MU scientist eyeing enzymes that could help fight flu

November 17 2011

As health care professionals prepare for another flu season, a University of Missouri scientist is studying how two enzymes could be used to stop the virus in its tracks. Bumsuk Hahm, Ph.D., and his colleagues at MU have received a $1.8 million grant from the National Institutes of Health to examine how the enzymes influence the immune system's ability to fight infection, including the flu virus. Credit: University of Missouri School of Medicine

The influenza virus remains a worldwide threat to humans, causing an average of 36,000 deaths and 200,000 hospitalizations each year in the United States alone. As health care professionals prepare for another flu

season, a University of Missouri scientist is studying how two enzymes could be used to stop the virus in its tracks.

Bumsuk Hahm, PhD, and his colleagues at MU have received a $1.8 million grant from the National Institutes of Health to examine how the enzymes influence the immune system's ability to fight infection. Called sphingosine 1-phosphate lyase (SPL) and sphingosine kinase 1 (SK1), they are among a group of metabolizing enzymes that affect many cellular processes, including cell growth, survival, movement and specialization.

"We know these enzymes influence multiple biological mechanisms and could lead to promising drug candidates, but scientists have never studied how these enzymes could be used to fight influenza," said Hahm, an assistant professor of surgery, molecular microbiology and immunology. "There are a lot of seasonal flu strains that are resistant to current treatments, including some strains could cause a global pandemic , so it's important that we identify and develop new targets for the treatment of influenza."

In a study published in the *Journal of Virology*, Hahm's research revealed that the enzymes affect the immune system's ability to detect viruses and resist infection. The new NIH grant will allow him to translate his study from cells to mice, an important step toward the development of a new treatment for humans.

"We found that when we alter the enzymes, the SPL enzyme stops the flu virus' ability to replicate, while the SK1 enzyme helps the virus to replicate," Hahm said. "If we can specifically activate SPL or inhibit SK1, we can identify a target for drug therapies that will block the spread of the influenza virus."

In November 2011, the MU School of Medicine presented Hahm with

its most prestigious award for scientists, the Dorsett L. Spurgeon Distinguished Medical Research Award. Hahm received his doctorate in molecular virology from Pohang University of Science and Technology in South Korea and then joined the virology division at the Scripps Research Institute in La Jolla, Calif. At Scripps, Dr. Hahm studied viral immunology and viral pathogenesis before joining the MU School of Medicine as a faculty member in 2008.

Provided by University of Missouri School of Medicine