

Preview into Microbiome: A Pathway Towards Personalized Medicine

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Our body harbors more than trillion microbes which have a pivotal role to play in each one of us having diversity of predominantly commensals [1]. Microorganisms are known to be present in various habitats and are present in varied populations in different individuals [1,2]. It is not a cumbersome exercise today to make a distinction between a healthy and diseased individual based upon the microbiota [3-5]. Also, diversity of microbes makes each and every individual unique in this world making them respond differently to therapeutic treatments which is equally attributed to genetic make-up of the individual as well [4-7]. It becomes of paramount interest to understand this microbiota well and moreover our modern technological and molecular approaches such as RNA and DNA sequencing, metagenomic analysis have considerably reduced the gaps in understanding the nature and role of microbiota and their potential to be exploited as biomarkers in therapeutics [7]. More so drug targets in microbiome could be identified and potentially developed into personalized medicines for the treatment of various diseases [8]. The treatments can be tailored specifically to the patients' individual needs based on their genetic information with the ultimate goal of improving outcomes and reducing adverse reactions. Pre-diseased conditions could be effectively diagnosed through the Microbiome based selective markers identification, their distinct expression profiles, validation of key proteins along with gene variants associated with disease [8,9]. All the above are prerequisites for the modern era of personalized medicine leading us to believe the fact that today's biomarker will be tomorrow's theranostics. Personalized medicine treatments have been labeled to be more specific and targeted to each person's need [8,9]. Novel and individual specific diagnostic pathways could be developed along with exploring new possibilities of new medication methods for approaching towards effective treatment against the diseases. Individual genes have been widely known to be affected in response to drugs and their processing. This is the deciding point about how effective and safe a drug is for a person with some individuals processing the medicines much faster than others. Many adverse effects can be seen in individuals where the drugs are processed slowly as they remain in the bloodstream for a longer time. Despite this field of personalized medicine being relatively new and exciting, there are numerous challenges still to be countered especially in understanding the genetic make-up of the individual, the type of changes occurring in a diseased cell and off-course the remedial action to find out the effective treatment. No doubt, this era of next generation sequencing perhaps belongs to personalized medicine to find out effective treatment regimen based upon each and every individual needs.

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