

# Fosco Bernasconi, PhD

- **Personal Information**

Nationality Swiss  
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- **Present position**

**Senior Scientist**, École Polytechnique Fédérale de Lausanne, Geneva, Switzerland

- **Past work experience**

2014 – 2020 **Postdoctoral Research Fellow**, École Polytechnique Fédérale de Lausanne, Geneva, Switzerland  
2012 – 2014 **Postdoctoral Research Fellow**, Charité University Berlin, Germany  
2012 – 2012 **Postdoctoral Research Fellow**, University Psychiatric Hospital of Zürich, Switzerland  
2008 – 2012 **PhD in neuroscience**, Centre Hospitalier Universitaire Vaudois (CHUV), Switzerland

- **Education**

2007 – 2008 **Master's degree, Medical Biology**, Faculty of Biology and Medicine, University of Lausanne, Switzerland  
2004 – 2007 **Bachelor's degree in Biology**, Faculty of Biology and Medicine, University of Lausanne, Switzerland  
1996 – 2001 **Diploma electronic technician**, SAMT - Scuola Arti e Mestieri Trevano, Lugano, Switzerland

- **Scientific Expertise**

Neuroscience Hallucinations, Parkinson's disease, interoception, perceptual consciousness, neuropsychopharmacology, neurotechnology  
DBS Local Field Potentials (LFP)  
Neuroimaging EEG, ECoG/iEEG, LFP, single neuron, non-invasive brain stimulation  
Technical Data analysis, machine learning, signal processing. Programming in MATLAB and Rstudio

- **Grants & Awards**

- 2022 Awarded of the *distinguished nominees* at Franco-Regli Prize
- 2017 Best Poster Award, NCCR-Synapsy “The synaptic bases of mental diseases” meeting
- 2016 Travel Fellowship, Swiss Society for Neuroscience
- 2012 Post-doctoral Mobility Fellowship, Swiss National Scientific Funding (SNSF)
- 2009 Travel Fellowship, Fondation 450<sup>ème</sup> de l’Université de Lausanne
- 2009 Best Poster Award, Dday at the University of Lausanne

- **Organization of international meetings**

- 2014 Cutting EEG 2014: Cutting-edge methods for EEG research on cognition

- **Invited lectures (selected)**

- 2022 Hallucinations engineering in Parkinson’s disease (*Bar Ilan University, Israel*)  
Robot-induced hallucinations in Parkinson's disease (*Colloques académiques du Centre Leenaards de la mémoire, Switzerland*)  
Minor hallucinations and cognitive decline in Parkinson’s disease (*Association for the Scientific Study of Consciousness, Amsterdam, Netherlands*)
- 2020 Robot-induced hallucinations in Parkinson’s disease depend on altered sensorimotor processing in fronto-temporal network (*Center for Neuroprosthetics Annual Meeting*)
- 2019 Robot-induced hallucinations in Parkinson’s disease depend on altered sensorimotor processing in fronto-temporal network (*Association for the Scientific Study of Consciousness, London, Canada*)
- 2018 Robot-induced altered states of (bodily) self-consciousness in healthy subjects and patients with early psychosis (*Association for the Scientific Study of Consciousness, Krakow, Poland*)  
Neurotechnology to investigate altered states of (bodily) self-consciousness in healthy subjects and patients with psychosis (*NCCR-synapse Meeting, Villars, Switzerland*)
- 2016 Neurotechnology to study self-consciousness (*Vytautas Magnus University, Kaunas, Lithuania*)  
Cortical sensorimotor processing in own body perception, hallucinations and psychosis (EPFL, Brain & Mind Meeting, Gstaad, Switzerland).

- **Selected scientific publications**

**F Bernasconi\***, E Blondiaux\*, G Rognini, H Dhanis, L Jenni, J Potheegadoo, M Hara, O Blanke. *Neuroscience robotics for real-time assessment of hallucinations. Nature Protocols. Sep 12.*

**F Bernasconi\***, E Blondiaux\*, J Potheegadoo, G Stripeikyte, J Pagonabarraga, H Bejr-Kasem, M Bassolino, M Akselrod, S Martinez-Horta, F Sampedro, M Hara, J Horvath, M Franza, S Konik, M Bereau, J-A Ghika, P.R Burkhard, D Van De Ville, N Favre, G Rognini, P Krack, J Kulisevsky, O Blanke. Robot-induced hallucinations in

Parkinson's disease depend on altered sensorimotor processing in fronto-temporal network. *Science Translational Medicine* 28;13(591):eabc8362.

