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Way to make one-way flu vaccine discovered

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A new process to make a one-time, universal influenza vaccine has been discovered by a researcher at Georgia State University's Center for Inflammation, Immunity and Infection and his partners.

Associate Professor Sang-Moo Kang and his collaborators have found a way to make the one-time vaccine by using recombinant genetic engineering technology that does not use a seasonal virus.

Instead, the new vaccine uses a virus' small fragment that does not vary among the different strains of flu viruses.

By using the fragment and generating particles mimicking a virus in structure, the immune system can learn to recognize any type of flu virus and attack the pathogen, preventing illness. The research appears in a recent edition of the journal *Molecular Therapy*, published by the Nature Publishing Group.

"We can now design a vaccine that makes it easier to induce a good immune system response to recognize a pathogen, regardless of how the surface proteins of the virus change," Kang said.

Health officials and scientists must alter flu vaccines every year to match expected strains, and often shortages can result, such as what happened during the 2009 Swine Flu outbreak. A one-time vaccine would prevent such a scenario, Kang said.

"Outbreaks of pandemic can be a dangerous situation, and our current

vaccination procedures are not perfect," he said.

Using the new one-time vaccine, using only a fragment rather than the live viral vaccine, such as FluMist, or a killed virus itself, would be safer for people with weakened immune systems, young children and the elderly, Kang said.

The team included researchers from Georgia State, the Emory Vaccine Center at the Emory University School of Medicine, Sungshin Women's University in South Korea and the Animal, Plant and Fisheries Quarantine and Inspection Agency in South Korea.

More information: The article is "Virus-like particles containing multiple M2 extracellular domains confer improved cross protection against various subtypes of influenza virus," *Nature Molecular Therapy*, dx.doi.org/10.1038/MT.2012.246

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