Understanding of immune system a booster for vaccines

Increased understanding of how the immune system functions is leading to new advances in the development of vaccines, says Margaret Liu from Chiron Corporation, Emmeryville, California, US.

Ms Liu describes several new technologies which have been involved in vaccine development: recombinant DNA technology; molecular attenuation of pathogens; delivery of genes from pathogens using nonpathogenic viral or bacterial vectors; and DNA vaccines (bacterial plasmids encoding antigens).

The delivery of vaccines is another area of interest, says Ms Liu. Routes of administration such as oral or transdermal are attractive to patients, while the use of transgenic edible plants to make vaccines would not only facilitate ease of administration but also production. Development of vaccines which do not require refrigeration or delivery devices could improve accessibility for some parts of the world.

Development of vaccine adjuvants is also important; Ms Liu says that such compounds may be used '*to reduce the number of immunisations or increase the potency in people who otherwise would not respond*'. The clinical targets of vaccines are expanding. Ms Liu points out that many infectious diseases still need vaccines, or better vaccines than those currently available. Researchers are also looking towards such indications as cancer, allergies, chronic and metabolic disorders such as hypercholesterolaemia, and the prevention of pregnancy.

See also Research & Development, this issue, p10; 800801184

Liu MA. Vaccines in the 21st century. British Medical Journal 319: 1301, 13 Nov 1999 800801175