USA: sleep deprivation and pro- and anti-inflammatory factors
2014 – now Prof. Tononi and Prof. Cirelli, Department of Psychiatry, University of Wisconsin Madison USA: ultrastructural markers of sleep and wake
2020 - now Prof. Bellesi, School of Bioscience, University of Camerino: sleep regulation and function

2020 – now	Dr. Richmond and Dr Caramaschi, Bristol Population Health Science Institute, Molecular Epidemiology Unit, University of Bristol, UK: epigenetic changes and the risk of developing alcohol use disorders in adolescents
2021 – now	Prof. Vyazovskiy, Department of Physiology, Anatomy and Genetics, University of Oxford, UK: 3D EM for torpor
2021- now	Prof. Ciccocioppo, School of Pharmacy, University of Camerino: sleep restriction and alcohol drinking in adolescence
2022-now	Dr. Esi Domi, Prof. Massimo Nabissi, Prof. Catia Lambertucci, School of Pharmacy, and Prof. Valerio Napolioni, Prof.ssa Valeria Polzonetti, School of Biosciences, University of Camerino: anti-inflammatory approach to improve sleep and PTSD symptoms

CAREER BREAKS

2013 and 2015: maternity leave

• INVITED TALKS AND SEMINARS

1. "Ultrastructural Sleep". Invited speaker at Pisa Award 15th Edition, 11 minute of Sleep, Pisa IT, May 6-7, 2022.
2. "Adolescent chronic sleep restriction promotes alcohol binge drinking and escalates alcohol consumption in msP rats". Poster presentation at Gordon Research Conference on "Sleep Regulation and Function", Lucca IT, 14-15 March, 2022.
3. "Remodeling of cortical synapses across sleep, wake and sleep loss". Invited speaker at Waterloo Foundation Annual Conference, Cardiff University, May 23, 2019.
4. "Sleep and synaptic homeostasis". Seminar for doctoral candidates, International School of Advanced Studies, University of Camerino, May 17, 2018.
5. "Sleep and plasticity during development". Invited speaker at Clinical Research Priority Program: Sleep and Health, Zurich, February 2, 2018.
6. "Sleep and wake at cortical synapses". Seminar at IMT School of Advanced Studies of Lucca, Italy, December 5, 2017.
7. "Sleep and wake at cortical synapses". Seminar at University of Bristol, School of Physiology, Pharmacology and Neuroscience, July 11, 2017
8. "Looking for the functions of sleep: insights from molecular and ultrastructural studies". Seminar at VIB & KU Leuven Centre for Brain & Disease Research, May 31, 2017
9. "Sleep and synapses: insights from ultrastructural studies". Seminar at Dept. Life Sciences, Imperial College London, May 4, 2017
10. "Can we tell whether a brain cell has been asleep by looking at the ultrastructure of mitochondrial and other cellular organelles?". Keynote speaker at Gordon Research Seminar on "Sleep Regulation and Function", Galveston TX, 2016
11. "Sleep loss promotes astrocytic phagocytosis of synaptic elements in mouse cerebral cortex" Poster presentation at Gordon Research Conference 2016 – Sleep regulation and function
12. "Ultrastructural signatures of sleep and wake in neuronal cell bodies of mouse frontal cortex". Poster presentation at SfN 2014
13. "Chronic sleep restriction increases mitochondrial size in cortical pyramidal neurons of adolescent mice. Poster presentation at FENS 2014
14. "Changes in sleep slow wave activity during adolescence: do they reflect synaptic pruning?" Poster presentation at Sleep-APSS 2013
15. "CSPGs digestion unmasks synaptic plasticity in the adult visual cortex". Poster presentation at SfN 2011

16. GLT-1 expression and Glu uptake in rat cerebral cortex are increased by phencyclidine. Poster presentation at FENS 2008.

