Dr Francesco Tamagnini, PhD in Neuroscience h-index:
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Curriculum Vitae
Dr Francesco Tamagnini

I study the neurophysiology of dementia through the rigorous application of quantitative methods. My scientific work is complemented by my entrepreneurial and managing skills.

Relevant Work experience

Present Appointment

Lecturer in Pharmacology

(September 2017 – present) School of Pharmacy, University of Reading. Line manager Dr Angela Bithell

Previous Appointments

Research Fellow

Funded by competitively awarded Alzheimer's Society Fellowship

(October 2015 – September 2017) Institute of Biomedical and Clinical Sciences, University of Exeter Medical School, University of Exeter. Line manager Prof Andy Randall

Associate Research Fellow

Funded by competitively awarded MRC "Proximity to industry" fund

(April 2015 – October 2015) Eli Lilly (Windlesham, UK) & Institute of Biomedical and Clinical Sciences, University of Exeter Medical School, University of Exeter. Line managers Dr Johanna Jackson and Prof Andy Randall

Research Assistant

MRC Grant-funded 3-year post-doc position

(April 2012 – April 2015) Institute of Biomedical and Clinical Sciences, University of Exeter Medical school, University of Exeter and Department of Physiology and Pharmacology, University of Bristol Supervisors Prof Andy Randall and Dr Jon Brown

Research collaborator and Post-doctoral research assistant

(May 2011 – April 2012) Department of Physiology and Pharmacology, University of Bristol. Supervisor Prof Zafar Bashir

Education

Postgraduate Certificate in Academic Practice (PCAP); Higher Education Academy fellow

September 2017. Pass ***PhD in Neuroscience***

(January 2008 – May2011) University of Bologna, Department of Human and General Physiology Supervisor Prof Giorgio Aicardi

Notes From 01/12/2009 until 05/2011, I attended the MRC Centre for Synaptic Plasticity, Department of Physiology and Pharmacology, University of Bristol, supervised by Prof Zafar Bashir.

MSc (5 years degree) in Pharmaceutical Biotechnologies

(September 2000 – March 2006) University of Bologna, Faculty of Pharmacy

Final Mark 110/110 cum laude (First class)

Relevant teaching content creation experience

- Development and implementation of **history of epistemology and statistics** courses across for the School of Biological Sciences and Grad School (**across sciences and humanities**)
- Fellow of the Higher Education Academy (fHEA)

Relevant Administrative duties

Wellbeing, Inclusion, Diversity and Equality (WIDE) lead for the University of Reading School of Pharmacy.

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Research

Research projects summary

- Neurophysiological dysfunction in Alzheimer's associated amyloidopathy and tauopathy
- Electrophysiological correlates of Extended Plant Cognition
- Mathematical modelling of neuronal function: from single conductances to neural networks
- Validation of electroencephalography as a screening tool for the prognosis of dementia
- Vibrational spectroscopy for the chemical imaging of Alzheimer's pathological hallmarks

Current grants

1. Alzheimer's Research UK Major Grant; £143,000. 2021-active
2. Universita' di San Marino and Istituto di Sicurezza Sociale; Euros 30,000. 2021-active

Technical expertise

- *In vitro* slice and cultured cell electrophysiology: field potential and whole-cell patch clamp
- *In vivo* two-photon microscopy
- Matlab coding
- Statistics software (SPSS)

Main Collaborations

- Dr Brian Pickles, University of Reading School of Biological Sciences, Extended Plant Cognition
- Study of functional alterations in tauopathy (Prof Diane Hanger, KCL; Prof Vincenza Andrisano, Universita' di Bologna, Rimini Campus)
- In-silico mathematical modelling of neuronal function in dementia (Prof K. Tsaneva-Atasanova, Dr Marc Goodfellow, University of Exeter, College of Engineering, Modelling and Physical Sciences)
- AlzSM: electrophysiological markers in Alzheimer's Disease. UniRSM and ISS
- Vibrational spectroscopy for the non-invasive diagnosis of Alzheimer's Disease (Dr Francesca Palombo and Prof Nick Stone, University of Exeter, Physics)

Prizes and Awards

- **Local selections (Republic of San Marino) for the "Campiello Junior Literary Prize".** 1999
- **SIF Prize for the best oral communication.** Italian Society for Physiology. June 2011
- **Wellcome Trust 'Value in People' Award (VIP)**: The University of Bristol Biomedical Science. 2011

Selected Outreach activity

- Of Mice and Men – Preclinical study of dementia – Oxford, ARUK Thames Valley network. Invited Speaker. April 2018.
- TEDx Citta' di San Marino, Republic of San Marino, Invited Speaker, October 2018.
- Audience with the Chiefs of State of the Republic of San Marino for the AlzSM project. August 2018.
- Of mice and dementia: a conversation on the use of animals in dementia research. Jan 2019.
- Invited Speaker at the San Marino National TV network. TV program: "Khorakhane': the mystery of memory", May 2019. And La bellezza fragile della memoria, April 2022.
- Invited guest at the House of Commons Science and Technology Committee as representative of the Phys Soc. March 2019.
- Article on mental health in academia for the Phys Soc. May 2020.
- Your mind matters: The relationship between academic culture and mental health. Webinar. Promoter, organizer and creator of the event. Organized by the Phys Soc. August 2020.
- COVID-19 and Mental Health: Exploring the Impact on Academics. Webinar organized by Phys Soc. December 2020.
- Lab Notes: The journey from Reading to Oxford: Building roads to save memories. Reading University. ARUK Thames Valley Network. June 2021.
- Myth and Neuroscience. Liceo classico San Marino. October-December 2022.

