

Human Brain Project Summit 2023 Programme

Palais du Pharo, Marseille
28-31 March 2023
With satellite events on 27 March

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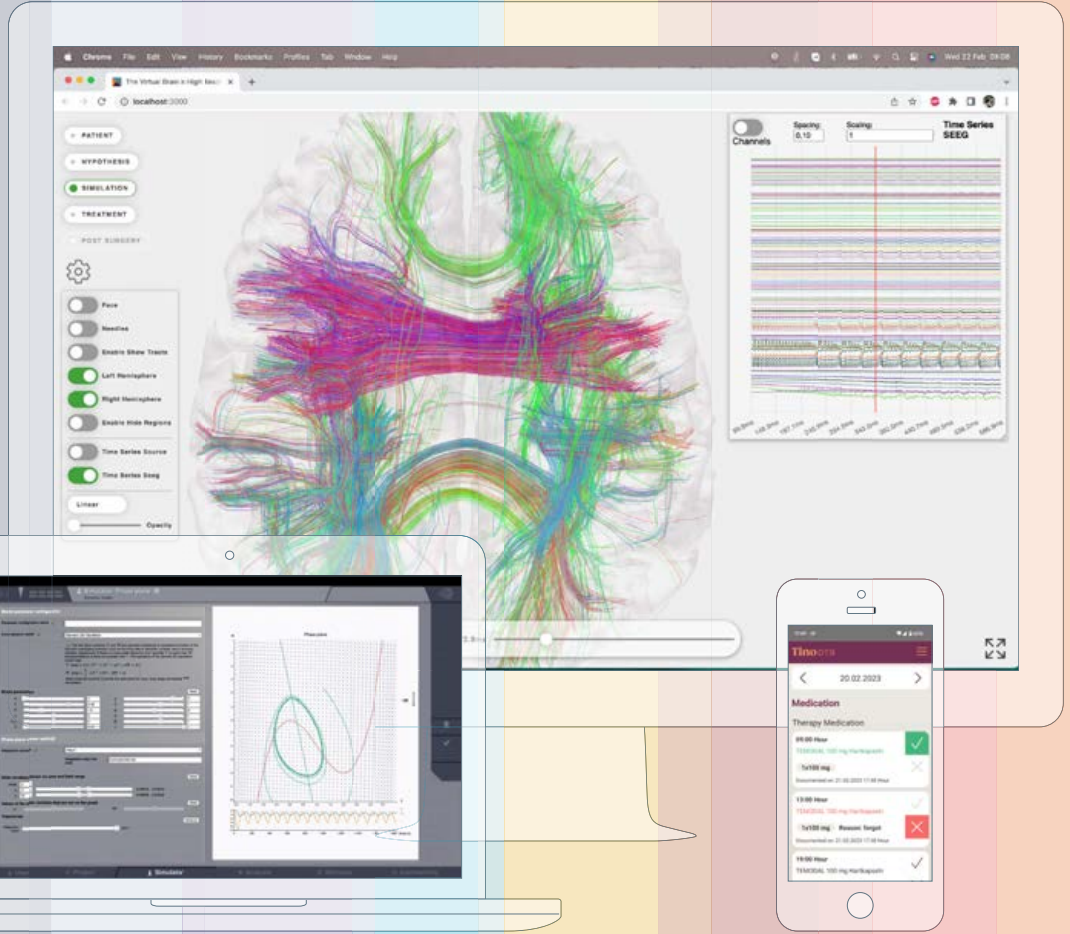
INS
at Aix-Marseille Université



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Codemart specialists
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seminal neuroscience
papers:

The Virtual Brain:
a simulator of primate
brain network dynamics
(Frontiers in Neuroinformatics)

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as a cloud service:**
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Satellite Events

