



Weill Cornell Medicine

Transferable Microbiota for the Treatment of Ulcerative Colitis

Lead Inventor:

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Transferable Microbiota for the Treatment of Ulcerative Colitis

Background & Unmet Need

- Fecal microbiota transplantation (FMT) has emerged as a promising new treatment for patients with disrupted microbiota, such as those with ulcerative colitis (UC)
- However, large-scale clinical trials have demonstrated that FMT is only effective in a subset of patients, limiting the utility of treatment
- FMT relies on healthy donor samples that have poorly defined microbiota compositions, and thus the microbial mechanisms for engraftment and clinical response are poorly understood
- **Unmet Need:** Identification of specific microbial strains associated with therapeutic benefit in FMT for the treatment of UC and related disorders

Technology Overview

- **The Technology:** Method for treating UC by administration of immune-reactive microbiota (TIM)
- The inventors analyzed fecal samples from UC patients before and 4 weeks post-FMT
- Single cell sorting was used to culture individual IgA-coated bacteria that were then identified by 16S rDNA gene sequencing
- Analysis of the sequencing data revealed a core TIM that correlated with clinical response
- **PoC Data:** Colonization of germ-free mice with the core TIM strains *Odoribacter splanchnicus* and *Alistipes finegoldi* reduced the severity of T cell colitis through an IL-10-dependent mechanism
- The identified microbial compositions may lead to improved treatment of UC and other disorders associated with imbalanced gut microbiota

Inventors:

Randy Longman
Lasha Gogokhia
Svetlana Lima

Patents:

[US Application Filed](#)

Publications:

[Lima et al. Gastro. 2022.](#)
[Lima et al. Gastro. 2020.](#)
[Gogokhia et al. Gastro. 2019.](#)

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Cornell Reference:

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Technology Applications

- Efficient and efficacious method of microbial transfer to treat UC and related disorders
- Screening tool for therapeutically active microbial communities

Technology Advantages

- Defined microbial composition improves control and reproducibility compared to FMT therapy
- IgA-reactive strains protect against colitis via a defined IL-10-dependent mechanism

Supporting Data / Figures

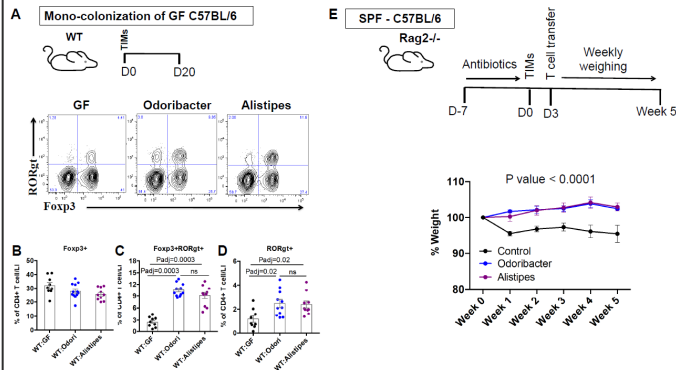


Figure 1: Germ-free mice were colonized with patient-derived *O. splanchnicus* or *A. finegoldii* isolates. Colonization of germ-free mice induced RORgt+/Foxp3+ iTreg cells and reduced the severity of transfer T cell colitis in Rag2-/- mice.

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