Abstract. This workshop gathered 45 participants from 16 countries and had a correspondingly multifaceted program covering various infectious diseases, public health applications, and methodological innovations. The discussions and presentations focused on the importance of mathematical models and statistical analyses in understanding the complex transmission systems of infectious diseases and in planning effective intervention strategies. Many different statistical and mathematical approaches were covered. The general unifying theme is that the analyses and models take into account the underlying transmission of the infectious agent among the hosts and/or vector populations.


Introduction by the Organisers

At the time of the workshop, the novel influenza A (H1N1) pandemic had passed through the southern hemisphere and was in the acute phase of its second wave in the northern hemisphere. Thus several presentations focused on mathematical and statistical methods for assessing the pandemic and planning interventions. Other infectious disease applications included pneumococcus, multiple drug resistant streptococcus, HIV, malaria, and citrus disease, among others.

In recent years network theory and graph theory have provided methodology for understanding the spread of infectious diseases and interventions. A full day of presentations was devoted to network and graph theory, including the role of serial or generation interval in conjunction with network models. Bayesian computation,
in particular Markov chain Monte Carlo (MCMC) methods are quite useful in analyzing infectious disease data where much of the underlying infectious and contact processes are unobserved and generally unobservable. A day was devoted to presentations of developments in these methods and applications.

Viral and bacterial phylodynamics and genomics are integral to infectious disease studies. Several presentations covered the development of statistical methods integrating genetic analysis with dynamic transmission systems. Other topics included statistical methods for analyzing vaccine studies, history of fitting epidemic models to data, and power analyses for hospital based studies of interventions.

A poster session on Monday evening gave participants not giving a talk the opportunity to discuss their current research with others. One evening two discussion groups were formed, one around the topic of the basic reproductive number, particularly within networks, the other around aspects of inference methods. Two early afternoon interactive tutorials were held for junior participants. One was on different aspects of vaccine efficacy and how they are measured. The other was an introduction to MCMC methods.

On Thursday evening, several participants provided a performance of classical music of piano, flute, and viola by Stravinsky, Donizetti, Debussy, Handel, and Mozart, and songs by Schumann and Schubert, followed by more contemporary songs with guitar accompaniment. Readings of poetry and a short story preceded a group song. The evening ended with everyone engaged in a Belgian dance.