

German-Israeli BCCN-BFNT
Workshop on

Dynamics in Small Neuronal Networks *in vitro*

Schloss Beuggen, Beuggen, Germany
Jul 15th-17th 2009

Hosted by the
Bernstein Center for Computational Neuroscience Freiburg

Networks of cortical neurons maintained in culture have become a widely used model for investigations ranging from the development of the nervous to the foundations of synaptic plasticity and learning. With the advent of planar microelectrode arrays, on which such cultures can be grown, monitoring network as such, their development and activity dynamics as well as the functional embedding of individual neurons into the network has become feasible. In this workshop we will address open issues related to these paradigms, such as approaches to assess functional connectivity, targeted interaction with the network and statistical measures to identify changes of activity patterns.

Organization:

Ulrich Egert, IMTEK, Univ. Freiburg, egert@imtek.de

Shimon Marom, Technion, Haifa, marom@techunix.technion.ac.il

Noam Ziv, Technion, Haifa, noamz@netvision.net.il

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Programme

WEDNESDAY (Jul 15th)

SESSION - 16:00-18:30	
Welcome and organizational issues – Ulrich Egert	
The isolated neuron (Avner Wallach, Asaf Gal)	Chair: Ulrich Egert
DINNER	
SESSION 2 - ROUND TABLE	
Intrinsic dynamics and variability - on measures of significance for induced changes	

THURSDAY (Jul 16th)

SESSION 3 - Morning	
The network - a look from within: individual neurons within networks – Thursday morning (Amir Minerbi, Maya Kaufman, Dotan Di Castro, <i>Steffen Kandler</i>)	Chair: Shimon Marom
LUNCH	
SESSION 4 - Afternoon	
Neuronal assemblies: population level approaches (Einat Kermany , <i>Tayfun Gürel</i> , Ofri Levy, <i>Sarah Jarvis</i>)	Chair: Noam Ziv
DINNER	
SESSION 5 - ROUND TABLE	
Superburst, Assemblies, Avalanches, Bursts and Clusters - what is the difference, what the link	

FRIDAY (Jul 17th)

SESSION 6

Chair: Steffen Kandler

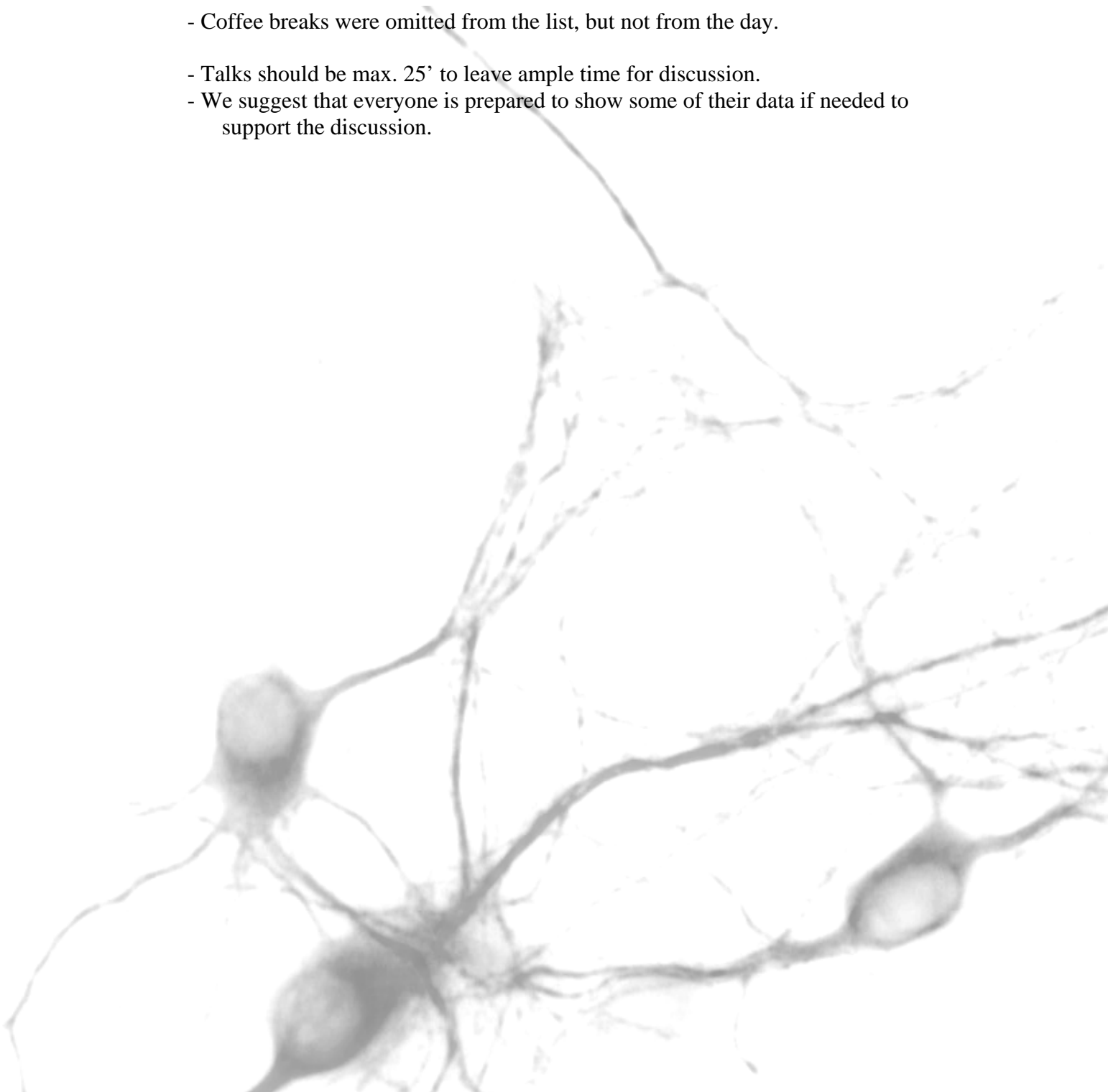
State dependence of interaction, how to define network states, their changes and their effect on stimulation paradigms

(Oliver Weihberger, Sebastian Reinartz, ...)

LUNCH

Socializing and trip to (tba, organized by the Freiburg students)...

- Coffee breaks were omitted from the list, but not from the day.
- Talks should be max. 25' to leave ample time for discussion.
- We suggest that everyone is prepared to show some of their data if needed to support the discussion.



Participants

Technion, Haifa:

Haroush, Netta
Kaufman, Maya
Kermany, Einat
Levy, Ofri
Roman Dvorkin
Di Castro, Dotan
Eytan, Danny
Gal, Asaf
Minerbi, Amir
Wallach, Avner
Marom, Shimon
Meir, Ron
Ziv, Noam

University Freiburg

Böhm, Claudia
Jarvis, Sarah
Mönig, Nila
Cardanobile, Stefano
Dini, Patrick
Froriep, Uli
Goddard, Matthew
Gürel, Tayfun
Kandler, Steffen
Okujeni, Samora
Reinartz, Sebastian
Weihberger, Oliver
Egert, Ulrich
Rotter, Stefan
Teppola, Heidi (Univ. Tampere,
Finland)