

06.04 | Wednesday

- 20:00-21:15 Registration
- 21:15-22:00 Opening Session and Tribute to Fernando Lopes da Silva (in Portuguese)
- 22:00-22:45 Opening Conference
Chairman | **Axel Cleeremans**
- The perception of time in humans, brains and machines
Anil Seth

07.04 | Thursday

1st session - The arrow of time

- Moderator - **Etzel Cardeña**
- 09:00-09:15 Opening remarks
- 09:15-09:45 Time, the hidden dimension
Orfeu Bertolami
- 09:50-10:20 The trouble with Einstein's time
Jimena Canales
- 10:25-10:55 Retrocausation and precognition: Taking time seriously
Daniel Sheehan & Patricia Cyrus
- 11:00-11:30 Coffee, posters session and contacts with faculty
- 11:30-12:15 Keynote lecture
The many-faceted enigma of time: A physicist's perspective
Bernard Carr
- 12:30-13:00 Morning Discussion
- 13:00-14:30 Lunch
- 14:30-15:30 Oral poster presentations - Grant holders
Moderator | **Mário Simões**
- 15:30-16:00 Coffee, posters session and contacts with faculty
- 16:00-17:00 Cont.
Oral poster presentations - Grant holders

06.04

07.04

08.04 | Friday

2nd session - The biology of time

- Moderator - **Miguel Castelo-Branco**
- 09:00-09:15 Opening remarks
- 09:15-09:45 Predictive anticipatory activity: How do biological systems pre-respond to future events?
Julia Mossbridge
- 09:50-10:20 Kinship: Life time memories
Michael Brecht
- 10:25-10:55 Circadian clocks and their Impact on metabolism, aging and longevity
Joseph S. Takahashi
- 11:00-11:30 Coffee, posters session and contacts with faculty
- 11:30-12:15 Keynote lecture
Time as construct and implicit coding space. A neurobiological perspective
Wolf Singer
- 12:30-13:00 Morning Discussion
- 13:00-14:30 Lunch
- 14:30-16:30 Parallel Workshops (W)
- W 1** – Room Auditorium; there will be simultaneous translation The physics and metaphysics of time
Moderator | **Axel Cleeremans**
Invited presenters: **Orfeu Bertolami, Bernard Carr, Daniel Sheehan & Patricia Cyrus**
- W 2** – Room Conferências
Precognition and anomalous experiences
Moderator | **Miguel Castelo-Branco**
Invited presenter: **Julia Mossbridge**
- W 3** – Room Medioteca
The experience of time in altered states of consciousness
Moderator | **Etzel Cardeña, Marc Wittmann**
Invited presenters: **Etzel Cardeña, Damisela Linares Gutiérrez, Marc Wittmann**
- W 4** – Room Braga
Perception and memory of time
Moderators | **Rui Costa, Rainer Goebel**
Invited presenter: **Dean Buonomano**
- 17:00-18:00 Get-together Cheese & Wine

08.04

09.04 | Saturday

3rd session - The experience of time

- Moderator - **Rainer Goebel**
- 09:00-09:15 Opening remarks
- 09:15-09:45 The brain is a time machine: The neuroscience of time
Dean Buonomano
- 09:50-10:20 Remembering the future: Facilitating the recall of future events
Chris Roe
- 10:25-10:55 Visualising time in the brain: Perceiving the present and predicting the future
Jennifer Coull
- 11:00-11:30 Coffee, posters session and contacts with faculty
- 11:30-12:15 Keynote lecture
How we experience the passage of time: The body, feelings, and the self
Marc Wittmann
- 12:30-13:00 Morning Discussion
- 13:00-14:30 Lunch
- 14:30-16:30 A conversation about time
Moderator | **Teresa Firmino**
Participants: **Jimena Canales, Dean Buonomano, Wolf Singer, Joseph S. Takahashi**

Registration Fee

The 13th Symposium will be a hybrid event, organized for in-person and virtual audience.

In-person

€200

€80 - for university students under the age of 25 and PhD students (please enclose copy of your student card and/or university/supervisor declaration).

These amounts include access to all Symposium sessions, coffee breaks and certificate of attendance. It does not include meals. There will be simultaneous translation from English to Portuguese and vice-versa, excluding workshops. Limited number of registrations.

Virtual

€100

€50 - for university students under the age of 25 and PhD students (please enclose copy of your student card and/or university/supervisor declaration).

Certificate of attendance is included by request. Access to posters session during coffee breaks and to parallel workshops is not included. There will be simultaneous translation from English to Portuguese and vice-versa.

