

Curriculum Vitae

Michele Bellesi, MD, PhD

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

Email: michele.bellesi@bristol.ac.uk
Phone: +44 (0)117 331 1628

Brief research track record

I am a neurologist and neuroscientist with established expertise in advanced systems neuroscience techniques. These include: 1) chronic electrophysiological recordings in freely behaving rodents in conjunction with chemogenetics/optogenetics; 2) light and electron microscopy 3) amperometry and microdialysis; 4) molecular biology; 5) polysomnographic recordings and brain stimulation in humans.

My overarching goal is to investigate the mechanisms and functions of sleep in health and disease. During my postdoc in the Tononi lab, I began investigating the interrelationship between sleep and glial cells, an important group of cells in the brain, which support neuronal activity and brain physiology, from the optimization of action potential transmission to modulation of synaptic plasticity and learning. In 2013, I pioneered the use of the translating ribosome affinity purification to obtain genome-wide transcriptomic profiling of glial cells as a function of sleep and wake. Thanks to this approach, I described the role of sleep in promoting myelination, a finding that triggered particular interest among clinicians, plus broader interest among the general public. Using tridimensional electron microscopy, I subsequently found that sleep and wake induce structural plasticity of cortical synapses and perisynaptic astroglia, a result that graced the pages of *Science* and *BMC Biology*. In recent work, I showed that a few hours of wake prompt astrocytes to engulf synaptic elements, perhaps in response to the wake-related increase in synaptic activity. Collectively, these results indicate that sleep and wake strongly influence glial physiology in the brain.

In parallel, I was at the forefront of developing an innovative technology for brain stimulation, which delivers acoustic pulses during specific stages of sleep to improve sleep intensity. This project allowed me to collaborate with Philips (a Dutch technology company) for several years, leading to the realisation of 7 patents, and product development for subsequent commercialization (<https://www.usa.philips.com/c-e/smartsleep-ces.html>).

These experiences have given me a broad academic and industry perspective of the field and enabled me to identify the critical questions and solutions required to address them. My current research is focused on assessing the consequences of sleep disruption and enhancement in health and disease. These investigations are performed using a combination of morphological and functional methods in both animals and humans.

Positions

2019 -	Research Fellow, School of Physiology, Pharmacology, and Neuroscience, University of Bristol, UK
2018 - present	Consultant for Philips Respironics, Inc. Murrysville, PA, USA
2016 - 2018	Fixed-term researcher (Assistant Professor equivalent), Dept. of Experimental and Clinical Medicine, Università Politecnica delle Marche, Italy
2016 - 2017	Honorary Fellow, Dept. of Psychiatry, University of Wisconsin-Madison, USA
2011 - 2016	Research Associate, Dept. of Psychiatry, University of Wisconsin-Madison, USA
2010 - 2011	Research Scholar, Dept. of Psychiatry, University of Wisconsin-Madison, USA

Education and Training

- 2017 Italian Academic Habilitation for Associate Professor (ASN2016 II fascia - 05/D1)
- 2016 Post-doctoral training in Sleep Neurophysiology, University of Wisconsin, WI USA
- 2011 PhD in Neuroscience, Università Politecnica delle Marche, Italy
- 2007 Residency in Neurology (50/50 and honors), University of Ancona, Italy
- 2002 Medical Doctor Degree (110/110 and honors), University of Ancona, Italy

Awards and Honours

- 2018 Travel Award sponsored by The R Foundation, Taiwan – 2.2K €
- 2017 FFABR 2017. Italian Ministry for University Research Award for basic research - 3K €
- 2016 Sleep Research Society DataBlitz Hypnos Cup (awarded best talk)
- 2006 Italian Society for Neuroscience Travel Award for the 2006 FENS forum, Geneva - 600€

Fellowships and Funding

- 2019-20 Wellcome Trust Seed Award in Science – “Boosting sleep to promote myelination” (PI) – 100K £
- 2018 Cariverona Foundation PhD grant – “Role of sleep in neurodevelopment” (PI) - ~60K €
- 2017-19 Univpm strategic research grant – “Role of exocytic presynaptic proteins-induced alterations of synaptic plasticity in aging-associated cognitive decline” (Co-Investigator) – 180K €
- 2016-18 Univpm Research project grant – “Glycogen modifications at cortical synapses” (PI) – 11K €
- 2007-11 PhD Fellowship sponsored by Università Politecnica delle Marche, Italy – 50K €
- 2002-07 5-year Resident Fellowship sponsored by University of Ancona, Italy – 150K €
- 1996-02 ERSU annual scholarship for deserving medical students

