



# MetaCell

SOFTWARE FOR NEUROSCIENCE

## NWB Explorer

**Open Source Brain Meeting**

Alghero, Italy

10th September 2019



**OPEN SOURCE BRAIN**



**NEUROSCIENCE**



**ENGINEERING**

**We develop software to share neuroscience data and models online, creating compelling visual and collaborative experiences.**



# WORLD LEADERS IN NEUROSCIENCE SOFTWARE



- Web, native, and mobile scientific software development
- Deployments internal to organizations as well as external to the public
- PhD level neuroscience cross-training
- Agile development cycles and continuous integration feedback loops with clients



# SELECT CUSTOMERS

PHARMA COMPANIES, NEUROTECH, ACADEMIA AND NON-PROFIT



THE UNIVERSITY  
of EDINBURGH

EMBL-EBI



The State University  
of New York



NWB Explorer

Not Secure | nwexplorer.opensourcebrain.org/user/fd8b1e65-  
eaa3-446a-810f-eb483b310a4c/geppetto

Welcome to NWB Explorer<sub>beta</sub>  
Visualise and understand your neurophysiology data

What file do you wish to load?

Paste a URL pointing to an NWB file

Load NWB file

Don't have a file to load?

Pick a sample and get started!

Simple time series

Ferguson et al. 20152345

Triplett et al. 2018

Lantyer et al. 2018

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## NWB Explorer DEMO



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OpenWorm



# NWB EXPLORER

DEMO

Try it out at

<https://nwbexplorer.opensourcebrain.org>



# NWB EXPLORER

## TECHNOLOGIES

- Geppetto
- Python backend
  - PyGeppetto
  - PyNWB
  - Jupyter notebook
- Deployment
  - Kubernetes
  - JupyterHub





# NWB EXPLORER

## INSTALLATION

- Get the code <https://github.com/MetaCell/nwb-explorer>
- Simple build process (Python 3.7 recommended)
- Pip (coming soon)
- Docker image (prebuilt image coming soon)
- JupyterHub in Kubernetes (e.g. Minikubes, Google Cloud)



# NWB EXPLORER

## CURRENT STATUS

- Beta version
  - Infrastructure ready
  - More features to come
- Challenges
  - Support the diverse experimental scenarios allowed by the format: NWB leaves a lot of freedom and we need the tool to interpret in a useful way files structured in different ways
  - The latest NWB format and implementation release is very recent, still some changes happening and there will likely be some more changes in the future
  - Big files - heavy data



# NWB EXPLORER

## FUTURE WORK

- Add support for missing NWB sections, data relationships and types (analysis, devices, electrodes, specialized series like voltage clamp, etc.)
  - Collect feedback from experimentalists
  - Collect and test more real examples
- Support extensions
- Plugin-like architecture for easier contribution
- Deep integration with Open Source Brain in the future to allow workflows where experimental data drive the development and validation of computational models





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## Thank you for your attention!

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