





FULVIA PALESI

CURRICULUM VITAE

PERSONAL INFORMATION

Birth 23 Jul 1984, Vizzolo Predabissi (MI)

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EDUCATION AND TRAINING

- Sept 2015 – **IDEA Patent**, Siemens Healthcare training centre, Erlangen (Germany). IDEA Sequence development training for research use on 3T Siemens scanners.
- Nov 2008–Oct 2011 – **PhD in Applied Physics**, Department of Physics, University of Pavia (Italy). Thesis: "Cross-sectional and longitudinal analysis of Diffusion Tensor Imaging in Multiple Sclerosis-like conditions as an early marker of disease progression". Supervisor: Prof. A. Lascialfari, External Referee: Prof. CAM. Gandini Wheeler-Kingshott
- Nov 2008–Oct 2011 – Neuroradiology Unit, IRCCS Mondino Foundation, Pavia (Italy). Collaboration for PhD project.
- Oct 2006–Oct 2008 – **Master Degree in Biomedical Physics** (110/110 with honor), Department of Physics, University of Pavia (Italy). Thesis: "Magnetic Resonance on HIV patients: correlation among spectroscopy, diffusion, tissue density and pathology". Supervisor: Prof. A. Lascialfari, Co-advisor: Prof. S. Bastianello
- Oct 2003–Oct 2006 – **Bachelor Degree in Physics** (110/110), Department of Physics, University of Pavia (Italy). Thesis: "Research of extra-solar planets: unexpected results and new questions about the planetary systems formation". Supervisor: Prof. G. Bignami
- Sep 1998–Jul 2003 – **Scientific High School** Graduation (100/100 with honor), I.T.I.S. "A. Volta", Lodi (Italy)
- Jun 2009 – PhD National School "VI Seminario Nazionale sul Software della Fisica Nucleare, Subnucleare e Applicata" at INFN, University of Sassari in collaboration with Consorzio COMETA, Alghero (Italy)

WORK EXPERIENCE

- Apr 2019–Present – **Assistant Professor** (RTD-A, BIO/09) at Department of Brain and Behavioural Sciences, University of Pavia, Pavia (Italy)
- Dic 2017–Apr 2019 – **MRI researcher** at Neuroradiology Unit, IRCCS Mondino Foundation, Pavia (Italy)
- Feb 2012–Aug 2012 – **Visiting fellowship** at UCL Institute of Neurology, London (UK). Collaboration with Prof. CAM. Gandini Wheeler-Kingshott.
- Nov 2011–Nov 2017 – **Post-Doc research fellow** (AdR, FIS/01) at Department of Physics, University of Pavia in collaboration with BCC – Brain Connectivity Center, IRCCS Mondino Foundation, Pavia (Italy)

TEACHING EXPERIENCE

- **EXAM/TEACHING ASSISTANT**
 - AY 2015–2016: "Fisica" (main teacher: Prof. P. Galinetto) for Bachelor Degree in Geology at University of Pavia (Italy)
 - AY 2015–2016: "Strumentazione fisica biosanitaria" (main teacher: Prof. M. Corti) for Master Degree in Physics at University of Pavia (Italy)
 - AY 2016–2017: PhD course in Applied Physics, seminars for "Applied Magnetic Resonance" (main teacher: Prof. P. Carretta) at University of Pavia (Italy)
 - AY 2016–2017; 2017–2018; 2018–2019: "MRI quantitativa: segnale, immagini, modelli" (main teacher: Prof. CAM.

Gandini) for Master Degree in Biomedical Engineering at University of Pavia (Italy)

- AY 2016-2017; 2017-2018: “Fisica dell’MRI per le neuroscienze” (main teacher: Prof. CAM. Gandini) for Master Degree in Psychology at University of Pavia (Italy)
 - AY 2018-2019; 2019-2020: “MRI Physics for neuroscience” (main teacher: Prof. CAM. Gandini) for Master Degree in Psychology, neuroscience and human sciences (in English) at University of Pavia and University School for Advanced Studies IUSS, Pavia (Italy)
 - AY 2019-2020: “Neurofisiologia sistemica avanzata” (main teacher: Prof. E. D’Angelo) for Master Degree in Neurobiology at University of Pavia (Italy)
- Co-Supervisor of **10 Master theses** at University of Pavia (Italy): Physics (3), Medicine (3), Bioengineering (2), Psychology (1), and Biology (1)
 - Co-supervisor of **3 PhD thesis** at University of Pavia (Italy): Bioengineering (1), and Neuroscience (2).

