

Modeling Cancer within the Human Microbiome

An international collaboration of scientists is working to understand how cancer convinces the body's organs and tissues to support tumor growth. Cancer's interaction with the micro-environments that exist within the human body is a special focus of the work.

Four teams will seek to learn more about the communication between the body and the tumor on a cellular level—and how the microbiome has both positive and negative implications for the effectiveness of cancer therapies.

A fifth group will work to create a laboratory tool that can grow gut tumor organoids complete with the surrounding tissue and microbiome. This engineering feat will be a dramatic advance in scientists' ability to model human cancer so new treatments can be more quickly and effectively tested.

The teams will use a combination of studies and procedures to drive new knowledge and create new treatments.

Microbiome: The collection of fungi, bacteria, viruses and other microorganisms that live in the human body.

Organoids: Tissue cultures derived from actual cancer samples and human stem cells.

Mouse models: A way to test microbiome, cancer, and drug interactions in real-life conditions.

Chemostats: Devices that support the growth of exceptionally complex cell cultures.

TEAM 1



Identify and define the mechanisms regulating tumor-host interactions, seeking to find molecular and biophysical markers across cancer cells, normal cells, and associated microbiota.

TEAM 2



Understand how cancer interplays with microbiomes in a person's gut, with a focus on identifying specific microorganisms that cause or facilitate the treatment of tumors.

TEAM 5 CHEMOSTAT GROUP



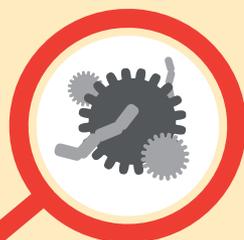
Build an accurate, stable model of tumors and their surroundings by growing and maintaining gut organoids using stem cells, lymphoid tissue, and the microbiome to provide scientists with a replicable tool that will supercharge the study of the microbiome's effects on tumor development.



TEAM 4



Design therapies that can moderate tumor growth and cancer development using gene expression studies to understand communications between the microbiome and a tumor.



CONVERGENCE 3.1416 MISSION

By better understanding how microbiomes affect the support the human body provides to tumors, these teams of scientists will help accelerate research and treatments across a wide range of cancers and provide tools to spur the next generation of cancer research.

