

Blue Brain

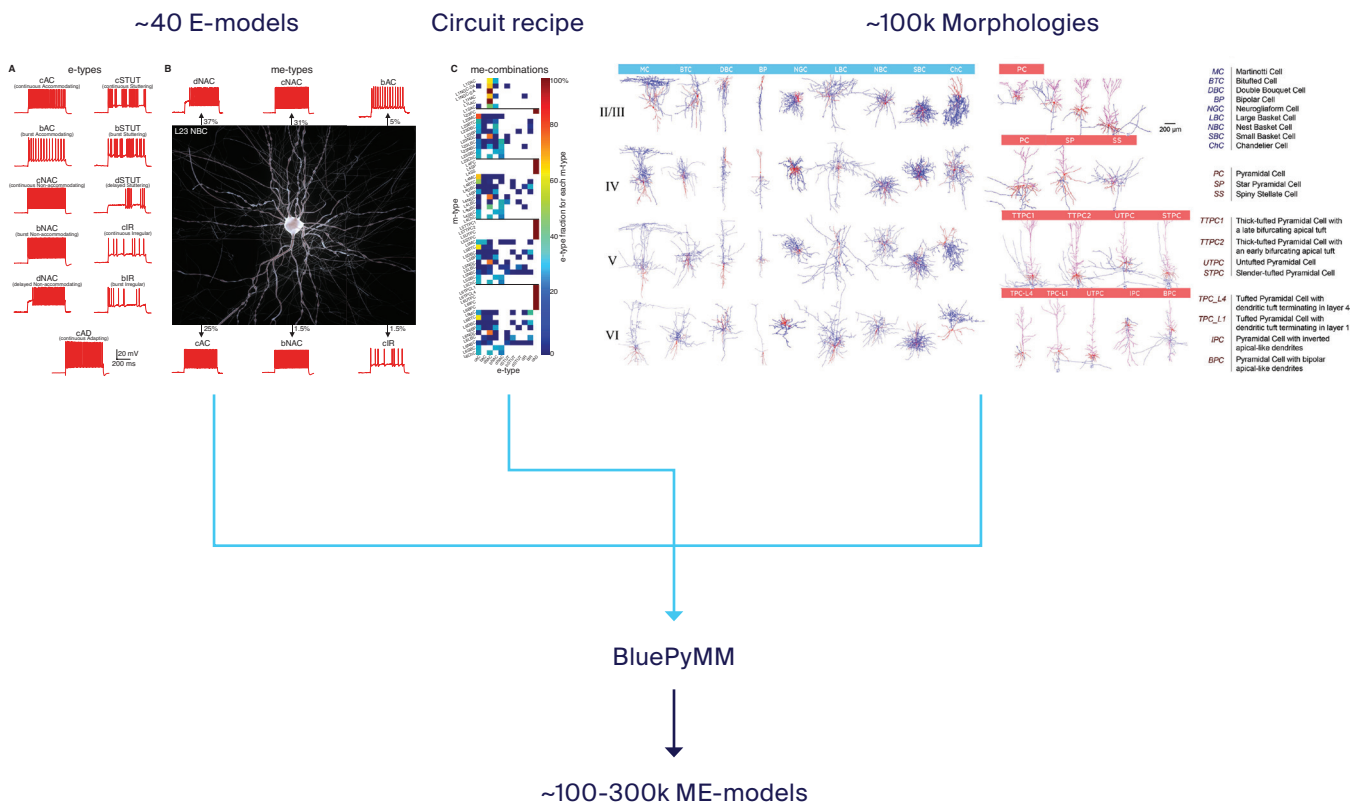
# BluePyMM

Blue Brain Python Cell Model Management - a tool  
to test morpho-electrical cell model combinations

**Blue Brain Python Cell Model Management (BluePyMM) checks the viability of every morphology-electrical combination used in a network simulation. It does this by verifying that the biophysical electrical models (e-models) associated with a certain morphology produces voltage traces that agree with experimental data.**

E-models can be obtained using BluePyOpt by data-driven model parameter optimization. Developing e-models can take a lot of time and computing resources. Therefore, these models are not reoptimized for every morphology in the network. Instead we want to test if an existing e-model matches that particular morphology 'well enough' – to a satisfactory standard.

This process is called Model Management (MM). It takes as input a morphology release, a circuit recipe and a set of e-models with some extra information. Next, it finds all possible (morphology, e-model-combinations (me-combos)) based on e-type, m-type, and layer as described by the circuit recipe, and calculates the scores for every combination. Finally, it writes out the resulting accepted me-combos to a database, and produces a report with information on the number of matches.



**BluePyMM** provides the user with a tool to run test protocols in parallel on a very large set of models on cluster computers with the ability to continue interrupted jobs.

