

## The Microbiome

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#### Editorial

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### Editorial

Understanding the concept of the microbiome and recognizing its role in immune modulation during the critical period of growth will give you a clear picture of many of the communicable and non-communicable disease development.

The importance cellular players in gut tolerance show how the immunomodulatory effects of microbiota on the mucosal inflammation and atopy during infant growth and development.

The concept of the human microbiome was first suggested by Joshua Lederberg, who coined the term "microbiome, to signify the ecological community of commensal, symbiotic, and pathogenic microorganisms that literally share our body space" [1,2].

The genes in our microbiome out number our genome.

The number of cells in the human microbiota is ten times as numerous as the number of cells in the human body [3-5].

The gastrointestinal tract is a mucosal surface constantly exposed to foreign antigens and microbes, and is protected by a vast array of immunologically active structures and cells in Lamina propria. The dendritic cells play a large role in determining whether the response to a particular antigen will be inflammatory or anti-inflammatory [6].

The intestinal microbiome, as a whole community, exerts a profound influence on mucosal immune regulation.

A dysregulation in the intestinal microflora and in its diversity leads to a breakdown of immune tolerance in the host which will result in unwanted inflammatory immune responses against innocuous antigens, resulting in allergic, inflammatory or infectious diseases [7].

Maintaining a normal microflora with normal diversity will maintain the immune tolerance which is critical in protection against allergic and autoimmune diseases.

The immunomodulatory effects of commensal species, represents an attractive approach for developing novel therapeutics for the treatment of allergic diseases. The microbiome provides numerous nutritional benefits to the host, including synthesizing vitamins and short chain-fatty acids (SCFAs), and important for the development and functionality of the intestinal immune system [8,9].

The GI tract functions as a major immunological organ as it must maintain tolerance to commensal and dietary antigens while remaining responsive to pathogenic stimuli [10].

The healthy microbiota in the gastrointestinal tract is in symbiotic balance i.e, balance between symbionts, commensal organisms, and pathobionts (dormant bad

bacteria). Alterations in this balance can lead to dysbiosis, which has been implicated in numerous pathologies, including inflammatory bowel diseases, infection and atopy [10].

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