

Scientists discover why newborns get sick so often

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If you think cold and flu season is tough, trying being an infant. A new research finding published in the November 2013 issue of the *Journal of Leukocyte Biology* sheds new light on why newborns appear to be so prone to getting sick with viruses—they are born without one of the key proteins needed to protect them. This protein, called "toll-like receptor 3" or "TLR3," is involved in the recognition of different viruses and mediates the immune response to them. Without this protein, newborn immune cells are not equipped to recognize and react appropriately to certain viruses, in particular, the herpes simplex virus known as HSV.

"This study helps to understand the molecular basis for the immaturity of the immune system of newborns, which we believe will contribute to development of therapeutic interventions to protect this vulnerable population group," said Lucija Slavica, a researcher involved in the work from the Department of Rheumatology and Inflammation Research at the University of Gothenburg in Gothenburg, Sweden.

To make this discovery, scientists compared [cells](#) from the cord blood of newborns with the same type of [blood cells](#) from adults. The cells from newborns did not contain the protein TLR3, which was present in adult cells. These cells rid the body of viral-infected cells, ultimately eliminating viral infections. When researchers treated both cell groups with a synthetic component mimicking a viral presence, the adult [immune cells](#) reacted by secreting substances involved in immune reaction against viruses (interferon-gamma) and killed cells infected with virus, while cells from [newborns](#) could not do this or were impaired in

performing this function.

"This study adds to the growing body of research stemming from the Nobel-winning discovery in 2011 on how the immune system recognizes microbes by shedding light on how these pathways develop over time after birth," said John Wherry, Ph.D., Deputy Editor of the *Journal of Leukocyte Biology*. "This report is particularly important - as any new parent can attest, infants are particularly susceptible to infections and understanding which pathways are not yet functional could lead to novel therapies."

More information: Lucija Slavica, Inger Nordström, Merja Nurkkala Karlsson, Hadi Valadi, Marian Kacerovsky, Bo Jacobsson, and Kristina Eriksson.

TLR3 impairment in human newborns. *J Leukoc Biol.* November 2013 94:1003-1011; DOI: [10.1189/jlb.1212617](https://doi.org/10.1189/jlb.1212617)

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