BRIEF SUMMARY OF THE SCIENTIFIC PROFILE

My research activity takes part of **integrative neuroscience** in humans. My activity has mainly been oriented to investigate the functioning of the **nervous system**, with particular interest to the **cerebellum**, using both experimental and modelling approaches. The main experimental activities involve the development of **magnetic resonance imaging** (MRI) protocols and sequences for clinical and research projects. These include either functional, microstructural and connectomics images, which can be combined to determine cerebellar involvement in physiological and pathological states. The modelling activities involve the **simulation of brain dynamics** at macroscale level but using multi-level research approaches (i.e. The Virtual Brain – TVB, Dynamic Causal Modelling – DCM) that integrate computational models to whole-brain MRI in order to investigate the mechanisms of neurological diseases.

New projects combining MRI and TVB are running in collaboration with the NMR Research Unit at Department of Neuroinflammation (UCL), Charité (University of Berlin), and Institut de Neurosciences des Systèmes (Aix-Marseille Université).

SCIENTIFIC PROJECTS

- Participation to **Human Brain Project Horizon 2020** Framework Programme for Research and Innovation – SGA2 (Grant Agreement No. 785907, 2018-2020) and SGA3 (Grant Agreement No. 945539, 2020-2023). My main task: simulation of brain dynamics embedding cerebro-cerebellar loops with The Virtual Brain framework.
- Participation to **Ministry of Health “Ricerca Finalizzata”** Network Program (NET2013-02355313).
- Participation to **Rete IRCCS delle Neuroscienze e della Neuroriabilitazione** (RIN) – Neuroimaging.

OVERALL SCIENTIFIC PRODUCTION

SCOPUS ID: 37038201700; ORCID.ORG/ 0000-0001-5027-8770; TOT CITATIONS=272; H-INDEX = 8 [SCOPUS ON JUNE 2020]

- 18 articles on international peer-reviewed indexed Journals
 - 7 publications on indexed International Conference Proceedings
 - 2 book contributions
 - 39 contributions at International Conferences
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ARTICLES ON INTERNATIONAL PEER-REVIEWED INDEXED JOURNALS

1. Castellazzi G, Cuzzoni MG, Cotta Ramusino M, Martinelli D, Denaro F, Ricciardi A, Vitali P, Anzalone N, Bernini S, Palesi F, Sinforiani E, Costa A, Micieli G, D’Angelo E, Magenes G, Gandini Wheeler-Kingshott CAM. A Machine Learning Approach for the Differential Diagnosis of Alzheimer and Vascular Dementia Fed by MRI Selected Features. *Front Neuroinform* (2020) 14:25. doi: 10.3389/fninf.2020.00025
2. P. Vitali, I. M. Pan, F. Palesi, G. Germani, A. Faggioli, N. Anzalone, P. Francaviglia, B. Minafra, R. Zangaglia, C. Pacchetti, C.A.M. Gandini Wheeler-Kingshott. Substantia Nigra Volumetry with 3-T MRI in De Novo and Advanced Parkinson Disease. *Radiology* (2020) doi.org/10.1148/radiol.2020191235
3. R.M. Lorenzi, F. Palesi, G. Castellazzi, P. Vitali, N. Anzalone, S. Bernini, M. Cotta Ramusino, E. Sinforiani, G. Micieli, A. Costa, E. D’Angelo, C.A.M. Gandini Wheeler-Kingshott. Unsuspected Involvement of Spinal Cord in Alzheimer Disease. *Front Cell Neurosci* (2020) 14:6. doi:10.3389/fncel.2020.00006
4. V. Nath, K.G. Schilling, A.E. Hainline, Y. Huo, P. Parvathaneni, J.A. Blaber, M. Rowe, P. Rodrigues, V. Prchkovska, D. Baran

