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# The cerebellar control of motor tuning during sensory discrimination

## Results in Brief

### Exploring sensorimotor integration

Several diseases, such as stroke, Huntington's and Parkinson's diseases, schizophrenia and autism, are all connected to abnormal sensorimotor integration. A better understanding of the circuitry involved in sensorimotor cooperation has been obtained in a study using rodents.



HEALTH



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Animals use the sense of touch to build a spatial representation of the surrounding environment. The nervous system integrates sensory and motor inputs to optimise movements and interpret the sensations. The whisking behaviour of rodents serves as a good model of such sensorimotor coordination.

A complex network controls the rodents' whiskers and processes the sensory information they collect. The cerebellum is one of the least characterised brain structures in this network and its role in sensorimotor integration had not been studied until now.

The EU-funded project 'The cerebellar control of motor tuning during sensory discrimination' (CBTOUCH) explored cerebellar contribution to active sensory discrimination. Functional imaging identified the connections of the cerebellum with

the whisker sensory-motor cortices. Electrophysiological and fast video recordings showed functional cerebellum recruitment during tactile exploration. Perturbing cerebellar function during sensory stimulation allowed researchers to define the contribution of the cerebellum to the sense of touch.

Scientists discovered a zone in the lateral part of the cerebellum where primary sensory and motor cortical inputs converge at the cellular level. They also demonstrated that this cerebellar zone of sensorimotor convergence projects back to the motor cortex, forming functional cortico-cerebellar reciprocal loops. The lateral cerebellar lobule contributes to the fine-tuning of whisking movements, regulating contact with surrounding objects.

CBTOUCH was designed to characterise in-depth the reason why sensory and motor areas maintain an accurate communication during everyday life situations.

## Keywords

[Sensorimotor](#)

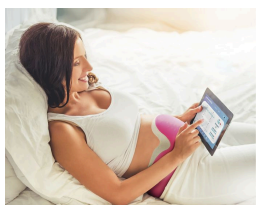
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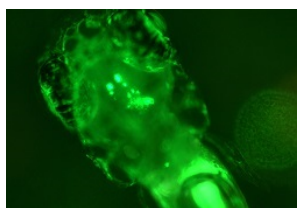
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### Project Information

#### CBTOUCH

Grant agreement ID: 299286

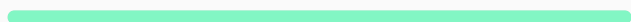
Project closed

#### Start date

1 June 2012

#### End date

31 May 2014



#### Funded under

Specific programme "People" implementing the Seventh Framework Programme of the European Community for research, technological development and demonstration activities (2007 to 2013)

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€ 193 594,80

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