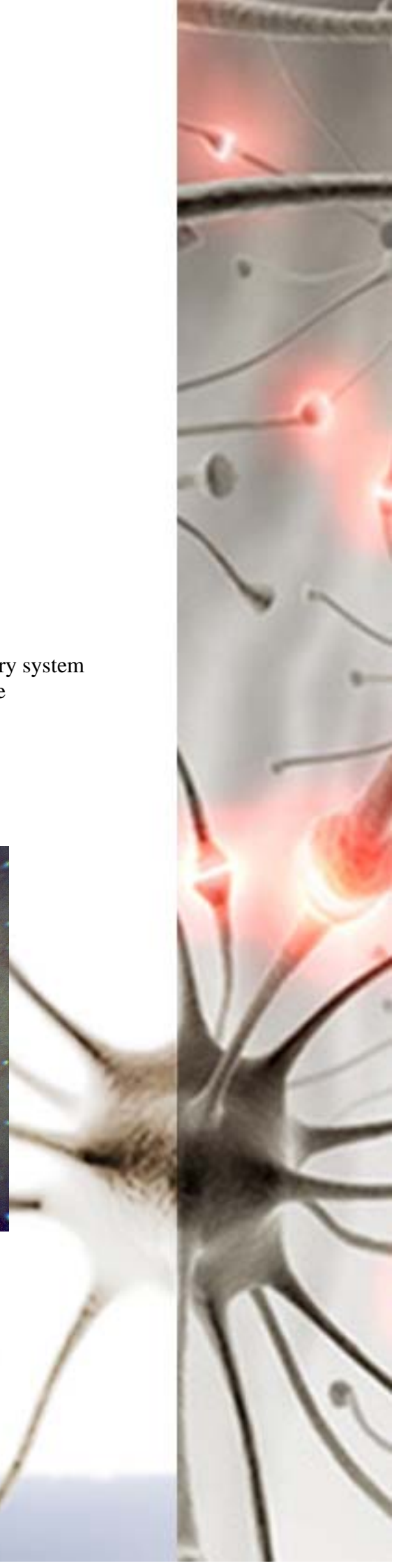
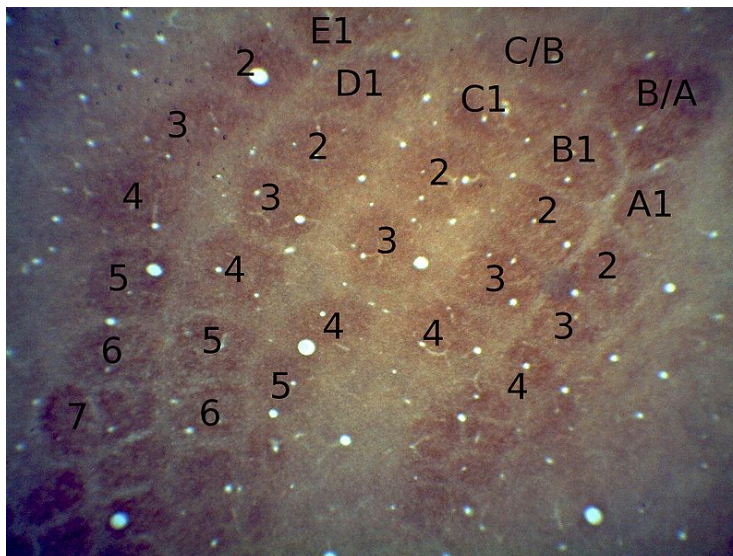




ScienceBeam Mechanical stimulator

- A mechanical stimulus generator for studying of somatosensory system
- Up to 1000 μ s mechanical displacement of rat and cat vibrissae
- Timing and speed controlling of mechanical displacement



Barrel cortex

The **barrel cortex** refers to the dark-staining regions of layer four of the somatosensory cortex where somatosensory inputs from the contralateral side of the body come in from the thalamus. Barrels are found in some species of rodents and species of at least two other orders. The rest of this article will focus on the 'whisker barrels' in the somatosensory cortex of rodents. Inputs from the thalamus carrying information from a given whisker terminate in discrete areas of layer IV forming anatomically distinguishable areas (barrels) which are separated from each other by areas called septa. These structures were first discovered by Woolsey and Van der Loos (1970). Recognizing that the array was similar to that of the vibrissae on the mystacial pad, they hypothesized that the barrels were the "cortical correlates of the mystacial vibrissae" and that "one barrel represents one vibrissa".

Due to its distinctive cytoarchitectonics and functional significance, the barrel cortex has played an important role in neuroscience. The majority of what is known about corticothalamic processing comes from studying the barrel cortex and researchers have intensively studied the barrel cortex as a model of neocortical column.

Neurons within the layer IV barrel cortex directly code for whisker displacement. That is to say, that the neuron within a given barrel will fire when the whisker that barrel represents is moved. These neurons also show directional sensitivity, certain neurons will only fire when the whisker is moved in a specific direction

Neurons in the barrel cortex exhibit the property of synaptic plasticity that allows them to alter the vibrissae to which they respond depending on the rodent's history of tactile experience. The field of barrel cortex research has matured to the stage where a book has been published on the subject.