27 March 2023



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Monday 27 March						
09:00h – 11:00h	License to Spike – A NEST Desktop and NESTML Workshop	Simulating complex neurobiological phenomena of human brain function and dysfunction in a data protection compliant environment: EBRAINS Service for Sensitive Data.	Infrastructure Training session: NMC hands on BrainScaleS	Vast parameter space exploration using L2L on EBRAINS	The process of integrating your science in an integrated EBRAINS workflow – Presented by the Scientific Liaison Unit of EBRAINS.	Software delivery for the Lab and integration into the EBRAINS software release
11:00h – 11:15h Break						
11:15h – 13:15h	License to Spike – A NEST Desktop and NESTML Workshop	Simulating complex neurobiological phenomena of human brain function and dysfunction in a data protection compliant environment: EBRAINS Service for Sensitive Data.	Publishing your research data through the EBRAINS portal	Vast parameter space exploration using L2L on EBRAINS	The process of integrating your science in an integrated EBRAINS workflow – Presented by the Scientific Liaison Unit of EBRAINS.	EBRAINS Medical Data Analytics
13:15 – 14:15h Break						
14:15h – 16:15h	Fenix User Forum meeting – How to make use of the Fenix Infrastructure	Rodent atlasing tools and QUINT workflow	EBRAINS Documentation and Tutorial Hands-On Workshop	EBRAINS Academy Workshop Series Session 1 – intracranial EEG	WE ARE SCIENCE. Towards a realistic future to enhance inclusion, gender, equality and diversity in science.	
16:15h – 16:30h Break						
16:30h – 18:30h	Fenix User Forum meeting – How to make use of the Fenix Infrastructure	The Arbor Simulator	Standardised Workflows in EBRAINS	EBRAINS Academy Workshop Series Session 2 – fMRI	WE ARE SCIENCE. Towards a realistic future to enhance inclusion, gender, equality and diversity in science.	Reconstructing and simulating multiscale brain circuits: workflows and applications to function and dysfunction

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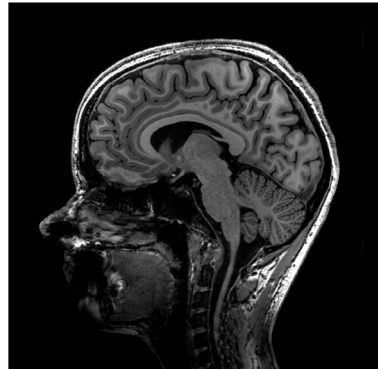
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StudyID: 4aaaa0264 / 8Tx32Rx head coil

** MAGNETOM Terra.X is still under development and not commercially available yet. Its future availability cannot be ensured.*

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Summit Programme

28-31 March 2023



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"Tuesday 28 March"

08:30

REGISTRATION

09:30

WELCOME ADDRESSES

09:30 - 09:45 ■ *. **Eric BERTON** (*President of Aix-Marseille University*)

09:45 - 09:50 ■ *. **Katrin AMUNTS** (*Forschungszentrum Jülich, HBP Scientific Research Director*)

09:50 - 10:05 ■ **Video Address. Mariya GABRIEL** (*European Commissioner for Innovation, Research, Culture, Education and Youth*)

10:05 - 10:10 ■ *. **Pawel SWIEBODA** (*HBP Director General, CEO of EBRAINS AISBL*)

10:10 - 10:20 ■ *. **Viktor JIRSA** (*Aix-Marseille University, Local Host, EBRAINS AISBL*)

10:20 - 10:25 ■ *. **André SYROTA** (*Chair of the HBP Stakeholder Board and of the EBRAINS AISBL Board of Directors, INSERM*)

10:25 - 10:40 ■ **Video Address. Sylvie RETAILLEAU** (*Minister of Research, Higher Education and Innovation of France*)

10:40

COFFEE BREAK

11:30

INTRODUCTION TO THE SUMMIT

Achievements and Future of Digital Brain Research

11:30 - 12:00 ■ **Research Achievements and Future of Digital Brain Research. Katrin AMUNTS** (*Forschungszentrum Jülich, HBP Scientific Research Director*)

12:00 - 12:15 ■ **The EBRAINS Research Infrastructure: past, present, future. Jan BJAALIE** (*University of Oslo, EBRAINS AISBL*)

■ **Digital for Brain Research and Health. Thomas SKORDAS** (*Deputy-Director General, European Commission*)

12:35

KEYNOTE

The Future of Digital Neuroscience

Speaker: Michael BREAKSPEAR (*University of Newcastle / Australia*)

Moderator: Viktor JIRSA (*Aix-Marseille University, Local Host, EBRAINS AISBL*)

13:30

BREAK

14:30

BRAIN HEALTH: AN EMERGING EUROPEAN POLICY PRIORITY

Moderator: Pawel SWIEBODA (*HBP Director General, CEO of EBRAINS AISBL*)

