Cluster A |Cells & Circuits

Projects involve fundamental research into the mechanisms of memory consolidation, from events at the cellular level to interactions within small circuits. The projects include as wide a range of brain structures and levels of approach as possible and are characterized by interactions within a single brain area or between two specific brain areas, i.e., projects on rodents, birds and flies. The theoretical contributions in section A aim to understanding the underlying principles such that these different systems can eventually be compared and contrasted. The broader long-term aim is to facilitate the integration of research questions and approaches that do not normally interact due to the huge scope of memory research.
Speaker Matthew Larkum introduces A on YouTube >>

Cluster B | Large Networks

Projects focus on the operation of larger networks, including multiple brain areas. All of these projects include experiments or theory on memory consolidation in humans. These projects all have a common theme of using perturbations or dysfunction as a guiding principle in their investigations. Memory dysfunction is a huge burden to our society and the direct development of new treatments is well-researched and well-funded around the world. In our CRC, the focus on memory dsysfunction is mainly intended to lay the foundation for innovative clinical approaches by means of fundamental investigations of memory. Each of the projects in B, contributes to our knowledge about processes underlying the consolidation of memory from synaptic to systems levels.
Steering Committee & B05 member Christoph Ploner introduces B on YouTube >>

Cluster C | Service Projects

Our CRC offers custom-tailored viral vector-based tools optimized for investigation of the mechanisms underlying memory consolidation. How memory circuits are consolidated can also be studied by examining gene expression in the participating neurons. Correlating gene expression with connectivity patterns can be particularly useful in describing underlying mechanisms of memory formation, as well as providing anatomical markers for neurons participating in the memory engrams. This can be accomplished through the use of transcriptome analysis by means of single cell RNA sequencing. The C01 project will serve as a hub for research in design and production of tools in order to support circuit analysis on morphological, molecular and functional levels.
Speaker Matthew Larkum introduces C on YouTube >>