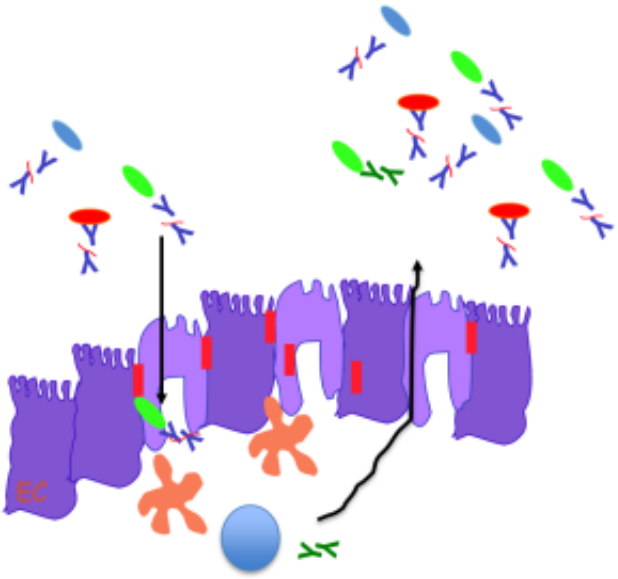
Mucosal immunoglobulins define a healthy gut



IgA allow the internalization of bacteria and the production of more IgA. The higher the amount of IgA, the higher the diversity of microbiota

The microbiota is the complex community of microorganisms inhabiting all the surfaces that are exposed to the external world, including the oral and gut mucosa, the skin, etc. A highly diverse microbiota has been associated with a healthy status, while reduced diversity has been associated with the metabolic syndrome and obesity. However, what drives and maintains the diversity of the microbiota is unknown.

A recent finding published in the last issue of Immunity by Maria Rescigno and colleagues in Italy has shown that the diversity of the microbiota is generated by the abundance of the mucosal immunoglobulins called IgA. IgA are the immunoglobulins that defend our host from bacterial infection as they neutralize their virulence, however IgA can also bind to the microbiota and allow them to anchor to the intestinal mucus and avoid their wash out with the intestinal bolus. Hence, IgA are fundamental to maintain the stability of the host microbiota.

Bacteria-bound IgA can be internalized and induce a feedback loop of IgA production thus allowing to preserve the microbiota. The IgA found at birth and during the early stages of life are then fundamental to define the host microbiota. These IgA are genetically determined as mice with different genetic background (black or white) are born with different amounts of IgA, but are also acquired by the mother during lactation. Hence, both genetic and environmental cues at birth are fundamental to establish the well being of the infant. This has important relevance later in life as the microbiota remains quite stable and the higher the diversity the higher the probability to conduct

a healthy life.

Publication

BALB/c and C57BL/6 Mice Differ in Polyreactive IgA Abundance, which Impacts the Generation of Antigen-Specific IgA and Microbiota Diversity.
Fransen F, Zagato E, Mazzini E, Fosso B, Manzari C, El Aidy S, Chiavelli A, D'Erchia AM, Sethi MK, Pabst O, Marzano M, Moretti S, Romani L, Penna G, Pesole G, Rescigno M
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