Memberships in professional societies

- 2015- member of the Sleep Research Society
- 2012- member of the Society for Neuroscience
- 2007- member of the Italian Society for Neuroscience
- 2002- member of the Italian Society for Neurology

Management experience and supervision of students

Led numerous research projects, coordinated the work of several technicians and undergraduate students. Three of my recent papers are co-authored with students. Two of the students that I directly advised went on successfully to graduate school. Currently, I am supervising the research projects of a PhD student, and two master students.

On-going collaborations

Prof. Giulio Tononi and Prof. Chiara Cirelli. University of Wisconsin-Madison, Madison, WI, USA.
(Projects: sleep-dependent motor learning and synapses; inhibitory synapses in sleep and wake).

Prof. Ralph Lydic and Prof. Helen Baghdoyan. University of Tennessee, Nashville, TN, USA; Prof. Pier Andrea Serra. Università di Sassari. (Project: cortical metabolomics in wake, sleep, and anesthesia).

Prof. Philippe Murrain. University of Stanford, Stanford, CA, USA. (Project: array tomography quantification of synaptic changes in sleep and wake)

Dr. Luca Passamonti. University of Cambridge, UK. (Project: personality, myelin and sleep habits).

University-Industry Collaboration

2010 - present. Contributed to a research project in collaboration with Philips Research and Respiroics aimed at developing an innovative technology for brain stimulation to improve sleep quality. This collaboration has led to seven patents and the manufacturing of a product that is being commercialized (<https://www.usa.philips.com/c-e/smartsleep-ces.html>).

Editorial activity and peer review for international journals

Guest Associate Editor in Sleep and Circadian Rhythms, Associate Editor in Frontiers in Psychiatry - section Psychopharmacology, Review editor for Frontiers in Neurogenomics.

Ad-hoc reviewers for Neuroimage (since 2018), Sleep (since 2012), Molecular Neurobiology (since 2015), PloSOne (since 2016), BMC Psychiatry (since 2017), Clinical Neurology and Neuropsychiatry (since 2010), Acta Neurologica Scandinavica (since 2015).

Invited and selected talks (last 5 years)

- Sleep and wake at cortical synapses. Annual meeting – Society for Psychology – Taiwan. October 15th, 2018 (Speaker in a symposium).
- Effects of sleep loss on cortical microstructure. XIX World Congress of Psychophysiology – Lucca. September 5th, 2018 (Speaker in a symposium).
- Effects of sleep and wake on glia. University of Helsinki (Plenary Lecture). May 29th, 2018
- Enhancing sleep slow waves using acoustic stimuli: insight from home-based studies. CUBRIC, University of Cardiff, UK April 2018.
- Sleep and wake at cortical synapses: a glial perspective. International Symposium Sleep and Health Zurich February 1st-2nd 2018.
- Sleep and wake at cortical synapses. IMT School of Advanced Studies. Lucca, Italy December 5th, 2017.
- Sleep loss promotes structural changes in astrocytes. *Society for Neuroscience Annual Meeting*, Washington, November 2017 (Speaker in a Mini-symposium).
- Astrocytes mediate the reshaping of cortical synapses in response to sleep loss. *World Sleep Congress*, Prague, October 2017 (Speaker in a Symposium).
- Effects of sleep and wake on glial cells. BENESCO Lecture Series on sleep, epilepsy, consciousness and cognition at the University of Bern. September 15th, 2017.
- Sleep and wake at cortical synapses. Dept. Physiology, Pharmacology and Neuroscience. University of Bristol, July 11th, 2017.
- Effects of sleep and wake on glia. Center for Neuroscience, University of Copenhagen, June 5th, 2017.
- Looking for the functions of sleep: insights from molecular and ultrastructural studies. VIB & KU Leuven Center for Brain & Disease Research, May 31st, 2017
- Sleep and synapses: insights from ultrastructural studies. Dept Life Sciences, Imperial College London, May 4th, 2017
- Contribution of sleep to the repair of neuronal DNA double-strand breaks: evidence from flies and mice. Session: Cellular and Molecular Mechanisms in Sleep and Waking. *European Sleep Research Society Meeting* Bologna, Sep 2016 (Selected oral presentation)

