



MMI 291 Seminar Series

Current Theme: Interdisciplinary Research

Winter Quarter 2021 – CRN 33311

Friday Seminar – 12:10-1 p.m.



“Structural Characterization of Dietary Carbohydrates using Liquid Chromatography-Mass Spectrometry (LC-MS) Platform to Monitor Food-microbe Interactions”

Research / Bio- Juan Castillo

The research integrates advanced liquid chromatography-mass spectrometry (LC-MS) methods with the characterization of dietary carbohydrates to better understand their roles in modulating the gut microbiome. While the importance of the microbiota in diet is generally understood, the role of carbohydrates – the largest component of food – is relatively unknown. Characterizing carbohydrate structures remains a significant challenge, and the carbohydrate compositions of food are mainly unknown. In this work, we present a set of tools involving advanced LC-MS methods to determine monosaccharide and linkage compositions of carbohydrates in foods. We then performed comprehensive LC-MS analyses on samples of foods and the resulting feces from subjects in large feeding trials. Glycosidic linkages present in foods and feces were compared to reveal the structure-function relationship of specific fibers and the gut microbiota. This approach is useful to determine food-microbe interactions and provides insight on the role of structures in establishing bacterial communities. Furthermore, we present a new method to produce novel oligosaccharides from polysaccharides to develop the next generation of prebiotics.

Publications

Interspecies Competition Impacts Targeted Manipulation of Human Gut Bacteria by Fiber-Derived Glycans., Patnode, M. L., Et al. Cell 2019 Sept.

A Nonenzymatic Method for Cleaving Polysaccharides to Yield Oligosaccharides for Structural Analysis., Amicucci, M. J., Et al. Nat. Commun., 2020 Aug

Liquid Chromatography–Tandem Mass Spectrometry Approach for Determining Glycosidic Linkages., Galermo, A. G., Et al. Anal. Chem., 2018 Oct

Feb
5



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Feb. 5, 2021
12:10 – 1 p.m.
ZOOM Meeting

Medical Microbiology
& Immunology
School of Medicine

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We hope to see you there!