

Research Centers in Neuroscience and Affective Sciences University of Geneva

Taken together, the Geneva Neuroscience Center (Centre Interfacultaire de Neurosciences, CIN) and the Interfaculty Centre for Affective Sciences (ICAS) of the University of Geneva pool resources from over 60 workgroups from the University of Geneva and from all 6 faculties of the University which dedicate their research to the understanding of the human brain and behaviour, ranging from molecular and neuronal research to social, psychological, philosophical and artistic research.

Geneva Neuroscience Center (Centre Interfacultaire de Neurosciences, CIN)

Reflecting the multidisciplinary of Neuroscience, the Geneva Neuroscience Center regroups research groups affiliated to several departments and faculties within Geneva University. Members of the Center conduct cutting-edge research **in various areas of Neuroscience**, in relation to both health and disease, for human beings (adults and children) as well as for animals. Questions such as: How does the nervous system generate complex behaviours and mental processes such as thoughts or emotions? What are the mechanisms of neurological and psychiatric diseases? How does the activity of neurons coordinate to provide us with sensation and volition? are among some of the fundamental questions that researchers in the Center try to answer. Researchers in the CIN are also participating to the National Center for Competence in Research (NCCR) on Synaptic bases on mental disorders.

<http://neurocenter.unige.ch>

Interfaculty Center for Affective Sciences (ICAS)

The ICAS hosts the National Center for Competence in Research (NCCR) Affective Sciences, financed by the Swiss federal government and administered by the Swiss National Science Foundation. It is the first research centre in the world dedicated to the **interdisciplinary study of emotions and their effects on human behaviour and society**.

The NCCR in Affective Sciences brings together disciplines which study the biological, psychological, and social dimensions of affect. The different scientific projects aim to provide a better understanding of affective phenomena (e.g., emotions, motivations, moods, stress, well-being) from various research perspectives and multiple levels of analysis. With its scientists stemming from various backgrounds such as psychology, philosophy, economics, political science, law, criminology, psychiatry, neuroscience, education, sociology, literature, history, and religious and social anthropology, the NCCR places a particular emphasis on the interdisciplinary and integrative collaboration between these different domains of research.

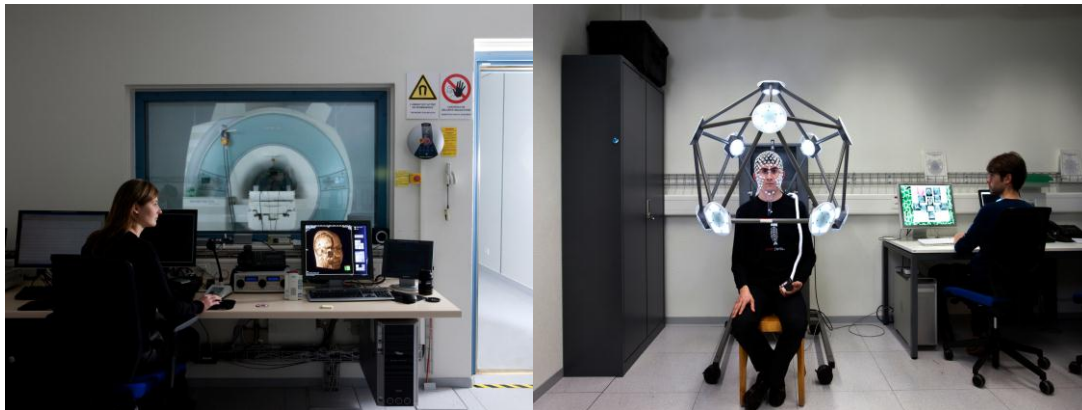
www.affective-sciences.org

Brain and Behaviour Laboratory (BBL)

The Geneva Neuroscience Center and the Interfaculty Center for Affective Sciences jointly coordinate the **Brain and Behaviour Laboratory (BBL)**. The BBL brings together a wide range of cutting-edge techniques from neuroscience and psychophysiology to **measure brain activity**, as well as peripheral **body changes** and complex **motor or social behaviour**, in experimentally controlled conditions. It is the first laboratory of its kind to combine an extraordinarily large diversity of methodologies and disciplines allowing scientists to carry out research into cognition, emotion, consciousness, sleep and dreams, both in health and in diseases.