- Sleep loss promotes astrocytic phagocytosis of synaptic elements in mouse cerebral cortex. Session O14: Physiological and Cognitive Responses to Sleep Loss. *Annual Meeting of the Associated Professional Sleep Societies (APSS)* Denver, CO, USA Jun 2016 (Selected oral presentation)
- Myelination of the central nervous system: a new significance for sleep. *BASS (Belgian Association for Sleep Research and Sleep Medicine) meeting* Modave, Belgium Jun 2015 ([Key note lecture](#))
- Sleep repairs DNA double-strand breaks that normally occur during wake. *Sleep and Circadian Biology Data Blitz - Annual meeting of Society for Neuroscience* Washington D.C. USA Nov 2014 (Invited oral presentation)

Publications in peer-reviewed journals

Total impact factor: 185.8 - Averaged impact factor: 5.8

H-index: 19 (Google Scholar); 16 (Scopus); Total citations: 1086 (Google scholar); 756 (Scopus)

1. Tai CH, **Bellesi M**, Chen AC, Lin CL, Li HH, Lin PJ, Liao WC, Hung CS, Schwarting RK, Ho YJ. A new avenue for treating neuronal diseases: Ceftriaxone, an old antibiotic demonstrating behavioral neuronal effects. *Behav Brain Res*. 2019 May 17;364:149-156.
2. **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.
3. Bourdon AK, Spano G, Marshall W, **Bellesi M**, Tononi G, Serra PA, Baghdoyan HA, Lydic R, Campagna SR, Cirelli C. Sleep/wake Changes in the Metabolome of Mouse Cortex as Revealed by Ultra-performance Liquid Chromatography Coupled with High-Resolution Mass Spectrometry. *Sci Rep* 2018 Jul 25;8(1):11225.
4. **Bellesi M**, Haswell D, de Vivo L, Marshall W, Roseboom PH, Tononi G, Cirelli C. Myelin modifications after chronic sleep loss in adolescent mice. *Sleep* 2018 May 1;41(5). doi: 10.1093/sleep/zsy034.
5. Funk CM, Peelman K, **Bellesi M**, Marshall W, Cirelli C, Tononi G. Role of somatostatin-positive cortical interneurons in the generation of sleep slow waves. *J Neurosci* 2017 September 2017, 37 (38) 9132-9148.
6. **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 Neurosci* 2017 May 24;37(21):5263-5273. *This paper is the #1 output from J Neurosci and is in the top 5% of all research outputs ever tracked by Altmetric, the attention research meter.*
7. 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* 03 Feb 2017: Vol. 355, Issue 6324, pp. 507-510
8. Nagai H, de Vivo L, **Bellesi M**, Ghilardi MF, Tononi G, Cirelli C. Sleep consolidates motor learning of complex movement sequences in mice. *Sleep* 2016; 40 (2): zsw059. doi: 10.1093/sleep/zsw059.
9. **Bellesi M**, Bushey D, Chini M, Tononi G, Cirelli C. Contribution of sleep to the repair of neuronal DNA double-strand breaks: evidence from flies and mice. *Sci Rep*. 2016 Nov 10;6:36804.
10. Billeh Y*, Rodriguez A*, **Bellesi M**, Bernard A, de Vivo L, Funk C, 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 Jun 20;3(2). * first co-authors.