Online registration - www.fundacaobial.com

09.04

13th SYMPOSIUM OF
BIAL FOUNDATION

BEHIND AND BEYOND THE BRAIN

Aquém e Além do Cérebro

The mystery of time



Casa do Médico - Porto
April 6 to 9, 2022

Organizing Committee:

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STEFAN SCHMIDT (Freiburg)
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Symposium's Venue

Casa do Médico • Rua Delfim Maia, 405 • 4200-256 Porto
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Secretariat

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 **Orpheu Bertolami** | Professor of Physics, Faculty of Sciences, University of Porto, Portugal. Scientific interests: astroparticle physics, cosmology, classical and quantum gravity, applied and fundamental physics in space, earth system physics.

 **Michael Brecht** | Professor of Systems Neuroscience, Humboldt University Berlin. Coordinator of the Bernstein Center for Computational Neuroscience Berlin, Germany. Scientific interests: memory formation, social touch, social neuroscience and biological approaches to brain function.

 **Dean Buonomano** | Professor of Neurobiology and Psychology, University of California, Los Angeles, USA. Author of "Your Brain is a Time Machine". Scientific interests: neural basis of timing, neurocomputation, neural dynamics, learning and memory.

 **Jimena Canales** | Writer and Professor at the Graduate College, University of Illinois, Urbana-Champaign, USA. Author of "A Tenth of a Second" and "The Physicist and the Philosopher: Einstein, Bergson, and the Debate That Changed Our Understanding of Time". Scientific interests: history of science.

 **Etzel Cardeña** | Thorsen Professor of Psychology and Director of the Center for Research on Consciousness and Anomalous Psychology (CERCAP), Department of Psychology, Lund University, Sweden. Scientific interests: the psychology of anomalous experiences/non-ordinary mental expressions, including parapsychological phenomena; neurophenomenology of hypnosis, meditation and dissociation; stream of consciousness.

 **Bernard Carr** | Professor of Mathematics and Astronomy, Queen Mary, University of London, UK. For his PhD he studied the first second of the Universe, working under Stephen Hawking. Former President of the Society for Psychical Research and current President of the Scientific and Medical Network. Scientific interests: cosmology and astrophysics - early universe, dark matter, black holes and the anthropic principle; the role of consciousness in physics - he is developing a new psycho-physical paradigm, linking matter and mind, which accommodates both normal and anomalous mental experiences.

 **Miguel Castelo-Branco** | Professor of Biostatistics and Visual Sciences and Director of CIBIT at ICNAS, University of Coimbra, Portugal. Scientific interests: sensory and perceptual neuroscience, and neurobiology of decision-making, social cognition and reward in health and disease.

 **Axel Cleeremans** | Research Director, Consciousness, Cognition & Computation Group, Université Libre de Bruxelles, Belgium. Scientific interests: consciousness and implicit learning, models of conscious and unconscious cognition, neural network of cognitive processes.

 **Rui Costa** | Professor of Neuroscience and Neurology, Columbia University, and Director and CEO of Columbia's Zuckerman Institute, New York, USA. Investigator at the Champalimaud Centre for the Unknown, Neuroscience Programme, Lisbon, Portugal. Scientific interests: molecular, cellular and systems mechanisms of action generation, sequence and skill learning, goal-directed actions versus habits, across-level approach to study cognitive and sensorimotor disorders (PD, OCD, and autism).

 **Jennifer Coull** | Senior CNRS Research Scientist, Laboratory of Cognitive Neurosciences, CNRS & Aix-Marseille University, France. Scientific interests: functional neuroimaging & psychopharmacology of timing (temporal expectations and duration judgements), development of the "sense" of time in childhood, timing in schizophrenia, functional neuroimaging & psychopharmacology of attention and arousal.

 **Patricia Cyrus** | Siemens Energy, Orlando, USA. Has participated in multiple experimental studies over the last 20 years in the field of remote viewing (RV), often collaborating with Dale Graff, most recently in demonstrations of precognitive RV.

 **Teresa Firmino** | Graduated in Social Communication, NOVA University of Lisbon, Portugal. Science journalist at the Portuguese newspaper "Público", since 1992. In 2008/2009, she has studied science journalism with a Knight Science Journalism Fellowship at Massachusetts Institute of Technology (MIT), USA. Since 2012, she has been the science editor of "Público". She published three books of scientific dissemination. In 2008, she was awarded an honorary mention for "Scientific Journalism" by the Ilídio Pinho Foundation. In 2012, she received the "Journalism Award" of the Portuguese League Against Cancer and in 2017 the "Ciência Viva Montepio Media Award".

