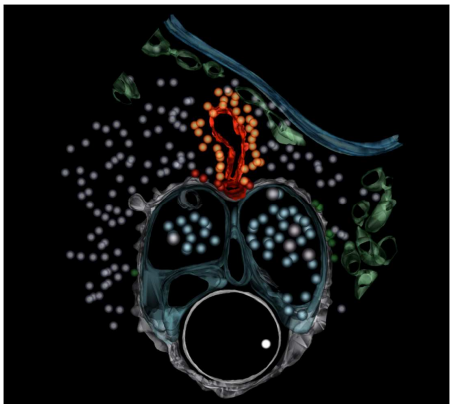
RESEARCH CONFERENCES



ESF-FENS The Brain Conference

**The Neurobiology of Synapses and their Dysfunction**

**13-17 October 2013**
**Hotel La Palma, Stresa, Italy**

Chairs:
**Nils Brose**, *MPI, Göttingen, DE*
**Michael E. Greenberg**, *Harvard Medical School, Boston, US*

**http://www.esf.org/conferences/13425**

# Highlights & Scientific Report

**Conference Highlights**

As its title indicates, the focus of the conference 'The neurobiology of synapses and their dysfunction' was on synapses, which are the contact sites through which nerve cells in the brain communicate. Highlights of the basic science contributions at the meeting included talks on how the about 100 trillion synapses in the human brain are formed in a specific manner so that all the functional circuits that define our behavior are generated properly, on how synapses are dynamically tuned, generated, or removed as the brain matures or learns, and on how synapses operate to determine the correct behavioral output. The basic science talks were complemented by talks on why and how synapses dysfunction in various neurological and psychiatric disorders, including autism, anxiety, drug addiction, Parkinson's disease, and Alzheimer's disease.

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**Scientific Report**

## Executive Summary

As expected because of its timely thematic focus, the conference was oversubscribed. A total of 140 participants could finally attend. The conference comprised 25 talks by established scientists and 10 talks by junior scientists (i.e. students and postdocs), along with 66 poster presentations, for which three time slots of about two hours each were allocated. 47% of the participants, 30% of the established scientist speakers, and 40% of the junior scientists speakers were female.

## Scientific Content of the Conference

The talks at the conference were arranged along five thematic focus areas to cover all aspects of synapse biology:

1. Synaptogenesis and network function

The focus in this thematic area was on mechanisms that define the basic principles and the specificity of synapse formation.

2. Synapse function

Talks in this focus area covered mechanisms of presynaptic transmitter release as well as mechanisms of postsynaptic function.

3. Activity dependent processes in synapse formation and function

The focus of this thematic area was on synaptic plasticity during learning and memory processes.

4. Synapses and networks

This part of the conference was focused on defined neuronal circuits that control defined behaviors such as fear, anxiety, or drug use.

5. Mechanisms of synaptopathies

Talks in this part of the conference dealt with the genetic and molecular causes of synapse dysfunctions involved in neurological and psychiatric disorders, including autism, anxiety, drug addiction, Parkinson's disease, and Alzheimer's disease.

The combination of basic science and disease related research at the conference provided an excellent opportunity to discuss the future clinical impact of research on synapses. Several of the disease mechanisms discussed in the final session have already sparked attempts to design experimental therapies. This development is expected to continue, so that synapse biology will continue to feature prominently in modern basic and clinical neuroscience.

| Forward Look |
| --- |
| 'Synaptopathies' are clearly an emerging topic that will deeply influence research on neurological and neuropsychiatric diseases. The research field is characterized by a particular need for interdisciplinary approaches. The choice of conference talks reflected this need, and the conference proved that a detailed dialogue between basic and more clinically oriented scientists is not only extremely fruitful but indeed required to move this emerging field forward. |
| |
| A regular meeting on 'synaptopathies', combining basic and clinically oriented research would be a very good idea. |
| Business Meeting Outcomes |
| Not applicable. |
| Atmosphere and Infrastructure |
| The atmosphere at the conference was characterized by intense collegial interactions and allowed younger scientists to discuss their work in detail as there was ample time for poster sessions and discussions. The overall feedback from the participants to the organizers was extremely positive and included very positive comments on the conference site. |
| Sensitive and Confidential Information<br>None |
| ☐ I hereby authorise ESF to publish the information contained in the above Scientific Report on the ESF Research Conferences webpages. No sensitive or confidential information (see above) has been included in this report |

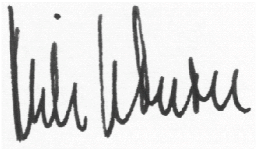
Confidential Issues

- *Any other issues, not to be included in the published report.*

None.

**Date & Author**:

January 7th, 2014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