Synapses as therapeutic targets for Autism Spectrum Disorders

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Pavia (Aula Golgi, July 4th, 2014)

Satellite symposium, 9th FENS Forum of Neurosciences

Satellite symposium of the FENS Forum 2014

Synapses as a therapeutic targets for Autism Spectrum Disorders

Organizers: Paolo Curatolo (Roma, Italy) and Enrico Cherubini (Trieste, Italy)

Venue: aula Golgi (Golgi museum), Pavia

Autism Spectrum Disorders (ASD) encompasses a wide range of neuro-developmental disorders characterized by social and communication deficits and repetitive behavior. Although in the majority of cases the causes of ASD are still unknown, recent discoveries of single mutations in genes involved in synaptic function in affected individuals, point to the synapse as a possible site of autism origin.
In this one day satellite symposium of the FENS Forum, to be held in Pavia on July 4th 2014, we propose to bring together world-recognized experts in the field to discuss how animal models have greatly advanced our understanding of the molecular pathways involved in synaptic dysfunction in ASD leading to "synaptic clinical trials" in young patients.

The symposium will be organized as follows:
In the morning, after a general introduction to the theme (**Thomas Bourgeron**, Paris, France), we will first focus on dysfunctions of excitatory and/or inhibitory synaptic signaling observed in animal models of the Rett syndrome (**C. Rosenmund**, Berlin, Germany), Fragile X syndrome (**Maria Vincenza Catania**, Catania, Italy), Tuberous Sclerosis (**Paolo Curatolo**, Rome, Italy).
We will then discuss autistic-like behavior and synaptic dysfunctions resulting from mutations in genes encoding for the scaffold molecules *SHANK3* (**Egidio D'Angelo**, Pavia) and neuroligins (**Enrico Cherubini**, Trieste, Italy).
In the afternoon section, we will discuss how deletion of the gene encoding for the homeobox containing the transcription factor Engrailed-2 (En-2), involved in patterning and differentiation of mid/hindbrain regions, may lead to autistic behavior associated with alterations of GABAergic function (**Yuri Bozzi**, Trento, Italy). **Yehezkel Ben Ari** (Marseille, France) will discuss how developmental changes in the direction of GABA action from depolarizing to hyperpolarizing may affect the excitatory/inhibitory balance, a risk factor in autistic disorders, and the novel therapeutic approach with bumetanide, a blocker of the cation-chloride importer NKCC1. Then, **L. Oberman** (Boston, USA) will talk about the use of mGluR antagonists and GABA agonists as novel pharmacological tools for the treatment of ASD. The day will terminate with the lecture of **Ofer Yizhar** (Rehovot, Israel) on the use of optogenetic tools to characterize behavioral dysfunctions (reminiscent of those found in autistic patients) arising from the excitatory/inhibitory imbalance of selective neuronal microcircuits.

The Symposium, a satellite of the FENS Forum 2014, will be held on July 4, 2014, in the aula Golgi (Golgi museum), in Pavia, the native land of Camillo Golgi.
Pavia is located 35 km south of Milan, at the confluence of the Ticino river with the Po. Dating back to pre-Roman times, under the Goths Pavia became the capital of their kingdom (AD. 568-774). Later, under the Visconti family, became an intellectual and artistic centre, and the seat of the University (one of the oldest in Europe). Founded in 1361 around the nucleus of the old school of law, attracted students from many countries. In 1815, Pavia was under Austrian administration until the Second War of Italian Independence (1859) and the unification of Italy one year later. Pavia's most famous landmark is the Certosa, or Carthusian monastery, founded in 1396 and located 8 km north of the city.

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Venue: Aula Golgi (Golgi museum), Pavia, July 4th, 2014

Organizers: Paolo Curatolo (Rome, Italy) and Enrico Cherubini (Trieste, Italy)

Morning Session

8.50-9.00	**P. Curatolo** (*Rome, Italy*): Welcome address
9.00-9.30	**T. Bourgeron** (*Paris, France*): General Introduction
9.30-10.00	**C. Rosenmund** (*Berlin, Germany*): Rett syndrome
10.00-10.30	**M.V. Catania** (*Catania, Italy*): Fragile X syndrome
10.30-11.00	**P. Curatolo** (*Rome, Italy*): Tuberous Sclerosis
11.00-11.30	Coffee break
11.30-12.00	**E. D'Angelo** (*Pavia, Italy*): *SHANK3*
12.00-12.30	**E. Cherubini** (*Trieste, Italy*): Neuroligins
12.30-12.45:	**Y. Ben Ari** (*Marseille, France*): General Discussion
12.45-15.00	Lunch e Poster Session

Afternoon Session

15.00-15-30	**Y. Bozzi** (*Trento, Italy*): Transcription factor En-2
15.30-16.00	**Y. Ben Ari** (*Marseille, France*): Chloride homeostasis
16.00-16.30	Coffee break
16.30-17.00	**L. Oberman** (*Boston, USA*): Novel pharmacological tools for the treatment of ASD
17.00-17.30	**O. Yizhar** (*Rehovot, Israel*): Optogenetic tools to identify the excitatory/inhibitory balance in selective neuronal microcircuits.
17.30-18.00	**L. Oberman** (*Boston, USA*): General discussion and conclusion