The different laboratories of the BBL include one functional Magnetic Resonance Imaging unit, two electroencephalography labs equipped with peripheral physiological recording devices, a virtual reality lab and video cameras to record naturally occurring behaviour in dyadic and group interactions, an acoustic lab and a sleep research room equipped for sleep and vigilance monitoring.

<http://bbl.unige.ch>



Photos: Dorothee Baumann

The research groups where the artist will be in residence:

1. Prof Didier Grandjean research group

This research group examines the psychological and neuronal processes involved in emotion and the affective dynamics related to different kinds of auditory, olfactory, and visual stimuli. How the human mind is able to build up a verbally accessible representation of emotion from an auditory stimulus and which kinds of brain processes are involved in this capacity is one of the major axes in their research.

Different clinical syndromes, such as depression, Parkinson disease and anxiety disorders, are also investigated in order to better understand how emotion interacts with cognitive functions such as attention and inhibition. Finally, «music and emotion» is also an important topic of research conducted by the Prof Grandjean research group.

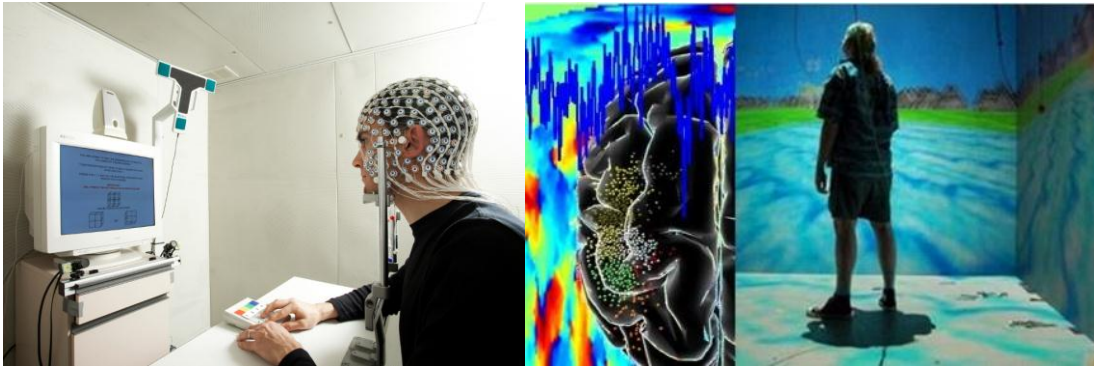


Photo: Dorothee Baumann

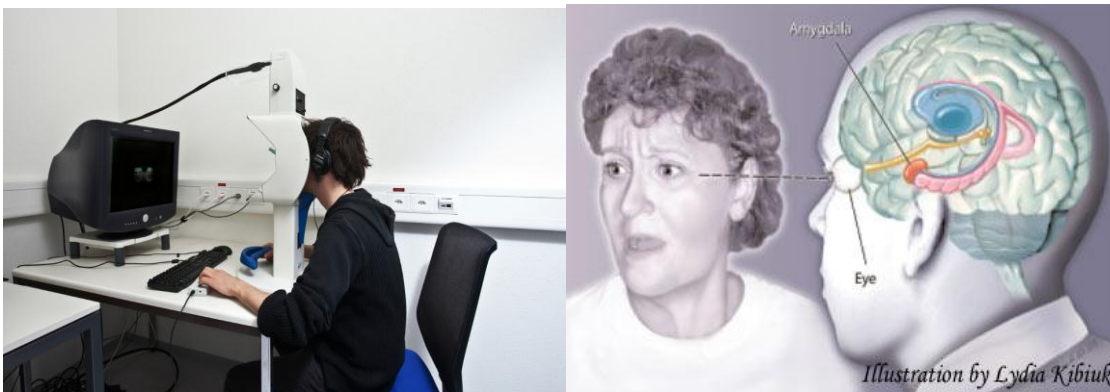
More information:

