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Human cells can be used to test drugs

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Miniature human brains capable of a rudimentary "type of thought" have been grown from stem cells by scientists in America. Although unlikely to master German grammar or the principles of calculus, the tiny bundles of neurons fire electricity in the same way as the human brain.

The scientists behind the "mini brains" say that they can be mass-produced, allowing researchers to test drugs without experiments on animals. Many treatments that look like promising ways to cure brain diseases when tested on mice have foundered because of the biological divide between their brains and ours.

Scientists in several laboratories have built collections of human cells that replicate some basic brain functions. The latest versions, a third of a millimetre in diameter, have been cultivated from the skin cells of five healthy adults by researchers at Johns Hopkins University in Maryland.

Thomas Hartung, the lead scientist on the project, said his team could produce hundreds of thousands of identical mini brains, potentially leading to a cut in the cost of developing new drugs.

The professor, who will present his findings at the annual meeting of the American Academy for the Advancement of Science in Washington this weekend, said the simulation was like a human brain two months into gestation. "It's starting to produce a primitive type of thinking – obviously there's no input or output," he said. "It is meaningless electrical activity but the neurons are trying to communicate."

The study was published yesterday in the journal *Science Advances*.