11. Bernardi G, Cecchetti L, Siclari F, Buchmann A, Yu X, Handjaras G, **Bellesi M**, Ricciardi E, Kecskemeti SR, Riedner BA, Alexander AL, Benca RM, Ghilardi MF, Pietrini P, Cirelli C, Tononi G. Sleep reverts changes in human grey and white matter caused by wake-dependent training. *Neuroimage*. 2016 Jan 23. pii: S1053-8119(16)00026-4.
12. Santostasi G, Malkani R, Riedner B, **Bellesi M**, Tononi G, Paller KA, Zee PC. Phase-locked loop for precisely timed acoustic stimulation during sleep. *J Neurosci Methods*. 2016 Feb 1;259:101-14.
13. **Bellesi M**, Tononi G, Cirelli C, Serra PA. Region-Specific Dissociation between Cortical Noradrenaline Levels and the Sleep/Wake Cycle. *Sleep*. 2016 Jan1;39(1):143-54.
14. 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*. 2015 Dec 22. pii: sp-00267-15.
15. **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 Dec;6:114-117.
16. **Bellesi M**, de Vivo L, Tononi G, Cirelli C. Effects of sleep and wake on astrocytes: clues from molecular and ultrastructural studies. *BMC Biol*. 2015 Aug 25;13:66. *This study has been recommended by F1000*.
17. Bernardi G, Siclari F, Yu X, Zenning C, **Bellesi M**, Ricciardi E, Cirelli C, Ghilardi MF, Pietrini P, Tononi G. Neuronal and behavioral correlates of extended training during sleep deprivation in humans: evidence for local, task-specific effects. *J Neurosci* 2015 35(11):4487-4500.
18. **Bellesi M**. Sleep and oligodendrocyte functions. *Curr Sleep Med Rep*. 2015, Mar;1(1): 20-26. (*Invited Review*)
19. **Bellesi M**, Riedner BA, Garcia-Molina GN, Cirelli C, Tononi G. Enhancement of sleep slow waves: underlying mechanisms and practical consequences. *Front Sys Neurosci*. 2014 doi: 10.3389/fnsys.2014.00208.
20. **Bellesi M**, Pfister-Genskow M, Maret S, Keles S, Tononi G, Cirelli C. Effects of sleep and wake on oligodendrocytes and their precursors. *J Neurosci*. 2013 Sep;33(36):14288-142300. *This paper has been featured in Nature (vol 503 7 Nov, 2013) as the most viewed paper in science*.
21. Dash MB, **Bellesi M**, Tononi G, Cirelli C. Sleep/wake dependent changes in cortical glucose concentrations. *J Neurochem*. 2013 Jan;124(1):79-89.
22. **Bellesi M**, Vyazovskiy VV, Tononi G, Cirelli C, Conti F. Reduction of EEG theta power and changes in motor activity in rats treated with ceftriaxone. *PLoS One*. 2012;7(3):e34139.
23. Ferrarelli F, Sarasso S, Guller Y, Riedner BA, Peterson MJ, **Bellesi M**, Massimini M, Postle BR, Tononi G. Reduced Natural Oscillatory Frequency of Frontal Thalamocortical Circuits in Schizophrenia. *Arch Gen Psychiatry*. 2012 Aug;69(8):766-74.
24. Cizak M, **Bellesi M**. Synaptic plasticity modulates autonomous transitions between waking and sleep states: insights from a Morris-Lecar model. *Chaos*. 2011 21(4):043119.
25. Melone M, **Bellesi M**, Ducati A, Iacoangeli M, Conti F. Cellular and synaptic localization of EAAT2 in human cerebral cortex. *Front Neuroanat*. 2011 14;4:151. doi:10.3389/fnana.2010.00151.
26. **Bellesi M**, Di Bella P, Provinciali L. Diagnostic difficulties with central nervous system actinomycosis. *Neurol Sci*. 2011 32:945:947.
27. **Bellesi M**, Conti F. The mGluR2/3 agonist LY379268 blocks the effects of GLT-1 upregulation on prepulse inhibition of the startle reflex in adult rats. *Neuropsychopharmacology*. 2010 May;35:1253-1260.