- Aydogan, W. Sun, Y. Shi, W.A. Parker, A. Aziz Ould Ismail, R. Verma, R.P. Cabeen, A.W. Toga, A.T. Newton, J. Wasserthal, P. Neher, K. Maier-Hein, G. Savini, F. Palesi, E. Kaden, Y. Wu, J. He, Y. Fen, M. Barakovic, D. Romascano, J. Rafael-Patino, M. Frigo, G. Girard, A. Daducci, J.P. Thiran, M. Paquette, F. Rheault, J. Sidhu, C. Lebel, A. Leemans, M. Descoteaux, T.B. Dyrby, H. Kang, B.A. Landman. Tractography Reproducibility Challenge with Empirical Data (TraCED): The 2017 ISMRM Diffusion Study Group Challenge. *J Magn Reson Imaging* (2020) 51(1):234-249. doi: 10.1002/jmri.26794
5. L. Casiraghi, A.A.S. Alahmadi, A. Monteverdi, F. Palesi, G. Castellazzi, G. Savini, K. Friston, C.A.M. Gandini Wheeler-Kingshott, E. D'Angelo. I see your effort: linear and non-linear BOLD effects in the action execution and observation network. *Cereb Cortex* (2019) 29(3):1351-1368. doi:10.1093/cercor/bhy322
 6. P. Vitali, F. Palesi, M. Cotta Ramusino, M. Pan, A. Costa, C.A.M. Gandini Wheeler-Kingshott, M. Ceroni, G. Micieli, N. Anzalone, G. Giaccone, F. Tagliavini, M. Geschwind. Early cortical and late striatal diffusion restriction on 3T MRI in a long-lived sporadic creutzfeldt-jakob disease case. *J Magn Reson Imaging* (2019). doi: 10.1002/jmri.26711
 7. F. Palesi, A. De Rinaldis, P. Vitali, G. Castellazzi, L. Casiraghi, G. Germani, S. Bernini, N. Anzalone, M. Cotta Ramusino, F.M. Denaro, E. Sinforiani, A. Costa, G. Magenes, E. D'Angelo, C.A.M. Gandini Wheeler-Kingshott, G. Micieli. Specific Patterns of White Matter Alterations Help Distinguishing Alzheimer's and Vascular Dementia. *Front Neurosci* (2018) 12:274. doi:10.3389/fnins.2018.00274
 8. C.A.M. Gandini Wheeler-Kingshott, F. Reimer, F. Palesi, A. Ricciardi, G. Castellazzi, X. Golay, F. Prados, B. Solanky, E. D'Angelo. Challenges and perspectives of functional sodium imaging (fNaI). *Front Neurosci* (2018) 12:810. doi: <https://doi.org/10.1101/375055>
 9. G. Castellazzi, S.D. Bruno, A.T. Toosy, L. Casiraghi, F. Palesi, G. Savini, E. D'Angelo, C.A.M. Wheeler-Kingshott. Prominent changes in cerebro-cerebellar functional connectivity during continuous cognitive processing. *Front Cell Neurosci* (2018) 12:331. doi: 10.3389/fncel.2018.00331
 10. F. Palesi, A. De Rinaldis, G. Castellazzi, F. Calamante, N. Muhlert, D. Chard, D. J. Tournier, G. Magenes, E. D'Angelo, C.A.M. Gandini Wheeler-Kingshott. Contralateral cortico-ponto-cerebellar pathways reconstruction in humans in vivo: implications for reciprocal cerebro-cerebellar structural connectivity in motor and non-motor areas. *Sci Rep* (2017) 7(1):12841. doi:10.1038/s41598-017-13079-8
 11. F. Palesi, G. Castellazzi, L. Casiraghi, E. Sinforiani, P. Vitali, C.A.M. Gandini Wheeler-Kingshott, E. D'Angelo. Exploring patterns of alteration in Alzheimer's disease brain networks: a combined structural and functional connectomics analysis. *Front Neurosci* (2016) 10:380. doi: 10.3389/fnins.2016.00380
 12. F. Palesi, D. J. Tournier, F. Calamante, N. Muhlert, G. Castellazzi, D. Chard, E. D'Angelo, C.A.M. Wheeler-Kingshott. Reconstructing contralateral fibre tracts: methodological aspects for revealing the cerebello-thalamo-cortical pathway. *Funct Neurol* (2016) 31(4):229-238. doi: 10.11138/FNeur/2016.31.4.229
 13. F. Palesi, D. J. Tournier, F. Calamante, N. Muhlert, G. Castellazzi, D. Chard, E. D'Angelo, C.A.M. Wheeler-Kingshott. Controlateral cerebello-thalamo-cortical pathways with prominent involvement of associative areas in human in-vivo. *BrainStruct Funct* (2015) 220(6):3369-3384. doi:10.1007/s00429-014-0861-2
 14. G. Castellazzi, F. Palesi, S. Casali, P. Vitali, E. Sinforiani, C.A.M. Wheeler-Kingshott, E. D'Angelo. A comprehensive assessment of resting state networks: bidirectional modification of functional integrity in cerebro-cerebellar networks in dementia. *Front Neurosci* (2014) 8:223. doi: 10.3389/fnins.2014.00223
 15. E. Caverzasi, A. Pichiecchio, G. Poloni, A. Calligaro, M. Pasin, F. Palesi, G. Castellazzi, M. Pasquini, M. Biondi, F. Barale, S. Bastianello. Magnetic resonance spectroscopy in the evaluation of treatment efficacy in unipolar major depressive disorder: a review of the literature. *Funct Neurol* (2012) 27(1):13-22.
 16. A. Pichiecchio, E. Tavazzi, G. Poloni, M. Ponzio, F. Palesi, M. Pasin, D. Tosello, L. Piccolo, A. Romani, R. Bergamaschi, G. Piccolo, S. Bastianello. Advanced Magnetic Resonance Imaging of Neuromyelitis Optica: a multiparametric approach. *Mult Scler* (2012) 18(6):817-24. doi: 10.1177/1352458511431072
 17. F. Palesi, P. Vitali, P. Chiarati, G. Castellazzi, E. Caverzasi, A. Pichiecchio, E. Colli Tibaldi, F. D'Amore, E. Sinforiani, S. Bastianello. DTI and MR volumetry of hippocampus-PC/PCC circuit: in search of early micro- and macro-structural signs of Alzheimer's disease. *Neurol Res Int* (2012) 2012:517876. doi: 10.1155/2012/517876
 18. G. Maccabelli, A. Pichiecchio, A. Guala, M. Ponzio, F. Palesi, D. Maranzana, G. Poloni, S. Bastianello, C. Danesino. Advanced magnetic resonance imaging in benign hereditary Chorea: study of two familial cases. *Mov Disord* (2010) 25: 2670–2674. doi: 10.1002/mds.23281

