

# Research in high gear for pandemic flu

**B**ecause of the threat of pandemic influenza A/H1N1 in 2009-2010, much research has been accomplished regarding various aspects of the seasonal and pandemic flu strains. From exploring viral evolution, to flu statistics among ethnic minorities, to conclusions about the value of flu vaccines and the hope of new rapid tests, there is much to learn from medical scholars who have tackled innumerable projects in the wake of this year's influenza threats. The landscape of the H1N1 flu is ever changing; stay abreast.

**2** In the February 2010 issue of *The American Journal of Pathology*, current research suggests that the flu may predispose people to secondary bacterial infections, which account for a significant proportion of mortality during flu pandemics. While most people will recover in one to two weeks, others will develop life-threatening conditions such as pneumonia or bronchitis. The research results point out the need for early antiviral and antibiotic treatment to combat severe disease in human patients, and highlight the importance of vaccination and effective hygiene measures to prevent secondary bacterial infections during a bout with influenza.

**4** According to a study entitled, "Public Health Management Pandemic (H1N1) 2009 Infection in Australia a Failure!" published in *Respirology*, two senior academics debate whether the public-health response to pandemic H1N1 2009 infection in Australia failed because of the unanticipated clinical presentation and high infectivity of virus there. The authors note that while government and public-health authorities responded properly and resources were not misspent, asymptomatic properties of the virus, long delays in screening tests, inadequately trained health practitioners, and problems in communication and coordination combined to overwhelm the ability of the public-health response to contain the pandemic.

**5** Researchers from the Medical College of Wisconsin, the Children's Research Institute, and the Children's Hospital of Wisconsin have developed rapid semi- and fully automated multiplex real-time RT-PCR assays to detect influenza A, influenza B, and respiratory syncytial virus (RSV). These assays can successfully detect human H1N1, H3N2, and swine-origin H1N1 viruses as well as distinguish these from influenza B and RSV infections. These assays could test large numbers of samples over a very short time, allowing for a significant decrease in both technician and assay time. The related report appears in the January 2010 issue of the *Journal of Molecular Diagnostics*.

**1** Researchers at Rice University and Baylor College of Medicine published in a December 2009 online edition of scientific journal *PLoS ONE* that they found what they believe is a weakness in H1N1's method for evading detection by the immune system. Comparing genetic sequences of more than 300 strains of H1N1 to track its evolution from the virus' first known appearance in the deadly "Spanish flu" outbreak of 1918, researchers discovered a previously unrealized role of receptor-binding residues in host evasion, which effectively becomes a bottleneck that keeps the virus in check. Confirming the computations could lead to more efficiency in creating vaccines not only for H1N1 but also for other strains of the flu. If studying viral evolution can help predict what will cause a severe problem in humans, vaccines could be pre-stocked to save time.

**3** A new study published in the *Canadian Medical Association Journal* concerning the severity of H1N1 influenza has found, among other things, that people of First Nations ethnicity were also at higher risk of severe H1N1 infection and were associated with severe H1N1 disease requiring ICU admission compared to people of other ethnic origins. (More than 600 recognized First Nations governments or bands exist; aboriginal peoples in Canada are neither Inuit nor Metis.) Similar trends have been observed in aboriginal communities in Australia and New Zealand. These findings are consistent with historical records from the 1918 Spanish influenza pandemic, during which mortality in aboriginal communities was far higher than in non-aboriginal communities.