



**Research:** H1N1 (2009) Influenza Virus Induces Broader Changes in Gene and microRNAs Networks during Infection in the Lung

**Lead Scientist(s):** Kevin S. Harrod, PhD

**Disease/Condition:** Swine Flu

The 2009 outbreak of the swine-origin influenza virus (now called 2009 H1N1 influenza virus) is the first great influenza pandemic of the twenty-first century, and it is the first pandemic in over 40 years. The virus resulted from multiple influenza strains that mutated and recombined, probably in pigs, before “jumping” into humans, a process known as zoonotic transmission. For the first time in history, the general public was able to witness a pandemic unfold.

Evidence from the study of influenza infection in humans suggests that this virus may be unique in many ways from the more typical seasonal influenza. A disproportionate number of pediatric infections have resulted in severe illness and fatalities, while older individuals seemed to be protected, likely due to exposure to similar influenza viruses in subsequent years.

A research team led by Dr. Kevin S. Harrod is examining the molecular, cellular, and genetic changes in the lung following 2009 H1N1 infection using both *in vitro* and *in vivo* systems. We have found, using leading-edge culture techniques, that indeed this virus is able to replicate faster and cause more disease when compared to previous seasonal influenza strains. Interestingly, the virus may be using the host’s own genes to facilitate its survival and cause disease. This finding brings to light a novel perspective on how new drugs may be discovered to fight influenza infection and human-to-human transmission.