



## NeuroFedora

FOSS and Free and Open (Neuro)Science

NeuroFedora contributors  
[neuro.fedoraproject.org](http://neuro.fedoraproject.org)

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## Open Science

Everyone should have the freedom to study, modify, and share scientific material<sup>1</sup>.

Scientists, academics, students, researchers, non-scientists, and non-academics should all have access to scientific material—irrespective of social status, location, age, nationality . . . .

<sup>1</sup><http://opensourceforneuroscience.org/>

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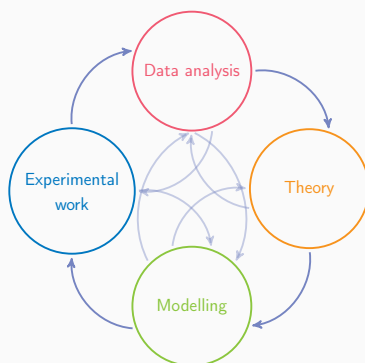
## Neuro Science

- How the brain functions (physiology)
- How it is structured (anatomy)
- About its chemicals (pharmacology, biochemistry)
- How it processes information (computational)
- About behaviours, and cognition (behavioural, cognitive)

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## How: Research Pipeline

## Basic Workflow



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## Tools of the trade

### Experimental:

- EEG, ECoG, intracellular and extracellular single and multi neuron recording,
- CT, DOI, MRI, f-MRI, MEG, PET,

### Data analysis:

- Statistics,
- Machine Learning, Big Data, Deep learning,

### Theory and modelling:

- Simulators of all kinds,

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## Free/Open (neuro) Science

## The ideal, in short:

### Free/Open Science:

Everyone should have the freedom to share, study, and modify scientific material.

### FOSS:

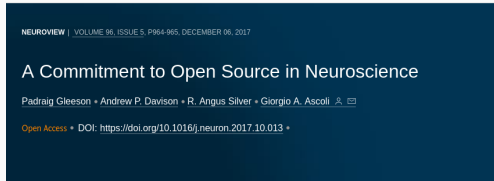
Everyone should have the freedom to share, study, and modify software<sup>2</sup>.

Free/Open Science includes and relies heavily on Free/Open Source Software (FOSS).

<sup>2</sup>Free software foundation

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## So we strive to use more and more FOSS



<sup>6</sup>Open source for neuroscience

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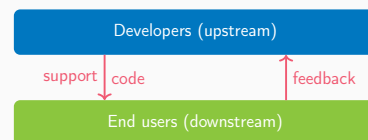
## NeuroFedora: why, how, what?

## Neuroscience community: highly multidisciplinary

- **various specialities:** biologists, mathematicians, physicists, chemists, psychologists, ...
- **small proportion of trained software developers**

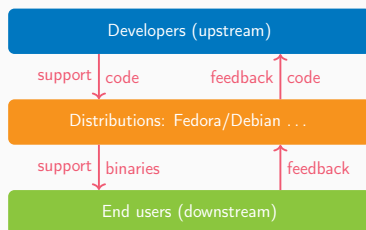
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## FOSS: Developers and users



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## Distributions liaison between developers and users



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## Distributions, like Fedora, are in a unique position:

- **liaison between upstream and users**
- **have the infrastructure**
- **follow best practices** in software development
- **constantly work on community development**
- **learn from one another**—train while working
- **disseminate** information to end-users

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## NeuroFedora:

### Primary goal:

- Provide a **ready to use, integrated FOSS platform** for neuroscientists<sup>7</sup>.

### Secondary/collateral goals:

- **help improve the standard and maintenance** of tools
- **help users develop software development skills**
- **make neuroscience accessible** to non-specialists

<sup>7</sup>Researchers, academics, hobbyists, anyone!

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## NeuroFedora: What we offer?

## Comp-Neuro Lab



- An OS to enable neuroscience
- Contains a plethora of computational neuroscience tools
- Packed with analysis and general productivity tools
- Integrated with GNOME

<https://labs.fedoraproject.org/en/comp-neuro/>

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## Comp-Neuro Container

- A ready-to-use comp-neuro container
- Can be used with Podman/Docker
- Can be obtained from standard public container image registries like Docker Hub



<https://docs.fedoraproject.org/en-US/neurofedora/containers/>  
<https://podman.io/>  
<https://www.docker.com/>

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## NeuroFedora: How can you help?

- Packaging and maintenance
- QA (testing)
- File bugs, help upstream packages
- Improve Documentation
- Help other users
- Spread the word!

<https://docs.fedoraproject.org/en-US/neurofedora/contributing/>

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## NeuroFedora: current metrics

- Will be 3 years old, in September 2021!<sup>8</sup>,
- 30 volunteer contributors
- software:
  - ~190 tools (packages) ready to install<sup>9</sup>:
    - NeuroMLite, pyNeuroML, NetPyNE, Neuron, InterViews, NEST, Genesis, Brian (v1 and v2), Moose, python-libNeuroML, PyLEMS, PyNWB, ...
  - ~200 in queue<sup>10</sup>.
    - EDEN, NeuroMynerva, FlyBrainLab, GeNN, ...

<sup>8</sup> in its second iteration

<sup>9</sup> src.fedoraproject.org: Neuro-SIG

<sup>10</sup> Pagure.io: Neuro-SIG: issues

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## Search: "NeuroFedora"



Mailing list: [neuro-sig@lists.fedoraproject.org](mailto:neuro-sig@lists.fedoraproject.org)  
IRC: [#fedora-neuro](#) on LiberaChat  
Telegram: [t.me/NeuroFedora](https://t.me/NeuroFedora)  
Documentation [neuro.fedoraproject.org](https://neuro.fedoraproject.org)  
Blog: [neuroblog.fedoraproject.org](https://neuroblog.fedoraproject.org)  
Pagure.io (FOSS Git forge): [neuro-sig/NeuroFedora](#)

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