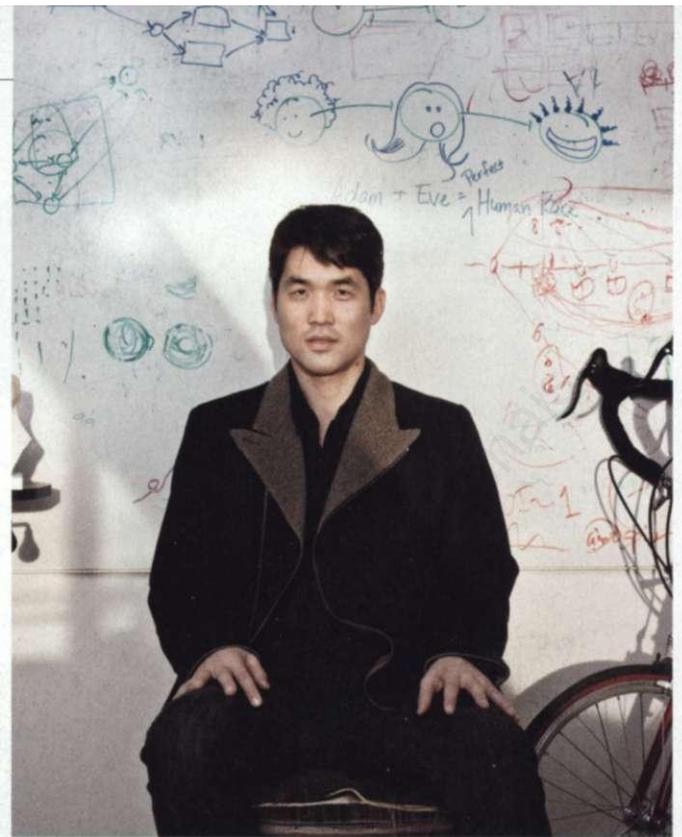


# MAP QUEST

Sebastian Seung wants to get computers to connect our thoughts.

As a first-year MIT professor, Sebastian Seung taught neuroscience—even though he had never taken a neuroscience class. He was trained as a theoretical physicist, but a random conversation with some brain scientists made him want to study the ultimate emergent physical phenomenon: human intelligence. "How do you take dumb neurons and put them together to make an intelligent mind?" he asks. Seung is now a professor of computational neuroscience in MIT's Department of Brain and Cognitive Sciences. His career-changing encounter proves once again that it's not *what* you know, it's *who* you know. And as we learn from his new book, *Connectome*, the same goes for neurons, whose roles are defined primarily by the neurons they communicate with. Seung's work explores a growing field called connectomics, the mapping and study of neural networks. It's usually done by examining the brain with an electron microscope and manually identifying cells and synapses. This is an incredibly slow process: it took scientists a dozen years to map the connections between the 300 neurons in a tiny worm. The human brain has 100 billion neurons. To speed things up, Seung has begun developing computer-vision algorithms that



pinpoint the boundaries between individual neurons. It's a nice payback for all of the brain power we've invested in AI research. "Ask not what the brain can do for the computer," Seung says. "Ask what the computer can do for the brain." His work could someday lead to a better understanding of memory, personality, and pathologies. For now, Seung is just following his curiosity—and one nagging question: Are we all simply the sum of our connectome? —Matthew Hutson

## ASK A FLOWCHART

Which tablet should I buy? —MATHEW HONAN

