Researchers hone in on Zika's neural target

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Video Abstract

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Abstract

Researchers have zeroed in on the neural structures most vulnerable to Zika virus. Given the devastating neurological effects linked to the virus, their findings could go a long way toward explaining how Zika first takes hold of its host—namely, the developing human fetus. In their study, published in the journal *Acta Neuropathologica Communications*, the researchers infected different types of neural cells extracted from mouse embryos. Because it was unclear which part of the nervous system Zika is most likely to attack, they collected cells from both the central nervous system and the peripheral nervous system, a catch-all for nerves lying beyond the brain and spinal cord. And to help ensure they could see the virus in action, for each normal cell they gathered, they also gathered a less defensive one deliberately lacking a virus-fighting immune response. After a few days, some cells had clearly fared better than others. While normal cells of either type appeared to resist infection, immune-deficient cells of the central nervous system were much more vulnerable than their peripheral counterparts. That result alone could have important implications. The Zika-linked disorder known as Guillaine-Barré syndrome is known to wreak its muscle-weakening effects through cells of the peripheral nervous system. The resistance of these cells to early Zika infection could rule out a direct viral pathway to the disease. A closer look at the cells that did succumb to infection revealed that the most susceptible were oligodendrocytes. These multi-branched cells lay a conductive membrane that speeds up neuron-to-neuron communication, making them critical to brain function. Although these results are specific to a single strain of Zika, they do provide important clues about how the virus might infect the nervous system during the early stages of human development. Expanding the researchers' infection model to other forms of Zika could give scientists a much better idea about how to halt its damaging effects.