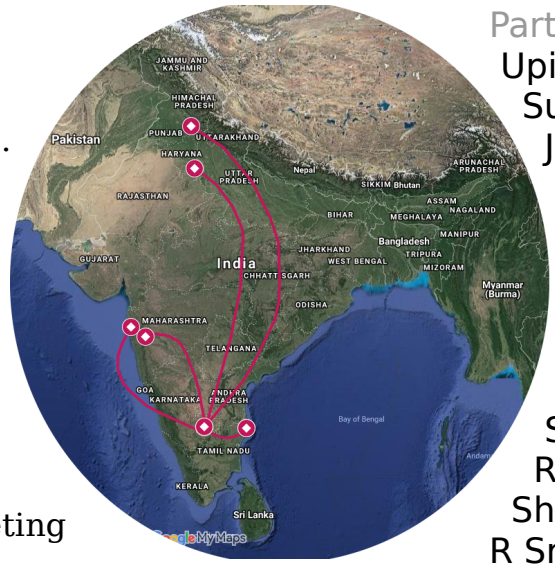
NEWSLETTER

OpenNeuroSig Consortium

Volume 1, Issue 2 *Date: 04 April 2019*

Highlights...

- Dr. Sourav Banerjee joins ONSC.
- IBAB willing to participate.
- a functional FindSim model layout in place.
- ONSC website is being developed.
- Information gap in neuronal cell biology..." - Dr. Aditi Bhattacharya
- Applications for CAMP school, 2019 are open.
- A Doodle poll for next meeting is set up.



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
R Srivatsan, IBAB

General Consortium News

We are happy to welcome ***Dr. Sourav Banerjee*** to the ONSC team. Dr. Sourav Banerjee is currently part of Systems and Behaviour group in National Centre for Brain Research, Haryana.

We also welcome the ***Institute of Bioinformatics and Applied Biotechnology***, Bangalore.
IBAB is an educational and research institute that trains students in Bioinformatics and Biotechnology. IBAB has a strong tradition of training students with modeling and data-curation skills, and this could be of interest to consortium members. In addition their in-house research and contacts with the industry may be relevant for the consortium to tap new interests and data resources.

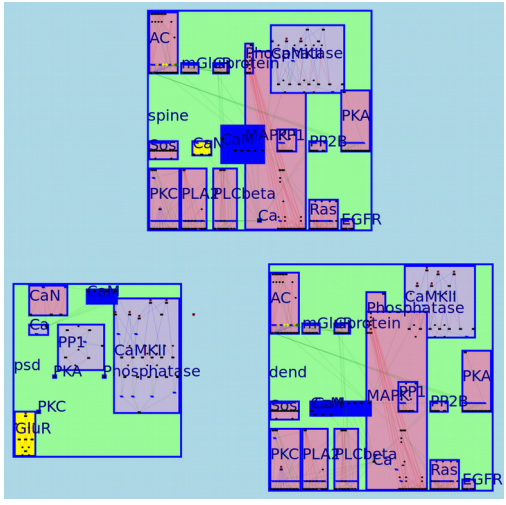
Announcement: Call for Consortium meeting. Please fill up the Doodle Poll at: https://doodle.com/poll/7mh5zu84xe6hacsa
In this meeting we will welcome new and old members, consider the structure of the Consortium, seek views on the website, and discuss some promising funding opportunities.

Updates on Websites

More than 150 literature-curated experiments of different types such as Time Series, Dose Response, Stimuli Barchart and Direct Parameters have been added to the FindSim database.

A model layout display has been developed in the FindSim interface. It has the following features:

- Zoom-in/ zoom-out to go from pathway to molecule level
- Model layout editor.
- Selecting a group brings connections to other groups in focus.
- Selecting an object copies it to the clipboard. This is used to fill in dialogs for the FindSim interface.
- Highlighting and shading to indicate which subsets of the model are selected for a given experiment.



