



Swiss Society for Neuroscience (SSN)

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Editorial

The SSN annual meeting 2006 took place in Basel on January 28th, in collaboration with the Swiss Society for NeuroRadiology. The local organizing committee did a great job and, as a consequence, the meeting was quite successful, as reflected by a large attendance. For the first time, abstracts for poster presentations were submitted on-line, a procedure that was successful although some slight improvements will be introduced for our future annual meetings. A highly important event of the meeting in Basel was the ceremony in the honor of the first "honorary member" of the SSN, our distinguished colleague Professor K. Akert from Zürich, who conducted a remarkable research in the field of Neuroscience and, in addition, has been highly active for the promotion of Brain Research in Switzerland during several decades.

In 2008, the SSN will organize the FENS meeting in Geneva, with an expected attendance of at least 5'000 European neuroscientists. This event is an honor for the SSN but also a highly challenging responsibility. The local organizing committee, under the direction of Professor Ann Kato, is already extremely active for the preparation of this event, already 2 years in advance. The success of the FENS 2008 meeting in Geneva will of course depend on the quality of our organization, on the special events that we will propose to the participants, with special emphasis on events aimed for the young neuroscientists. Nevertheless, the success of such a meeting depends essentially on the quality of the scientific content. An important element in this context is the offer of symposia. A call for proposals for symposia will be sent to all national European Neuroscience Societies with a deadline of February 2007. However, you can already be active now by pre-contacting colleagues from all over Europe and encouraging them (maybe in collaboration with you) to elaborate a program for a special symposium on a topic of their choice. The organization of a symposium includes a selection of prominent speakers covering an attractive topic, although a good balance between different European areas would represent an advantage, as well as the inclusion of young speakers as well. The council of the SSN is grateful for your collaboration in this process of recruiting potential organizers of symposia for the FENS 2008 meeting in Geneva.

Eric M. Rouiller

SSN travel fellowships 2006

To attend the FENS Forum meeting that will take place in July 2006 in Vienna, we have received 37 applications from young scientists of the SSN. The applications were evaluated by the SSN Council based on the abstract, the CV, a letter of motivation and a letter of reference from the supervisor. The following 20 young scientists were awarded a SSN travel fellowship of Frs 700:

ARSIERO Maura; BAERISWYL Thomas; BAH
Amine; CAPPE Céline; CAGNON Laurène;
FRANKLIN Tamara; FREUND Patrick;
GANTELET Emilien; GIRARDIN Cyrille; GUERIN
Céline; KAESER Mélanie; LABOUEBE Gwenaël;
LANZ Florian; LOSEY Patrick; MEGEVAND
Pierre; RAPPAZ Benjamin; REPICI Mariaelena;
ROMEI Vincenzo; VASLIN Anne; WYSS
Alexander.

In a first round, **Chenal Julie** and **Gavillet Mathilde** were awarded but they both later received a travel fellowship from another source. Their SSN travel fellowship was thus transferred to other applicants.

To attend the SfN meeting in Atlanta (October 14-18th, 2006), the SSN will offer 10 travel fellowships amounting to Frs 1000 each. The application deadline is June 30th, 2006.

SSN meeting 2007 in Bern

The SSN annual meeting in 2007 will take place in Bern, on March 10th, in collaboration with the “Swiss Society of Multiple Sclerosis”. Further information will follow in the next issue of the SSN Newsletter.

First SSN "Honorary Member"

As mentioned in the editorial, Professor Konrad Akert was nominated as "Honorary Member" of the SSN in recognition of his exceptional scientific career and his constant efforts to promote Neuroscience in Switzerland. Among many initiatives, Professor Konrad Akert played a major role in the development of the Swiss chapter of the IBRO, the ancestor of the SSN.



Professor Konrad Akert

Meeting announcements

International Symposium

Chronobiology in Psychiatry

Monday 11 September 2006

Psychiatric University Clinic Basel

For more information: www.chronobiology.ch

Symposium

**“Hirnforschung und
Menschenbild”**

**“Neurosciences et Conceptions
de l’homme”**

Fribourg, October 12-14th, 2006

For more information:
www.hirnforschung-symposium.ch

Best publication award 2005



The SSN best publication 2005 was awarded to Dr. Daniel Huber.

Huber D, Veinante P, Stoop R. 2005. Vasopressin and Oxytocin Excite Distinct Neuronal Populations in the Central Amygdala. *Science* 308(5719):245-248

The amygdala is a group of nuclei in the temporal lobe of the brain that plays a crucial role in anxiety and fear behavior. Sensory information converges in the basolateral and lateral nuclei of the amygdala, which have been the first regions in the brain where the acquisition of new (fear) memories has been associated with long term changes in synaptic transmission. These nuclei, in turn, project to the central nucleus of the amygdala. The central amygdala, through its extensive projections to numerous nuclei in the midbrain and brainstem, plays a pivotal role in the orchestration of the rapid autonomic and endocrine fear responses. In the central amygdala a large number of neuropeptides and receptors is expressed, among which high levels of vasopressin and oxytocin receptors. Local injections of these peptides into the amygdala modulate several aspects of the autonomic fear reaction. Interestingly, their effects are opposing: vasopressin tends to enhance the fear reactions, whereas oxytocin has anxiolytic effects. In order to investigate the neurophysiological mechanisms that could underlie this opposing modulation of the fear behavior, we studied the effects of vasopressin and oxytocin on the neuronal activity in an acute brain slice preparation of the rat central amygdala.