<http://cms.unige.ch/fapse/neuroemo>

www.affective-sciences.org/response-patterning-overview

2. Prof David Sander research group

This research group works on investigating appraisal processes in emotion, and their effects on attention and memory, using the experimental approaches of cognitive neuropsychology and cognitive neuroscience. This line of research brings together behavioural data as well as brain imaging data from healthy subjects and brain-damaged patients in order to better understand the emotional response to relevant visual, auditory, or olfactory stimuli. In particular, research tests the computational profile of the human amygdala in order to constrain psychological models of emotion.



More information:

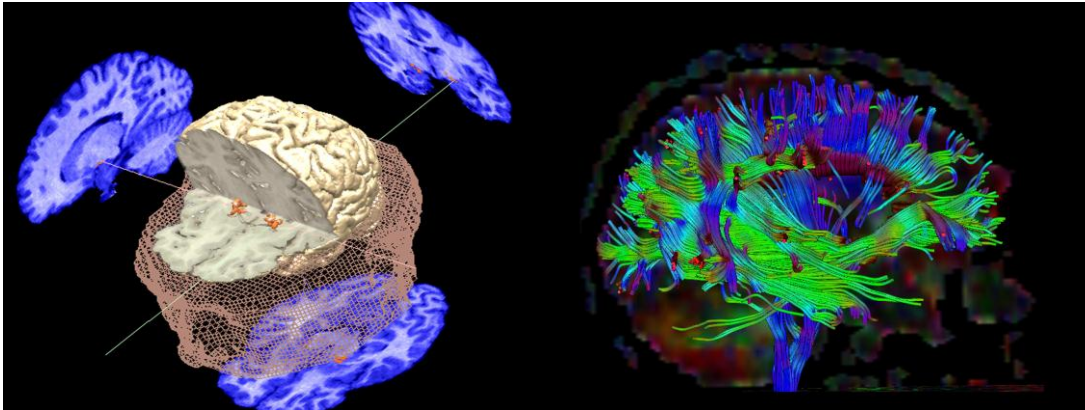
<http://cms.unige.ch/fapse/EmotionLab>

<http://www.affective-sciences.org/elicitation-overview>

3. Prof Patrik Vuilleumier research group

This group investigates the cerebral mechanisms of cognition, including perception, emotion, and consciousness by using neuroimaging techniques in healthy subjects, as well as neuropsychological studies in brain-lesioned patients. The major questions of the researchers in this group concern how the human visual system can recognize objects and faces, how we identify sounds and voices, and how we perceive and respond to emotions and social signals, such as facial expressions or eye gaze. They

also study the neural circuits by which emotions can influence perception and behaviour, for example in response to fear, anger, or reward. Researchers in this group are also interested in the role of sleep and its influence on emotional regulation and memory, and study the effects of neurological lesions (in particular stroke) and psychiatric diseases (in particular depression) on cognitive and affective processes.



More information:

<http://labnic.unige.ch>

www.affective-sciences.org/neural-architecture-overview

For the resident artist for 2011 we suggest the following consideration:

The three Professors and their research group members are used to work together and share the major equipment laid in the Brain and Behaviour Laboratory (BBL). Therefore, an artist should consider making a proposal based on one or several of the following **research themes that is common to all three groups**:

- What are the cerebral bases of emotions?
- How does voice or music provoke strong emotional responses?
- How do we recognize the emotions in the face, body postures and/ or the voice?
- What are the rules of the integration of various sensory information (vision, audition, etc) in emotion perception?
- How do emotions influence attention or memory?
- What are olfactory emotions and how do they affect the body and brain responses?

