His ‘virus catcher’ may save lives

IN THE not too distant future, patients with viral infections may be able to have their blood cleansed of viruses without popping a pill.

National University of Singapore (NUS) scientist Tong Yan Wah, 34, hopes to come up with a “sieve” he is hoping will “trap” viruses which cause diseases such as influenza, severe acute respiratory syndrome or Sars and aids.

His sieve will contain tiny moulds specially shaped to recognise the shapes of viruses and catch them. By locking arms with these viruses, these moulds make the viruses powerless to infect the human body.

So Dr Tong’s moulds act like synthetic antibodies to kill the viruses, something the body’s immune system also does naturally.

In a procedure similar to kidney dialysis, a patient’s blood can then be extracted, pumped through the sieve, have the inactive virus removed, and then have the blood returned to the body.

Dr Tong has just received US$100,000 ($148,000) from the Bill and Melinda Gates Foundation to try to do this. And if in the next year, he can show it can work, he will get another US$1 million to continue work on his “virus catcher” for two more years.

The foundation was set up by software giant Microsoft’s founder Gates and his wife.

One of the areas it supports is innovation in global health, especially if it goes towards reducing costs and making health care more accessible to poorer countries.

A specialist in infectious diseases at Tan Tock Seng Hospital, Dr Lim Poh Lian, 43, said that a project such as Dr Tong’s was “potentially feasible” because therapies using natural antibodies from the body already exist.

“So it is well worth considering making synthetic antibodies,” she said.

She added that while vaccines and antiviral medications have helped in eliminating or treating many viral diseases, they have their limitations. For example, viruses sometimes mutate too fast for vaccines to be developed against them in time and resistance to antiviral medications can occur.

“So we must look for new approaches to tackle the problem,” said Dr Lim.

Like an imprint made on plasticine, the moulds can be shaped to fit a specific molecule.

Dr Tong’s mould can already capture one protein – albumin – from a mixture of proteins. And his team is working on applying this to more proteins.

Eventually it may be used to purify large molecules, such as proteins which are used to make treatments like insulin and the cancer drug, Herceptin.

Dr Tong’s mould to catch proteins was granted a provisional United States patent in August.

Talks to commercialise it are in progress and the technology should be available to drug companies in about three years, he said.