• COMPLETE LIST OF PUBLICATIONS

1. Aboufares El Alaoui A, Buhl E, Galizia S, Hodge JJL, **de Vivo L****, Bellesi M**. Increased interaction between endoplasmic reticulum and mitochondria following sleep deprivation. *BMC Biol.* 2023 Jan 4;21(1):1. doi: 10.1186/s12915-022-01498-7. **Co-corresponding author
2. Loschky SS, Spano GM, Marshall W, Schroeder A, Nemec KM, Schiereck SS, **de Vivo L**, Bellesi M, Banningsh SW, Tononi G, Cirelli C. Ultrastructural effects of sleep and wake on the parallel fiber synapses of the cerebellum. *Elife* 2022 Dec 28;11:e84199. doi: 10.7554/eLife.84199
3. Anastasiades PG*, **de Vivo L***, Bellesi M, Jones MJ. Adolescent sleep and the foundations of prefrontal cortical development and dysfunction. *Progress in Neurobiology* 2022, Nov 218:102338. *First co-authors.
4. Nagai H*, **de Vivo L***, Marshall W, Tononi G, Cirelli C. Effects of Severe Sleep Disruption on the Synaptic Ultrastructure of Young Mice. *eNeuro* 2021, 8(4). *First co-authors.
5. Aboufares El Alaoui A, Jackson M, Fabri M, **de Vivo L**, Bellesi M. Characterization of Subcellular Organelles in Cortical Perisynaptic Astrocytes. *Front Cell Neurosci.* 2021; 14:573944.
6. Bellesi M, **de Vivo L****. Structural synaptic plasticity across sleep and wake. *Curr Opin Physiol.* 2020; 15:74-81 **corresponding author, invited review
7. **de Vivo L***, Nagai H*, De Wispelaere N, Marshall W, Spano GM, Bellesi M, Nemec K, Schiereck SS, Nagai M, Tononi G and Cirelli C. Sleep-dependent synaptic renormalization in mouse pups. *Sleep.* 2019, 42(11):zsz184. *First co-authors
8. Spano GM, Banningsh WS, Marshall W, **de Vivo L**, Bellesi M, Loschky SS, Tononi G, Cirelli C. Sleep deprivation by exposure to novel objects increases synapse density and axon-spine interface in the hippocampal CA1 region of adolescent mice. *J Neuroscience* 2019, 39(34):6613-6625.
9. **de Vivo L**, Bellesi M. The role of sleep and wakefulness on myelin plasticity. *Glia* 2019, 67(11):2142-2152.
10. Bellesi M, **de Vivo L**, Koebe S, Tononi G, Cirelli C. Sleep and Wake Affect Glycogen Content and Turnover at Perisynaptic Astrocytic Processes. *Front Cell Neurosci.* 2018, 12:308.
11. Bellesi M, Haswell JD, **de Vivo L**, Marshall W, Roseboom PH, Tononi G, Cirelli C. Myelin modifications after chronic sleep loss in adolescent mice. *Sleep.* 2018 41(5).
12. Honjoh S, **de Vivo L**, Okuno H, Bito H, Tononi G, Cirelli C. Higher Arc Nucleus-to-Cytoplasm Ratio during Sleep in the Superficial Layers of the Mouse Cortex. *Front Neural Circuits.* 2017, 11:60.
13. Bellesi M, **de Vivo L**, Chini M, Gilli F, Tononi G, Cirelli C. Sleep Loss Promotes Astrocytic Phagocytosis and Microglial Activation in Mouse Cerebral Cortex. *J Neuroscience* 2017, 37(21):5263-5273.
14. Nagai H, **de Vivo L**, Bellesi M, Ghilardi MF, Tononi G, Cirelli C. Sleep Consolidates Motor Learning of Complex Movement Sequences in Mice. *Sleep.* 2017, 40(2).
15. **de Vivo L**, Bellesi M, Marshall W, Bushong EA, Ellisman MH, Tononi G, Cirelli C. Ultrastructural evidence for synaptic scaling across the wake/sleep cycle. *Science* 2017 355(6324):507-510.
16. Billeh YN, Rodriguez AV, Bellesi M, Bernard A, **de Vivo L**, Funk CM, Harris J, Honjoh S, Mihalas S, Ng L, Koch C, Cirelli C, Tononi G. Effects of Chronic Sleep Restriction during

Early Adolescence on the Adult Pattern of Connectivity of Mouse Secondary Motor Cortex. *eNeuro* 2016; 3(2).

