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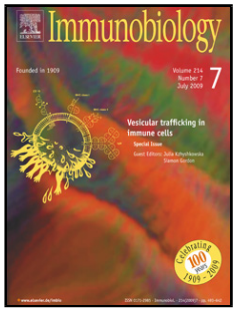

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Lupus: the microbiome angle

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Abstract: Microbiota consists of more than 10^{14} microorganisms that inhabit different areas of the body including the gastrointestinal tract, mainly the mouth and gut. It includes viruses, fungi, protozoa, archaea and bacteria. The microbiota interacts closely with host leading to a dynamic relationship that results in the biological effects observed. Its diverse genetic material (microbiome) interacts closely with the host immune system and cells, and therefore is closely associated with inflammation, immune tolerance, adaptive immunity and autoimmune diseases. Bacterial microbiota, which is the mostly studied lives in harmony with the host and maintains a symbiotic relationship. Therefore it plays an important role in immunological, metabolic, and neurological aspects and thereby the well-being of the host. Alteration of the homeostatic environment or the dynamic balance of microorganisms can result in dysbiosis or disease. However, does dysbiosis cause disease, aggravate disease or is the result of the disease remains to be defined, it could be a bit of all three factors. More recently, a number of studies demonstrate that these microorganisms could contribute to disease. Alteration of the tightly balanced composition of bacterial microbiota (dysbiosis) leads to exacerbation, rapid progression and worsening of disease states. It is important to identify the 'healthy' microbes that maintain a healthy environment, the 'sensitive' microbes that go awry with disease, the 'bad' microbes that cause disease and the 'therapeutic' microbes that can help rectify the changes. Increased relative abundance of certain bacterial species has been linked to triggering autoimmune diseases. Despite the burgeoning literature in the field, the molecular mechanisms by which the microbiota impacts the body in health and disease remain largely unknown. In this review, we will discuss recent advancements in our understanding of the gut bacterial microbiota associated with inflammatory and immunological processes and the role they play in the autoimmune disease, systemic lupus erythematosus.

Key words: systemic lupus erythematosus, microbiome, gut, bacteria

Introduction: The microbiota includes a variety of diverse viruses, fungi, protozoa, archaea and bacteria that play a critical role in maintaining human health. In the gastrointestinal (GI) tract alone, microbiota consists of more than 100 trillion microorganisms, with 100 times more diverse genomes (microbiome) than the human genome. Many of these organisms play beneficial roles in the human gastrointestinal tract while others could wreak havoc (1, 2). This myriad of organisms that live in symbiotic harmony with the human body maintaining a healthy