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Selected Publications

1. Maiarù M, Leese C, Silva-Hucha S, Fontana-Giusti S, Tait L, **Tamagnini F**, Davletov B, Hunt SP. Substance P-Botulinum Mediates Long-term Silencing of Pain Pathways that can be Re-instated with a Second Injection of the Construct in Mice. J Pain. 2024 Jan 12:S1526-5900(24)00340-7. doi: 10.1016/j.jpain.2024.01.331.
2. Brady ES, Griffiths J, Andrianova L, Bielska MH, Saito T, Saido TC, Randall AD, Tamagnini F, Witton J, Craig MT, Alterations to parvalbumin-expressing interneuron function and associated network oscillations in the hippocampal – medial prefrontal cortex circuit during natural sleep in AppNL-G-F/NL-G-F mice, Neurobiology of Disease. 2023, Volume 182, 106151.
3. Saghafi S, Rumbell T, Gurev V, Kozloski J, Tamagnini F, Wedgwood KCA., Diekman CO. Inferring parameters of pyramidal neuron excitability in mouse models of Alzheimer's disease using biophysical modeling and deep learning. bioRxiv 2023.04.18
4. Barberio, C., Saez, J., Withers, A., Nair, M., **Tamagnini, F.**, Owens, R. M., Conducting PolymerECM Scaffolds for Human Neuronal Cell Differentiation. Adv. Healthcare Mater. 2022
5. Torre EC, Bicer M, Cottrell GS, Widera D, **Tamagnini F.** Time-Dependent Reduction of Calcium Oscillations in Adipose-Derived Stem Cells Differentiating towards Adipogenic and Osteogenic Lineage. Biomolecules. 2021
6. Bercea CI, Cottrell GS, **Tamagnini F**, McNeish AJ. Omega-3 polyunsaturated fatty acids and hypertension: a review of vasodilatory mechanisms of docosahexaenoic acid and eicosapentaenoic acid. Br J Pharmacol. 2021
7. Goniotaki D, **Tamagnini F**, Biasetti L, Rumpf S, Fennell K, Pollack S J, Ukwesa S, Sun H, Serpell L C, Noble W, Staras K, Hanger D P. Synaptic dysfunction caused by truncated tau is associated with hyperpolarization-activated cyclic nucleotide-gated channelopathy. bioRxiv 2020
8. Tait L, **Tamagnini F**, Stothart G, Barvas E, Monaldini C, Frusciante R, Volpini M, Guttmann S, Coulthard E, Brown J T, Kazanina N, Goodfellow M. EEG microstate complexity for aiding early diagnosis of Alzheimer's disease. Sci. Rep. 2020
9. Bianchi R, Eilers W, Pellati F, Corsi L, Foster H, Foster K, **Tamagnini F.** Hippocampal synaptic and membrane function in the DBA/2J-mdx mouse model of Duchenne muscular dystrophy. Mol Cell Neurosci. 2020
10. Stephen TL[*], **Tamagnini F**[*], Piegsa J, Sung K, Harvey J, Oliver-Evans A, Murray TK, Ahmed Z, Hutton ML, Randall A, O'Neill MJ, Jackson JS. Imbalance in the response of pre- and postsynaptic components to amyloidopathy. Sci Rep. 2019
11. **Tamagnini F**, Cotton M, Goodall O, Harrison G, Jeynes C, Palombo F, Tomkow J, Tomkow T, Wedgwood K, Welsman J. Of Mice and Dementia': A filmed conversation on the use of animals in dementia research. Dementia (London). 2018
12. Palombo F.[*], **Tamagnini F.**[*], Jeynes J. C. G., Mattana S., Swift I., Nallala J., Hancock J, Brown J.T., Randall A. D., and Stone N. Detection of Aβ plaque-associated astrogliosis in Alzheimer's disease brain by spectroscopic imaging and immunohistochemistry. The Analyst. 2018
13. **Tamagnini F.**, Walsh DA, Brown JT, Bondulich MK, Hanger DP & Randall AD. Hippocampal neurophysiology is modified by a disease-associated C-terminal fragment of Tau protein. Neurobiology of Aging. 2017
14. **Tamagnini F**, Novelia J, Kerrigan TL, Brown JT, Tsaneva-Atanasova K, Randall AD. Altered intrinsic excitability of hippocampal CA1 pyramidal neurons in aged PDAPP mice. Front Cell Neurosci. 2015