14:30 - 15:00 ■ **Keynote address. Paul BOON** (*President, European Academy of Neurology*), **Nicolas GAZERES** (*Dassault Systeme*)

15:00 - 16:00 ■ **Brain Health: an emerging European policy priority. Philippe AMOUYEL** (*JPNP / Fondation Alzheimer*), **Frédéric DESTREBECQ** (*European Brain Council*), **Marlies DORLÖCHTER** (*ERA-NET NEURON*), **Gitte MOOS KNUDSEN** (*University of Copenhagen, Chair of the HBP Science and Infrastructure Advisory Board*), **Stefan SCHRECK** (*European Commission DG SANTE*), **Nicolas GAZERES** (*Dassault Systeme*), **Paul BOON** (*President, European Academy of Neurology*), **Petra RITTER** (*Charité University Hospital Berlin*)

16:00

BEST ABSTRACT AWARDS

2 Best abstract awards and winners speeches

Moderators: Egidio D'ANGELO (*University of Pavia*), **Marja-Leena LINNE** (*Tampere University*)

16:00 - 16:06 ■ **Winners' announcement. Egidio D'ANGELO** (*University of Pavia*), **Marja-Leena LINNE** (*Tampere University*)

"Tuesday 28 March"

16:06 - 16:14 ■ **Best Abstract Award on Neuroscientific and Medical Research: Simulating the emergence of conscious and unconscious states at the whole-brain level.** Maria SACHA (*CNRS - Université Paris-Saclay*)

16:14 - 16:22 ■ **Best Abstract Award on Methodological developments and technology: VoluBA: Interactive registration of high-resolution volumes to 3D reference atlases.** Julia THOENNISEN (*Forschungszentrum Jülich GmbH*)

16:22 - 16:30 ■ **Best Abstract Award on Methodological developments and technology: Pioneering open neuroscience - the role of the curation services.** Sophia PIESCHNIK (*University of Oslo*)

16:30

COFFEE BREAK

17:00

FEDERATED COMPUTING INFRASTRUCTURE

Coordinator: **Thomas LIPPERT** (*JSC / Forschungszentrum Jülich*)

17:00 - 17:10 ■ **Back to future: An introductory journey on a federated computing infrastructure for the HBP.** Anna LÜHRS (*Forschungszentrum Jülich*), Anne NAHM (*Forschungszentrum Jülich*), Maren FRINGS (*Forschungszentrum Jülich*)

17:10 - 18:15 ■ **Panel discussion.** **Thomas LIPPERT** (*JSC / Forschungszentrum Jülich*), **Stefano GORINI** (*CSCS - Swiss National Supercomputing Centre*), **Yannis IOANNIDIS** (*Athena Research Center, HBP Software Development Director*), **Lena ODEN** (*FernUniversität Hagen*), **Per ÖSTER** (*CSC - IT Center for Science*)

18:15

CLOSING OF THE DAY**Wednesday 29 March**

08:45

NEW WINDOWS INTO CONSCIOUSNESS

08:45 - 08:55 ■ **Introduction: Consciousness in the HBP.** Mavi SANCHEZ-VIVES (*Institute of Biomedical Research August Pi i Sunyer*)

08:55 - 09:15 ■ **Multiscale study of Disorders of Consciousness and quantification.** Marcello MASSIMINI (*University of Milan*)

09:15 - 09:35 ■ **At the frontiers of mental state reportability.** Athina DEMERTZI (*University of Liège*)

09:35 - 09:55 ■ **Why robots are not conscious. A synthetic view of body perception and awareness.** Pablo LANILLOS (*Cajal International Neuroscience Center*)

10:00

KEYNOTE**A computational approach to precision neurostimulation**

Speaker: **Andreas ROWALD** (*Friedrich-Alexander University Erlangen-Nürnberg*)

Moderator: **Katrin AMUNTS** (*Forschungszentrum Jülich, HBP Scientific Research Director*)

10:30

COFFEE BREAK

11:00

THE FUTURE OF NEUROSCIENCE**Panel discussion: The future of neuroscience at the intersection of technology and computing**

