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 carbohydrates structures remains a significant challenge, and the carbohydrate compositions of food are mainly unknown. In this work, we present a set 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