**F Bernasconi**, JP Noel, HD Park, N Faivre, M Seeck, L Spinelli, K Schaller, O Blanke\*, A Serino\*. Audio-tactile and peripersonal space processing around the trunk in human parietal and temporal cortex: an intracranial EEG study. *Cerebral Cortex* 1;28(9):3385-3397.

**F Bernasconi**, A Schmidt, T Pokorny, M Kometer, E Seifritz, FX Vollenweider. Spatiotemporal brain dynamics of emotional face processing modulations induced by the serotonin 1A/2A receptor agonist psilocybin. *Cerebral Cortex* 24(12):3221-31.

- **List of scientific publications**

2022 **F Bernasconi\***, E Blondiaux\*, G Rognini, H Dhanis, L Jenni, J Potheegadoo, M Hara, O Blanke. *Neuroscience robotics for real-time assessment of hallucinations. Nature Protocols. Sep 12.*

2021 M Pereira, P Megevand, M.X Tan, W Chang, S Wang, A Rezai, M Seeck, M Corniola, S Momjian, **F Bernasconi**, O Blanke\*, N Faivre\* (\* equal contribution). Evidence accumulation determines conscious access. *Nature Communications* 31;12(1):3261

**F Bernasconi\***, E Blondiaux\*, J Potheegadoo, G Stripeikyte, J Pagonabarraga, H Bejr-Kasem, M Bassolino, M Akselrod, S Martinez-Horta, F Sampedro, M Hara, J Horvath, M Franza, S Konik, M Bereau, J-A Ghika, P.R Burkhard, D Van De Ville, N Faivre, G Rognini, P Krack, J Kulisevsky, O Blanke. Robot-induced hallucinations in Parkinson's disease depend on altered sensorimotor processing in fronto-temporal network. *Science Translational Medicine* 28;13(591):eabc8362.

Jennifer Abbasi, Robots Induce Parkinson Disease Hallucinations. *JAMA* 325(22):2243. Editorial on my STM 2021 paper

2020 A Serino\*, P Pozeg\*, **F Bernasconi**, M Solcà, M Hara, P Progin, G Stripeikyte, H Dhanis, R Salomon, H Bleuler, G Rognini\*\*, O Blanke\*\*. Thought consciousness and source monitoring depend on robotically-controlled sensorimotor conflicts and illusory states. (\* and \*\* equal contribution). *iScience* 16;24(1):101955.

M Solcà, H-D Park, **F Bernasconi**, O Blanke. Behavioral and neurophysiological evidence for altered interoceptive bodily processing in chronic pain. *Neuroimage* 5;217:116902.

M Pereira, P Megevand, M.X Tan, W Chang, S Wang, A Rezai, M Seeck, M Corniola, S Momjian, **F Bernasconi**, O Blanke\*, N Faivre\*. Evidence accumulation determines conscious access. *BioRxiv*. (\* equal contribution)

**F Bernasconi\***, E Blondiaux\*, J Potheegadoo, G Stripeikyte, J Pagonabarraga, H Bejr-Kasem, M Bassolino, M Akselrod, S Martinez-Horta, F Sampedro, M Hara, J Horvath, M Franza, S Konik, M Bereau, J-A Ghika, P.R Burkhard, D Van De Ville, N Faivre, G Rognini, P Krack, J Kulisevsky, O Blanke. Sensorimotor hallucinations in Parkinson's disease. *BioRxiv*. (\* equal contribution).

2018 N Faivre, L Vuillaume, **F Bernasconi**, R Salomon, O Blanke, A Cleeremans. Sensorimotor conflicts alter perceptual and action monitoring. *BioRxiv*.

**F Bernasconi**, JP Noel, HD Park, N Faivre, M Seeck, L Spinelli, K Schaller, O Blanke\*, A Serino\*. Audio-tactile and peripersonal space processing around the

trunk in human parietal and temporal cortex: an intracranial EEG study. *Cerebral Cortex* 1;28(9):3385-3397.

**F Bernasconi**, JP Noel, HD Park, N Faivre, M Seeck, L Spinelli, K Schaller, O Blanke\*, A Serino\*. Audio-tactile and peripersonal space processing around the trunk in human parietal and temporal cortex: an intracranial EEG study. *bioRxiv*. (\* equal contribution)

HD Park, **F Bernasconi**, R Salomon, C Tallon-Baudry, L Spinelli, M Seeck, K Schaller, O Blanke. Neural Sources and Underlying Mechanisms of Neural Responses to Heartbeats, and their Role in Bodily Self-consciousness: An Intracranial EEG Study. *Cerebral Cortex* 28(7):2351-2364.

