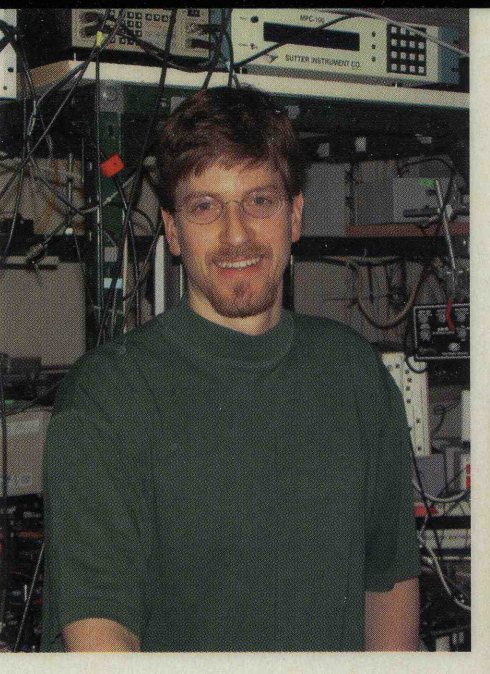
Mark Schnitzer, 33

Stanford University

Sheds light on the functioning of individual brain cells



BY COMBINING physics, neuroscience, and optics, Mark Schnitzer intends to directly observe single neurons deep below the surface of the living mammalian brain; it would be a scientific first. While working at Lucent Technologies' Bell Labs, Schnitzer crafted an incredibly small endoscope—a fiber-optic viewing device with lenses as small as 350 micrometers across. The scope illuminates brain cells that have been labeled with a fluorescent dye; detectors in the device pick up the fluorescence and software constructs images of the cells. The device could allow neuroscientists to see how brain cells function, grow, and communicate across tiny synaptic gaps. Already, researchers are preparing to use Schnitzer's tool to study how animals store long-term memories. Because it is so small, the endoscope could also be fed deep into the brain, inflicting minimal harm on surrounding neurons. Human trials are years away, but Schnitzer says eventually his tool may help doctors detect brain cancers and blood clots without biopsy. Now an assistant professor in Stanford University's departments of applied physics and biological sciences, Schnitzer continues to apply his tools to brain research.

Micah Siegel, 33

Concept2Company

Transforms research from universities and national labs into successful startups

THOMAS EDISON and Eli Whitney are Micah Siegel's idols—not just because they were great inventors, but because they turned their inventions into revolutionary products. "Ninety percent of the rewards go to the guy who figures out how to scale up what he is doing," says Siegel. He earned PhDs in electrical engineering and molecular biology at Caltech, where he codeveloped genetically engineered sensors that change colors whenever a neuron's functions are excited or inhibited. Twenty pharmaceutical labs are now using the sensors to test drugs. Business success excited Siegel's own neurons, so in 2000 he cofounded Concept2Company in Palo Alto, CA, to help other scientists commercialize research. Since then, he has evaluated more than 350 business proposals from university and national labs and has raised millions of dollars of investments in several startups. In some deals, C2C steps in and handles the "business functions" many scientists hate—attracting management teams, licensing patents, schmoozing customers, raising capital—improving researchers' chances of becoming Edisons or Whitneys.

Mijail Serruya, 29

Cyberkinetics

Connects brains directly to computers in the hope of helping paralyzed people communicate and control robotic aids

IT TAKES incredible patience to interview people so severely paralyzed they can communicate only with the blink of an eye or the twitch of a brow. But it was partly impatience that inspired Mijail Serruya to do just that. The Brown University medical student and PhD was helping to develop a "brain-machine interface," and he was eager to put it to work helping profoundly disabled people. Talking to them about their needs was an important step. Brain-machine interfaces could potentially allow paralyzed people to communicate through computers and to control robotic wheelchairs and aids. Serruya started by fine-tuning algorithms that allow signals recorde
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Foxborough, MA-based C
human tests, Serruya says

Giovanni Trave

Johns Hopkins University

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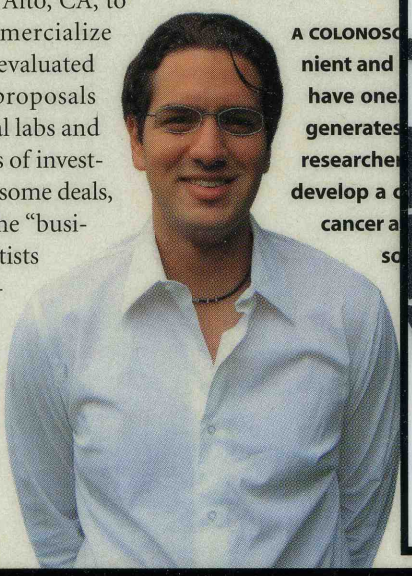

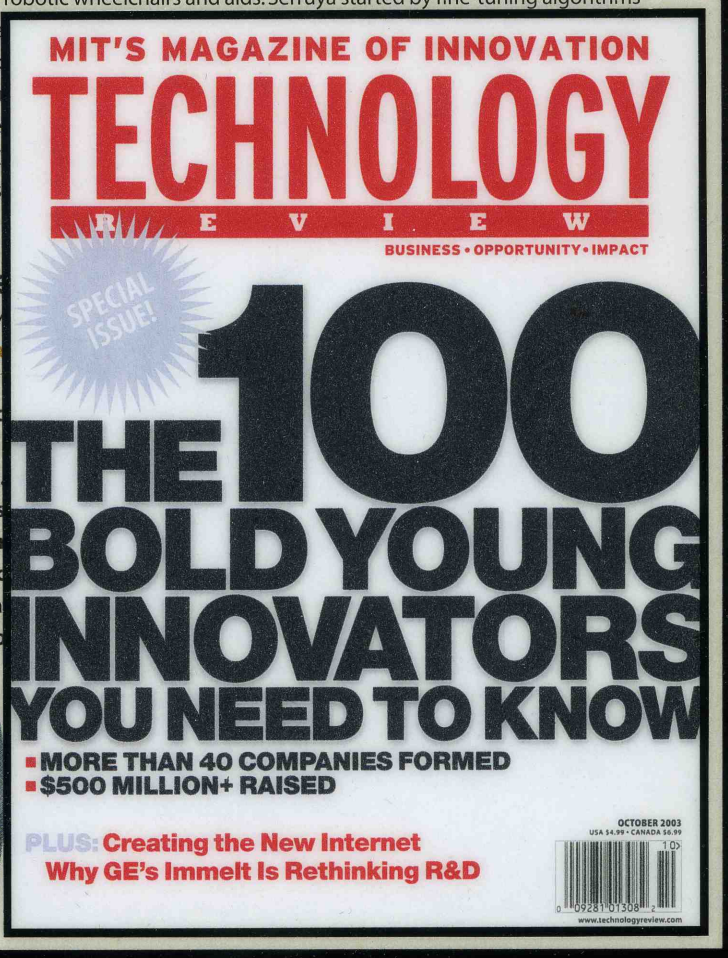

A. ATEMASOV (SIEGEL); JOHN ABROMOWSKI (SERRUYA)