

Merck to use genome editing for studying gut bacteria

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Collaboration with Washington University on gut bacteria research could lead to diagnostics, treatment for malnourished children



Merck, a leading science and technology company and leader in genome editing, announced collaboration with Washington University in St. Louis, Missouri, USA, that could lead to the optimizing of nutritional supplements to restore a healthy gut microbial community (microbiome).

The two-year collaboration will employ Merck's CRISPR genome-editing technology in research studies by Dr. Jeffrey Gordon of Washington University School of Medicine.

The research aims to determine the differences between gut bacterial communities in healthy and malnourished children, and to identify what features of healthy intestinal bacteria are critical for supporting healthy growth.

From there, nutritional approaches to restore a normal microbiome can be developed and optimized, as nutritional interventions to date have failed to solve the problem.

"Development of the gut microbiome is disrupted in severely malnourished children, leaving them with immature communities compared with healthy children," said Udit Batra, Member of the Merck Executive Board and CEO, Life Science. "Our collaboration with the leading expert in the study of the human microbiome, Dr. Jeffrey Gordon, will focus on how to repair and reconstitute a normal microbiome in malnourished children. Using our foundational genome-editing technology, we will continue to form collaborations with the global scientific community to explore how to develop exciting new treatments for many diseases."

CRISPR-based genomic scissors have unveiled new possibilities in medicine and biotechnology. Similar to a word processing program that finds deletes and replaces words or letters, these CRISPR RNA-protein complexes search for certain DNA sequences in a cell, cut them and allow the cell to paste in new DNA information. Merck, together with Dr. Gordon's group, will use its CRISPR genome scissors in this collaboration to modify the sequence of DNA in microbes cultured from human gut microbiome samples. The results will help the researchers obtain essential, new information about

the microbes' functions and nutritional needs.

As a company that has been highly involved in genome editing innovation, Merck recognizes that genome editing has resulted in major positive advancements in biological research and medicine.

At the same time, the growing potential of gene-editing technologies has opened scientific, legal and societal concerns.

As both a user and supplier of gene-editing technology, Merck supports research with genome editing under careful consideration of ethical and legal standards.

Merck has established a Bioethics Advisory Panel to provide guidance for research in which its businesses are involved, and has defined a clear operational position taking into account scientific and societal issues while not blocking any promising therapeutic approaches for use in research and application.