India’ Microbiome Research Potential

What is the issue?

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India has a vast potential for microbiome research but the field of study is still in its infancy.

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What is Microbiome research?

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- The microbiome comprises all of the genetic material within a microbiota i.e. the entire collection of microorganisms in a specific niche, such as the human gut.
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- The human body carries diverse communities of microorganisms, which are mainly bacterial, these are referred to as “human microbiome”.
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- These organisms play a key role in many aspects of host physiology, ranging from metabolism of otherwise complex indigestible carbohydrates and fats to producing essential vitamins, maintaining immune systems and acting as a first line of defense against pathogens.
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- Thus to simply put microbiome research is field of study which involves the study of the human microbiome.
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What is the significance of this research?

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- Research on the human microbiome has thrown light on various aspects such as how different parts of the human body are occupied by characteristic

microbial communities, and how various factors contribute in shaping the composition of the microbiome, including the genetics, dietary habits, age, geographic location and ethnicity.
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- These studies laid a strong foundation to decipher the microbiome's implications on health and a wide range of diseases.
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What is India's potential in this area?

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- India provides for a wide range of research with more than 4,500 ethnic groups and presence of two global biodiversity hotspots (Himalayan range and Western Ghats).
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- A meta-analysis on gut microbiota of healthy Indian individuals and compared it with that of individuals from other parts of the world.
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- It shows that the Indian population harbors a distinct gut microbial community, which calls for an in-depth investigation of the Indian microbiome.
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- India has a large number of tribal populations largely unaffected by "modern" diet and lifestyle.
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- The prevalence of lifestyle-related disorders such as obesity and diabetes has been known to be significantly lower compared to the non-tribal (urbanized) populations across the globe.
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- Hence a study on the tribal population would help improve knowledge of evolution of the mutualism between gut microbiota and the host.
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- But India lacks is a national microbiome initiative similar to those in other countries.
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What is the India's action in this regard?

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- Council of Scientific and Industrial Research (CSIR) has proposed a project to map the human microbiome across the country.
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- A high-level committee at the Department of Biotechnology has shown a keen interest in the proposed project.
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- The project will include collection of saliva, stool and skin swabs of 20,000 Indians across various ethnic groups from different geographical regions.
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- In this regard an International conference has been conducted on Microbiome research in Pune.
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- Apart from this various research groups in the country are working on the human microbiome.
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Source: Indian Express

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