Human Brain Project

EBRAINS

FLAG-ERA JTC2021

Introduction

Vision: Deepen understanding of the human brain structure and function by building a European infrastructure that harnesses multiple disciplines and computing, and advances science, ICT and medicine to the benefit of society.

- 113 Core Project Partners
- 16 European Countries
- 33 current/21 ended Partnering Projects

Partnering Projects

https://www.humanbrainproject.eu/en/about/project-structure/partnering-projects/

HIBALL

Creating the next generation of highly detailed human brain models by building on the BigBrain - the first openly accessible, microscopic resolution 3D model of the human brain.

Learn more

TVB-Cloud

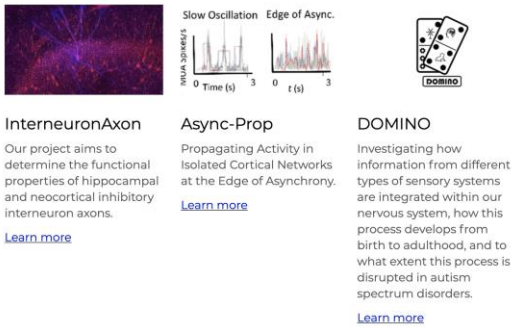
We create a cloud-based brain simulation platform for neurodegenerative disease.

Learn more

TVB-CD

Building a Personalized Virtual Brain with Neurodegenerative Disease to Guide Clinical Decisions.

Learn more



InterneuronAxon

Our project aims to determine the functional properties of hippocampal and neocortical inhibitory interneuron axons.

Learn more

Async-Prop

Propagating Activity in Isolated Cortical Networks at the Edge of Asynchrony.

Learn more

DOMINO

Investigating how information from different types of sensory systems are integrated within our nervous system, how this process develops from birth to adulthood, and to what extent this process is disrupted in autism spectrum disorders.

Learn more

SoundSight

SoundSight uses a cross-species, multi-level approach to study how vision shapes the development of auditory inputs to the occipital cortex.

Learn more

MoDeM

MoDeM aims to advance knowledge on the psychophysiological mechanisms through which environmental stimuli influence decision-making.

Learn more

MILEDI

Multiscale Modelling of Impaired LEarning in Alzheimer's Disease and Innovative Treatments.

Learn more

PrimCorNet

PrimCorNet will combine experimental and modeling work to explore how local and large-scale dynamics are shaped within and across primate visuo-parieto-frontal cortical networks.

Learn more

SENSEI

SENSEI aims at developing image processing tools along with innovative imaging modalities dedicated to 3D neuronal segmentation and morphometrics.

Learn more

SHERPA

Investigating ways in which smart information systems (SIS; the combination of artificial intelligence and big data analytics) impact ethics and human rights issues.

Learn more

HA-CTion

HA-CTion will provide experimentally testable hypotheses to guide future research in humans.

Learn more

EpiCARE

European Reference Network for rare and complex epilepsies

Learn more

Macaque vision

Biologically meaningful simulation of early visual data processing in macaque cerebral cortex.

Learn more

EpiSensor

EpiSensor is the epilepsy component of RADAR-CNS a platform and infrastructure for real-time data streaming from wearable devices and smartphone apps, to allow data related to clinical events to be associated with contextual information.

Learn more

DOPAMAP

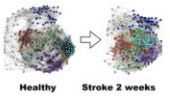
Map of dopamine receptor positive cell types in the developing and adult mouse brain

Learn more

BOLDsim

BOLD signal reconstruction and simulation from cellular data-driven models

Learn more



Brainsynch-Hit

To study directional interactions between brain areas in healthy controls and in patients with stroke to understand the neural mechanisms of neuropsychological deficits.

Learn more

Brains on Board

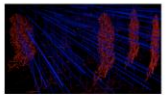
Reverse engineering the honeybee brain to develop efficient AI for robot behaviour.

Learn more

MOSAIC

MOSAIC is a project funded by Sapienza University of Rome. The overall goal is to describe how cortical networks dynamics is modulated across brain and behavioral states.

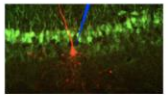
Learn more



CerebNEST

Large-scale network models of the cerebellum for sensorimotor robotic control.

Learn more



HIPPOPLAST

Understanding how rigid and plastic circuits contribute to hippocampal function and spatial learning and memory.

Learn more

RobotBodySchema

Studying the mechanisms of how the brain represents the body to make robots more autonomous and safe.

Learn more

SMART BRAIN

The SMART BRAIN project proposes to advance the complementary measurement of neuronal tissue by different optical imaging technologies, and to develop the subsequent in silico integration of different images by means of data-driven multimodal image fusion.

