

ICN Brisbane 16–20 July 2018

Satellite Proposal

Patterning Neural Activity in the Central Nervous System Leigh Marine Laboratory 12-14 July, 2018

1. Host organisation and organising team

Institute of Marine Science (IMS), University of Auckland

Organizing Team: John Montgomery (ISN member, Organizing Cttee ICN Brisbane); Alison Mercer (Past President ISN); Craig Radford (Staff Member IMS); Marie Goeritz (Postdoctoral Fellow), Boyd Taylor (Operations Manager IMS)

2. Steering committee

John Montgomery (ISN member, Organizing Cttee ICN Brisbane)

Alison Mercer (Past President ISN)

Craig Radford (Staff Member IMS);

John Simmers

<http://www.inb.u-bordeaux2.fr/dev/EN/researcher.php?researcher=Simmers%20John&id=147>

Andy Bass

<http://nbb.cornell.edu/andrew-bass>

3. Satellite theme and programme structure

The formation of patterned neural activity in the Central Nervous System has been a long standing topic in neuroethology. Such pattern formation encompasses the motor output of central pattern generators (GPGs) for rhythmic behaviours, the neural correlates of sound production (vertebrate and invertebrate); song learning, and other forms (such as sensory input processing by cerebellar granule cell networks).

The topic is explicitly chosen to be common to a wide range of neuroethology themes. This will allow researchers from different ISN interests to participate and include a NZ element to their 2018 ICN itinerary. The program will aim to provide a brief overview of each participant's field of interest and identify outstanding issues in a way that is a) accessible to the wider group and b) that will facilitate discussion across the full spectrum of CNS pattern formation.

Overarching questions might include:

- Given our current understanding of CPGs, internal models and sensory/GPG interactions to what extent (if any) does Sherrington's idea of 'trains of motor acts', or sequences of motor activity, have any legacy in a synthetic understanding of motor control?
- How can sensory input and error feedback optimize pattern formation?
- What are the relative contributions to pattern formation of the synaptic connectivity of network neurons versus their intrinsic membrane properties?
- How is pattern formation by cell circuits influenced by the extrinsic neuromodulatory environment?

- How do different central networks interact in order to coordinate pattern formation?
- How does pattern formation by neural circuits remain adapted to changing operational needs during the course of development?
- How do forebrain networks sculpt the output of downstream CPGs? Are there any 'rules' shared across divergent motor systems, e.g., locomotion, respiration & sound communication?
- Sensory-motor coupling – is it just for communication behaviours?

4. Work plan, schedule

Provisional dates: 12-14 June, 2018

We would hold the symposium at the Leigh Marine Laboratory (<http://www.marine.auckland.ac.nz/en/about/our-institute/leigh-marine-laboratory.html>) – in the Discovery Centre (<http://www.goatlandmarine.co.nz/>) an hour and a bit north of Auckland. This is close to the Tawharanui sanctuary for bird folk (<http://www.tossi.org.nz/>), and we'd try and include some NZ wine/food/art exposure in the outward and return trips (<http://www.brickbay.co.nz/>).

Organizing team will look after all the arrangements and the steering committee the program.

5. Budget summary and financial commitment

We have permission from the Director of the IMS at University of Auckland for the use of the facility at no charge. We will also be able to provide some accommodation (cottage 6 persons and bunkrooms 24 persons), also at no charge. Participants not using laboratory accommodation will be responsible for their own accommodation and costs (there are numerous options in the Leigh area).

Registration for Visitors to Auckland will be limited to 1 bus load (25 people)

Registration fees for visitors to the Satellite will cover:

Transport from Auckland to Leigh

(Bus Auckland to Leigh early Thursday 12th returning evening Saturday

14th; participants will have to time flights, and/or Auckland

accommodation to work to the bus times. Most flights Ak Brisbane are

early morning, so accommodation close to the airport night of 14th would

be required to travel to arrive morning of Sunday 15 July in good time for the Official Congress Opening & Welcome 16:30)

Meals at the laboratory (2Xbreakfast; 3Xlunch; 2Xdinner)

Visit to BrickBay/Tawharanui (1st or last day to make use of bus)

Estimated cost of registration \$230 per person

Registration for Auckland/Leigh locals (not requiring transport) will cover:

Meals at the laboratory (2Xbreakfast; 3Xlunch; 2Xdinner)

Visit to BrickBay/Tawharanui

Estimated cost of registration \$150 per person.

6. Tourism Opportunity

Information for participants wishing to make the most of a visit to New Zealand.

July is mid-winter so think more of hot pools (Rotorua) and skiing (Central North Island/Queenstown/Wanaka).

But having said that, temperatures in the north of NZ are typically in the early/late teens (Celsius) so plenty of options for beaches and walking, but swimming not so much.

Great wildlife/vineyard/coastal options around Auckland. Look up Waiheke Island, Tiritiri Matangi, Piha etc. <http://www.aucklandtourism.co.nz/>