

IGSN - SYMPOSIUM

Monday, September 21st 2020 • 15.00 (3 pm)

Auditory processes in communication and the effect of hearing loss on the brain connectome

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Vocal communication of emotional arousal in rats

It has been established that rats communicate by emission of ultrasonic vocalizations, and these calls express emotional arousal of the senders. Emotional arousal is initiated by two ascending mesolimbic systems that are separate from the classical ascending corticopetal reticular activating system. Emotional arousal is based on two parallel systems because one of them, the ascending mesolimbic cholinergic system, initiates aversive state, and the other, ascending mesolimbic dopaminergic system, initiates appetitive state. These states require different preparation and are functionally antagonistic. For instance, pharmacological initiation of an aversive system was significantly decreased after prior pharmacological activation of the appetitive system. Changes in arousal are signaled by ultrasonic vocalizations that are specific to the emotional state. Positive emotional state is signaled by emission of 50 kHz calls while negative state by emission of 22 kHz calls. Rats' acoustic system is particularly sensitive to the sound frequencies of ultrasonic vocalizations and this sensitivity is established from infancy by interactions with conspecifics. Damage to acoustic system or inappropriate development will decrease or abolish this sensitivity and impair rat vocal communication.

Host:

GABRIELE RUSSO

Department of Neurophysiology, Faculty of Medicine, Ruhr University Bochum

Guests are welcome!

