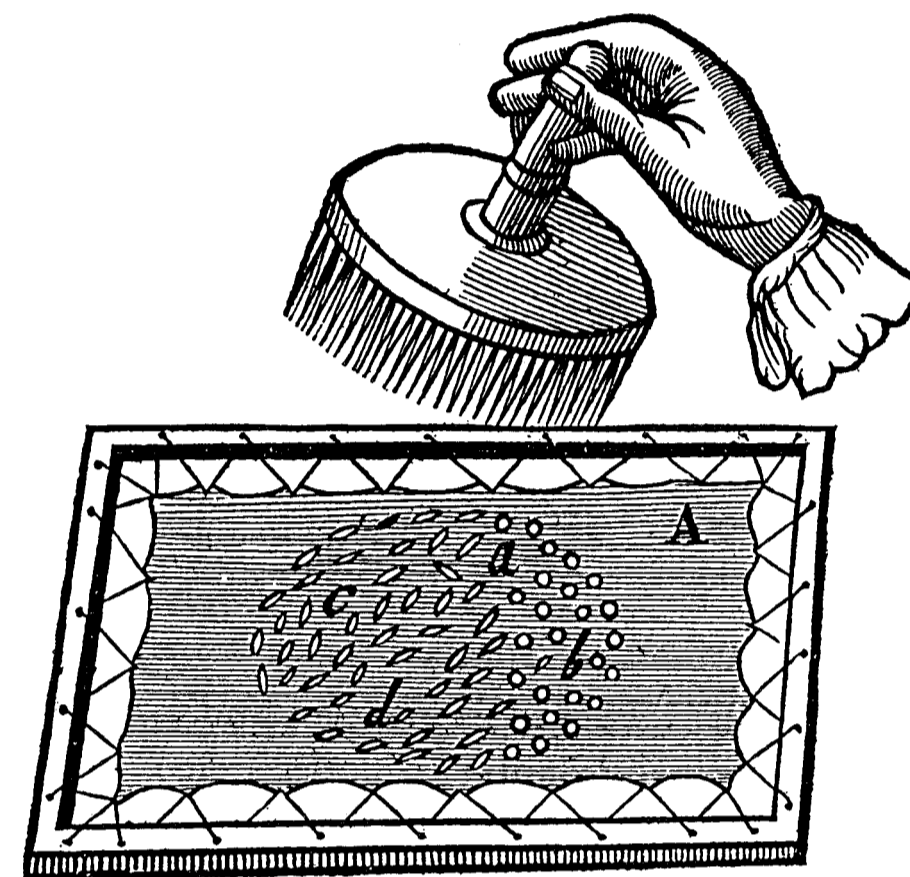


Autumn School, October 11-13, 2004

# Learning and Memory

Molecular Mechanisms - Cellular Processes - Mathematical Models

Learning and memory are central ingredients for proper biological function in changing environments. Both processes are of particular importance for neuroscience but they also play a significant role in other biological disciplines. This autumn school focuses on the basic molecular and cellular processes underlying learning and memory in neural systems, with emphasis on synaptic plasticity. Experimental approaches will be discussed in close relation with the corresponding mathematical models, both at an introductory level. The last day of the school will bridge between the physiological and behavioral level and also touch on learning and memory in the immune system.



"Imprinting" as a basic form of learning and memory.  
(From René Descartes: *L'homme*, Paris, 1664)

## Monday, October 11:

- |               |  |
|---------------|--|
| 9.00          | <b>Opening of the Autumn School</b>  |
| 9.15 - 10.45  | Dietmar Schmitz (NWFZ, Charité)<br><b>Cellular processes of learning and memory:<br/>Development &amp; current state of concepts and experiments I</b> |
| 11.15 - 12.45 | Andreas Herz (ITB, HU Berlin)<br><b>Modelling short-term synaptic plasticity with differential equations and iterated maps I</b>                       |
| 15.15 - 16.45 | Dietmar Kuhl (Neurobiology, FU Berlin)<br><b>Molecular and cellular mechanisms of learning and memory I</b>  |
| 17.15 - 18.45 | Hanspeter Herzel (ITB, Charité)<br><b>Modelling molecular signal transduction chains and networks</b>  |
| 19.00         | <b>Reception and Dinner</b>  |

## Tuesday, October 12:

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|---------------|---|
| 9.15 - 10.45  | Dietmar Schmitz (NWFZ, Charité)<br><b>Cellular processes of learning and memory:<br/>Development &amp; current state of concepts and experiments II</b> |
| 11.15 - 12.45 | Andreas Herz (ITB, HU Berlin)<br><b>Modelling short-term synaptic plasticity with differential equations and iterated maps II</b>                       |
| 15.15 - 16.45 | Dietmar Kuhl (Neurobiology, FU Berlin)<br><b>Molecular and cellular mechanisms of learning and memory II</b>  |
| 17.15 - 18.45 | Laurenz Wiskott (ITB, HU Berlin)<br><b>Modelling learning and memory: The systems level</b>   |

## Wednesday, October 13:

- |               |  |
|---------------|--|
| 9.15 - 10.15  | Dietmar Schmitz (NWFZ, Charité)<br><b>Short- and long-term plasticity of the mossy fiber synapse</b> |
| 10.15 - 11.15 | Richard Kempter (ITB, HU Berlin)<br><b>Hippocampal plasticity: Learning behavioral sequences</b>     |
| 11.45 - 12.45 | Andreas Radbruch (DRFZ, Berlin)<br><b>Memory in the immune system</b>                                |
| 15.15 - 16.15 | Gerd Kempermann (Max Delbrueck Center, Berlin)<br><b>Adult neurogenesis</b>                          |
| 16.15 - 17.15 | Livia de Hoz (Neurophysiology, Charité)<br><b>Memory consolidation</b>                               |
| 17.45 - 19.15 | Andreas Herz (ITB, HU Berlin)<br><b>The Hebbian memory trace: new insight from bee olfaction</b>     |