

Eastern Ontario: Tricking the influenza virus

Influenza brings misery to millions of Canadians every year and many millions more throughout the world. It circles the globe in seasonal epidemics, causing tens of thousands of deaths in non-pandemic years and killing millions when a new strain triggers a pandemic. Now health authorities throughout the world fear are bracing for another pandemic if the deadly H5N1 avian strain ever mutates to a form that spreads easily among people.

Joining the international effort to prevent such a disaster is 17-year-old Maria Merziotis, a Grade 12 student at Ottawa's Hillcrest High School, who won first place in the Eastern Ontario section of this year's Sanofi Aventis BioTalent Challenge with her effort to combat the influenza virus.

The influenza virus wreaks its havoc by binding to the sialic acid present on the surface of human cells. The sialic acid is a natural receptor for the deadly airborne invader. Working with her mentor, Dr. Michel Gilbert, of the National Research Council's Institute of Biological Sciences, Maria synthesized a floating form of sialic acid (sialyllactose) that acts as a synthetic receptor for the virus.

"This has the potential for both diagnostic and therapeutic applications," says Maria. "It can be used to detect what strain of influenza is responsible for a specific infection. It can differentiate between human and avian strains. It may also be possible to interfere with the infection process by administering the floating sialyllactose through injection, nasal spray or to the lungs with a pump. The flu virus would attach to the artificial receptor rather than the human cell and infection would be prevented."

Maria says that the diagnostic application has already been tested by Health Canada with encouraging results. "The therapeutic application is rationale but it is really a long shot and its efficacy would really need to be tested and demonstrated in animals before it is considered for humans."