28. Omrani A*, Melone M*, **Bellesi M**, Safiulina V, Aida T, Tanaka K, Cherubini E, Conti F. Up-regulation of GLT-1 severely impairs LTD at mossy fibre-CA3 synapses. *J Physiol*. 2009 Oct 1;587:4575-88. * first co-authors.
29. **Bellesi M**, Melone M, Gubbini A, Battistacci S, Conti F. GLT-1 upregulation impairs prepulse inhibition of the startle reflex in adult rats. *Glia*. 2009 May; 57(7): 703-713.
30. Melone M, **Bellesi M**, Gubbini A, Conti F. GLT-1 up-regulation enhances the effect of PCP on prepulse inhibition of the startle reflex in adult rats. *Schizophr Res*. 2009. Apr 109:196-197.
31. Melone M, **Bellesi M**, Conti F. Synaptic localization of GLT-1a in the rat somatic sensory cortex. *Glia*. 2009 Jan; 57(1):108-17.
32. Muglia M, Magariello A, Citrigno L, Passamonti L, Sprovieri T, Conforti FL, Mazzei R, Patitucci A, Gabriele AL, Ungaro C, **Bellesi M**, Quattrone A. A novel locus for dHMN with pyramidal features maps to chromosome 4q34.3-q35.2. *Clin Genet*. 2008 May;73(5):486-91.
33. **Bellesi M**, Logullo F, Di Bella P, Provinciali L. CNS demyelination during anti-TNF alpha therapy. *J Neurol*. 2006 May; 253(5):668-9.
34. **Bellesi M**, Passamonti L, Silvestrini M, Bartolini M, Provinciali L Non-convulsive status epilepticus during lithium treatment at therapeutic doses. *Neurol Sci*. 2006 Feb;26(6):444-6.
35. Passamonti L, Muglia M, Magariello A, **Bellesi M**, Conforti FL, Mazzei R, Patitucci A, Gabriele AL, Sprovieri T, Peluso G, Caracciolo M, Medici E, Logullo F, Provinciali L, Quattrone A. Further evidence of genetic heterogeneity in autosomal dominant distal motor neuronopathy. *Neuromuscul Disord*. 2004 Nov;14(11):705-10.
36. Capecchi M, Passamonti L, Annesi F, Annesi G, **Bellesi M**, Candiano IC, Ricciuti R, Iacoangeli M, Scerrati M, Zappia M, Tarantino P, De Marco EV, Civitelli D, Carrideo S, Provinciali L, Ceravolo MG, Quattrone A. Chronic bilateral subthalamic deep brain stimulation in a patient with homozygous deletion in the Parkin gene. *Mov Disord*. 2004. Dec;19(12):1450-2.

Conference Proceedings

Garcia-Molina G, Vissapragada S, Mahadevan A, Goodpaster R, Riedner B, **Bellesi M**, Tononi G. Probabilistic Characterization of Sleep Architecture: Home Based Study on Healthy Volunteers. *Conf Proc IEEE Eng Med Biol Soc*. 2016 Aug;2016:2834-2838.

Garcia-Molina GN, **Bellesi M**, Riedner BA, Pastoor S, Pfundtner S, Tononi G. Automatic Characterization of Sleep Need Dissipation Dynamics Using a Single EEG Signal. *Conf Proc IEEE Eng Med Biol Soc*. 2015;2015:5993-7.

Book chapters

Garcia-Molina G, **Bellesi M**, Pastoor S, Pfundtner S, Riedner B, Tononi G. Online Single EEG Channel Based Automatic Sleep Staging. In book: *Engineering Psychology and Cognitive Ergonomics. Applications and Services*. Springer Berlin Heidelberg, Editors: Don Harris, pp.333-342. 2013.

Bellesi M. The effects of sleep loss on brain functioning. *Handbook of Sleep Research*. Elsevier, Editors: Hans Dringenberg (in press)

Patents

- ❖ System and method for adjusting the volume of auditory stimulation during sleep based on sleep depth latencies **Bellesi M**, Riedner B, Tononi G, Garcia-Molina G. Application Number: 2016P00607US Joint Philips & UW
- ❖ System and method for adjusting the intensity of sensory stimulation during sleep based on sleep spindles. **Bellesi M**, Riedner B, Tononi G, Garcia-Molina G. Publication Number: WO2016005870 A1. Joint Philips & UW
- ❖ System and method for sleep session management based on slow wave sleep activity in a subject. Tononi G, Riedner B, **Bellesi M**, Garcia-Molina G, Pfundtner S, Pastoor S. Publication Numbers: US20160058970 A1, CN105324077A, EP2986208A1, WO2014170881A1. Joint Philips & UW
- ❖ Adjustment of sensory stimulation intensity to enhance sleep slow wave activity. **Bellesi M**, Riedner B, Tononi G, Garcia-Molina G. Publication Numbers: US20160082222 A1, CN105377129A, EP2986209A1, WO2014170781A1. Joint Philips & UW
- ❖ System and method for determining timing of sensory stimulation delivered to a subject during a sleep session. **Bellesi M**, Garcia-Molina G, Benzo J, Riedner B, Tononi G. Publication Numbers: US20170000970 A1, CN105960195A, EP3102094A1, WO2015118415A1. Joint Philips & UW
- ❖ System and method for enhanced knowledge consolidation by sleep slow wave induction and sensory context re-creation. Tononi G, Westerink J, Garcia-Molina G, **Bellesi M**. Publication Numbers: WO2014118650 A1, US20150374951, CN104955513A, EP2950868A1. Joint Philips & UW
- ❖ Sensory stimuli to increase accuracy of automated real-time sleep staging. Garcia-Molina G, Tononi G, Riedner B, **Bellesi M**, Pfundtner S, Pastoor S. Publication Numbers: US20150359482 A1, CN104955385A, EP2950707A1, WO2014118693A1. Joint Philips & UW.

