

## Emmanuel BARBIER PhD



### Current position and affiliation

**Directeur de Recherche**, Inserm, Grenoble Institut Neuroscience (Inserm U1216 – UGA) and IRMaGe (Inserm US17 – UGA – CNRS UAR 3552 – CHUGA)

### Professional address

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Research team: <https://neurosciences.univ-grenoble-alpes.fr/equipe5>

Research facility: <https://irmage.univ-grenoble-alpes.fr/>

### Education

2007: “Habilitation à diriger les recherches” (HDR), UGA Grenoble

1999: PhD Human Biology, Université Lyon 1, Lyon

1994: Engineer, Physics of Materials, Insa, Lyon

### Research areas

Expert in magnetic resonance imaging (MRI) of the brain with 25 years of experience. I developed several methods to obtain quantitative maps of perfusion related parameter in the brain (vessel size and density, blood flow, tissue oxygen saturation...), conducted longitudinal studies in small animals to test the impact of drugs in the context of several brain diseases and mainly cancer. I developed simulation tools and data analysis to handle complex MRI data. With a focus on brain microvascularisation and brain function, I worked on tool to integrate MRI data in collaboration with data scientists to discover imaging biomarkers in the field of cancer, stroke, brain trauma, and epilepsy.

### Appointments and Experience

2012-now: Senior researcher (Directeur de Recherche), Inserm

2001-2011: Junior researcher (Chargé de Recherche), Inserm

1999-2001: Research associate, LFMI, NINDS, NIH, Bethesda, MA, USA

1996-1998: Intradocotrinal stay at Carnegie Mellon University, Pittsburgh, PA, USA

1995 Intradocotrinal stay at Medish Spectrum Twente, Enschede, The Netherlands

1994-1999: PhD student, Centre Hospitalier Lyon-Sud, Lyon

### Recent institutional responsibilities

#### *Research structures*

2022-now: co-head CDT CerCoG Brain and Cognition, UGA (Federative structure; 300 members, 17 labs)

2022-now: Deputy Director of Grenoble Institut Neuroscience Inserm U1216 – UGA (250 scientists)

2021-now: Director of IRMaGe Inserm US17 – UGA – CNRS 3552 – CHUGA (18 engineers)

2011-now: Head of the team “functional neuroimaging and brain perfusion” at GIN Inserm U1216 – UGA (40 scientists)

2016-now: Elected Member of the Administration Council of UGA

2016-2020: Deputy Director of IRMaGe Inserm US17 – UGA – CNRS 3552 – CHUGA (20 engineers)

#### *Scientific organizations*

2022-now: Member of the scientific council of the French Foundation for Stroke (FR-AVC), <http://www.fondation-recherche-avc.org/>

2021-now: Member of the Annual Meeting Program Committee (AMPC) of the ISMRM, <https://www.ismrm.org/>

2021-now: Member of the scientific council of the Multidisciplinary Institute in Artificial intelligence, <https://miai.univ-grenoble-alpes.fr/>

2021-now: Member of the scientific council of the DRCI (CHUGA)

2021-now: Member of the CRBSP (CHUGA, Inserm, UGA), nominated by Inserm

2016-2021: President-Elect (2016-2017), President (2018-2019), and past-President (2020-2021) of the SFRMBM (French National Society for Magnetic Resonance in Medicine and Biology, [sfrmbm.fr](http://sfrmbm.fr))

2015 – 2020: Member of the scientific council of Grenoble Excellence in Neurodegenerescence (member of the international CoEN Network)

### Scientific metrics and current projects

<https://scholar.google.fr/citations?user=UGjnFNwAAAAJ&hl=fr>

ORCID: <https://orcid.org/0000-0002-4952-1240>

>120 peer reviewed publications, 10 book chapters

Organizer or member of the scientific committee for 25 scientific meetings (national and international)

Mentor for 22 PhD students, 6 postdocs

Referee for 11 HDR defense, 38 PhD defense, 9 MD defense

More than 20 international invitations and 40 national invitations

Current projects: **ANR**: EPICATCHER (PI), BREAKTHRU, MR-FUSE, CMRO2 (2019-2025); **EUROPE**: PROMETEUS (2023-2027 EIC-PATHFINDER), MECACCM (2023-2027; ERA-NET NEURON), BRAINI2 (2022-2024, EIT-HEALTH)

### Awards & Distinctions

More than 20 communication/poster and journal awards

2000: Individual National Research Service Award, National Institutes of Neuronal Disorders and Stroke, NIH

