

New information on the development of the brain

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With their French colleagues, researchers at the University of Helsinki have found a mechanism in the memory centre of newborn that adjusts the maturation of the brain for the information processing required later in life. The study was published this week in an American science magazine The *Journal of Neuroscience*.

The <u>brain cells</u> in the brain of a newborn are still quite loosely interconnected. In the middle of chaos, they are looking for contact with each other and are only later able to operate as interactive <u>neural</u> <u>networks</u>.

Many cognitive operations, such as attention, memory, learning and certain states of sleep are based on rhythmic interactions of neural networks. For a long time the researchers have been interested in finding the stage in the development of the brain in which the functional characteristics and interconnections are sufficiently developed for these subtle brain functions.

Key players in this maturation process include a type of nerve cells called interneurones, and recent research sheds light on their functional development. The researchers have noticed that the activeness of the interneurones change dramatically during early development. In the memory centre of the brain they found a mechanism which adjusts changes in the activeness of interneurones.

The interneurones <u>nerve cells</u> are kind of controller cells. In the nervous



system of a newborn they promote the creation of nerve cell contacts, and on the other hand they prevent premature rhythmic activity of neural networks. During development the controlling role will change, and the result is that the neural network becomes more efficiently rhythmic. This can be seen, for example, in the strengthening of the <u>EEG signal</u> during sleep.

The mechanism adjusting the activity of the interneurones is related to the development phase which prepares the brain to process and handle information needed later in life. The finding may also offer more detailed means to intervene in the electric disorders of developing neural networks, such as epilepsy.

Provided by University of Helsinki

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