

# The NeuroML ecosystem for standardised multi-scale modelling in neuroscience

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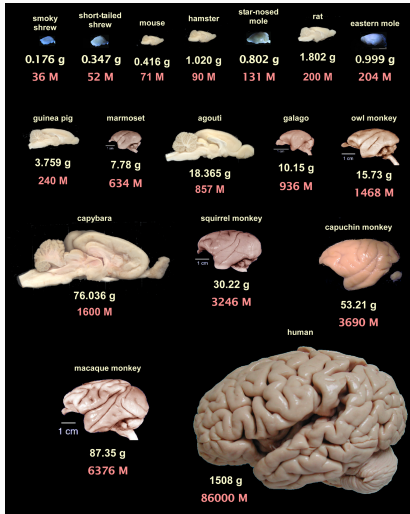
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# An understanding of the brain



- 86B neurons<sup>1</sup>
- complex morphologies: dendritic trees
- active and passive ion channels
- inputs spread out over the dendritic tree
- but: also 85B glia

<sup>1</sup>Suzana Herculano-Houzel. "The human brain in numbers: a linearly scaled-up primate brain". In: *Frontiers in human neuroscience* 3 (2009), p. 31. DOI: [10.3389/neuro.09.031.2009](https://doi.org/10.3389/neuro.09.031.2009)

## ***A mechanistic* understanding of the brain**

Figure showing multiple scales of modelling goes here.

# The model life cycle

- tweaked version of life cycle figure from paper goes here.
- remove NeuroML, add data

# Standards enable FAIR neuroscience

- NWB/BIDS for data
- NeuroML/SBML etc. for modelling
- Add logos

## But, too many standards?

- XKCD here.

- Introduction to NeuroML.

- Figure 2 from paper



- Figure 3

- Figure 4

- Figure 5
- Code example

- Figure 6

- Figure 7
- Figure 8
- Figure 9

- Example simulation: neuron/netpyne

- Figure from docs
- Mention inspyred

- GitHub, OSBv1, OSBv2, NeuroML-DB



- Schema, component types

- Python API

- LEMS, advantages

- Jupyterbook

- GSoC, Outreachy, good computer science students