

NIMBioS Working Group: Cortical Networks

May 9-11, 2011 Meeting Schedule

Monday, May 9

8:00-9:00 am Breakfast at NIMBioS

9:00-12:00 Presentations by attendees. Perhaps 20 mins for those who attended in 2010, and 30 mins for those who didn't. The purpose is to get familiar with each researcher's background and interests.

12:00-1:00 Lunch

1:00-3:00 Open discussion of the following topics

A) Overarching goal of the meeting: to write a perspective paper on the topic of developing an approach to measuring/analyzing/quantifying cortical networks at multiple scales of abstraction, going from whole brain (say fMRI) to the single neuron. The intended audience would consist of the neuroscience/computational neuroscience community. Perhaps we can target a publication in *Nature*, *Neuroscience*, or *Trends in Neurosciences*. We will also communicate this paper to the NSF/NIMBioS program managers.

B) Conceptual. Big picture issues: what are the important questions the field would like addressed? Are we moving in the right direction?

- What can we hope to achieve?
 - Decode? Predict?
 - Prostheses?
 - Cure?
 - Understand?

3:00-3:30 Coffee Break

3:30-5:30:

C) Theoretical Challenges:

- How to maximize information from the multidetector data (images, multi-unit, etc.)
- How do we visualize (communicate) the results?
- How do we study non-sensory brain regions?
- Population codes (information synergy)
- Revisit the labeled line dogma (cell types)

5:30 Reception @ NIMBioS

6:30 Dinner on own

Tuesday, May 10

8:00-9:00 am Breakfast at NIMBioS

9:00-12:00

D) Technical Challenges:

- Improve spike sorting
- Extraction of mnemonic patterns from spike & LFP data
- Increase number of neurons recorded
- Record in behaving animals

12:00-1:00 Lunch

1:00-3:00

E) Technical Challenges: Network Extraction Techniques and Tools

- Can we develop an integrated method to analyze networks at multiple scales of abstraction ?

3:00-3:30 Coffee Break

3:30-5:30

- Summarize emerging themes
- F) How can we formulate a Center Grant proposal based on the ideas discussed.

Wednesday, May 11:

8:00–9:00 am Breakfast at NIMBioS

9:00-12:00:

- Create concrete outline for paper draft
- Create plan for submitting a Center Grant
 - Who might be willing/able to support such a Center grant?
 - How might such a Center be organized, and where could it be located?
- What can we communicate back to NSF/funders based on our discussions?

12:00 **Boxed lunches to go**

Breakfast (bagels, pastries, fruit, yogurt, coffee, juice) will be available at NIMBioS from 8:00-9:00 each morning. There will be a hot breakfast on Tuesday, May 10th.