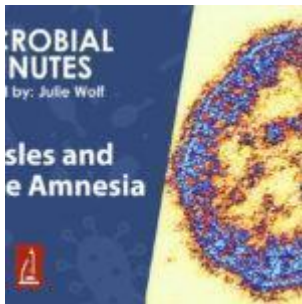


Measles induced immunological amnesia



Measles incidence has greatly decreased due to widespread measles vaccination with the measles mumps rubella (MMR) vaccine, which has an efficacy of >90% . However, an increase in vaccine hesitancy has resulted in more measles cases where the WHO reported a 300% increase in measles cases (2019 vs 2018). Before the [introduction of measles vaccination in 1963, measles was responsible for almost 3 million children death each year](#). Though measles has a relatively low fatality rate, infection is associated with immunosuppression. Where studies have shown that infection can result in lymphopenia, reduced lymphocyte proliferation and skewing of cytokine homeostasis.

Epidemiological studies have associated measles infection with increased childhood morbidity and mortality up to 5 years post-infection. This association could be due “immunological amnesia” where measles infection and depletion of memory B and T cells, as well as plasma cells. However, to date, no studies have directly demonstrated measles induced immunological amnesia. A Study by Mina *et al.*, aimed to investigate this by studying the effects of measles on the antibody (Ab) repertoire to specific viral and bacterial pathogens.

Mina *et al.*, studied a population of children from the Netherlands, whose parents have opted out of vaccination due to religious reasons. Researchers used VirScan ([Xu *et al.*, 2015](#)), a comprehensive serological profiling blood test that measures Ab responses against multiple viral and bacterial

pathogens (over 400 pathogens). Using this platform they showed that measles infection is associated with a decrease in Ab responses to viruses such as Herpes, Influenza, Rotavirus and Papillomavirus, as well as *S.pneumonia* and *S.aureas* bacteria. Additionally, they showed measles infection was associated with a decrease in pathogen-specific Ab diversity, however, proportions of non-specific IgA, IgG, and IgM Ab levels remained similar. Finally, Mina *et al.*, were able to confirm these results using non-human primate model, where they observed similar results where NHPs lost 40-60% of pre-existing viral-specific Abs up to 5 months post measles infection. In addition to this study, [Petrova et al.](#), have shown that measles also results in depletion of memory B cells which results in changes in the memory B cell repertoire.

These results highlight the importance of measles vaccination. As it not only protects against measles but it may also ensure that individuals do not experience measles induced *immunological amnesia*. Which may result in increased morbidity and mortality due to other infections.

Journal Article: Mina *et al.*, 2019. [Measles virus infection diminishes pre-existing antibodies that offer protection from other pathogens.](#) Science

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