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Current Position

PhD student,
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Department of Biosystems Science and Engineering (D-BSSE), ETH Zurich

Background

M.Sc. Neuroscience, Erasmus University Medical Center Rotterdam, the Netherlands
B.Sc. Neuroscience specialist program, <http://www.utoronto.ca/> University of Toronto, Scarborough, Canada

Supervisors

Prof. Dr. Andreas Hierlemann, ETH Zurich
Dr. Frederic Knoflach, Hoffmann-La Roche Ltd.

Project description

This project aims at growing brain slice cultures on high density multi-electrode array (MEA) chips. Previous studies showed that the hippocampus is important for memory consolidation and retrieval. During awake and dreaming states, different pyramidal cell groups are selectively activated during gamma oscillations depending upon the type of information they encode. However, the selection mechanism is still unclear. Using a high-density MEA, we will be able to record individual pyramidal cell activities at the network level. This research will help to answer questions about selective information processing, and how reduced gamma oscillation synchronization in a model of schizophrenia impacts the selective activation mechanism of pyramidal cells.

Keywords: HD-MEA, extracellular electrophysiology, organotypic culture, hippocampus, gamma oscillations, data evaluation

Collaborations

Hoffmann-La Roche Ltd.
Xensor Delft, The Netherlands

Marie Curie courses:

Courses from Network meeting in Bremen Febuary 2015
Courses from Network meeting in Copenhagen August 2014
Courses from Network meeting in Basel April 2014
Technical University of Denmark, PhD Summer School: Micro- and Nanotechnology for label-free Sensing 2013, August 12-23, 2013
Courses from Network meeting in Delft September, 2013
Courses from Network meeting in Copenhagen January 2013
Courses from Network meeting in Bratislava and Vienna September 2012
Courses from Network meeting in Basel March 2012

Other Courses:

SfN short course III: Optimizing Experimental Design for High-Quality Science, Chicago, IL, USA, 2015

unicode-bidi: embed; vertical-align: baseline;">Bench to Bedside symposium 2015, Neuroscience Network Basel, Feb.13, 2015.</p> <p style="language: en-US; line-height: normal; margin-top: 0pt; margin-bottom: 6.0pt; margin-left: .38in; text-indent: -.38in; text-align: left; direction: ltr; unicode-bidi: embed; vertical-align: baseline;">Neuroscience cycle B4: Neurological Diseases, University of Basel, Feb-May, 2015</p> <p style="language: en-US; line-height: normal; margin-top: 0pt; margin-bottom: 6.0pt; margin-left: .38in; text-indent: -.38in; text-align: left; direction: ltr; unicode-bidi: embed; vertical-align: baseline;">Neuroscience cycle B3: Genes and Behavior, University of Basel, Sep-Dec, 2014</p> <p style="language: en-US; line-height: normal; margin-top: 0pt; margin-bottom: 6.0pt; margin-left: .38in; text-indent: -.38in; text-align: left; direction: ltr; unicode-bidi: embed; vertical-align: baseline;">Neuroscience cycle B2: synapse, University of Basel, Feb-May, 2014</p> <p style="language: en-US; line-height: normal; margin-top: 0pt; margin-bottom: 6.0pt; margin-left: .38in; text-indent: -.38in; text-align: left; direction: ltr; unicode-bidi: embed; vertical-align: baseline;">Practical course in advanced 3D microscopy Winter School 2014, University of Zurich and ETH Zurich, Jan. 2014</p> <p align="JUSTIFY">Advanced Neuroscience I, University of Zurich, 2013 - 2014</p> <p align="JUSTIFY">Microsensors and Microsystems, ETH Zurich, 2012-213</p> <p align="JUSTIFY">Genetic Approaches in Biomedical Research, University Basel, 2012</p> <p align="JUSTIFY">Fundamentals of Modern Statistics, ETH Zurich, 2012</p> <p align="JUSTIFY">Felasa LTK Module 1, 2012</p> <p align="JUSTIFY"></p> <p align="JUSTIFY">Other Trainings:</p> <p style="margin-top: 0pt; margin-bottom: 6pt; margin-left: 0.38in; font-size: 12.16px; line-height: normal; text-indent: -0.38in; text-align: left; direction: ltr; unicode-bidi: embed; vertical-align: baseline;">Project Management (PM) for Research, ETH Zurich, 2015</p> <p style="margin-top: 0pt; margin-bottom: 6pt; margin-left: 0.38in; font-size: 12.16px; line-height: normal; text-indent: -0.38in; text-align: left; direction: ltr; unicode-bidi: embed; vertical-align: baseline;">How does my personal life model influence my career? ETH Zurich HR department, June 16-17, 2015</p> <p style="margin-top: 0pt; margin-bottom: 6pt; margin-left: 0.38in; font-size: 12.16px; line-height: normal; text-indent: -0.38in; text-align: left; direction: ltr; unicode-bidi: embed; vertical-align: baseline;">Learning to Teach Workshop, ETH Zurich, March 2014;</p> <p style="margin-top: 0pt; margin-bottom: 6pt; margin-left: 0.38in; line-height: normal; text-indent: -0.38in; text-align: left; direction: ltr; unicode-bidi: embed; vertical-align: baseline;">BioBusiness summer school, Amsterdam, the Netherlands, June, 2014</p> <p style="margin-top: 0pt; margin-bottom: 6pt; margin-left: 0.38in; line-height: normal; text-indent: -0.38in; text-align: left; direction: ltr; unicode-bidi: embed; vertical-align: baseline;"></p> <p align="JUSTIFY"><strong style="text-align: justify;">Secondments</p> <p style="font-size: 12.16px; line-height: 15.808px;" align="JUSTIFY">2014: July, Oct. at Hoffmann-La Roche Ltd.</p> <p align="JUSTIFY">2013: Feb 4-7, 18-20, March 5-7, 11-13; May 6-8, 13-17, June 3-7, 10-12, July 16 18, 23-25, Oct. 1-22, at Hoffmann-La Roche Ltd.</p> <p align="JUSTIFY">2012: March 12th - 16th, Aug. 13th - 17th, Oct. 8th -12th at Hoffmann-La Roche Ltd.</p> <p align="JUSTIFY">
</p> <p align="JUSTIFY"><strong style="text-align: justify;">Publications</p> <p style="text-align: justify;">M. Ballini, J. Muller, P. Livi, Y. Chen, U. Frey, A. Stettler, A. Shadmani, V. Viswam, I. L. Jones, D. Jackel, M. Radivojevic, M. K. Lewandowska, W. Gong, M. Fiscella, D. J. Bakkum, F. Heer, and A.