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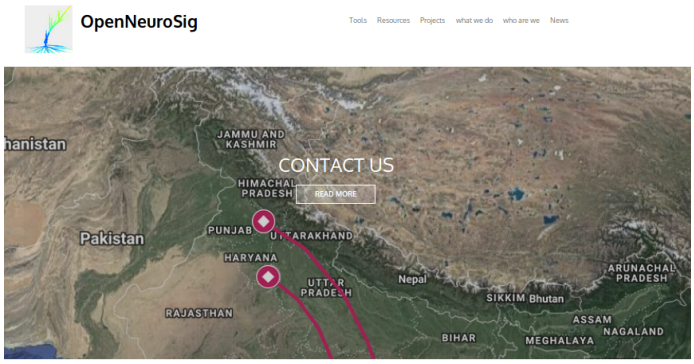
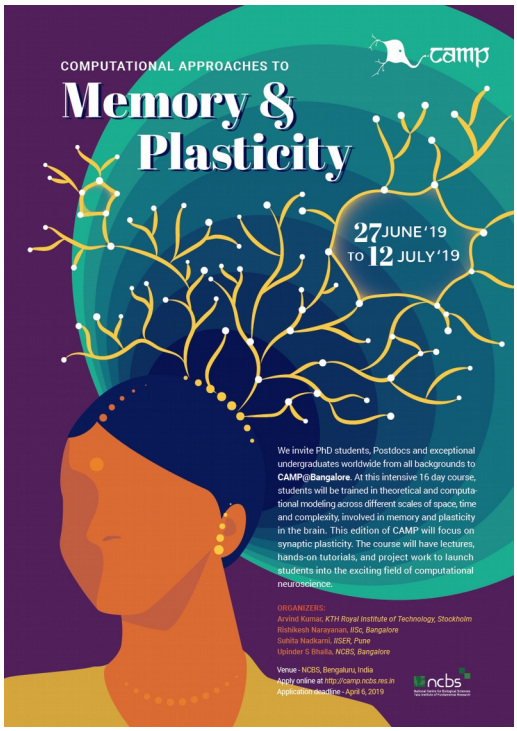
The ONSC website is being developed and it wouldhighlight the tools, resources and projects that are being developed as part of the consortium.



CAMP school, 2019

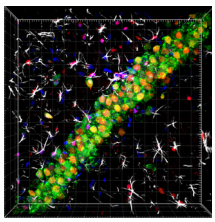
Applications to CAMP school are open. We invite PhD students and Postdocs worldwide to attend this 16-day intensive course on theoretical and computational modeling in memory and plasticity, across different scales of space, time and complexity. The last date for the application is 6 April, 2019. Find more information from this link: https://camp.ncbs.res.in/



Work from participating labs

Dr. Aditi Bhattacharya from Centre for Brain Development and Repair, inStem, works on understanding the signal-induced regulation of protein synthesis in complex brain circuits. According to her, "Neuronal cell biology has always operated with an information gap." She says the reason for this is that "the bulk of our signaling data and how cascades help in underwriting plasticity changes come from culture systems, generally, neuronal cells. While our foundational and bulk of electrical data relies on brain slices where a multitude of cells (neurons, glia, endothelial) coordinate their function to generate and maintain plasticity changes. One of the most well-studied signal transduction pathways are the ones that lead to activity-induced transcription (mRNA synthesis) and translation (protein synthesis). A notable point here is that these signaling mechanisms work in neurons and glia in tandem to sculpt these changes".

Dr. Bhattacharya's team investigates how protein synthesis changes in the neuron-glia unit in local circuits of the brain inresponse to behavior, both in healthy rats and rat models of Autism Spectrum Disorders. These are usually done using in situ amino acid labeling and advanced fluorescence microscopy. At the same time, the team is also studying common human variations of p70 ribosomal S6K1, a key signaling kinase integrator that can change enzyme function and hence alter plasticity dependent signaling.



Left, CA1 hippocampal slice with cell-type specific protein synthesis. Red: FUNCAT measuring protein synthesis, Green: neurons stained with NeuN, Grey: astrocytes stained with GFAP

The team is happy to be involved with OpenNeuroSig and has been providing experimental support for FindSim and AutSim from the start. These were done in both neuronal culture and slice samples. As expected there are many differences in the two preps that need to be addressed and evaluated to enrich this initiative further.