

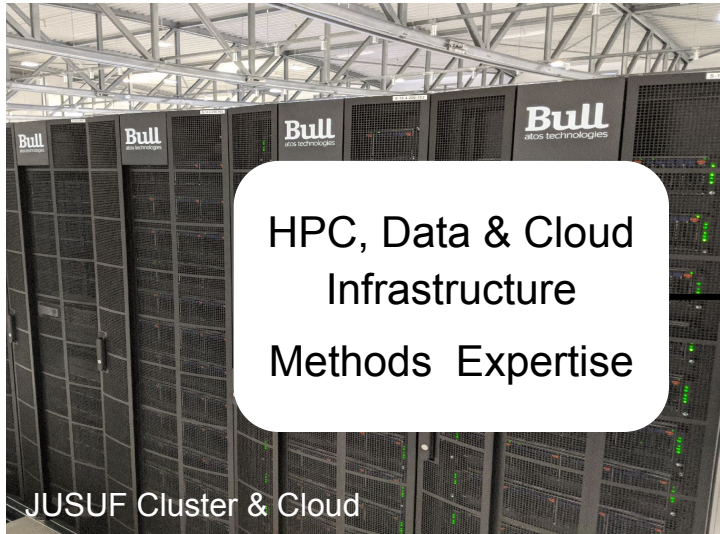
# BOOSTING NEUROSCIENCE RESEARCH WITH HPC

OCTOBER 23<sup>RD</sup>, 2023 | DR. SANDRA DIAZ PIER, SDL NEUROSCIENCE, JSC, FZJ

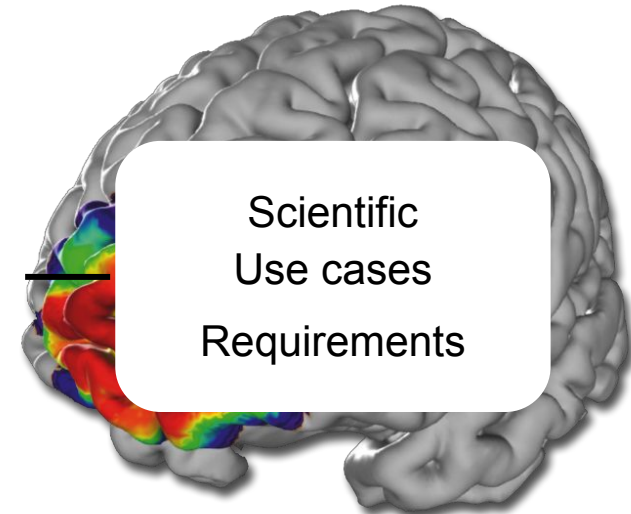
# SIMULATION & DATA LAB NEUROSCIENCE

Collaborative research and support

## SDL Neuroscience @JSC



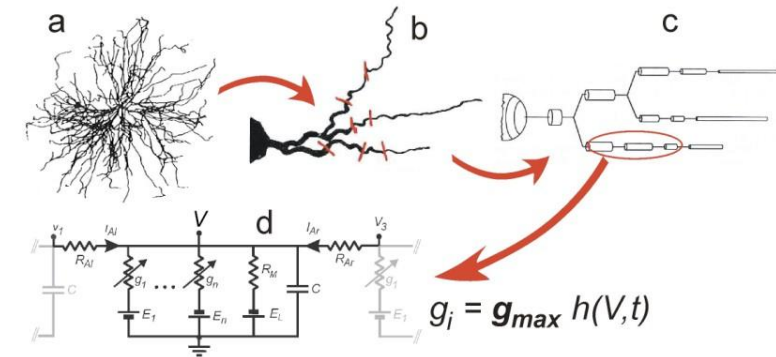
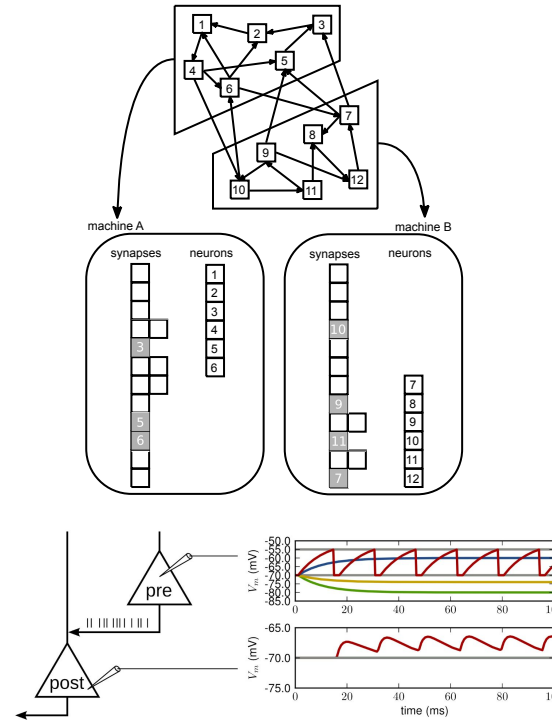
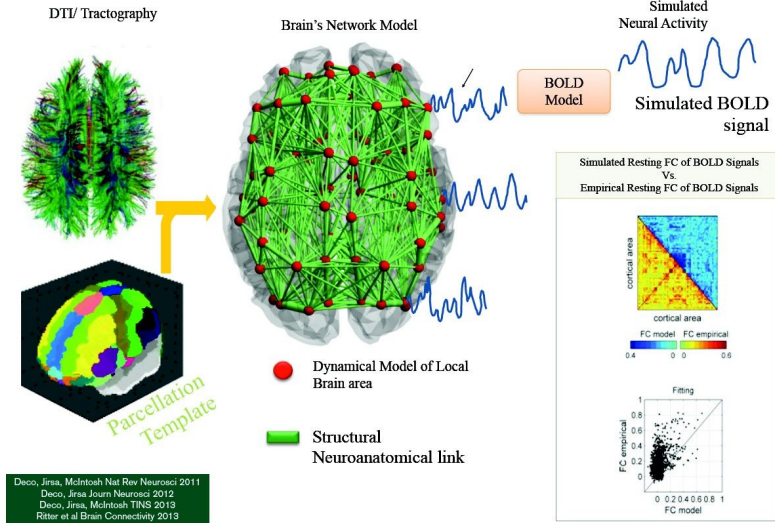
## Neuroscience community



