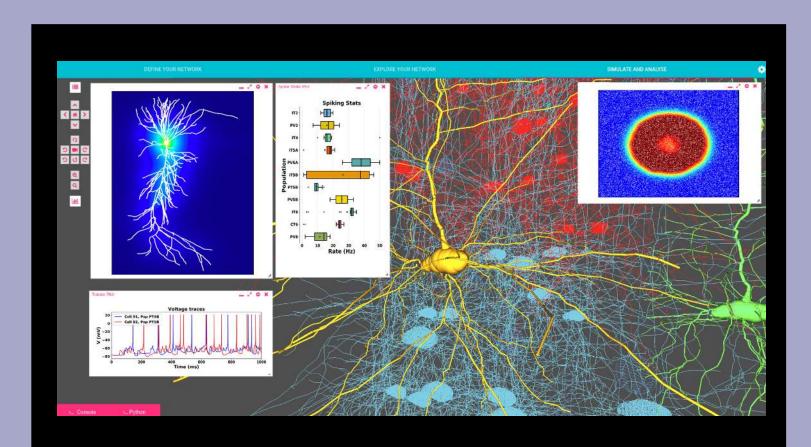Member Newsletter | Summer 2018 | Volume 2 No. 1



Multiscale modeling from molecular to large scale network using NEURON, the Reaction-Diffusion tool, and NetPyNE (www.netpyne.org).

*Credit: Salvador Dura-Bernal*

@CNSorg    CNSorg

Contact us if you have comments, information, or images to include in the newsletter.
newsletter@cnsorg.org

# OCNS President
# Astrid Prinz

Why be a member of the OCNS? There are clear scientific benefits to attending the Annual CNS Meeting and receiving communications from the OCNS. For example, check out the fantastic twitter and facebook feeds to keep up with all the latest research publications in computational neuroscience! (For more about specific member benefits, visit http://www.cnsorg.org/member-benefits.) Perhaps it is equally important that by supporting OCNS, you are supporting the next generation of scientists. We are a relatively small organization, but one of our goals is to create a community where all computational neuroscientists can feel welcome and supported. Our mission states that our purpose is "to create a scientific and educational forum for everyone…". We also specifically state that one goal of the Annual CNS Meeting is to serve as a forum for "young scientists to present their work and to interact with senior leaders in the field". This is a unique feature of the culture of the CNS Meeting that provides incentive (beyond the science) for many of us to return to the meeting year after year. Maintaining this culture requires that we all contribute to a positive atmosphere of inclusiveness at the meeting and in our everyday interactions with other scientists and students.

Like other scientific societies, the success of our programs depends on our many volunteers. Very busy people in our research community spend significant amounts of time contributing to the success of the meeting and other OCNS activities. As we look to expand the benefits of membership for OCNS, we will need additional volunteers. If you have ideas about ways to enhance our contributions to the community, contact one of your officers or Board members with your ideas. I look forward to seeing many of you in Seattle in July for the 27th Annual Computational Neuroscience Meeting.

# CNS 2018

27th Annual Computational Neuroscience Meeting
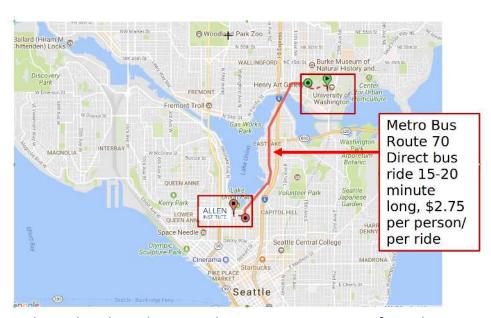July 13-18, 2018
Seattle, USA

**Local Organizers:**

Christof Koch, Allen Institute
Adrienne Fairhall, University of Washington
Eric Shea-Brown, University of Washington

**Keynote Speakers:**

Eve Marder, Brandeis University
Nancy Kopell, Boston University
Daniel Wolpert, University of Cambridge
Rajesh Rao, University of Washington

Please note that the Main Meeting begins the evening of Friday July 13 and runs through Monday July 16. It will be preceded by a day of Tutorials (Friday July 13) and followed by two days of Workshops (Tuesday July 17 and Wednesday July 18). July 14-16, Main Meeting activities will be held at the University of Washington. Tutorials, Workshops, and the keynote talk the evening of Friday July 13 will be held nearby at (and near) the Allen Institute. See the meeting website for more information about precise locations of events and lodging that is available close to the meeting venues.



