

Viruses for a healthy pregnancy

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Sequences of DNA in the human genome that originated from ancient viral infections have some surprising effects on our bodies and are even essential for a healthy pregnancy, according to an article in the February issue of *Microbiology Today*.

Retrovirus infections represent the most intimate host-pathogen relationship. The virus inserts a copy of its genome into the DNA of the host cell, resulting in an irreversible, stable and sometimes lifelong infection. If a sperm or egg cell is infected, the virus DNA can be passed down generations, permanently fixed in the germ line. As a result, an endogenous retrovirus (ERV) can exist for millions of years.

“Over the course of evolution, retroviruses have invaded the germ-line of our ancestors on numerous occasions. Now, human ERVs (HERVs) make up around 8% of our genome,” say Dr David Griffiths from the Moredun Research Institute and Cécile Voisset from the Faculté de Médecine et des Sciences de la Santé in France.

Although there are no viruses similar to these ancient pathogens currently infecting humans, there are some related viruses in animals. For a retrovirus to become part of the host genome it is usually inactivated by mutation or silencing so it does not express any proteins. An epidemic of neoplastic disease in Australian koalas is giving researchers the rare opportunity to study this process.

“Recent work has provided some tantalizing evidence supporting the roles of HERVs in normal physiology and also in disease,” says Dr

Griffiths, “they can be seen as bona fide human genes.” Some HERVs may be crucial for a healthy pregnancy, whereas others have been linked to diseases like MS and cancer.

“It is only recently that the abundance of HERVs has been recognised and we are learning that they can have significant functions,” says Dr Griffiths.

Source: Society for General Microbiology

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