

THE UNIVERSAL INFLUENZA VACCINE

A continual dissatisfaction with things as they are is a critical substrate for new discovery. And there is much to complain about the current influenza vaccine. Available influenza vaccines induce a strong immune response against the viral glycoproteins: hemagglutinin (HA) and neuraminidase (NA). These are highly effective in children and adults (70-90%) but less so in the elderly (30-50%). A major drawback is that the principal vaccine targets, especially HA undergoes continual alteration in the viruses – a phenomenon better known as *antigenic drift*. It sometimes undergoes dramatic changes which is termed *antigenic shift*. This means that prior to every expected influenza epidemic the vaccine must be updated to reflect the pool of circulating viral strains.

Hence, if vaccines are targeted against antigens which do not vary between strains we potentially can have a vaccine which need not be changed every season! Acambis, a biotechnology company based in Cambridge, UK has come up with one such vaccine. It targets 2 proteins: M2 which encodes an ion channel and another nucleoprotein which packages the viral RNA. Phase I trials have shown that it is both safe and effective in human beings. This vaccine called the ACAM-FLU-A protects mainly against Influenza A. However it may take upto 5-10 more years before it reaches prescription pads of doctors (*www.nature.com*. 7 January 2008).

NEW TOOLS IN DRUG DISCOVERY

The world is flat. The internet has leveled it. Knowledge is no longer a privilege of the rich. People living in disparate regions, with diverse skills are willing to share information and solve bizarre problems for the sheer pleasure of the challenge without monetary returns. Drawing inspiration from

projects like the hugely successful Wikipedia, India plans to launch an innovative drug discovery program. It will rope in global IT firms, researchers, companies and young scientists in laboratories and universities to invent drugs at a fraction of the cost of an MNC developed drug. The Government has begun discussions with Sun Microsystems to set up web management tools for an “open source” drug discovery project. The first project will be to develop medicines for tuberculosis and later for other diseases like malaria and AIDS. Researchers attached to Institutions such as Royal Society of UK, Imperial College of London, Medicine Sans Frontiers and various Indian Universities will have the opportunity to work on a drug discovery process even at an individual level. Contributions will also fetch rewards and recognition to be sponsored by corporates like the Kinetic group or Wellcome Trust.

The drug discovery program in India is likely to be implemented by the Council of Scientific and Industrial Research or the Institute of Genomics and Integrative Biology. A database of requirements for developing drugs has already been built. Individual experts can contribute in solving special aspects of the drug discovery. Contracts will then be assigned to individual manufacturers and clinical research organizations. Drugs will instantaneously become generics and challenge the MNC's claims that they invest billions of dollars in risky experiments.

The concept is revolutionary and may change our view of how to handle health care (*The Economic Times*, 20 December 2008).

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