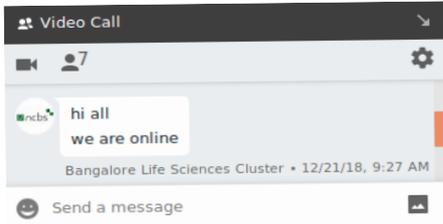


On the 21st December 2018, nine neuroscience labs from different parts of the country gathered together on a virtual platform and agreed to form India's



first unique consortium to discuss a well-defined, open source and leading edge framework in neuronal signaling. The rest, as they say, is history.

General Consortium News

T minus 0 seconds!

We are officially announcing the release of a weekly newsletter. The newsletter will be the source of the current buzz in the consortium. It will include an array of topics including updates about the project, updates on the membership of the consortium, present and future directions of the project and other relevant news. This newsletter will be exclusively sent to the participating labs every week. Participating labs will be encouraged and invited to discuss about their work apart from adding on to the common goals of the project. This may cover any plans, suggestions and results that are relevant for the broad framework of neuronal signaling.

In addition to the newsletter, we are also launching a website which will serve as an interface for the modelers and experimentalists alike to interact with FindSim/AutSim. It will also include information



Participating labs:

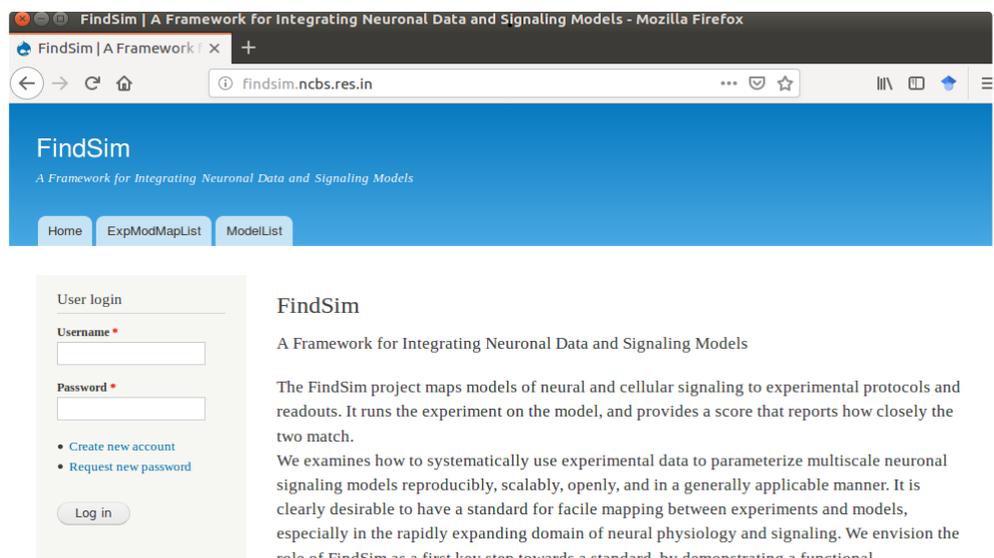
- Upinder Bhalla, NCBS
- Suhita Nadkarni, IISER Pune
- James Chellaiah, JNCASR
- Aditi Bhattacharya, InStem
- Sayak Mukherjee, IBAB
- Rohit Manchanda, IITB
- Sourav Bannerjee, NBRC
- Raghu Padinjat, NCBS
- Deepak Nair, IISc
- Srinivasa Chakravarthy, IITM
- Rishikesh Narayanan, IISc
- Shailesh Appukuttan, CNRS

regarding the latest developments in the project. Users will be able to make their personal accounts which will allow them direct access to the database of experiments and models that will be regularly maintained on the server.

We also take this opportunity to announce that a Twitter feed @OpenNeuroSigConsortium is being initiated. Members can follow and interact with the most current news around the Consortium through this feed. Remember, you heard it here first, folks!

Resources already in place for the Consortium

- 1) Multiscale modeling of ODE/Gillespie/reaction-diffusion systems with detailed single neuron physiology in MOOSE.
- 2) Curated database of model-friendly experimental protocols and readouts: over 120 entries.
- 3) Capability in FindSim to perform 'experiments' of standard biochemical dose-response, time-series, combinatorial stimuli, as well as a range of single neuron electrophysiology, LTP/LTD experiments and



phosphoproteomics.

4) Capability to do model optimization to improve parameters using the experimental database as a criterion for model 'goodness'

5) Version 0.9 of a spine signaling model pertaining to Autism pathways.

6) First stages of web interface for community access to this platform (see screenshots below).

