

Most detailed digital simulation of brain yet created from mouse model

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A tiny piece of a rat's brain has been reconstructed in minute detail in a computer. The digital model, which includes 31,000 neurons and their 37 million synapses, fires like the real thing, and is already revealing fresh clues as to how the brain works.

The simulation is the first significant achievement of the Blue Brain project, which was launched 10 years ago by Henry Markram at the Swiss Federal Institute of Technology in Lausanne. The breakthrough represents the first step to a larger goal – creating a digital model of the entire human brain to probe consciousness itself.

So far, the digital brain recreates a piece of tissue about one third of a millimetre cubed. It contains 207 different types of brain cells and the millions of connections between them.

Markram and his many colleagues created their model using data they have been collecting for the last two decades. For 20 years, the teams have been pulling apart a brain region that is responsible for a rat's sense of touch. This tiny area has been sliced, stained, dissected and stimulated every which way.

Using this information, Markram's team developed an algorithm to predict how the neurons connect with each other and fire together. After creating digital reconstructions of about 1000 of their recorded neurons, the team applied their algorithm to recreate 31,000 neurons, all connected to each other.

Read full, original post: [Digital version of piece of rat brain fires like the real thing](#)