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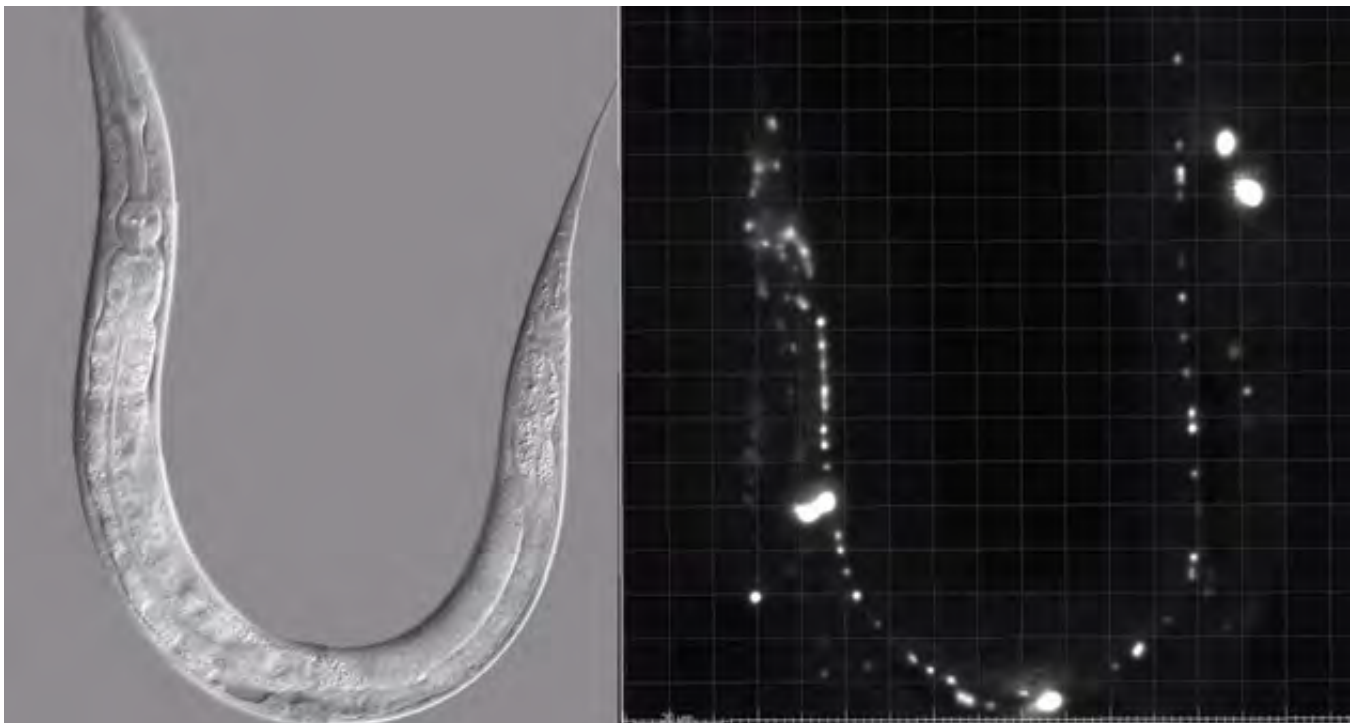
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# MIT can map the activity of every neuron in an animal's brain

BY JON FINGAS    @JONFINGAS    MAY 19TH 2014, AT 12:51:00 PM ET

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Scientists have long yearned for a neuron-by-neuron illustration of brain activity; get that and you can see exactly what drives an animal's thoughts and reflexes. MIT may make those wishes come true, as it just [revealed a system](#) that produces a complete 3D neural activity map. The discovery revolves around a [light field](#) microscope (which refracts light to create a 3D image) that's optimized for looking at the electrical pulses of each neuron, right down to the millisecond time level. So far, researchers have created videos showing what's happening within the entire nervous system of a [c. elegans worm](#), and the brain of a zebrafish larva.

As you might suspect, scaling could be a problem. A *c. elegans* worm has just 302 neurons,

while a human brain has roughly 100 billion; you'd need a much bigger light field to see everything going on inside your own head. At present, the technology is also too low-resolution to see what's happening in specific parts of neurons, like dendrites. Provided MIT's technology keeps evolving, though, there's a real possibility that neuroscientists could pinpoint the nature of brain conditions and produce more effective treatments.

Neuron Activity in 3-D



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