Hierlemann, ♦A 1024-Channel CMOS Microelectrode Array With 26,400 Electrodes for Recording and Stimulation of Electrogenic Cells In Vitro, ♦ IEEE Journal of Solid-State Circuits, vol. 49, no. 11, pp. 2705-2719, 2014.

Conferences

W. GONG, J. SENCAR, D. JOKEL, D. BAKKUM, A. HIERLEMANN. "Tracking the activity of multiple individual neurons over one month in organotypic hippocampal slices grown on high-density multi-electrode arrays." ♦ Society for Neuroscience (SfN) Conference, Chicago, IL, USA, 2015, p. 540.08

W. Gong, J. Sencar, D. Jokel, J. Moller, M. Fiscella, M. Radivojevic, D. Bakkum, A. Hierlemann, "Long-term, High-spatiotemporal-resolution Recording from Cultured Organotypic Slices with High-density Microelectrode Arrays", Proceedings of the 18th International Conference on Solid-State Sensors, Actuators and Microsystems, Transducers, 2015, Anchorage, Alaska, USA, pp. 1037-1040 (ISBN: 978-1-4799-8954-6, DOI: 10.1109/TRANSDUCERS.2015.7181103).

Wei Gong, Milos Radivojevic, David Jokel, Douglas Bakkum and Andreas Hierlemann. Long-term, high-spatiotemporal resolution recording and stimulation of hippocampal slice on high-density microelectrode arrays. The 7th International IEEE EMBS Conference on Neural Engineering, 22-24 April 2015, Montpellier, France. Poster presentation.

Wei Gong, David Jokel, Jan Moller, Michele Fiscella, Milos Radivojevic, Douglas Bakkum, Felix Franke, Frederic Knoflach, Beat Gwiler, Branka Rosic, Thomas Russell, Andreas Hierlemann (2014). Long-term Cultivation and Recording from Organo-typic Brain Slices on High-density Microelectrode Arrays. MEA Meeting 2014 - 9th international Meeting on Substrate-integrated Microelectrode Arrays, July 1 - 4, 2014 in Reutlingen, Germany

W Gong, A W Van Herwaarden, C Hafner, A Hierlemann. ♦♦Poster: Liquid Calorimetry with serum and blood on the Flash DSC1. L♦nwitzseminar on Calorimetry 2014, Germany, June 15-20, 2014

M. Ballini, J. Muller, P. Livi, Y. Chen, U. Frey, A. Shadmani, I.L. Jones, W. Gong, M. Fiscella, M. Radivojevic, D. Bakkum, A. Stettler, F. Heer, A. Hierlemann. Conference Paper: A 1024-channel CMOS microelectrode-array system with 26'400 electrodes for recording and stimulation of electro-active cells in-vitro. ♦Conference: VLSI Circuits (VLSIC), 2013 Symposium

MEA meeting 2012, ♦Reutlingen, Germany

Network Meetings ♦

Bremen, Germany, Feb. 23-24, 2015

Copenhagen, Danmark, Aug. 25-28, 2014

Basel, Switzerland, April 18-21, 2014

Delft, the Netherlands, Sep 23-26, 2013

Copenhagen, Danmark, Jan 14-18, 2013

Vienna, Austria, September 25-26, 2012

Basel, Switzerland, March 26-27, 2012

Industry meetings

Roche visit, ♦ and Siemens ♦Project management lecture ♦, April 2012, Basel

Memberships

EngCaBra

MEA

align="JUSTIFY"><a href="http://www.neuronetwork.unibas.ch/"
rel="nofollow">Neuroscience Network Basel</p> <p align="JUSTIFY">FENS</p> <p align="JUSTIFY">Dutch
Neurofederation</p> <p align="JUSTIFY">BCI</p> <p
align="JUSTIFY"><a
href="http://www.heartandstroke.com/site/c.iklQLcMWJtE/b.2796497/k.F922/Heart_Disease_Str
oke_and_Healthy_Living.htm" rel="nofollow">Heart and Stroke Foundation</p> <p
align="JUSTIFY"><strong style="text-align:
justify;">Links</p> <p align="JUSTIFY">BEL, D-BSSE, ETH Zurich</p>