15. Nistor PA, May PW, **Tamagnini F**, Randall AD, Caldwell MA. Long-term culture of pluripotent stem-cell-derived human neurons on diamond--A substrate for neurodegeneration research and therapy. Biomaterials. 2015
16. Mehrban N, Zhu B, **Tamagnini F**, Young FI, Wasmuth A, Hudson KL, Thomson AR, Birchall MA, Randall AD, Song B, Woolfson DN. Functionalized α-Helical Peptide Hydrogels for Neural Tissue Engineering. ACS Biomater Sci Eng. 2015
17. **Tamagnini F**, Scullion S, Brown JT, Randall AD. Intrinsic excitability changes induced by acute treatment of hippocampal CA1 pyramidal neurons with exogenous Amyloid β peptide. Hippocampus. 2014
18. **Tamagnini F**, Scullion S, Brown JT, Randall AD. Low concentrations of the solvent dimethyl sulphoxide alter intrinsic excitability properties of cortical and hippocampal pyramidal cells. PLoS One. 2014
19. **Tamagnini F**, Barker G, Warburton EC, Burattini C, Aicardi G, Bashir ZI. Nitric oxide-dependent long-term depression but not endocannabinoid-mediated long-term potentiation is crucial for visual recognition memory. J Physiol. 2013

Selected Conference communications

- **The results of the AlzSM study. Study day at the University of San Marino.** Organized by me as Director of Neuroscientific Research at the University of San Marino Centre for Biomedical studies. 09/2023.
- Bridging the Minds. Clinical and preclinical approaches to the study of neurodegeneration and dementia. San Marino State Hospital. 06/2022. Speaker and Organizer
- **COVID-19 and Mental Health: Exploring the Impact on Academics. Webinar. Physiological Society. 12/2020.**
- **Your mind matters: The relationship between academic culture and mental health. Webinar. Physiological Society. 07/2020.**
- **"Quando belta' splendea – The use of electroencephalography for the diagnosis of dementia" TEDX Citta' di San Marino.** 10/2018.
- **Electrophysiological differentiation of ipsc-derived 3d neural cultures on rationally designed, functionalized hydrogels.** 04/2018. MRC Stem Cell Partnership Workshop. Cardiff. Invited Speaker.
- **Of mice and men: a multidisciplinary approach to the pre-clinical study of dementia.** 03/2018. "ARUK Oxford Dementia Awareness Morning". Oxford. Invited Speaker.
- **Age-related alterations to electrical membrane properties of CA1 hippocampal glutamatergic and GABAergic neurons in a mouse model of progressive tauopathy.** 11/2017. **"**Society for Neuroscience International Conference" Washington D.C., USA. Selected Speaker.
- **Use of single-cell electrophysiology to characterize Alzheimer's disease-associated altered neuronal excitability.** 09/2017. **"**Recent Developments in Pharmaceutical Analysis (RDPA) conference" Rimini, Italy. Selected Speaker.
- **Human iPSC-derived 3D neural cultures on rationally designed, functionalized hydrogels: a study on electrophysiological differentiation.** 2016. "6th MALAYSIAN TISSUE ENGINEERING & REGENERATIVE MEDICINE SCIENTIFIC MEETING, IN CONJUNCTION WITH 2ND MALAYSIAN STEM CELL MEETING" Penang, Malaysia. Conference. Invited Speaker.
- **Role of nitric oxide in synaptic plasticity in the rat perirhinal cortex.** 2011. SIF Congress for PhD students and post-docs, Sestri Levante (GE) Italy. Invited Speaker.

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Selected Seminars as Invited Speaker at Academic Institutions

- **Mind the madness in academia.** Keynote lecture at the King's College of London DTP. 05/2023.
- **Neuroelectrophysiological dysfunction associated with tauopathy.** 2019. University of Surrey. Surrey Clinical Research Centre.
- ***Electrophysiological differentiation of ipsc-derived 3d neural cultures on rationally designed, functionalized hydrogels.*** 2018. MRC Stem Cell Partnership Workshop. Cardiff.
- **"A spark of memory: the use of electrophysiological methods for the preclinical investigation of dementia" – "Scintille di memoria: l'uso di metodi elettrofisiologici per lo studio preclinico delle demenze".** Within the seminar "Metodi clinici e pre-clinici per lo studio delle malattie neurodegenerative". 2017. ISS and University of San Marino. Republic of San Marino.
- **Electrophysiological changes of the hippocampal neuronal function in models of amyloidopathy and tauopathy.** 2017. University of Aberdeen, Institute of Medical Sciences, Aberdeen, UK.
- **Wobbly lines: the use of single cell electrophysiology for the characterization of brain function in health and disease, from brain slices to stem-cell derived neurons.** 2016. University of Reading Malaysia, Johor Bahru, Malaysia.
- **Alzheimer's disease and slimmer spikes: amyloidopathy correlates with hippocampal hyperexcitability.** 2016. University of Reading, Reading, UK.
- **Amyloidopathy correlates with hippocampal hyperexcitability?** 2016. Imperial College, London, UK.