Functional Manipulation of the Gut Microbiome Using a Personalized Approach

Tech ID: 29074 / UC Case 2017-257-0

BACKGROUND

The use of traditional probiotic microorganisms to provide therapeutic function for the gut microbiome has a number of limitations. Probiotic bacteria do not colonize the gut because they can't compete with the resident flora that have evolved for that environment. Current probiotics are a single strain which when used in multiple hosts have not had great success in broad populations and are therefore unpredictable. To alleviate the above problem, a new approach is necessary to colonize the human gastrointestinal tract with greater reliability and for therapeutic value to the patient.

TECHNOLOGY DESCRIPTION

Researchers at UC San Diego have developed a method to modulate the gut microbiome that allows investigators to "knock-in" specific genes and pathways which can alter the gut microbiome. The method allows for the investigator to isolate commensal bacteria from mammalian stool for the purpose of altering the gastrointestinal microbiome. The isolated bacteria are then cultured *in vitro* to yield a substantially homogenous population of isolated and cultured bacteria. The resulting studies done in mice demonstrate that the engineered bacterial are able to colonize the host for up to 160 days. The engineered gene introduced into the gut is capable of altering the luminal metabolome.

APPLICATIONS

The resulting homogenous population of isolated and cultured bacteria is administered to the subject

ADVANTAGES

The current method is a much improved technique over the current standard methods to alter the gut microbiome.

STATE OF DEVELOPMENT

The invention is in the experimental data and working prototype stage.

INTELLECTUAL PROPERTY INFO

A provisional patent has been submitted.

PATENT STATUS

Country	Type	Number	Dated	Case
Patent Cooperation Treaty	Published Application	2018195097	10/25/2018	2017-257

Additional Patent Pending

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OTHER INFORMATION

KEYWORDS

probiotic microorganisms, gut microbiome, engineered bacterial, human gastrointestinal tract, personalized approach

CATEGORIZED AS

- **Medical**
  - Delivery Systems
  - Disease: Digestive System

RELATED CASES

2017-257-0

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