INDEXED INTERNATIONAL CONFERENCE PROCEEDINGS

1. Conference Paper – F. Palesi, C Casellato, CAM Gandini Wheeler-Kingshott, V Jirsa, E D'Angelo. Designing of a cerebellar neural mass for incorporation into The Virtual Brain. *Front Cell Neurosci* (2020)

2. Conference Paper – F. Palesi, F. Calamante, G. Savini, G. Castellazzi, E. D’Angelo, C.A.M. Gandini Wheeler-Kingshott. Characterization of cerebro-cerebellar structural connections using high-quality diffusion MRI data. *Front Cell Neurosci* (2017) doi: 10.3389/conf.fncel.2017.37.00010
3. Conference Paper – L. Casiraghi, F. Palesi, G. Castellazzi, A. De Rinaldis, C. Di Perri, C.A.M. Gandini Wheeler-Kingshott, E. D’Angelo. Altered cerebral and cerebellar functional connectivity with structurally altered brain areas in children with autism spectrum disorder. *Front Cell Neurosci* (2017) doi: 10.3389/conf.fncel.2017.37.00001
4. Conference Paper – G. Castellazzi, F. Palesi, S.D. Bruno, A.T. Toosy, E. D’Angelo, C.A.M. Gandini Wheeler-Kingshott. Resting state fMRI during continuous cognitive processing reveals dynamical changes of brain networks involving cerebral cortex and cerebellum. *Front Cell Neurosci* (2017) doi: 10.3389/conf.fncel.2017.37.00009
5. Conference Paper – S.M. Marchese, F. Palesi, E. De Vita, A. De Rinaldis, P. Vitali, G. Germani, C.A.M. Wheeler-Kingshott, E. D’Angelo. Characterization of cerebellar metabolites in white and gray matter using 3T magnetic resonance spectroscopy. *Front Cell Neurosci* (2017). doi: 10.3389/conf.fncel.2017.37.000031
6. Conference Paper – G. Savini, F. Palesi, G. Castellazzi, L. Casiraghi, F. Grussu, A. Lascialfari, E. D’Angelo, C.A.M. Gandini Wheeler-Kingshott. Investigation of cerebellar microstructure with two-compartment Spherical Mean Technique and T1w/T2w myelin weighting. *Front Cell Neurosci* (2017) doi: 10.3389/conf.fncel.2017.37.00008
7. A. Pichiecchio, T. Carigi, N. Bergsland, S. Gianfelice, F. Palesi, M.A. Chiappedi, G. Rossi, S. Bastianello, U. Balottin. Brain Diffusion Tensor Imaging and Volumetric Analysis: Grey and White Matter Changes in Preschool Children with Autism Spectrum Disorder. *Autism Open Access* (2016) 6:161. doi:10.4172/2165-7890.1000161

