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"A new home for brain research"

since April 2013, the Labs of Directors, **Profs Erin Schuman and Gilles Laurent**, as well as the Institute's administration are located in the same building on campus Riedberg, a developing and inspiring environment in the North of Frankfurt, which is also the home of the Goethe University's biology, chemistry and physics departments, as well as the Frankfurt Institute for Advanced Studies (FIAS).

Gilles and Erin will be joined in the summer by the Max Planck Research Group Leaders **Dr. Tatjana Tchumachenko** (currently at Columbia University, New York, USA) and **Dr. Johannes Letzkus** (currently at the Friedrich Miescher Institute in Basel). Additionally, the Institute will house the Department of a third director (to be hired soon), the Max Planck Research Unit of Neurogenetics, headed by **Dr. Peter Mombaerts**, and several core facilities.

The Institute's old home in Niederrad, downtown and on the other side of the river Main, is still functioning, and houses the Emeritus Group of **Prof. Wolf Singer**, our Research Units, and the Department of **Prof. Pascal Fries**, Director at the Ernst Strüngmann Institute for Neuroscience (ESI). ESI will focus on Systems and Cognitive Neuroscience. **Wolf Singer** retains a double affiliation with both the Max Planck Institute for Brain Research and the Ernst Strüngmann Institute.

Erin Schuman watches Gilles Laurent sign the transfer documents on April 3, 2013. The new building is now officially transferred to both directors.



Minerva Bistro

the Minerva Bistro is located on the ground floor of the new building of the Max Planck Institute for Brain Research in Riedberg, and it is open to the public.

The Minerva bistro offers a weekly seasonal menu of innovative, high-quality, healthy and attractively priced cuisine. You can find the bistro's entrance in the foyer of the new MPI building at Max von Laue Str. 4 and on sunny days you can eat on the terrace and enjoy the garden. The MPI for Brain Research is happy to have attracted the talented team of **Bastian Karst and Sebastian Linder**—owners of the award-winning restaurant Kalist in Oberursel. Karst and Linder succeeded in recruiting **Benjamin Moore** as Minerva's Head Chef. Minerva is open from 8:00 to 18:00 Monday-Friday and also offers freshly-baked croissants, eggs and yogurt each morning, with lunch service beginning at 11:30.



Minerva was the Roman goddess of wisdom and an image of Minerva, as a warrior-goddess, is the logo of the Max Planck Society. For its Minerva bistro, the MPI Brain Research chose to represent Minerva as “unplugged”: her helmet is off but her determination is strong.

Ask a neuroscientist

for each edition of the Newsletter, a scientific question is answered by a member of our Institute. This time, a question by **WeeSaam Lepak**, high-school student at the Frankfurt International School (FIS) is answered. **WeeSaam** currently participates in the Max Planck Junior Scholars Program, internships which allows young students to participate in research at our Institute. His question is: “Is there a scientific reason or advantage for dreams to occur at night?”

the question is answered by **Prof. Gilles Laurent**: “This is a tricky and far-ranging question, but I’ll be brief. Dreaming in humans is associated (at ~90%) with rapid-eye-movement (REM) sleep, a state of sleep associated (among others) with heightened brain activity and with muscle atonia (rest), except for the eye muscles. But REM-like states have been demonstrated in nearly all mammals tested and in birds (all animals that thermoregulate). Thus, if REM sleep predicts „dreaming” (a subjective state admittedly difficult to test with non humans), the answer to the question is that it depends on when these animals tend to express REM sleep; and this in turns obviously depends on when these animals sleep. While we, as a species, are diurnal animals—we thus tend to sleep and dream at night—many species are nocturnal (many bats sleep over 18 hours a day), or sleep often during the day (think of cats). Then there is the case of marine mammals (whales, dolphins, seals etc), some of which can spend extended periods of time at sea and on land. Those aquatic mammals, when at sea, tend to show unihemispheric sleep (i.e., sleep on one side of the brain at a time). This unihemispheric sleep is also non-REM, for the simple reason that REM implies muscle atonia, and is thus incompatible with swimming. But when these animals move to land, such as seals do periodically, then they express REM sleep. But dolphins and whales, as far as I know, express no REM sleep. Whether they dream is harder to answer.”

