INFLUENZA
(Respiratory Viruses Research Laboratory)

Introduction
Influenza, commonly known as “flu”, is a highly contagious acute respiratory viral disease caused by influenza viruses. It is transmitted by aerosol droplets and has a very wide host range that includes humans and other mammals, as well as domestic poultry and wild birds. Novel influenza virus subtypes with pandemic potential arise through genetic reassortment between circulating influenza viruses of human and non-human origins.

Global Status
- Annual epidemics caused by seasonal influenza viruses causes 3 to 5 million cases of severe illness and 250,000 to 500,000 deaths, affecting nearly 5%–10% of adults and 20%–30% of children
- Several influenza pandemics have been recorded since 1889. The latest – 2009 H1N1 pandemic, resulted in 89 million infections worldwide, with an estimated 8,870 to 18,300 H1N1-related deaths

Our Results
Several host genes critical for influenza virus replication or confer host resistance to influenza virus infection are currently being investigated as potential novel druggable targets for influenza therapeutic intervention.

Host factors essential for influenza virus replication are identified by siRNA knockdown of gene expression

Our Strategy
The Respiratory Viruses Research Laboratory (RVRL) has taken chemical genomics and RNA interference (RNAi) approaches, in combination with high-content image analysis to better understand the role of host cell proteins and their associated pathways in the context of influenza virus replication.

Also, RVRL is investigating the mechanisms of disease pathogenesis and immunity associated with influenza virus infection in order to understand the dynamics of host innate and adaptive immune responses. This provides the foundation for facilitating novel therapeutics development.

Chemical Genomics

RNAi

Efficacy of influenza vaccines are limited
Neuraminidase inhibitors (e.g. Tamiflu, Relenza, Rapivab, Inavir) are the only FDA-approved drugs for influenza currently used in the clinics

Screening of small molecules with immunomodulatory activities as potential anti-influenza drugs

Influenza viruses pose a serious health risk in human and animal population, and understanding the host-pathogen interaction will help define novel targets for more effective therapeutic interventions. Thus, RVRL continues to unravel the different aspects of influenza virus infection in order to discover new druggable targets for therapeutic development.

Prospective

Institut Pasteur Korea
Over 10 Years in Korea Fighting Disease for All Mankind