

Research combats the stomach flu

December 5 2013, by Jen Hendricks

More than 21 million cases of the stomach flu, caused by Norovirus, are reported every year in the United States.

William Groutas, Endowment Association Distinguished Professor at Wichita State, is working with his research team to create an anti-[norovirus](#) therapeutic to combat the disease.

The [stomach flu](#) can be especially harmful to immune compromised individuals, the young and elderly. And officials with the National Institutes of Health (NIH) are concerned that the [virus](#) could be used as a bio-terrorism weapon.

With support from the NIH, and in collaboration with Kansas State University and Ohio State University, Groutas and his team are focusing not on the Norovirus itself, but on blocking an enzyme that allows it to replicate.

"We have been fairly successful in identifying multiple series of compounds that inhibit an enzyme, norovirus protease, that is essential for virus replication, and we have also forged very successful collaborations with scientists at Kansas State University, who have a cell-based system for screening our compounds, and also another group at Ohio State University that has the best [animal model](#) for Norovirus infection," Groutas said.

Groutas' dedication to antiviral research, including Norovirus, stemmed from his time as a postdoctoral fellow at Cornell University where he

became interested in studying the human proteases (enzymes that split proteins) responsible for the degradation of lung connective tissue in emphysema, a lung disease most often caused by smoking. While they were successful in coming up with multiple classes of compounds that were effective in inhibiting the enzymes in a test tube, there was no suitable animal model for emphysema that could be used to evaluate the compounds' effectiveness.

While it was evident that the NIH wanted them to continue their research, the lack of an appropriate animal model forced a major change in their research. About six years ago, they transitioned from studying the human enzymes and decided to leverage their expertise to design inhibitors of viral proteases, Groutas said.

The three viruses they focused on were West Nile virus, Dengue virus and Norovirus. Along with their success with Norovirus, Groutas and his team have been successful in creating inhibitors for West Nile virus and Dengue virus in collaboration with researchers at Georgetown University Medical Center.

Recently, Groutas received the Dolph Simons Award in Biomedical Sciences, part of the Higuchi-KU Endowment Research Achievement Awards.

"Groutas and his accomplishments exemplify what WSU is and what we hope it to be – a place where we can have people doing world-class research, and those are the same people who are in the class teaching the students," said David Eichhorn, Department of Chemistry professor and chair.

Groutas views his research as another teaching tool for his students.

"Engagement in research keeps a teacher up to date and on the cutting

edge of their field, and the enthusiasm for research is manifested in the classroom," Groutas said.

Provided by Wichita State University

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