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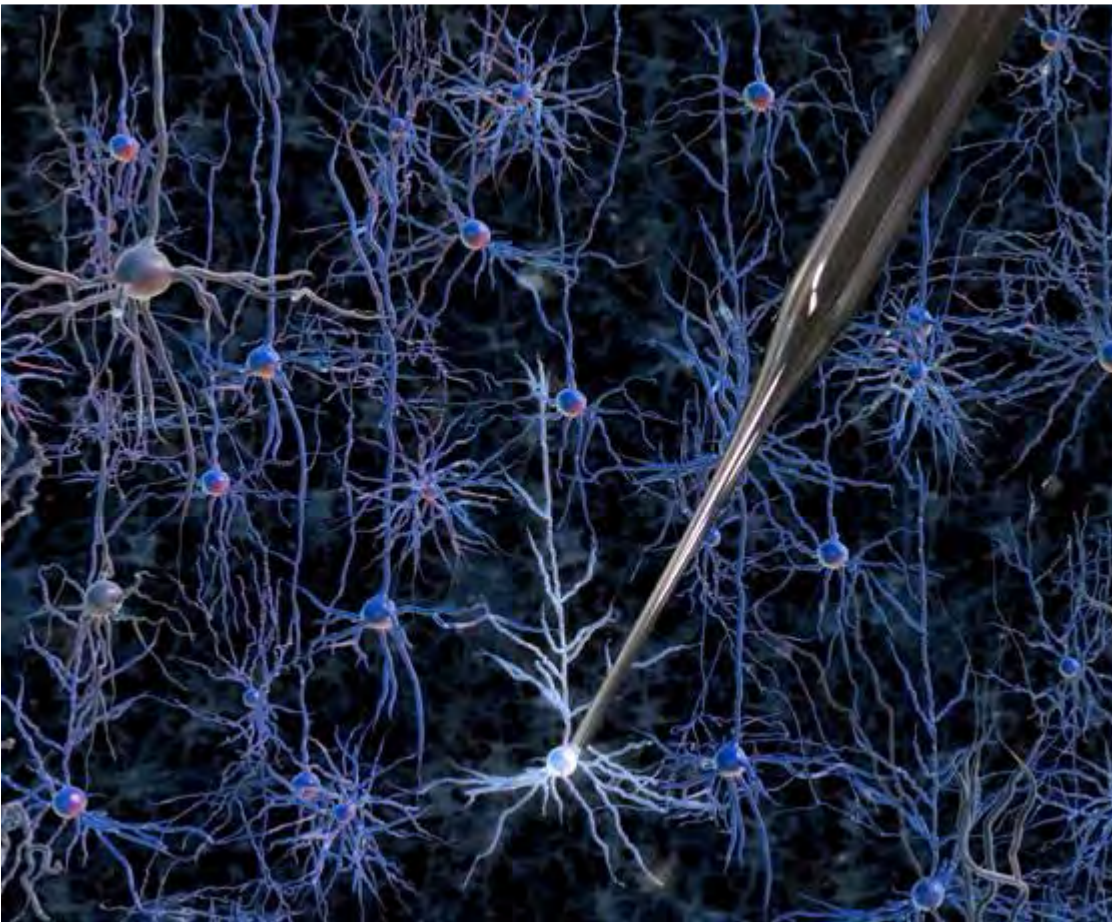
2011 blogs



John Roach

Robot brains with real brains: is there a rescue?

## Robot brain scientists to learn how



Boyden Lab / MIT

Researchers have automated a painstaking process to study electrical activity inside neurons in the living brain.

Brain scientists have built a robot that can find and record information from individual neurons in the living brains of mice.

Yes, robots are becoming real-world brain scientists.

In the future, these same robots could be studying how humans think and even deliver targeted drugs to the brain – to treat disorders such as schizophrenia, Parkinson’s, autism or epilepsy.

The robotic procedure automates the well-known, albeit time consuming, difficult and mind-numbing, task for human neuroscientists known as whole-cell patch clamping.