MEMBERSHIPS

- Member of the International Society for Magnetic Resonance in Medicine (ISMRM) since 2013
- Member of the “Associazione Italiana di RM in Medicina” (AIRMM) since 2018

AWARDS

- 2019: "Best poster award" at School of Brain Cells & Circuits "Camillo Golgi" - Ettore Majorana Foundation and Centre for Scientific Culture, Erice (Italy)
- 2018: "Best paper award" at Fondazione Istituto Neurologico Nazionale C. Mondino
- 2017: 1st prize at ISMRM Tractography reproducibility challenge
- 2014: ISMRM Magna cum Laude Award (Oral Presentation)

TALKS AT NATIONAL AND INTERNATIONAL CONFERENCES

INVITED TALKS

- “The virtual mouse brain embedding cerebellar nodes” at Hackathon on CEREBELLUM MODELLING, HBP Education – Jan 2020, Pavia (Italy)
- “Multimodal approach to characterize temporal lobe epilepsy” at “GIDRM Workshop: Integration of NMR and MRI with other techniques in Brain Imaging” – May 2019, Chieti-Pescara (Italy)
- “Modelli avanzati di diffusione per la caratterizzazione microstrutturale del tessuto cerebrale” at I Corso “Imaging Avanzato in Neuroradiologia” – Dec 2018, Naples (Italy)
- “Modelli multi-compartmentali di diffusione per la caratterizzazione microstrutturale del tessuto cerebrale” at Foundation Carlo Besta Neurological Institute IRCCS – May 2018, Milan (Italy)
- “Micro and macro cerebellar structure with diffusion MRI” at IX Congresso Nazionale “Risonanza Magnetica in Medicina: dalla ricerca tecnologica avanzata alla pratica clinica” – May 2018, Padova (Italy)
- “Nuovi modelli di diffusione per la caratterizzazione microstrutturale del tessuto cerebrale” at IV Congresso Nazionale Neuroradiologia Funzionale – Nov 2017, AINR, Parma (Italy)
- “Risonanza magnetica: dagli spin alle neuroscienze” at “Tuesday Seminar” at Department of Physics – Mar 2016, Pavia (Italy)
- “Magnetic Resonance Imaging on the brain: from structural to functional characterization” at Department of Physics – Apr 2014, Pavia (Italy)
- “Physical principles of Diffusion Tensor Imaging” at II Corso Residenziale di Neuroradiologia Funzionale – Applicazioni cliniche delle Tecniche Avanzate di Immagine – 30 Sept 2009, Pavia (Italy)

ORAL PRESENTATIONS AT CONFERENCES

- “Modelli standard e avanzati di diffusione MR nell’epilessia del lobo temporale” at 42° Congresso Nazionale LICE – Jun 2019, Rome (Italy)
- “Comparison of multiple multi-compartment diffusion models in temporal lobe epilepsy” at X Congresso Nazionale “Associazioni Italiana Risonanza Magnetica in Medicina (AIRMM)”, Mar 2019, Milan (Italy)
- “Network integration and segregation differentiate between Alzheimer Disease and Vascular Dementia” at ISMRM 24th Annual Meeting, May 2016, Singapore (Singapore)
- “Combined functional and tractography connectome to investigate Alzheimer brain networks” at ISMRM 23rd Annual Meeting, Jun 2015, Toronto (Canada)
- “Contralateral cerebello-thalamo-cortical pathways with prominent involvement of associative areas in humans in vivo” (Magna cum laude Award) at Joint Annual Meeting ISMRM-ESMRMB, May 2014, Milan (Italy)
- “Cerebello-cortical tracts with prominent involvement of associative areas in humans in vivo” at AMRITA BIOQUEST 2013, Aug 2013, Kochi – Amritapuri (Kerala, India)
- “Studio DTI delle alterazioni microstrutturali precoci nella malattia di Alzheimer” at I Congresso Nazionale di Neuroradiologia Funzionale – AINR, Feb 2011, Milan (Italy)
- “Automatic ROI identification algorithm on ADC and FA maps of the brain using a macroscopic anatomical parcellation of the MNI MRI single-subject brain” at 24th AINR National Conference, Oct 2008, Roma (Italy)

Autorization for Italy: “I allow personal data handling according to D.lgs 196/03”

06 July 2020

