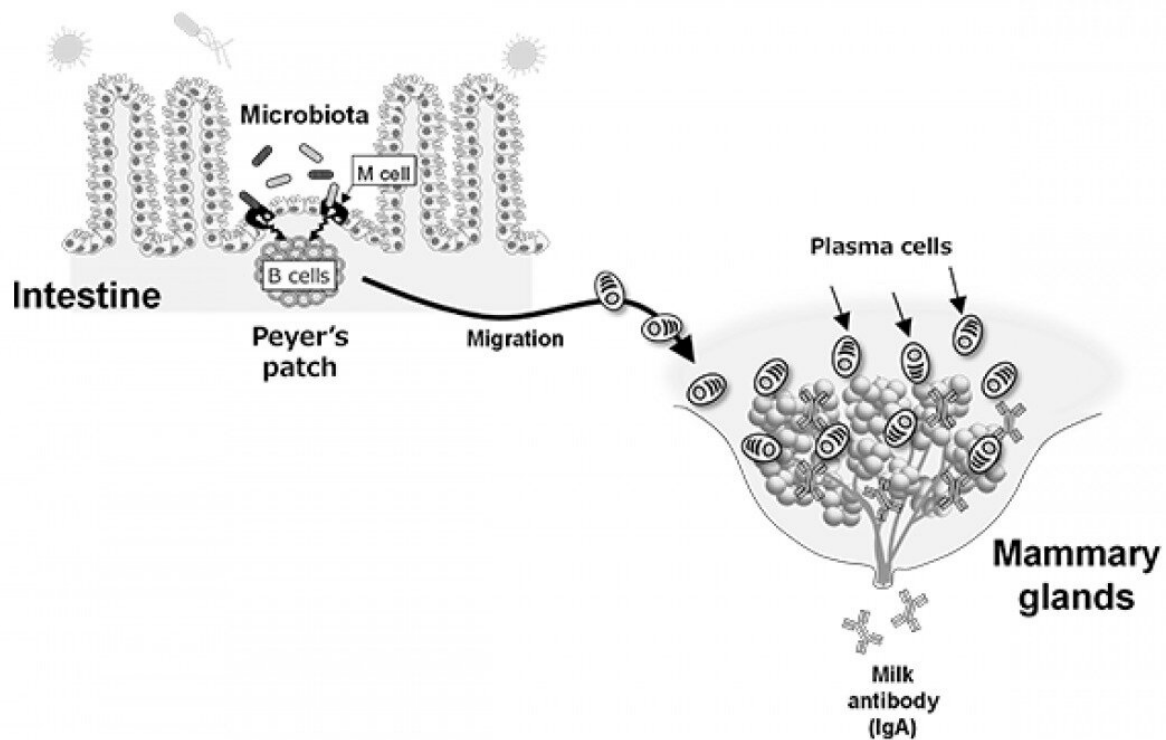


Gut microbiota induces the secretion of maternal antibodies in breastmilk

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Credit: ResearchSEA

A research group has discovered an interorgan network between the mammary glands and the small intestine that plays an essential role in transferring antibodies via breastfeeding.

Breastfeeding offers an array of benefits for mothers and newborns. Maternal antibodies are transferred via breastfeeding, protecting the gastrointestinal tracts of babies from several pathogen-caused infections. Yet the [molecular mechanism](#) by which [maternal antibodies](#), especially immunoglobulin A (IgA), are produced in mothers during lactation still puzzles scientists.

Now, a research group led by Tomonori Nochi from Tohoku University's Graduate School of Agricultural Science has discovered that an interorgan network between the mammary glands and the [small intestine](#) plays an essential role in maternal antibody transfer through breastfeeding.

Details of their research were published in the journal *Cell Reports* on September 7, 2021.

Nochi states the research was linked to a need to develop an immune strategy that enhances the quality and quantity of maternal IgA in milk. "We still lack a complete picture when it comes to antibody production in lactating mothers, and this has hindered the discovery of immunological and microbiological approaches to increasing breastfeeding quality."

In the past, scientists have struggled fully comprehend antibody production in lactating mothers. This has hindered the discovery of immunological and microbiological approaches to increasing breastfeeding quality."

The team's research revealed the key part Peyer's patches (PP)—immune sensors found in the gastrointestinal tract—play in producing maternal IgA.

They also identified two crucial bacterium types; Bacteroides

acidifaciens and *Prevotella buccalis*, which cohabit the [gastrointestinal tract](#) of mothers, generate immune responses in PPs through antigen sampling M cells, resulting in IgA-producing plasma cells migrating to the [mammary glands](#).

"Our results provide significant insights into the development of probiotics that facilitate the transfer of sufficient amounts of maternal antibodies from mother to the neonates via breastfeeding," added Nochi.

More information: Katsuki Usami et al, The gut microbiota induces Peyer's-patch-dependent secretion of maternal IgA into milk, *Cell Reports* (2021). [DOI: 10.1016/j.celrep.2021.109655](https://doi.org/10.1016/j.celrep.2021.109655)

Provided by Tohoku University

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