

KRISHNA SHENOY AND JOANNA WYSOCKA NAMED HHMI INVESTIGATORS

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The funding will aid Shenoy's efforts to develop brain-machine interfaces and allow Wysocka to continue exploring the earliest steps of human development.



By Tom Abate and Krista Conger

Two Stanford University researchers are among 26 scientists from 19 institutions newly appointed as [Howard Hughes Medical Institute](#) (HHMI) investigators, the institute announced today. They were chosen through a competitive selection process from a pool of nearly 900 candidates.

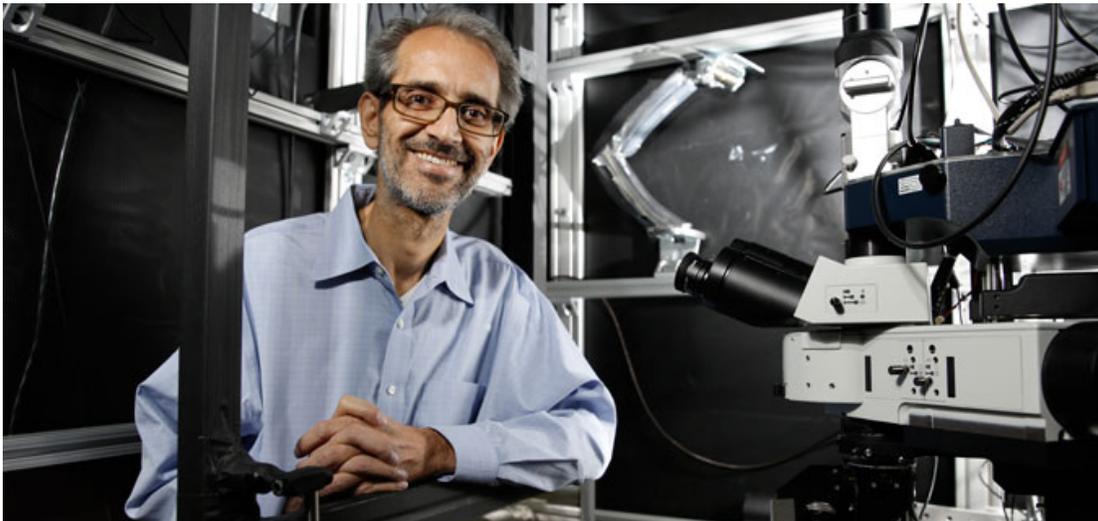
[Krishna Shenoy](#), a professor of [electrical engineering](#), and [Joanna Wysocka](#), an associate professor of chemical and systems biology and of developmental biology in the School of Medicine will each receive a full salary, benefits and a research budget during their initial five-year appointments, which may be renewed for additional five-year terms. The institute will also cover other expenses, including research space and the purchase of critical equipment.

With today's appointments, Stanford now has 22 HHMI investigators.

BRAIN-MACHINE INTERFACES

Shenoy brings an engineer's perspective to understanding how the brain controls body movements. His lab has long been at the forefront of efforts to develop technologies to restore movement to people with paralysis.

By studying the brains of monkeys as they perform specific tasks, Shenoy and his colleagues have probed how groups of neurons coordinate and cooperate to generate arm movements. His lab has developed unique insights into the dynamic neural circuits that control motor activity. Through computational analyses of large-scale neural data, he has shown how the populations of neurons involved in motor activity evolve dynamically – an understanding that has prompted neuroscientists to reconsider how neural circuits function.



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paralysis. (Photo: Craig Lee)

Shenoy is also considered a leader in the emerging field of brain-machine interfaces to control the movement of computer cursors and prosthetic limbs. He has developed computational methods to dramatically speed up the ability to decode patterns of neural activity in a person's brain. These algorithms have been incorporated into a system designed to allow people with paralysis to control a computer cursor with their thoughts. That system is now being evaluated in a clinical trial.

"Krishna's engineering approach to brain research is a source of inspiration to his colleagues and of hope for people with paralysis," said Persis Drell, the Frederick Emmons Terman Dean of the Stanford School of Engineering.

Shenoy received a National Institutes of Health Director's Pioneer Award in 2009. He is a member of the Stanford Neurosciences Institute and of Stanford Bio-X.

HOW FACES FORM

Wysocka's research focuses on how gene-expression patterns enable cells in the developing embryo to migrate from a region known as the neural crest to form the skeletal and connective tissue of the head. In particular, she is interested in learning how genes may affect human facial structures and birth defects, such as cleft palate. Wysocka also recently published research showing that viral proteins may play a role in the earliest steps of human development.

"The flexibility of HHMI funding will allow us to further develop some high-risk projects that we have initiated in the lab," Wysocka said. "For example, we will use this funding to extend our work on genetic, regulatory and evolutionary principles that make our facial features uniquely human and uniquely individual. Given the faltering support for basic research in the United States, the HHMI appointment provides my team with the luxury to pursue fundamental questions and to think beyond the short-term outlook."



Joanna Wysocka

Lloyd Minor, dean of the School of Medicine, said, "We congratulate Dr. Wysocka on her achievements that led to this great honor. The support of the Howard Hughes Medical Institute helps our researchers continue pushing the boundaries of bleeding-edge and paradigm-changing science."

Wysocka was named an Outstanding Young Investigator by the International Society for Stem Cell Research in 2010. She is member of the Stanford Cancer Institute and of Stanford Bio-X.

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