# DESIGN & IMPLEMENTATION OF EFFICIENT SIMULATION METHODS FOR MODELS AT DIFFERENT SCALES



THEVIRTUALBRAIN.



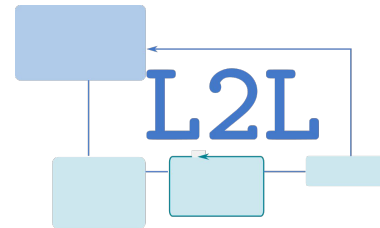
Human Brain Project



# USE CASES

- Jupyter notebook showing optimization of simulations of the whole brain with The Virtual Brain using the machine learning tool L2L via a connection to HPC infrastructure at the JSC with Unicore

**UNICORE**



- Using the container infrastructure to launch NEST Desktop and do some simulations of neural networks in NEST

# EBRAIN-HEALTH & EBRAINS 2.0



Co-funded by  
the European Union

“The project eBRAIN-Health delivers a distributed research platform for modeling and simulating complex neurobiological phenomena of human brain function and dysfunction in a data protection compliant environment.”

(<https://ebrain-health.eu/home.html>)

The SDL Neuroscience contributes with software development as well as to the deployment of tools and services on HPC resources.



EBRAINS (European Brain Research Infrastructures) is developed as a legacy of the Human Brain Project. The EBRAINS 2.0 project will further the development and provision of the infrastructure’s research technologies to the scientific community.

(<https://www.ebrains.eu/projects/ebrains-2-0>)

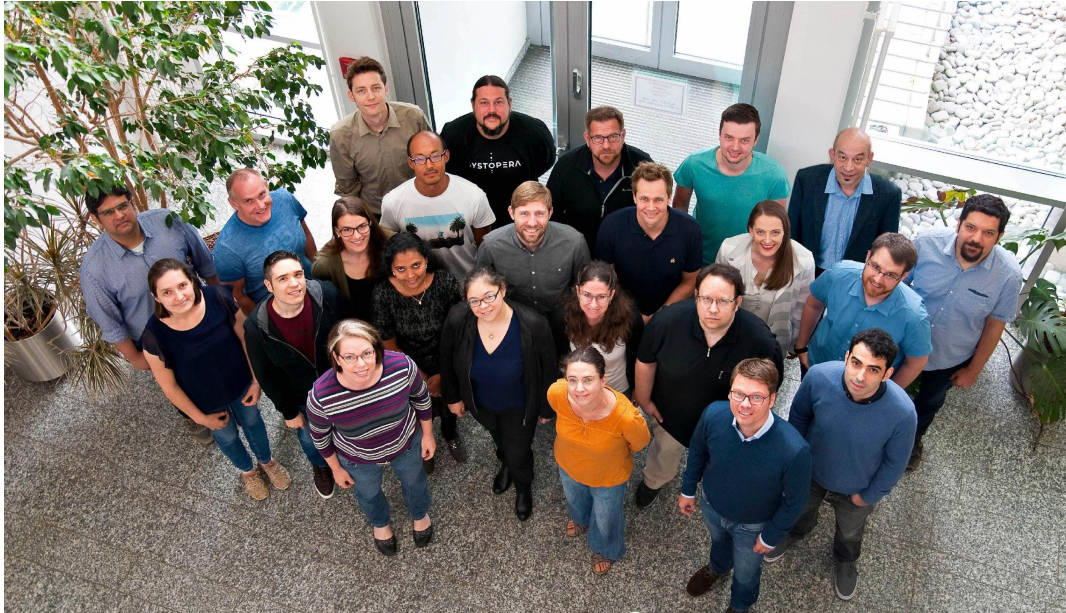
The SDL Neuroscience contributes to HPC and cloud infrastructure operations, software deployment, architecture definition, scientific liaison, tool development and coordination.



## EBRAINS

# SIMULATION & DATA LAB NEUROSCIENCE

## Contact



**Dr. Thorsten Hater**



**Dr. Han Lu**



**Michiel van der Vlag**

Special thanks to my colleagues Thorsten Hater, Han Lu and Michiel van der Vlag for helping in the preparation of the use cases



[www.fz-juelich.de/ias/jsc/sdlns](http://www.fz-juelich.de/ias/jsc/sdlns)



[slns@fz-juelich.de](mailto:slns@fz-juelich.de)