

Chips could speed up detection of livestock viruses

March 31 2008

Some of the worst threats to farm workers and farm animals such as bird flu, foot-and-mouth disease and other emerging viruses could soon be quickly identified by using a simple screening chip developed by scientists from the Institute for Animal Health, scientists will hear today at the Society for General Microbiology's 162nd meeting being held this week at the Edinburgh International Conference Centre.

“The last major SARS outbreak – severe acute respiratory syndrome – which started on the border of China and Hong Kong was identified using a microarray chip. Fortunately, because of the rapid identification of the virus it was brought under control, and in spite of its seriousness caused relatively few deaths,” says Dr Paul Britton of the Institute for Animal Health in Compton, near Newbury, Berkshire. “We need a similar way of quickly identifying viruses that attack chickens, cattle, pigs, sheep and other farm animals.”

The scientists have developed a microarray, called a chip, which contains specific small regions of virus genes that react with any viruses in the samples being tested, showing up as coloured spots on glass slides. The method can also be used to see if a sample contains two or more viruses.

“At the moment the common methods for detecting viruses rely on some previous knowledge, such as recognising the clinical signs of a disease,” says Dr Paul Britton. “A system that can be used by almost anyone, and that can quickly and accurately be used to identify the particular virus early on is vital to control these diseases before they spread, and will

have much wider applications.”

The new microarray can detect up to 300 different viruses that infect humans and animals including farm livestock, birds, fish and insects. The chip has already been successfully used to detect a coronavirus, similar to SARS, called infectious bronchitis virus, which infects chickens causing major problems for the poultry industry, and also foot-and-mouth disease virus.

“The great advantage of this microarray-based diagnosis is that you don’t even have to know which virus you are looking for. It can be used in the early stages of a disease outbreak to quickly identify the threat to people or animals, and can be used on samples either from clinics or isolated from the environment”, says Dr Paul Britton. “The chip we’ve developed consists of over 2,800 stretches of genes from over 300 viruses from 36 different virus families.”

“At the moment, the cost of the chip is quite high because it is a research tool. However, we hope to make some chips available soon to European members of the Epizone project, a virtual institute that aims to improve research and control epizootic diseases more effectively.”

Source: Society for General Microbiology

Citation: Chips could speed up detection of livestock viruses (2008, March 31) retrieved 24 April 2024 from <https://phys.org/news/2008-03-chips-livestock-viruses.html>

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