Speakers: **Stephanie FORKEL** (*Radboud University*), **Randy MCINTOSH** (*University of Toronto*), **Toshihisa OHTSUKA** (*University of Yamanashi*), **Yong YAO** (*NIH BRAIN Initiative, Virtual address*)

Moderators: **Katrin AMUNTS** (*Forschungszentrum Jülich, HBP Scientific Research Director*), **Viktor JIRSA** (*Aix-Marseille University, Local Host, EBRAINS AISBL*)

11:45

DIGITAL TWINS IN EPILEPSY

11:45 - 11:56 ■ **Patient Report.** Simon PRIVETT (*Exeter, UK*)

"Wednesday 29 March"

11:56 - 12:07 ■ **Epileptogenic Networks: from quantification to modelling (Part 1).** Fabrice BARTOLOMEI (*Aix-Marseille University*)

12:07 - 12:18 ■ **Epileptogenic Networks: from quantification to modelling (Part 2).** Julia MAKHALOVA (*Aix-Marseille University*)

12:18 - 12:30 ■ **Digital biomarkers of seizure risk: applications in epilepsy.** John TERRY (*University of Birmingham*)

12:30

LUNCH

13:30

PHILOSOPHY, ETHICS AND SOCIETY IN BRAIN RESEARCH

Speaker: David WINICKOFF (*OECD*)

Moderator: Kathinka EVERS (*Uppsala University*)

14:30

COFFEE BREAK

15:00

ARTIFICIAL NEURAL NETWORKS

The interplay of neuroscience and AI

Coordinator: Rainer GOEBEL (*Maastricht University*)

15:00 - 15:15 ■ **Merging insights from artificial and biological neural networks for neuromorphic edge intelligence.** Charlotte FRENKEL (*Delft University of Technology*)

15:15 - 15:30 ■ **Computing with physics: Learning from carbon and silicon.** Mihai PETROVICI (*University of Bern*)

15:30 - 15:45 ■ **Generating new hypotheses about brain function from brain-inspired convolutional deep neural network models.** Rainer GOEBEL (*Maastricht University*)

15:45

POSTER SESSION & NETWORKING

18:45

CLOSING OF THE DAY**Thursday 30 March**

09:00

KEYNOTE

Causal Explanation in Neuroscience: Mechanisms and Pathways

Moderator: Viktor JIRSA (*Aix-Marseille University, Local Host, EBRAINS AISBL*)

■ **Causal Explanation in Neuroscience: Mechanisms and Pathways.** Lauren ROSS (*University of California, Irvine*)

09:30

INNOVATION AWARDS

Coordinators: Guillermo VELASCO (*HBP Innovation Team Leader*), Steven VERMEULEN (*HBP Innovation Director, EBRAINS AISBL*)

10:00

COFFEE BREAK

10:30

BRAIN-INSPIRED ROBOTICS AND COMPUTING

Coordinators: Steve FURBER (*University of Manchester*), Johannes SCHEMMEL (*University of Heidelberg*)

10:30 - 11:15 ■ **Brain-inspired robotics and computing - Young researchers.**

10:30 - 10:45 ■ **Fast and energy-efficient neuromorphic deep learning with first-spike times.** Julian GÖLTZ

Thursday 30 March

(University of Heidelberg)

10:45 - 11:00 ■ **Closed-Loop real-time neuromorphic computation.** Jens PEDERSEN

11:00 - 11:15 ■ **Integrating Spiking Neural Networks and Deep Learning Models on the NRP.** Tom KNOWLES
(University of the West of England)

11:15 - 12:00 ■ **Brain-inspired robotics and computing - Future Directions.**

11:15 - 11:26 ■ **Spike-based analogue computing.** Johannes SCHEMMELE *(University of Heidelberg)*

11:26 - 11:38 ■ **The Potential of Neurorobotics for Brain Disease Investigation.** Silvia TOLU *(Technical University of Denmark)*

11:38 - 11:49 ■ **Bio-Inspired Processing from Edge to Cloud: SpiNNaker 2 and Beyond.** Christian MAYR *(TU Dresden)*

11:49 - 12:00 ■ **Neurorobotics: from fundamental research to applications.** Fabrice MORIN *(Technische Universität München)*