17. **de Vivo L**, Nelson AB, Bellesi M, Noguti J, Tononi G, Cirelli C. Loss of Sleep Affects the Ultrastructure of Pyramidal Neurons in the Adolescent Mouse Frontal Cortex. *Sleep*. 2016; 39(4):861-74. doi: 10.5665/sleep.5644.
18. Bellesi M, **de Vivo L**, Tononi G, Cirelli C. Transcriptome profiling of sleeping, waking, and sleep deprived adult heterozygous Aldh1L1 - eGFP-L10a mice. *Genom Data* 2015, 6:114-117.
19. Bellesi M, **de Vivo L**, Tononi G, Cirelli C. Effects of sleep and wake on astrocytes: clues from molecular and ultrastructural studies. *BMC Biology* 2015, 13:66.
20. **de Vivo L**, Faraguna U, Nelson AB, Pfister-Genskow M, Klapperich ME, Tononi G, Cirelli C. Developmental patterns of sleep slow wave activity and synaptic density in adolescent mice. *Sleep*. 2014, 37(4):689-700.
21. **de Vivo L**, Landi S, Panniello M, Baroncelli L, Chierzi S, Mariotti L, Spolidoro M, Pizzorusso T, Maffei L, Ratto GM. Extracellular matrix inhibits structural and functional plasticity of dendritic spines in the adult visual cortex. *Nature Communications* 2013; 4:1484.
22. **de Vivo L**, Melone M, Bucci G, Rothstein JD, Conti F. Quantitative analysis of EAAT4 promoter activity in neurons and astrocytes of mouse somatic sensory cortex. *Neurosci Lett*. 2010, 474(1):42-5.
23. **de Vivo L**, Melone M, Rothstein JD, Conti F. GLT-1 Promoter Activity in Astrocytes and Neurons of Mouse Hippocampus and Somatic Sensory Cortex. *Front Neuroanat*. 2010; 3:31.
24. Carnevali O, **de Vivo L**, Sulpizio R, Gioacchini G, Olivotto I, Silvi S, Cresci A. Growth improvement by probiotic in European sea bass juveniles (*Dicentrarchus labrax*, L.), with particular attention to IGF-1, myostatin and cortisol gene expression. *Aquaculture* 2006 258 (1-4), 430-438.

Total citations in Google Scholar: 1809. H-index: 16.

Impact of the research on the media (selected list)

Moebius Radio 24 (podcast in Italian)

<http://www.radio24.ilsole24ore.com/programma/moebius/sonnosinapsi-piccole-elefanti-botanica-111620-gSLA8ZIWIC>

Interview on Italian national and local television programs: TG Regionale and TG Leonardo "La forma del sonno" 2017, (in Italian).

Sleep deprivation can lead to the brain 'eating itself', study says. Independent 25/05/2017

The brain starts to eat itself after chronic sleep deprivation. New Scientist 23/05/2017

Sleep deprivation can cause brain to start 'eating' itself. The Telegraph 26/05/2017

Your Brain Will Start To Eat Itself After Chronic Sleep Deprivation. Huffingtonpost 24/05/2017

The Purpose of Sleep? To Forget, Scientists Say. The New York Times. 3/02/2017

The Brain's Connections Shrink During Sleep. The Atlantic 3/02/2017

Sleep is about forgetting some memories and keeping others, studies suggest. Independent 3/02/2017

Sleep may help us to forget by rebalancing brain synapses. The Guardian 3/02/2017