

Séminaires – Lundi 16 novembre 2015
Salle E 206 - UFR LSHS
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Lundi 16 novembre 2015 – 13h30-15h

**Cognitive dimensions of navigation and communication
in honeybee**

I shall address the question whether honeybees navigate and communicate according to a cognitive map of the explored environment. This issue has been discussed recently from controversial perspectives. The data I shall present favor the interpretation that navigational performance requires more than reference to path integration, picture matching and vector addition. My arguments are based on Tolman's paradigm of the novel shortcut. These results raise the question what bees communicate in their waggle dance, a flight instruction or a location.

Lundi 16 novembre 2015 – 15h30-16h30

**Neural correlates of cognition in the miniature brain
of an insect, the honeybee**

Multiple evidence documents neural processes beyond elementary forms of plasticity in the honeybee brain. These are characterized by e.g. rule extraction during associative learning, exploratory learning leading to a map-like composition of navigation memory, and highly adaptive symbolic forms of social communication. We take advantage of the rich learning repertoire of the bee under natural and laboratory conditions, and search for neural correlates at the level of a high order integration center, the mushroom body. The memory trace can be conceptualized as a distributed pattern of changed synaptic sites in the matrix-like organization of its input site, and as a combinatorial pattern of neural plasticity in defined subsets of identified extrinsic lobe neurons. These neurons integrate highly processed sensory information, and transform the perceptual space into a value and meaning related neural space reflecting neural processes involved in expectation and planning.