2017 R Ronchi\*, **F Bernasconi**\*, C Pfeiffer, J Bello-Ruiz, M Kaliuzhna, O Blanke. Interoceptive signals impact visual processing: Cardiac modulation of visual body perception. *NeuroImage* 158, 176-185. (\*equal contribution).

N Faivre, J Doenz, M Scandola, H Dhanis, J Bello Ruiz, **F Bernasconi**, R Salomon, O Blanke. Self-Grounded Vision: Hand Ownership Modulates Visual Location through Cortical  $\beta$  and  $\gamma$  Oscillations. *Journal of Neuroscience* 37 (1), 11-22.

2016 HD Park, **F Bernasconi**, J Bello-Ruiz, C Pfeiffer, R Salomon, O Blanke. Transient modulations of neural responses to heartbeats covary with bodily self-consciousness. *Journal of Neuroscience* 36 (32), 8453-8460.

C Pfeiffer, M Van Elk, **F Bernasconi**, O Blanke. Distinct vestibular effects on early and late somatosensory cortical processing in humans. *NeuroImage* 125, 208-219.

2015 F Ball, **F Bernasconi**, NA Busch. Semantic relations between visual objects can be unconsciously processed but not reported under change blindness. *Journal of cognitive neuroscience* 27(11), 2253-68.

**F Bernasconi**, M Kometer, T Pokorny, E Seifritz, FX Vollenweider. The electrophysiological effects of the serotonin 1A receptor agonist buspirone in emotional face processing. *European Neuropsychopharmacology* 25 (4), 474-482.

2014 I Bareither, M Chaumon, **F Bernasconi**, A Villringer, NA Busch. Invisible visual stimuli elicit increases in alpha-band power. *Journal of neurophysiology* 112 (5), 1082-1090.

**F Bernasconi**, A Schmidt, T Pokorny, M Kometer, E Seifritz, FX Vollenweider. Spatiotemporal brain dynamics of emotional face processing modulations induced by the serotonin 1A/2A receptor agonist psilocybin. *Cerebral Cortex* 24(12):3221-31.

2013 Manuel AL, **Bernasconi F**, Spierer L. Plastic modifications within inhibitory control networks induced by practicing a stop-signal task: an electrical neuroimaging study. *Cortex* 49(4):1141-7.

2012 M De Lucia, A Tzovara, **F Bernasconi**, L Spierer, MM Murray. Auditory perceptual decision-making based on semantic categorization of environmental sounds. *Neuroimage* 60 (3), 1704-1715.

AL Manuel, **F Bernasconi**, L Spierer. Spatio-temporal brain dynamics mediating post-error behavioral adjustments. *Journal of cognitive neuroscience* 24 (6), 1331-1343.

- 2011 **F Bernasconi\***, M De Lucia\*, A Tzovara\*, AL Manuel, MM Murray, L Spierer. Noise in brain activity engenders perception and influences discrimination sensitivity. *Journal of Neuroscience* 31 (49), 17971-17981. (\*equal contribution).
- J Grivel\*, **F Bernasconi\***, AL Manuel, MM Murray, L Spierer. Dynamic calibration of our sense of time. *Neuropsychologia*. 2011 Jan;49(1):147-50. (\*equal contribution).
- F Bernasconi**, AL Manuel, MM Murray, L Spierer. Pre-stimulus beta oscillations within left posterior sylvian regions impact auditory temporal order judgment accuracy. *International Journal of Psychophysiology* 79(2):244-8.
- L Spierer, M De Lucia, **F Bernasconi**, J Grivel, NM Bourquin, S Clarke, MM Murray. Learning-induced plasticity in human audition: objects, time, and space. *Hearing Research* 271(1-2):88-102.
- 2010 **F Bernasconi\***, J Grivel\*, MM Murray, L Spierer. Plastic brain mechanisms for attaining auditory temporal order judgment proficiency. *Neuroimage* 15;50(3):1271-9. (\*equal contribution).
- Bernasconi F**, Grivel J, Murray MM, Spierer L. Interhemispheric coupling between the posterior sylvian regions impacts successful auditory temporal order judgment. *Neuropsychologia* 48(9):2579-85.
- AL Manuel, J Grivel, **F Bernasconi**, MM Murray, L Spierer. Brain dynamics underlying training-induced improvement in suppressing inappropriate action. *Journal of Neuroscience* 13;30(41):13670-8.
- 2010 L Spierer, **F Bernasconi**, J Grivel. The temporoparietal junction as a part of the "when" pathway. *Journal of Neuroscience* 8;29(27):8630-2