12:00

LUNCH

13:00

INNOVATION, INDUSTRY AND HBP

Speakers: Enric CLAVEROL- TINTURÉ *(European Innovation Council)*, Martha DE CUNHA MALUF-BURGMAN *(Edwards Lifesciences, Remote participation)*, Christian MAYR *(TU Dresden)*, Stephan NICKELL *(Carl Zeiss MultiSEM GmbH)*, Steven VERMEULEN *(HBP Innovation Director, EBRAINS AISBL)*

Coordinator: Yannis IOANNIDIS *(Athena Research Center, HBP Software Development Director)*

14:00

COFFEE BREAK

14:30

NEW AVENUES FOR DRUG RESEARCH

Coordinator: Philippe RYVLIN *(Centre Hospitalier Universitaire Vaudois)*

14:30 - 14:55 ■ **Toward a new allosteric pharmacology of receptors: implications for drug discovery.** Jean-Pierre CHANGEUX *(Pasteur Institute)*

14:55 - 15:20 ■ **Multiscale approaches and AI to bridge biological complexity in drug design: toward personalized medicine.** Giulia ROSSETTI *(Forschungszentrum Jülich)*

15:20 - 15:45 ■ **Precision Psychiatry: Targeting the Underlying Biology and Resolving Patient Heterogeneity.** Joachim SCHOLPP *(Boehringer Ingelheim Pharma)*

15:45

POSTER SESSION & NETWORKING

18:30

CLOSING OF THE DAY

Friday 31 March

08:45

NEUROSCIENTIFIC BREAKTHROUGHS

Coordinator: Cyriel PENNARTZ *(University of Amsterdam)*

08:45 - 08:50 ■ **Introduction to the session.** Cyriel PENNARTZ *(University of Amsterdam)*

08:50 - 09:04 ■ **From population neuroimaging to whole-brain models for individual predictions (remote).** Svenja CASPERS *(Heinrich Heine University Duesseldorf)*

09:04 - 09:18 ■ **Progress in whole-brain dynamics and modelling.** Gustavo DECO *(Catalan Institution for Research and Advanced Studies)*

09:18 - 09:32 ■ **Learning without being aware that you learn.** Wim VANDUFFEL *(KU Leuven)*

"Friday 31 March"

09:32 - 09:46 ■ **The visual cortex beyond vision.** **Umberto OLCESE** (*University of Amsterdam*)

10:00 ~~09:46 - 10:00 ■ **A roadmap to the neural signatures of conscious processing.** **Claire SERGENT** (*University of Paris*)~~

OPENING UP: EXPERIENCES FROM HBP PARTNERING PROJECTS

Moderators: **Hans Ekkehard PLESSER** (*Norwegian University of Life Sciences*), **Julien VEZOLI** (*INSERM*)

10:10 - 10:27 ■ **DOPAMAP: Map of dopamine receptor positive cell types in the developing and adult mouse brain.** **Jee Hyun KIM** (*Deakin University*)

10:27 - 10:45 ■ **AI-Mind: Intelligent digital tools for screening of brain connectivity and dementia risk estimation in people affected by mild cognitive impairment.** **Ira HARALDSEN** (*Oslo University Hospital*), **Ricardo BRUÑA** (*Universidad Complutense de Madrid*)

10:45 COFFEE BREAK

11:15 **KEYNOTE**
The short and the long of inhibition

Speaker: **Hannah MONYER** (*University Hospital and DKFZ Heidelberg*)

Moderator: **Wim VANDUFFEL** (*KU Leuven*)

11:45 **EBRAINS - A KEY ACHIEVEMENT OF THE HBP**

Speakers: **Sandra DIAZ PIER** (*Forschungszentrum Jülich, German National Node - HPC, Computational Neuroscience*), **Trygve LEERGAARD** (*University of Oslo, Norwegian National Node Leader*), **Nicola PALOMERO GALLAGHER** (*Forschungszentrum Jülich, German National Node Scientific Coordinator*), **Francesco PAVONE** (*University of Florence, Italian National Node Leader*), **Philippe VERNIER** (*CNRS Université Paris-Saclay, French National Node Leader*)

Moderator: **Rainer GOEBEL** (*Maastricht University*)

12:45 **SUMMIT CLOSING REMARKS**

Speaker: **Katrin AMUNTS** (*Forschungszentrum Jülich, HBP Scientific Research Director*)

13:00 LUNCH