 **Rainer Goebel** | Professor of Cognitive Neuroscience, Faculty of Psychology and Neuroscience, Maastricht University, The Netherlands. Founding director of the Maastricht Brain Imaging Centre (M-BIC). Scientific interests: neuronal representations in the brain and how they are processed to enable specific perceptual and cognitive functions, neural correlates of visual awareness, clinical applications in brain computer interfaces (BCIs) and neurofeedback studies.

 **Julia Mossbridge** | Affiliate Professor, Department of Physics and Biophysics, University of San Diego, CA, and Fellow, Institute of Noetic Sciences, Petaluma, USA. 2014 recipient of the Charles Honorton Integrative Contributions Award from the Parapsychology Association. Scientific interests: the relationship between psychological and physical time, unconscious access to future events, training people to improve their future orientation.

 **Chris Roe** | Professor of Psychology, and Director of the Centre for Psychology & Sociology, University of Northampton, UK. Past-President of the Society for Psychical Research and Parapsychological Association, and past chair of the British Psychological Society Transpersonal Psychology Section. Scientific interests: understanding the nature of anomalous experiences, including experimental approaches to test claims for extrasensory perception and psychokinesis, particularly where they involve psychological factors.

 **Stefan Schmidt** | Professor of Systemic Family Therapy and Head of the Academic Section of Systemic Health Research, Department of Psychosomatic Medicine and Psychotherapy, University Medical Centre, Freiburg, Germany. Director of the Institute for Frontier Areas in Psychology and Mental Health (IGPP), Freiburg, Germany. Scientific interests: systems approaches in health research, psychophysiology, consciousness research, mindfulness meditation, experimental parapsychology, exceptional experiences, placebo research and brain-computer interface.

 **Anil Seth** | Professor of Cognitive and Computational Neuroscience, University of Sussex, and Founding Co-Director of the Sackler Centre for Consciousness Science, UK. Co-Director of the Canadian Institute for Advanced Research Azrieli Program in Brain, Mind, and Consciousness. Editor-in-Chief of the Neuroscience of Consciousness (Oxford University Press) and Wellcome Trust Engagement Fellow. Scientific interests: the understanding of the biological basis of consciousness by bringing together research across neuroscience, mathematics, artificial intelligence, computer science, psychology, philosophy and psychiatry.

 **Daniel Sheehan** | Professor of Physics, University of San Diego, USA. Scientific interests: plasma physics, the foundations of thermodynamics, energy technology, nanotechnology, consciousness, and the physics of time and retrocausation.

 **Mário Simões** | Retired Professor of Psychiatry and Consciousness Sciences and Director of LIMMIT - Laboratory of Interaction Mind-Matter with Therapeutic Intention, Faculty of Medicine of Lisbon, Portugal. Scientific interests: psychology and psychophysiology of altered states of consciousness, ethnomedicine, human exceptional experiences and psychology and spirituality.

 **Wolf Singer** | Professor, studied Medicine in Munich and Paris, obtained his MD and PhD in Munich. Director emeritus at the Max Planck Institute for Brain Research, Frankfurt, Germany. Founding Director both of the Frankfurt Institute for Advanced Studies (FIAS) and of the Ernst Strüngmann Institute for Neuroscience (ESI) and Director of the Ernst Strüngmann Forum. Scientific interests: the neuronal substrate of higher cognitive functions.

 **Joseph S. Takahashi** | Professor and Chair, Department of Neuroscience, Howard Hughes Medical Institute, University of Texas Southwestern Medical Center, Dallas, USA. Scientific interests: genetics and molecular neuroscience of circadian clocks in mammals, genetic basis of behaviour, healthy aging and longevity.

 **Caroline Watt** | Holder of the Koestler Chair of Parapsychology, and founder member of the Koestler Parapsychology Unit, Psychology Department, University of Edinburgh, Scotland. Scientific interests: replication and methodological issues in parapsychology.

 **Marc Wittmann** | Research Fellow, Institute for Frontier Areas of Psychology and Mental Health, Freiburg, Germany. Scientific interests: the perception of time in everyday fluctuations of consciousness as well as during altered states of consciousness such as induced through meditation, ganzfeld, floating tank and hallucinogens; neurophysiological and psychological explorations of how subjective time is related to cognition, emotion and body states.

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