The technique involves bringing a tiny, hollow glass pipette in contact with the cell membrane of a neuron, then opening up a small pore in the membrane to record the electrical activity within the cell, explains MIT.

The skill took graduate student [Suhasa Kodandaramaiah](#) four months to learn.

“When I got reasonably good at it, I could sense that even though it is an art form, it can be reduced to a set of stereotyped tasks and decisions that could be executed by a robot,” he **said in a news release**.

And so, that’s what he and his colleagues did – building a robotic arm that lowers a glass pipette into an anesthetized mouse with more superior precision and speed than humans.

Their procedure is described in the May 6 issue of **Nature Methods**.

The same technique can be used to determine the shape of the cell and they are working on a way to extract a cell’s contents to read its genetic profile.

According to the MIT news release, this is a new era for robotics:

The researchers are now working on scaling up the number of electrodes so they can record from multiple neurons at a time, potentially allowing them to determine how different parts of the brain are connected.

They are also working with collaborators to start classifying the

thousands of types of neurons found in the brain. This “parts list” for the brain would identify neurons not only by their shape — which is the most common means of classification — but also by their electrical activity and genetic profile.

“If you really want to know what a neuron is, you can look at the shape, and you can look at how it fires. Then, if you pull out the genetic information, you can really know what’s going on,” [team member Craig Forest at Georgia Tech] says. “Now you know everything. That’s the whole picture.”

While this research does indeed open a new era for neuroscience, is anyone else just a wee bit afraid of these robots?

--Via [MIT](#)

John Roach is a contributing writer for msnbc.com. To learn more about him, check out his [website](#) and follow him on [Twitter](#). For more of our [Future of Technology](#) series, watch the featured video below.



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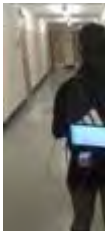
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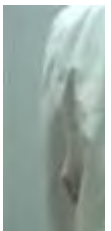
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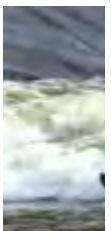
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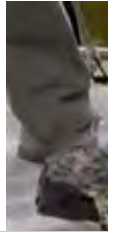




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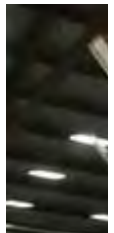
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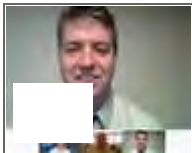
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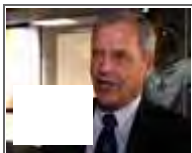
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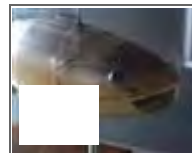
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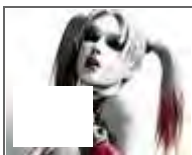
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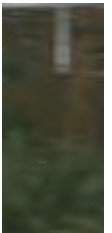




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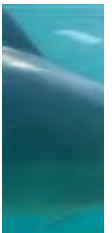
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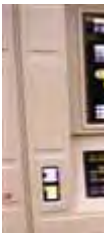
A one-armed robot has learned to juggle two balls at once, an impressive feat that promises to shed light on dynamic human motions, accordin... [Read more](#)



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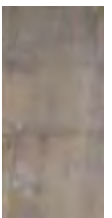
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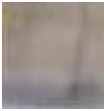


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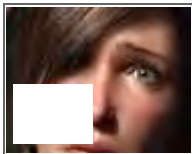
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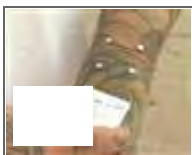
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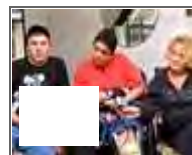
Angry gamers aren't 'whiny,' they're right



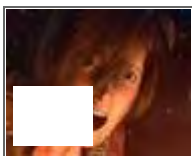
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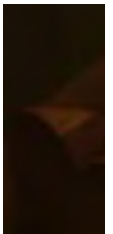
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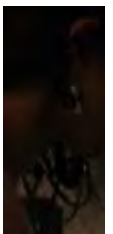
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