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Human gut-derived commensal bacteria as drug (BRUGS) for treatment of inflammatory autoimmune diseases

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Despite availability of numerous immunomodulatory drugs, there are no entirely satisfactory treatments for inflammatory autoimmune diseases such as MS and most of the available drugs have substantial side effects, accompanied with less than optimal tolerance of many for these parental agents. Thus, there is an urgent need for discovery of new treatment(s) to cure RA, MS and other autoimmune diseases. Recent studies have shown that intestinal microflora or its specific components plays an important role in the health of the host and possess probiotics like qualities. Recently, we have identified a new strain of human commensal-organism *Prevotella histicola* (*P. histicola*) that appear to have potent systemic immunomodulatory effects in experimental autoimmune encephalomyelitis (EAE), an experimental model of MS. *P. histicola* offers an exciting new therapeutic option as oral administration leads to

1. suppression of EAE disease;
2. *reduced* inflammation and pathology in the CNS;
3. Increased IL10 production and induction of FoxP3+ Tregs as well as
4. suppressive macrophages in treated groups.

P. histicola induced immune responses in the gut cause induction of immune tolerance in periphery leading to suppression of antigen-specific response and is uniquely suited as a therapeutic agent given that it is a common human commensal. Based on these observations, we propose human commensal bacteria as drug (BRUG) as a novel therapeutic option for treatment of inflammatory autoimmune diseases such as multiple sclerosis (MS).

Biography

Ashutosh K Mangalam completed his PhD from prestigious Sanjay Gandhi Postgraduate Institute of Medical Science, Lucknow, India in 2002 and Postdoctoral studies from Mayo Clinic. He is currently a faculty in Immunology department at Mayo Clinic, Rochester and Associate Director of FOCIS center of excellence at Mayo Clinic. He has authored more than 20 papers in reputed journals, 3 book chapters; serve as expert reviewer for reputed journals and various grant study sections.

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