Metro Bus Route 70 Direct bus ride 15-20 minute long, $2.75 per person/ per ride

Logistics: There is a direct bus line that runs between University of Washington and Allen Institute that takes about 15 minutes and costs between $2.50-$3.50. You must have exact change; no change is made on the bus.

# CNS 2018 TUTORIALS

## July 13, 2018, Allen Institute, Seattle, Washington

*Tutorials are intended as introductions into main methodologies of various fields in computational neuroscience. This year, CNS tutorials offer introductory full day courses on cellular and network level modelling as well as specialized half day tutorials. Tutorials are particularly tailored for early stage researchers as well as researchers entering a new field in computational neuroscience.*

## Whole day tutorials

*Allen Institute Brain Observatory and Brain Modeling Toolkit tutorial*
Yazan Billeh, Sergey Gratiy, Saskia de Vries

*Multiscale modeling from molecular level to large network level*
Salvador Dura-Bernal, Robert McDougal, William Lytton

*Simulation of large-scale neural networks*
Sacha J. van Albada, Philipp Weidel

## Half day tutorials

*Neuroinformatics resources for computational modelers*
Padraig Gleeson

*Modeling and analysis of extracellular potentials*
Gaute T. Einevoll, Espen Hagen

*Single cell RNA-seq analysis for transcriptomic type characterization*
Zizhen Yao, Lucas Graybuck

*Hermann Cuntz*
*Tutorials Chair*

**For detailed descriptions see:**
**http://www.cnsorg.org/cns-2018-tutorials**

# Update from the Program Chair

The 27th Annual Computational Neuroscience Meeting (CNS*2018) in Seattle is shaping up to be a great event. We had an unusually large number of 309 abstract submissions this year and are expecting up to 500 participants at the meeting. Abstract acceptance has been announced, and all accepted abstracts will be presented at the meeting either as an oral presentation or as a poster.

**Oral presentations:**
There were 102 submissions for oral presentations. Of those that were accepted for presentation at the conference, 24 were selected for an oral format. All other accepted contributions of course will be more than welcome to present a poster. Three oral presentations will be highlighted as featured oral presentations in a 35+5 minute format, whereas the remaining talks are 15+5 minutes. The program for the oral sessions is available on the OCNS website at:
http://www.cnsorg.org/cns-2018-meeting-program.

**Poster presentations:**
Posters will be presented in two sessions (each poster in one of the sessions). Due to the layout of the poster hall, board dimensions, and number of presented posters, we recommend posters of maximum 86.4cm (w) x 111.7cm (h) [34'' (w) x 44'' (h)]. Note that this is some 7.2cm short of A0 portrait height. A0 portrait posters can in principle be displayed but would extend over the bottom edge of the boards by roughly 7cm (3'').

The Program Committee is looking forward to an excellent CNS*2018 meeting in Seattle, and we are looking forward to meeting you all there!

*Thomas Nowotny*
*CNS Program Committee Chair*

*Thank you to the CNS*2018 sponsors:*

# CNS 2018 WORKSHOPS
## July 17-18, 2018, Allen Institute, Seattle, Washington

**Two Day Workshop**

*Methods of Information Theory in Computational Neuroscience (July 17-18)*
Organizers: Joseph T Lizier, Viola Priesemann, Justin Dauwels, Taro Toyoizumi, Alexander G Dimitrov, Lubomir Kostal, Michael Wibral

**One Day Workshops**

*Neuronal morphology and structure (July 17)*
Organizers: Alexander D Bird, André Castro, Hermann Cuntz

*Insight gained by detailed dendritic modeling (July 18)*
Organizers: Dieter Jaeger, Volker Steuber

*Bridging spatial and temporal scales in brain connectomics (July 17)*
Organizers: Joana Cabral, Katharina Glomb

*Integrative theories of cortical function (July 18)*
Organizers: Hamish Meffin, Stefan Mihalas, Anthony Burkitt

*Models for perceiving and learning time intervals and rhythms (July 17)*
Organizers: Áine Byrne, John Rinzel, Amit Bose

*How does learning reshape the dimensionality of collective network activity? (July 18)*
*Organizers:* Merav Stern, Guillaume Lajoie, Rainer Engelken

*Towards new models for cognitive flexibility (July 18)*
Organizer: Rajeev Rikhye

*Dynamics of rhythm generation (July 17)*
Organizer: Gennady Cymbalyuk

**Half Day Workshops**

*Neuroscience Gateway and large scale neural systems simulations and tools (July 17)*
Organizers: Amit Majumdar, Subhashini Sivagnanam, Ted Carnevale