Learn more

CORTICITY

Comparative Investigation of the Cortical Circuits in Mouse, Non-human primate and Human

Learn more

RGS@HOME

Scaling ICT based neurorehabilitation to personalized 24/7 home care.

Learn more

SGA3 Workpackages

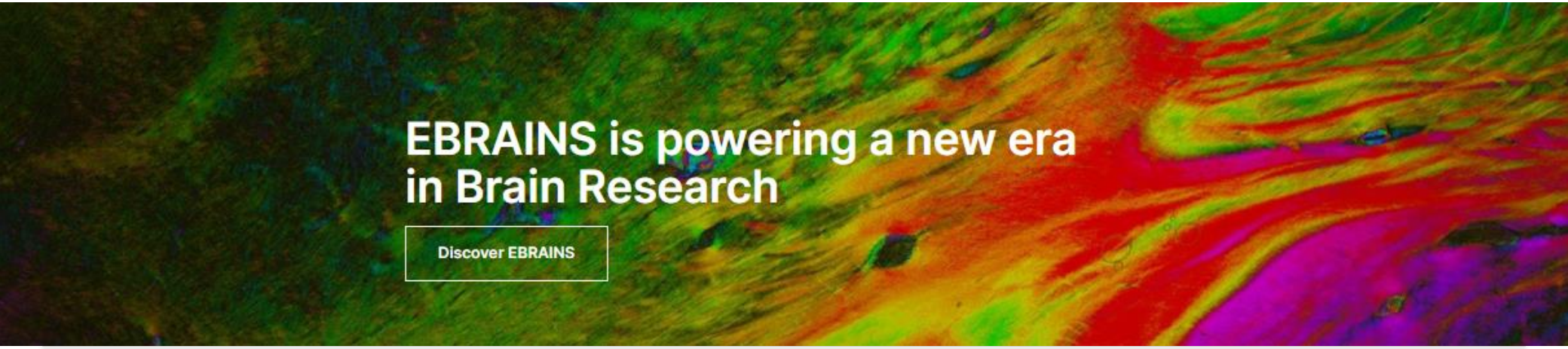
WP1	The human multiscale brain connectome and its variability – from synapses to large-scale networks and function
WP2	Networks underlying brain cognition and consciousness
WP3	Adaptive networks for cognitive architectures: from advanced learning to neurorobotics and neuromorphic applications
WP4	EBRAINS Data Services
WP5	EBRAINS Modelling Services
WP6	EBRAINS Computing Services
WP7	Management and Coordination
WP8	Communication, Outreach and Exploitation
WP9	Responsible Research and Innovation

HBP & EBRAINS

➔ Brings to the scientific community: data, tools and facilities.

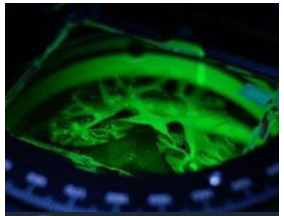
➔ Aims to integrate “best-in-class” resources, creating synergy and building upon scientific developments nationally.

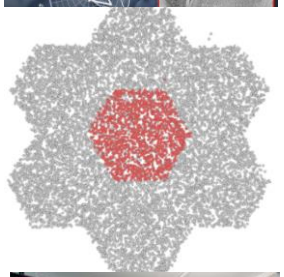
➔ Joining EBRAINS AISBL members get the opportunity to participate in the co-development of the research infrastructure and be involved in the co-shaping of our future service offering.

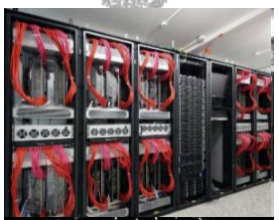


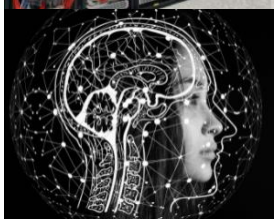
EBRAINS Services

www.ebrains.eu/services









Data and Knowledge

- Online solutions to facilitate sharing of and access to research data, computational models and software

Atlases

- Navigate, characterise and analyse information on the basis of anatomical location

Simulation

- Solutions for brain researchers to conduct sustainable simulation studies and share their results

Brain-Inspired Technologies

- Understand and leverage the computational capabilities of spiking neural networks

Medical Data Analytics

- The Medical Data Analytics service provides two unique EBRAINS platforms, covering key areas in clinical neuroscience research

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Thank You!

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www.humanbrainproject.eu **www.ebrains.eu**