Phylogenetic forensics advances but doesn’t give courts a smoking gun

Juries might soon be hearing about the genetic path of infections and diseases as evidence in court cases. The process of analyzing and categorizing viral sequences, known as phylogenetic forensics, is explored in a recent article in *Nature*. Although exciting developments have been made, this style of forensics doesn’t give courts the sort of nearly indisputable evidence that DNA does.

> The intersection of this science with the legal system makes many uneasy, says Anne-Mieke Vandamme, an evolutionary geneticist at the University of Leuven in Belgium, who has worked on 19 criminal cases since 2002, mostly for the defence. Unlike DNA evidence, which is routinely used in legal settings around the world, the results of phylogenetic forensics are rarely definitive. “You can never prove guilt,” she says.
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> One of the challenges was differentiating the process from conventional DNA testing in minds of the judges and lawyers. Court officials needed to understand that the analysis is inherently more messy: because HCV mutates so rapidly, the longer a person has an infection, the more viral diversity they are likely to have.

This emerging field has been tested in the courts already: in the trial of an anesthetist in Spain who was accused of infecting patients with hepatitis C in 2007 and a man in Louisiana who injected his former girlfriend with HIV-and HCV tainted blood in 1998.

But when lives are in the balance scientists continue to proceed with caution. Testing phylogenetic forensics procedures is made all the more complicated when microorganisms are evolving almost as fast as the technology.

Read the full original article: Science in court: Disease detectives