

### **Biology 305 Exam 3 Abstract**

This abstract will be part of the first exam. You do not need to read the actual paper. Your goal before the exam is to make sure you understand the concepts and ideas presented in the abstract. You may talk with friends (in fact I hope that you do) and ask me anything about the information presented below.

Olsen, CW (2002) The emergence of novel swine influenza viruses in North America. *Virus Research* **85**:199-210.

Since 1997, novel viruses of three different subtypes and five different genotypes have emerged as agents of influenza among pigs in North America. The appearance of these viruses is remarkable because there were no substantial changes in the overall epidemiology of swine influenza in the United States and Canada for over 60 years prior to this time. Viruses of the classical H1N1 lineage were virtually the exclusive cause of swine influenza from the time of their initial isolation in 1930 through 1998. Antigenic drift variants of these H1N1 viruses were isolated in 1991-1998, but a much more dramatic antigenic shift occurred with the emergence of H3N2 viruses in 1997-1998. In particular, H3N2 viruses with genes derived from human, swine and avian viruses have become a major cause of swine influenza in North America. In addition, H1N2 viruses that resulted from reassortment between the triple reassortant H3N2 viruses and classical H1N1 swine viruses have been isolated subsequently from pigs in at least six states. Finally, avian H4N6 viruses crossed the species barrier to infect pigs in Canada in 1999. Fortunately, these H4N6 viruses have not been isolated beyond their initial farm of origin. If these viruses spread more widely, they will represent another antigenic shift for our swine population, and could pose a threat to the world's human population. Research on these novel viruses may offer important clues to the genetic basis for interspecies transmission of influenza viruses.