The website is hosted at findsim.ncbs.res.in/ findsimweb

Work from participating labs

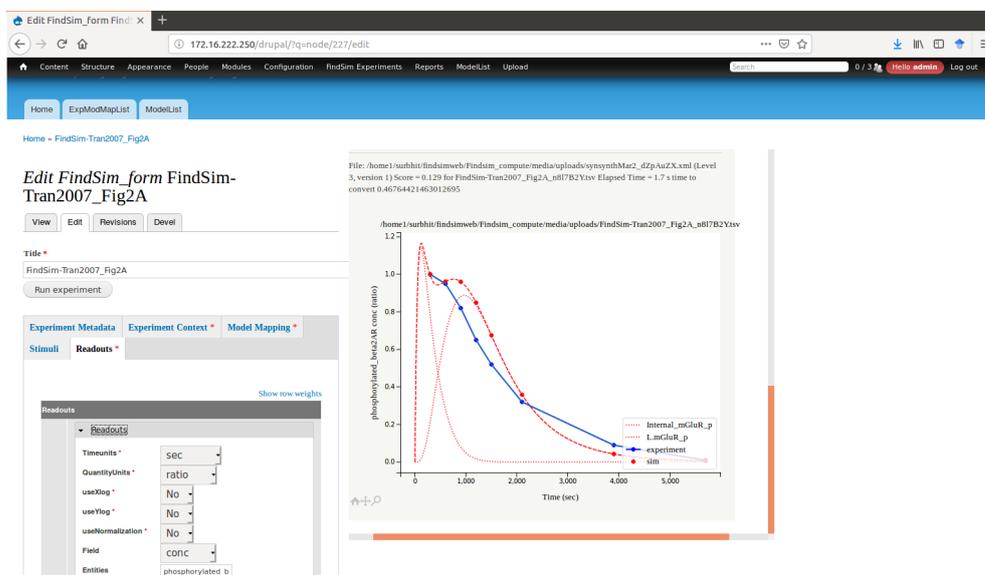
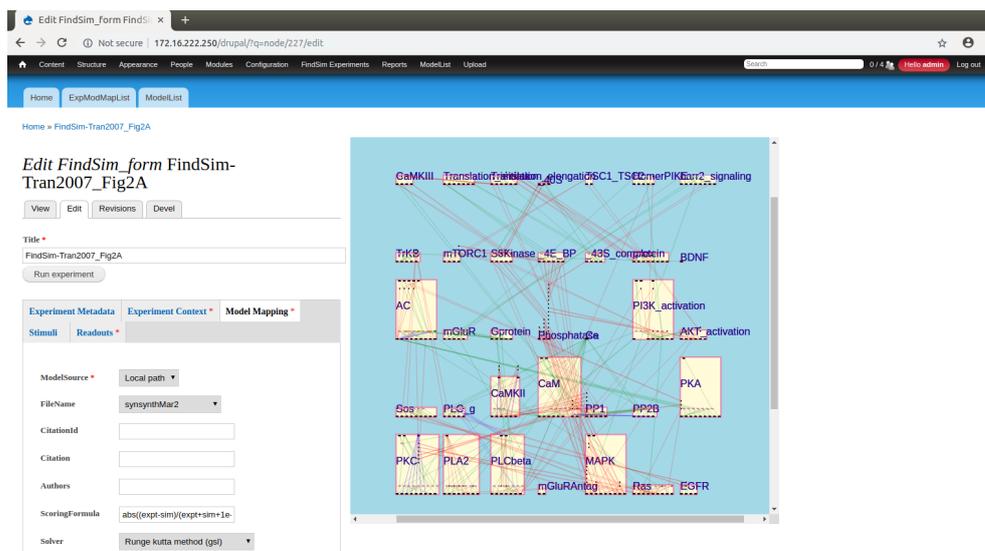
Dr. James Clement Cheliah's lab's recent work focuses using Syngap1 +/- mouse model of ID to study the effect of Synaptic RAS-GTPase Activating Protein (SYNGAP1) on protein synthesis, and their study proposes a model for its crosstalk with protein synthesis regulator, Fragile X Mental Retardation Protein (FMRP).

"Recent advancement in scientific techniques has proved that translation can occur in neurites (spines) which are far away from the

cell body", Abhik Paul from his lab writes. "Tight regulation of neuronal protein synthesis is vital for the brain as it has a direct impact on our learning and memory capability."

James says "The initiative on multi-institutional neuronal consortium would bring together not only the experimentalists but also researches who do simulations. The available experimental data can be incorporated in neuronal simulations which can facilitate further understanding of how modulating certain signalling pathways that regulate synaptic functions, and based on those results from simulations, we can test further hypothesis in mouse model that may take many years. Therefore, in my opinion, this consortium will facilitate discovery of novel mechanisms and potential drug targets."

Screenshots of the website



Left: Screenshots of the website allowing the user to input the details of the experiment, for eg. metadata, experimental information, model mapping, stimuli and readout. The user can view the model layout and perform simulation on a server located at NCBS-TIFR, Bangalore.

The website produces an output which informs the user of the best fit between the experiment and simulation.