*Developing, standardizing, and sharing large scale cortical network models (July 17)*
Organizer: Padraig Gleeson
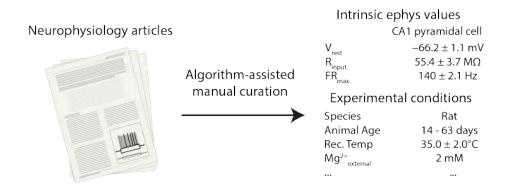
*Martin Zapotocky*
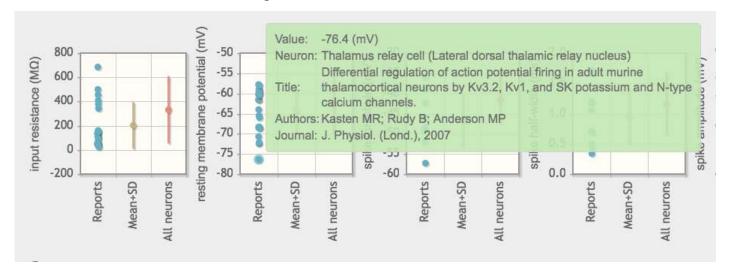*Workshops Chair*

**For detailed descriptions see:**
http://www.cnsorg.org/cns-2018-workshops

# Featured Resource *for*
## *Computational Neuroscience*

*NeuroElectro*



Neurophysiology articles

Algorithm-assisted
manual curation

Intrinsic ephys values

CA1 pyramidal cell

| | |
|---|---|
| $V_{rest}$ | $-66.2 \pm 1.1$ mV |
| $R_{input}$ | $55.4 \pm 3.7$ MΩ |
| $FR_{max}$ | $140 \pm 2.1$ Hz |

Experimental conditions

| Species | Rat |
|---|---|
| Animal Age | 14 - 63 days |
| Rec. Temp | $35.0 \pm 2.0°C$ |
| $Mg^{2+}_{external}$ | 2 mM |
| ... | ... |

**NeuroElectro** (neuroelectro.org) makes electrophysiological measurements for specific neuron types publicly accessible for wide-spread comparison and reuse. Measurements include membrane properties and spike characteristics such as resting membrane potential and spike width. Currently, the database is populated from 968 curated articles with values obtained using data recorded under control conditions.



Value: -76.4 (mV)
Neuron: Thalamus relay cell (Lateral dorsal thalamic relay nucleus)
Title: Differential regulation of action potential firing in adult murine thalamocortical neurons by Kv3.2, Kv1, and SK potassium and N-type calcium channels.
Authors: Kasten MR; Rudy B; Anderson MP
Journal: J. Physiol. (Lond.), 2007

Curated data collected from publications are displayed in graphical form by property type. Here, the blue dots show data from multiple publications on thalamic relay cells. Hovering over a dot reveals the precise value and data source. Data also can be accessed as a bulk download or by querying a RESTful API.

Recent work has used data from NeuroElectro to understand 1) how experimental conditions, like ionic solutions, affect experimental reproducibility (Tebaykin et al, 2017); and 2) how gene expression patterns obtained via a sister database at neuroexpresso.org are correlated with electrophysiological variability (Tripathy et al, 2017).

*Shreejoy Tripathy, University of British Columbia*
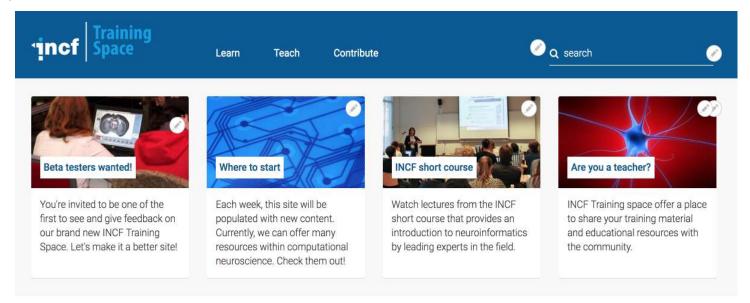*& Rick Gerkin, Arizona State University*

Do you have a favorite software tool or online resource? Users and developers are welcome to contribute short articles of broad interest to OCNS members. Contact us at newsletter@cnsorg.org.

# International Neuroinformatics Coordinating Facility TrainingSpace – Linking Training Resources into a Global Hub

**TrainingSpace** is an online "hub" linking world-class neuroinformatics training resources developed by the INCF community and partners such as FENS, HBP, IBRO, OHBM, and the BD2K- and iNeuro Training initiatives. With TrainingSpace, we aim to make already existing training materials more visible and to preserve lectures and material from courses funded in whole or in part by the INCF.