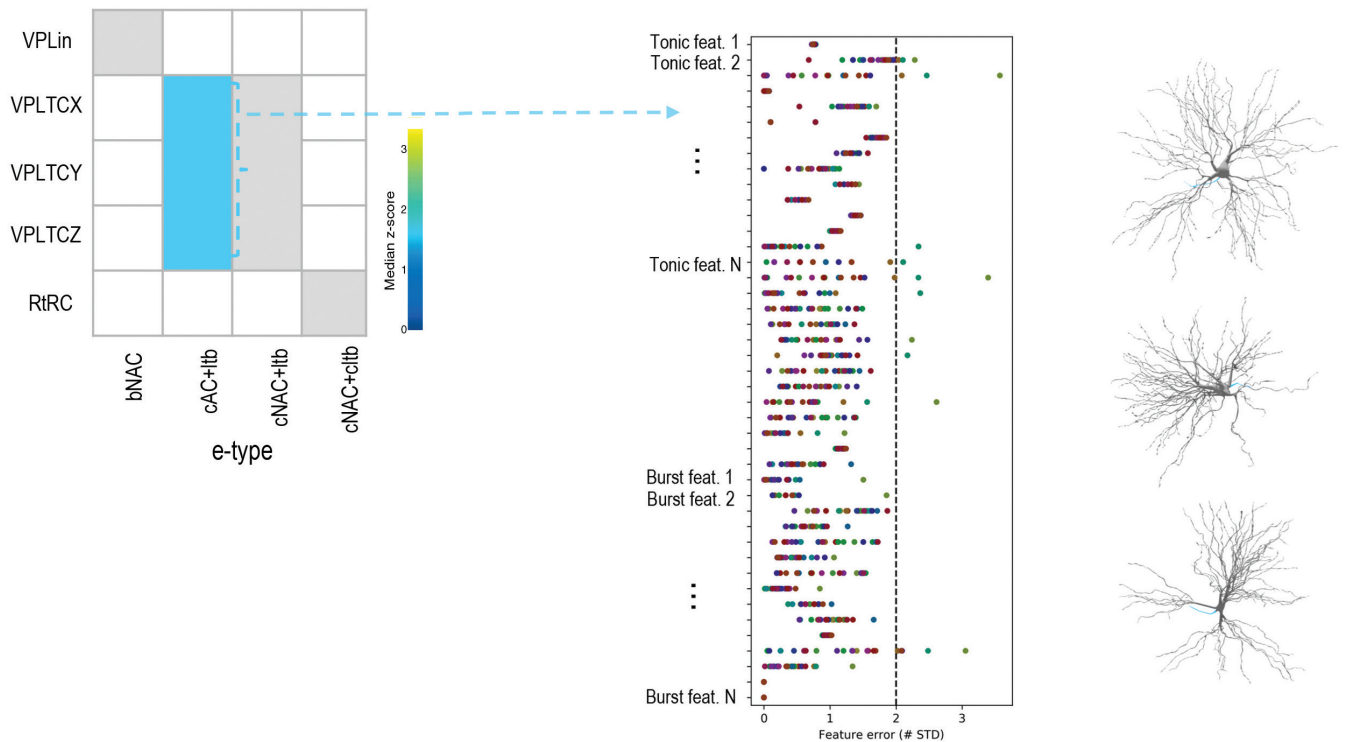
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## Software Adopters

The Blue Brain Project uses BluePyMM to build neocortical and thalamic network models.

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### BluePyMM used for modelling the Thalamus



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BluePyMM is used by the group of Prof. Michele Migliore within the context of the [Human Brain Project](#) to build a hippocampal network model.

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*“The BluePyMM is quickly becoming for my lab an instrumental tool in implementing a morphologically and biophysically accurate model circuit of the hippocampus, and it represents a fundamental step to automatically test and validate the electrophysiological properties of the huge number of cells composing the circuit”*

Prof. Michele Migliore, CNR-IBF

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## About EPFL's Blue Brain Project

The aim of the EPFL Blue Brain Project, a Swiss brain research initiative founded and directed by Professor Henry Markram, is to establish simulation neuroscience as a complementary approach alongside experimental, theoretical and clinical neuroscience to understanding the brain, by building the world's first biologically detailed digital reconstructions and simulations of the mouse brain.

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**BluePyMM** is available under Lesser GNU Public License, at:  
[github.com/BlueBrain/BluePyMM](https://github.com/BlueBrain/BluePyMM)

It can be used on all systems that can run Python and the NEURON simulator.

Support is also available using a chat channel:

**[gitter.im/BlueBrain/BluePyMM](https://gitter.im/BlueBrain/BluePyMM)**

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