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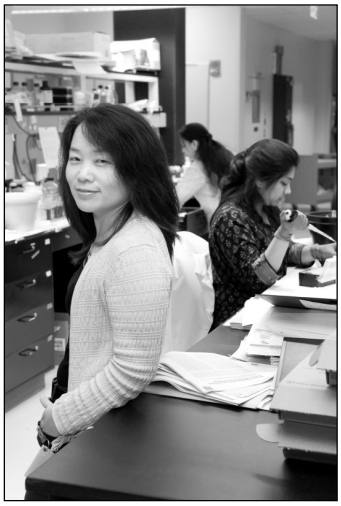
# RUTGERS UNIVERSITY SCIENTIST'S RESEARCH REVEALS CRITICAL KNOWLEDGE ABOUT THE NERVOUS SYSTEM

*Research funded by NJ Commissions on Spinal Cord Injury and Brain Injury Research will help solve nervous system disorders of Multiple Sclerosis, spinal cord injuries, diabetes and cancer*

**Newark, NJ** – Uncover the neural communication links involved in myelination, the process of protecting a nerve's axon, and it may become possible to reverse the breakdown of the nervous system's electrical transmissions in such disorders as multiple sclerosis, spinal cord injuries, diabetes and cancers of the nervous system.

With $697,065 in grants from the New Jersey Commission on Spinal Cord Injury and the New Jersey Commission on Brain Injury Research, **Haesun Kim** of **Teaneck, NJ**, assistant professor of biological sciences at Rutgers University in Newark, is working on gaining a better understanding of those links.



**PROFESSOR HAESUN KIM, photo ©2007 Shelley Kusnetz**

Specifically, her work focuses on Schwann cells within the peripheral nervous system and their communication links with the axons they myelinate by enwrapping them in myelin. Axons are the long fibrous part of neurons that carry the nerve's electrical signals. A fatty substance, myelin covers those axons both to protect them and to provide a conduit for the fast conduction of electrical signals within the nervous system. Once that myelin is lost, the electrical signal breaks down and eventually the neuron dies – like a cell phone that loses its signal.

Determining how Schwann cells and axons communicate with one another could lead to an understanding of how to promote remyelination, the rebuilding of myelin, and restoration of that

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signal. One unique aspect of the communication link between Schwann cells and axons is that they are mutually dependent upon that connection for their existence.

"When Schwann cells are generated during development, axons send out signals to the Schwann cells and tell them, 'You are going to become myelin cells and you are going to myelinate me,'" explains Kim. "The Schwann cells in turn guide the axons to where they need to go and direct the axons to grow."

By pinpointing the sequence and nuances of the communication links involved in myelination, targeted genetic and pharmacological interventions possibly could be developed to restore the loss of myelin. Such an understanding additionally may allow for the effective transplanting of Schwann cells in the central nervous system to promote remyelination and the correction of neurological disorders at that level.

The New Jersey Commission on Spinal Cord Injury has provided $397,066 and the New Jersey Commission on Brain Injury Research $299,999 to support Kim's research.

Kim received her M.S. in biology from the University of Toledo, her Ph.D. in cell biology, neurobiology and anatomy from the University of Cincinnati, and performed her post-doctoral work at the Dana-Farber Cancer Institute at Harvard Medical School. She joined the Rutgers-Newark faculty in 2004.

*For more information on Dr. Kim's research, visit http://newarkbiosci.rutgers.edu/Faculty/Kim.html or contact the Rutgers-Newark Office of Communications at 973.353.5262, oc@andromeda.rutgers.edu*

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