INCF Training Space can be found at https://training.incf.org/ and will offer:
● introductory material on neuroinformatics for neuroscience programs, and tutorials for specific tools and subjects, and
● help guiding lecturers to content that can be useful in setting up or developing a course further.
Future additions: career paths, study guides, and curricula to help students discover which subjects and sub-fields are relevant for them.

**Computational neuroscience** is one of the pilot subjects for TrainingSpace. Computational neuroscientists tend to have diverse backgrounds, so we aim to guide students from different fields to background material they don't yet have in their educational background – such as maths, statistics, programming, or neurobiology -- before progressing to more complex material requiring this knowledge. A significant part of the content will come from partnerships with other organizations that provide training in neuroscience and related subjects. In addition, we offer funding for courses with the condition that course material should be made available through TrainingSpace, for instance by filming lectures.

*How to help:*
Film your courses and seminars and tell us!
Found a good lecture series on YouTube? Send us a link!
Help us view, review, and summarize videos!
Contact us at trainingspace@incf.org.

*Malin Sandström*
*Community Engagement Officer, INCF*

# In Case You Missed It in the Previous Newsletter – New Format for Future OCNS Meetings Starting in 2019

*Meeting will be shorter with one day of the main meeting integrated with the workshops.*

With 25 years under the belt, the OCNS meetings have a tradition of an established structure that works well for members in many ways. However, some participants feel that it could be improved. At the recent meeting of the OCNS Board of Directors in Antwerp, the pros and cons of different formats for the meeting were discussed. Here we briefly cover some of the challenges pointed out by participants, and the way we will address them at the 2019 meeting.

The main challenges are the length of the meeting and resulting separation between the main meeting audience and the workshop participants. Currently, we start with one day of tutorials which ends with the first keynote presentation. This is followed by three days of the single track main meeting and then two days of multiple track workshops. This totals in a six-day meeting, which is too demanding for many participants. A common complaint is that participants would like to attend the entire meeting, including tutorials and workshops, but can't afford to come for the entire time. Instead, they only come to the main meeting or only attend the workshops. Indeed, a look at the structure of participation shows that the intersection of the participants of the main meeting and the workshops could be higher. This is an opportunity lost. Even bringing the workshops audience to the posters could significantly improve the quality of discussion at the meeting and directly benefit students and postdoc poster presenters. Further, we value providing speaking opportunities to students and postdocs, but speaking slots are limited since most of the presentations during the main meeting are selected based on the submitted abstracts.

A way to overcome this is to introduce parallel sessions throughout the meeting and to interlace the workshops with the main meeting. A good example is provided by the international neuroscience meetings such as SfN or FENS, as well as national neuroscience society meetings, which commonly have parallel sessions. Since the board is divided over how such changes should be implemented, there was a decision to start by shortening the meeting overall by one day. The first three days (tutorial day and the first two days of the main meeting) and the last day of workshops will remain largely unchanged. However, the last day of the main meeting and the first day of the workshops will be integrated, with parallel sessions shared between the regular presenters and the workshops. There will be a poster session on that day to encourage interaction between the people coming just for the workshops with those coming to the main meeting. We will continue to provide an option of registration for the two workshop days only, but there will not be an option to register for only the final day of stand-alone workshops. To present a poster at the poster session, you will have to register for the main meeting.

We calculated the demands on time by the longest workshops, and the new structure will not compromise the longest and very successful two-day workshops which have taken place at the OCNS meeting for several years now. The main change for the workshop organizers is that they would apply for a number of fixed-length blocks of time, as needed to accommodate the requirements of their workshop. It is too late to introduce these changes for the 2018 meeting, so we plan that the 2019 meeting will have this new experimental structure. If feedback from participants in 2019 is positive, further integration may take place in future years.

Firmer constraints on workshop structure will be imposed so that the breaks are respected by all the organizers to facilitate mingling and interactions between participants attending different parallel tracks. A further measure that might be implemented is a rule that you can speak at the meeting only once, perhaps with the exception for keynote invited speakers. Currently, it is common to have people speaking at multiple workshops and sometimes also at the main meeting. We feel that imposing this constraint would allow for more presenters, while facilitating shortening of the meeting.

We realize some of these changes may be controversial. What are your feelings? If you have strong views, write the Board or speak up at the Members Meeting at CNS*2018 in Seattle. Even better, apply for a Director position for the OCNS, so that you can shape the future of the Organization and its meetings.