1996: Innovalyon Award

### 10 representative publications

- F. Boux, F. Forbes, J. Arbel, B. Lemasson, **E. L. Barbier**. Bayesian inverse regression for vascular magnetic resonance fingerprinting. *IEEE Trans Med Imaging*, 40(7):1827-1837, 2021, doi: [10.1109/TMI.2021.3066781](https://doi.org/10.1109/TMI.2021.3066781)
- F. Boux, F. Forbes, N. Collomb, E. Zub, L. Maziere, F. de Bock, M. Blaquiere, V. Stupar, A. Depaulis, N. Marchi, **E. L. Barbier**. Neurovascular multiparametric MRI defines epileptogenic and seizure propagation regions in experimental mesiotemporal lobe epilepsy. *Epilepsia*, 62(5):1244-1255, 2021 doi: [10.1111/epi.16886](https://doi.org/10.1111/epi.16886).
- G. J.-P. C. Becq, T. Habet, N. Collomb, M. Faucher, C. Delon-Martin, V. Coizet, S. Achard, **E. L. Barbier**. Functional connectivity is preserved but reorganized across several anesthetic regimes. *Neuroimage*, 219:116945, 2020, doi: [10.1016/j.neuroimage.2020.116945](https://doi.org/10.1016/j.neuroimage.2020.116945).
- F. Natali, C. Dolce, J. Peters, C. Stelletta, B. Demé, J. Ollivier, M. Boehm, G. Leduc, I. Piazza, A. Cupane, **E. L. Barbier**. Anomalous water dynamics in brain: a combined diffusion Magnetic Resonance Imaging and Neutron Scattering investigation. *Journal of the Royal Society Interface* 16(157):20190186, 2019. doi: [10.1098/rsif.2019.0186](https://doi.org/10.1098/rsif.2019.0186)
- Arnaud, F. Forbes, N. Coquery, N. Collomb, B. Lemasson, **E. L. Barbier**. Fully Automatic Lesion Localization and Characterization: Application to Brain Tumors using Multiparametric MRI Data. *IEEE Trans Med Imaging*, 37(7):1678-1689, 2018. doi: [10.1109/TMI.2018.2794918](https://doi.org/10.1109/TMI.2018.2794918).
- L. Hirschler, C. S. Debacker, J. Voiron, S. Köhler, J. M. Warnking, **E. L. Barbier**. Inter-Pulse Phase Corrections for Unbalanced Pseudo-Continuous Arterial Spin Labeling at High Magnetic Field. *Magnetic Resonance in Medicine*. 79(3):1314-1324, 2018. doi : [10.1002/mrm.26767](https://doi.org/10.1002/mrm.26767).
- K. Pernet Gallay, P. H. Jouneau, J. Delaroche, R. Farion, C. Rémy, **E. L. Barbier**. Vascular permeability in the RG2 glioma model can be mediated by macropinocytosis and be independent of the opening of the tight junction. *Journal of Cerebral Blood Flow and Metabolism*, 37(4):1264-1275, 2017. doi:[10.1177/0271678X16654157](https://doi.org/10.1177/0271678X16654157)
- S. Valable, A. Corroyer-Dumont, A. Chakhoyan, L. Durand, J. Toutain, D. Divoux, L. Barré, E. T. MacKenzie, M. Bernaudin, O. Touzani, **E. L. Barbier**. Imaging of brain oxygenation with MRI: a validation with PET in the healthy and tumoral brain. *JCBFM*, 37(7): 2584–2597, 2017 doi: [10.1177/0271678X16671965](https://doi.org/10.1177/0271678X16671965).
- T. Christen, P. Bouzat, N. Pannetier, N. Coquery, A. Moisan, B. Lemasson, S. Thomas, E. Grillon, O. Detante, C. Rémy, J.-F. Payen, **E.L. Barbier**. Tissue oxygen saturation mapping with magnetic resonance imaging. *JCBFM*. 34(9):1550-1557, 2014. doi: [10.1038/jcbfm.2014.116](https://doi.org/10.1038/jcbfm.2014.116)
- N. Coquery, O. Francois, B. Lemasson, C. Debacker, R. Farion, C. Rémy, **E. L. Barbier**. Microvascular MRI and unsupervised clustering yields histology-like maps in two rat models of glioma. *JCBFM*, 34(8):1354-62, 2014. doi: [10.1038/jcbfm.2014.90](https://doi.org/10.1038/jcbfm.2014.90)