

Microbiomics and Precision Medicine

The role of Microbiomics in human health and medicine had been generally known since the advent of Microbiology. However, Microbiomics came to be explored in-depth for its precise applications with the emergence of metagenomics and biotechnology tools. With such advances it has been possible to understand the microbial diversity prevalent in the human body with greater detail. It has also enabled biomedical researchers to understand how its numbers and taxa can have an impact on human health and well-being while there is still the further need to identify many unculturable microorganisms affecting human health because of past limitations with traditional microbiological methods. Scientific literature has now revealed how homeostasis and dysbiosis can determine between health and diseased states in human physiology. The human microbiome should therefore serve as a comprehensive tool towards stratified healthcare and would provide an invaluable and orthogonal approach to existing strategies in precision medicine. Emerging knowledge on the gut-brain axis along with animal models have shown that microbiota in treatment management have the potential to ameliorate neuro-degenerative related pathology and human behaviour. The gut microbiome continues to be explored with this objective to address issues pertaining to gastrointestinal health and overall health as a new era of postbiotics come on the scene. A significant benefit of the microbiome in precision medicine is the ease of manipulation and delivery of therapeutics aimed at modulating microbiome functions. Continued research on the organisms and functions that affect disease and their variability among individuals is required to fully exploit the potential use of the microbiome in precision medicine. This conference paper aims to present some of the current developments in this field of precision medicine based on primary and secondary data from laboratory and clinical resources.

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