Impact of the research on the media (selected list)

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

Sleep Affects Formation Of Myelin, Vital To Brain Growth And Repair: Study. **HuffPost** 04/09/2013

What's the point of sleep? **The Guardian**. 05/09/2013

Beauty sleep or brains sleep? Switching off 'helps regrow brain cells'. **Independent** 04/09/2013

How Sleep Protects the Brain over Time. **Scientific American**. 01/01/2014

Sleep 'boosts brain cell numbers'. **BBC**. 04/09/2013

Il buon sonno promuove l'incremento e la riparazione del cervello. **La Stampa** 04/09/2013

Il sonno, ecco come protegge il cervello. **Huffingtonpost** 10/09/2013

Teaching philosophy

As a teacher, I strive to pass on not only knowledge, but also enthusiasm and passion, because I believe that learning must be a pleasant process. During my classes, I like giving my students brief historical introductions, because I believe that it is more natural to understand the present if first we explain where we were and how we got to this point. Moreover, I found very useful to mix up the main points of the lesson with anecdotes. It is easier to remember something if you add a bit of a story around it. For example, I believe that telling how researches thought about a specific experiment, how they set it up, what they were expecting and what they found, is much more exciting than just listing the notions that students need to learn. I also like interacting with my students while I am explaining something, to check if they are following me and to keep their attention high. It is also a way to know them better and tailor the lesson to their learning pace. My students are always free to interrupt me if they have questions. I prefer this way instead of packing all the questions at the end of the class. A question is always a chance to explain things better. I usually challenge my students to share opinions with and to mentor one another. I also encourage them to study together when possible, like in brain-storming sessions, because it's a very handy way to recapitulate and to learn how to collaborate. Finally, I encourage my students to make connections with other disciplines because I think it is very important to contextualize what they learn in my classes with their own education path.

Teaching experience

In my career as a scientist, I have been fortunate enough to be a teaching fellow in a number of courses when I was a PhD student at the Università Politecnica delle Marche. In each of these courses, the professor offered me a great deal of autonomy to lead classes on specific topics during the main course of human physiology. I taught for several consecutive years the physiology of nerve pulse transmission at the School of Medicine. Given my background in Neurology, these classes had also the purpose of showing the students the pathophysiological links with diseases of the pulse transmission (like for example with Multiple Sclerosis). During the same years, I also led classes at the Dentistry School, teaching the physiology of the digestive system, and at the Bio-Engineering School, where I taught how to model the nervous system physiology with computational models. As Fixed-term Researcher at the Università Politecnica delle Marche, I led the entire course of human physiology for the Nursing School.

2016-2018 Nursing school (human physiology)

2010 Medical school (pH regulation, body temperature mechanisms)

2008-2009 Dentistry school (physiology of the digestive system)

2008-2009 Bio-engineering school (basics of computational models)

2005-2009 Medical school (biophysics of nerve pulses and relative pathophysiology)

Teaching evaluation

2017-18 evaluation for the human physiology course (Nursing school): 95.8% overall score, with 100% for items relative to clarity, motivation, availability, arousing general interest.

Outreach Activities

Public engagement (Talks, Stands, Sleep Questionnaires, etc) at Sharper 2018 - MSCAnight – Sept 2018

Participated in Memex “Galileo”, a scientific format for popular science of Rai Cultura. May 9th, 2018

Participated in a popular radio podcast on Deutsche Welle, a Germany's international broadcaster. Topic: glial phagocytosis and sleep loss. June, 2017

Il Sonno e le Sinapsi. Lettere dalla Facoltà. Popular Scientific Bulletin of Università Politecnica delle Marche. Anno XX n.2, 2017.

TG3-Leonardo RAI 3: "La forma del sonno", Popular Scientific Newscast 02.09.2017

02/05/2019

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