Friends of the Max Planck Institute for Brain Research

continued

"If the question concerned humans exclusively, then the answer is that dreams occur at night because we sleep at night—although our sleep patterns have probably evolved a lot since our lifestyle has become less synchronized to diurnal cycles with the invention of artificial lighting. This said I can vouch for the vividness of daydreaming in the middle of a boring early-afternoon seminar in an overheated room. This may even have survival value!"

News from our Institute "The remarkable neuron"

in the beginning of this year, **Prof. Erin Schuman** presented her work at the TEDx Caltech conference. Her contribution is available on the web.

On January 18, 2013, Caltech hosted TEDx Caltech: The Brain, a forward-looking celebration of humankind's quest to understand the brain, by exploring the past, present and future of neuroscience. **Erin Schuman** presented her work on protein synthesis at the synapses. Her presentation „The Remarkable Neuron“ is available on YouTube.

TEDx (x=independently organized TED event) Caltech is a local, self-organized event that bring people together to share a TED-like experience. At this event, TEDTalks video and live speakers were combined to spark deep discussion and connection in a small group.

More information

tedxcaltech.com/content/erin-schuman

www.brain.mpg.de/research/schuman-department.html

Recent publications

Laurent Department

Rutishauser, U., Kotowicz, A. and Laurent, G. A method for closed-loop presentation of sensory stimuli conditional on the internal brain-state of awake animals. *Journal of Neuroscience Methods* 215: 139–155 (2013).

Schuman Department

Ngo, J.T., Schuman, E.M. and Tirrell, D.A. A mutant methionyl-tRNA synthetase from bacteria enables site-selective N-terminal labeling of proteins expressed in mammalian cells. *Proc. Natl. Acad. Sci., Proc. Natl. Acad. Sci.*, 110(13), 4992-4997 (2013).

Taylor, A., Wu, J., Tai, H.C. and Schuman, E.M. Axonal translation of β -catenin regulates synaptic vesicle assembly. *Journal of Neuroscience* 33(13): 5584–5589 (2013).

Singer Department

Petersen, S. and Singer, W. (Eds.) *Macrocircuits*. *Current Opinion in Neurobiology* 23(2), Elsevier, Amsterdam NL, 159-290 (2013).

Petersen, S. and Singer, W. Editorial overview. *Current Opinion in Neurobiology* 23(2): 159-161 (2013).

Uhlhaas, P.J. Dysconnectivity, large-scale networks and neuronal dynamics in schizophrenia. *Current Opinion in Neurobiology* 23(2): 283-290 (2013).

Wibral, M., Pampu, N., Priesemann, V., Siebenhühner, F., Seiwert, H., Lindner, M., Lizier, J.T. and Vicente, R. Measuring information-transfer delays. *PLOS ONE* 8(2): e55809 (1-19) (2013).



The International Max Planck Research School (IMPRS) for Neural Circuits was founded at the beginning of 2011. Each year up to ten new students are selected to start their doctoral studies in Frankfurt am Main.

Third IMPRS selection symposium

the third selection symposium of the International Max Planck Research School (IMPRS) for Neural Circuits was held on March 15 and 16, 2013. Sixteen students from all over the world visited Frankfurt, gave a talk, were interviewed and were shown the various neuroscience labs of the Max Planck Institute for Brain Research, Goethe University and Ernst Strüngmann Institute. The symposium was concluded with a city tour and a visit to a typical Frankfurt restaurant in Sachsenhausen.

In the Fall of 2013 six new students from four different countries will join our IMPRS.

More information

www.imprs.brain.mpg.de

Become a Friend

through our recently founded Association Friends of the Frankfurter Max Planck Institute for Brain Research, we will share with you the latest research findings of our Institute and provide an opportunity for you and your family to see how neuroscience research is done.

If you are interested in learning about the brain and about how neurons, synapses and neuronal networks lead to behavior and perception, you should become a member of our Association.

Membership benefits include:

- A bi-annual newsletter, with an overview of the latest research results, activities and publications of the MPI for Brain Research, Frankfurt.
- Access to all the lectures of the Institute.
- Visits to the MPI for Brain Research Laboratories.
- Access to the MPI for Brain Research Library.
- Invitation to "Brain Day" events for the entire family.
- Invitations to special evening lectures.

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