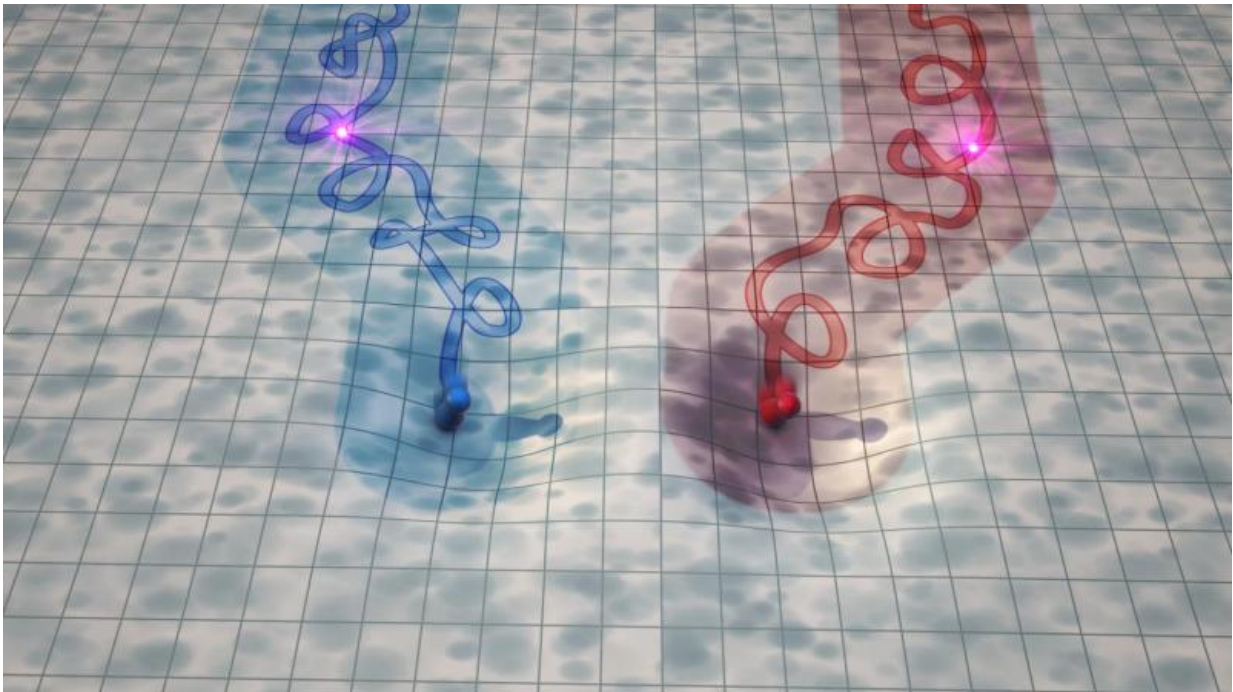


Raising a child has a bigger effect on the immune system than gastroenteritis

February 15 2016



An illustration of how the immune system profiles of two individuals in a relationship converge over time and become more similar after having a child. The grid represents the immunological space. Our immune systems show minor variations on a day-to-day basis but the greatest change, shown by convergence of the blue and red tracks, is the introduction of a child (pink flash). Following this event, the two individuals become significantly closer in the immunological space. Credit: Image produced by Dr Carl, dr-carl.com

Raising a child together has a greater effect on your immune system than the seasonal 'flu vaccine or travellers' gastroenteritis, a study by researchers at VIB and KU Leuven in Belgium and the Babraham Institute in the UK has found.

The research took a detailed look at the immune systems of 670 people, ranging from 2-86 years of [age](#), to understand more about what drives variation in our immune systems between individuals. From an assessment of the effects of a range of factors, including age, gender and obesity, one of the most potent factors that altered an individual's immune system was whether they co-parented a [child](#). Individuals who lived together and shared a child showed a 50% reduction in the variation between their two immune systems, compared with the diversity seen in the wider population.

Dr Adrian Liston, a researcher at VIB and KU Leuven who co-led the research said: "This is the first time anyone has looked at the immune profiles of two unrelated individuals in a close relationship. Since parenting is one of the most severe environmental challenges anyone willingly puts themselves through, it makes sense that it radically rewires the immune system - still, it was a surprise that having kids was a much more potent immune challenge than severe gastroenteritis. That's at least something for prospective parents to consider - the sleep deprivation, stress, chronic infections and all the other challenges of parenting does more to our body than just gives us grey hairs. I think that any parents of a nursery- or school-age child can appreciate the effect a child has on your immune system!"

Participants in the study were assessed over a period of three years. Regularly monitoring their immune systems showed that the individuals maintained a stable immune landscape over time, even after their immune systems were triggered into action by the seasonal flu [vaccine](#) or [gastroenteritis](#). The researchers found that following immune challenge,

our immune systems tend to bounce back to the original steady state, demonstrating the elastic potential of our immune system.

In assessing the effect of other factors on the [immune system](#), such as age, [obesity](#), [gender](#), anxiety and depression, the study found that age is a crucial factor in shaping the immunological landscape, agreeing with the age-related decline seen in response to vaccination and reduced resistance to infection.

Dr Michelle Linterman, a researcher at the Babraham Institute who co-led the research said: "Our research shows that we all have a stable immune landscape which is robustly maintained. What is different between [individuals](#) is what our individual immune systems look like. We know that only a small part of this is due to genetics. Our study has shown that age is a major influence on what our immune landscapes look like, which is probably one of the reasons why there is a declining response to vaccination and reduced resistance to infection in older persons."

More information: Carr & Dooley et al. (2015) The cellular composition of the human immune system is shaped by age and cohabitation. *Nature Immunology*. DOI: [dx.doi.org/10.1038/ni.3371](https://doi.org/10.1038/ni.3371)

Provided by Babraham Institute

Citation: Raising a child has a bigger effect on the immune system than gastroenteritis (2016, February 15) retrieved 20 April 2024 from <https://medicalxpress.com/news/2016-02-child-bigger-effect-immune-gastroenteritis.html>

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