NIH pumps money into biodefence

Anthony Li, a.li@elsevier.com

The National Institutes of General Medical Sciences (NIGMS; http://www.nigms.nih.gov), an arm of the NIH, is awarding $28 million over the next five years for the development of computer modelling techniques that will be used to analyse and respond to infectious disease outbreaks.

MIDAS

The aim of the initiative, named MIDAS (Models of Infectious Disease Agent Study), is to create strategies for the detection, control and prevention of epidemics whether they occur naturally or as a result of a bioterrorist attack. Jeremy M. Berg, director of the NIGMS, stated that, 'MIDAS is designed not only to help prepare us for the infectious disease crises, but also to be an active part of the response.' Of the total funding, US$9.5 million will be shared equally between three groups whose goal will be in creating mathematical models to study various aspects of infectious disease epidemics and community responses.

Historic and modern data

The first team will be led by the John Hopkins Bloomberg School of Public Health, Baltimore, MD, USA (http://www.jhsph.edu/) and include collaborators from the Brookings Institution, Washington, DC, USA (http://www.brook.edu/), NASA (http://www.nasa.gov/), the University of Maryland, MD, USA (http://www.umd.edu/) and Imperial College, London, UK (http://www.ic.ac.uk/). Their task will be to use historic and modern data about epidemics and incorporate factors such as disease, incubation period, transmission rate, weather patterns and social networks, in order to evaluate the effectiveness of containment methods such as vaccination, contact tracing and quarantine.

Researchers from the Los Alamos National Laboratory, Los Alamos, NM, USA (http://www.lanl.gov) will be using their share to explore the spread and possible containment of multiple, interacting disease-causing organisms in hypothetical urban areas with a population of 1.5 million. By modifying social networks and populations, they will be able study the effect of epidemics on these social contacts and the repercussions of intervention strategies.

The third team, from Emory University, Atlanta, GA, USA (http://www.emory.edu/), will find the best method of controlling an epidemic by modelling a disease outbreak in hypothetical communities numbering up to 48,000. They will examine the effectiveness of current policies and adapt the model for smallpox, SARS, pandemic influenza and other possible bioterrorism agents.

Web portal

The remaining $18.5 million will be used to develop a web-based portal where all the information from the three other groups can be collated and organised. In addition, the team, spearheaded by Research Triangle Institute (RTI) International, will develop user-friendly computer modelling tools so that public health officials will be able to simulate epidemics and response strategies themselves.

This network of MIDAS researchers will be guided by a steering committee who will establish policies for the all the groups, set standards for data management, evaluate progress and provide a forum for the exchange of ideas with other members of the scientific community. Roy Anderson, a researcher at Imperial College who is part of the team collaborating with the John Hopkins School of Public Health, highlighted the generic value of the program, 'I am very pleased that the US/NIH has agreed to allocate this amount of money for modelling and simulation research to work out the optimum ways to manage a bioterroism attack. The research will also have many applications in the civil area – namely, how best to manage an influenza A outbreak using various intervention tools.'