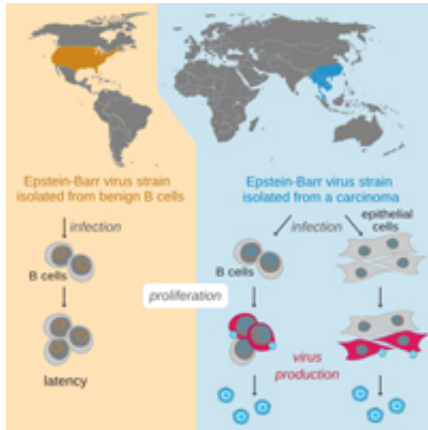


How a ubiquitous herpesvirus sometimes leads to cancer

10 October 2013



Credit: *Cell Reports*, Tsai et al.

You might not know it, but most of us are infected with the herpesvirus known as Epstein-Barr virus (EBV). For most of us, the virus will lead at worst to a case of infectious mononucleosis, but sometimes, and especially in some parts of the world, those viruses are found in association with cancer. Now, researchers reporting in the Cell Press journal *Cell Reports* on October 10 have found that the difference between a relatively harmless infection and a cancer-causing one lies at least partly in the viral strain itself.

The results offer some of the first evidence for the existence of distinct EBV subtypes with very different public health risks. The researchers say that vaccination or other strategies for preventing EBV infection will need to be designed with these most pathogenic, cancer-causing [strains](#) in mind.

"EBV is an important but neglected pathogen," said Henri-Jacques Delecluse of the German Cancer Research Centre in Heidelberg, Germany. "We have made an important step in recognizing that EBV is actually a family of viruses that have different properties, some of which are very likely to cause disease. So, the consequences of being

infected with EBV might be different, depending on the strain one carries."

Delecluse and his colleagues made the discovery by sequencing the DNA of a [viral strain](#) dubbed M81 isolated from a Chinese patient with nasopharyngeal carcinoma (NPC). Their analyses revealed that M81 is highly similar to other viruses isolated from NPCs and profoundly different from Western strains in terms of its ability to infect and replicate within cells.

The M81 strain can infect [epithelial cells](#) and multiply spontaneously at a very high level in all cells it infects, including B lymphocytes, the cells in which the viruses hide, the researchers report. It remains to be seen exactly how infected epithelial [cells](#) become cancerous.

"Our results have made me radically change my strategy to address the problem of EBV-associated diseases," Delecluse said. "The current view is that the virus is essentially the same all over the world and that local conditions explain the different consequences of EBV infection. We now show that the type of EBV also plays an important role. By concentrating on the potentially pathogenic EBV strains, we will soon better understand how EBV causes diseases, and this will also help [in] designing prevention strategies."

More information: *Cell Reports*, Tsai et al.: "Spontaneous lytic replication and epitheliotropism define an Epstein-Barr virus strain found in carcinomas."

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