We first assessed the effects of vasopressin and oxytocin on the spontaneous activity of central amygdala neurons. Extracellular single unit recordings revealed two major populations of neurons: a majority of neurons was excited by vasopressin and inhibited by oxytocin, whereas other neurons were only excited by oxytocin receptor activation. The inhibitory effect of oxytocin could be reduced by the block of GABAergic transmission, whereas the excitatory effects of vasopressin and oxytocin were not affected. In a second step we identified the cellular mechanisms for the excitatory effects of both peptides as well as the morphological and biochemical mechanisms underlying the opposing effects, by using sharp electrode recordings together with intracellular labelings. We revealed that oxytocin-excited neurons are localized in the lateral part (CeL) whereas vasopressin excited cells are found in the medial part of the central amygdala (CeM). The tracing of the neuronal morphology showed that the axon collaterals of the oxytocin-excited neurons project from the CeL, far into the CeM. Combined immunohistochemical stainings indicated that these projections are GABAergic. In the third set of experiments we investigated the synaptic interactions between the two identified cell populations. Whole-cell

patch-clamp recordings in the CeM revealed that the inhibitory effect of oxytocin was caused by the massive increase of inhibitory GABAergic currents, which was induced by the activation of CeL neurons. Finally the effects of vasopressin and oxytocin on evoked activity were investigated. We found on the one hand, that the probability of evoking action potentials in the CeM by stimulating the basolateral amygdala afferents was enhanced under vasopressin, whereas it decreased under oxytocin. On the other hand, the impact of cortical afferents stimulation on the CeL neurons was enhanced by oxytocin application.

This study revealed a new gating mechanism in the amygdala in which the two neuropeptides are specifically acting on the autonomic related component of emotions, through a GABAergic network within the central amygdala. These results pinpoint the exact circuits by which the two neuropeptides are affecting the integration of information and thus reveal the physiological basis for their opposite modulatory effect on anxiety and fear related behavior. They might have direct impact on several clinical applications: novel anxiety and fear treatments may directly target central oxytocin and vasopressin receptors within the amygdala. Furthermore, by acting on a GABAergic network, the action of modulators of neuropeptide receptors in the central amygdala could additionally be tuned by classical benzodiazepines, thus leading to possible combined treatments. In fact, the anxiolytic potential of neuropeptides like oxytocin has recently been confirmed in a human study.

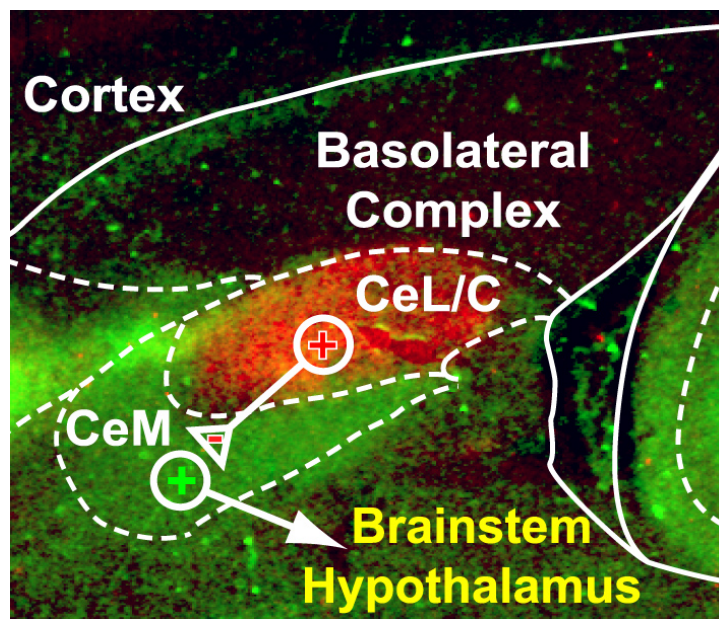


Figure: Complementary receptor distribution for oxytocin (red) and vasopressin (green) in a horizontal section through the central amygdala of the rat brain. GABAergic projections from the lateral/capsular part of the central amygdala (CeL/C) are activated by oxytocin and inhibit the brainstem projecting neurons in the medial part (CeM).

D. Huber

The call for applications for the SSN Best Publication Award 2006 is now open (deadline on September 30th, 2006) for papers published during the period going from July 1st 2005 to June 30th 2006.