

Vaccine method 'offers instant immunity'

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In a breakthrough, a method of vaccination has been developed that provides instant immunity, researchers say.

The new approach has the potential to give humans spontaneous protection against diseases caused by viruses, bacteria, toxins and even cancerous cells, they said.

At present vaccines can take days or weeks to take effect.

But in methods developed by the California-based Scripps Research Institute, a two-stage process targets specific cells and creates a 'universal' immune reaction.

Mice were injected with one type of chemical antibodies to trigger a programmable reaction, and another type of chemical described as 'adapter' molecules recognise the right cells to target. The two work in sync to self-assemble inside the body to create an instant result.

'The antibodies in our vaccine are designed to circulate inertly until they receive instructions from tailor-made small molecules to become active against a specific target,' said team leader Carlos Barbas.

'The advantage of this method is that it opens up the possibility of having antibodies primed and ready to go in the time it takes to receive an injection or swallow a pill.

'This would apply whether the target is a cancer cell, flu virus, or a toxin like anthrax that soldiers or even civilian populations might have to face during a bioterrorism attack,' he said.

The chemical-based method, in contrast to traditional biological approaches, addresses serious challenges that vaccine development faces, said researchers whose work is published on Monday in the Proceedings of the National Academy of Sciences.

'Our approach differs from the traditional vaccine approach in the sense that when we design an antibody-adapter compound we know exactly what that compound will react with,' Barbas said.

'The importance of this is best exemplified with HIV. In current vaccines, many antibodies are generated against HIV, but most are not able to target the active part of the virus.' The work by one of the world's largest private biomedical organisation has so far only been tested on mice affected by melanoma or colon cancer. Three clinical trials are being conducted by the US medical giant Pfizer to test the new approach against types of cancer and diabetes.

