1st INFOGUT TRAINING SCHOOL, 22-24 September 2025,

Campus of Food Science – *Alma Mater Studiorum*-University of Bologna, Cesena (FC), Italy

22/09	Topic	Trainer	Form	*Objectives*
13.15	Welcome by UNIBO Authorities			
13:30	The INFOGUT Project: from building the basement up to opportunities and perspectives	Andrea Gianotti (UNIBO)	FtoF	By understanding the foundational goals and structure of the INFOGUT platform and COST projects. Learn how to create a research consortium and navigate grant opportunities, including STSMs. Identifying key partners, leadership roles, and future perspectives for professional development.
14:30	Reviewing Batch GM Models.	Harsh Mathur (TEAGASC)	FtoF	To give new students and researchers an introduction to the microMatrix bioreactor system, especially those who are unfamiliar with the system; -In addition, to supplement training for researchers who are already using the microMatrix system in their research institutes; -Finally, to have a Question and Answer session where any specific questions and troubleshooting steps can be discussed in detail e.g. issues relating to microbial blooms in batch model fecal fermentation experiments using the microMatrix system as an example.
15.45	Coffee break			
16:00	In vitro dynamic models of colon fermentation	Edoardo Capuano (Uni Wageningen)	FtoF	In this contribution, a number of widely used in vitro dynamic models of colon fermentation are presented and discussed. This contribution will include general information on the fundamental operational principles of a dynamic model of colon fermentation, the main characteristics of each model, the difference in key parameters and settings, strength and limitations of each model and how this knowledge can be used to select the appropriate model depending on the research question. Specific examples will be presented on the use of (some) of the models, taken from the relevant scientific literature or the research work of the presenter.
23/09				
09:00	Reviewing Animal GM Models	Jurgen Zentek (Freie Uni Berlin)	FtoF	This lecture aims to equip students with a basic understanding of in vitro digestive models for monogastric animals. They will learn to describe different model types, recognize recent advancements, and understand how these models are used to study digestion. Students will also be encouraged to reflect on the strengths and limitations of in vitro approaches compared to in vivo methods.
10:30	Coffe break			
10:45	Parameters & Processing of Batch GM Models, with laboratory practice	Lorenzo Nissen (UNIBO)	FtoF	By the end of the lesson, students will be able to: i) Understand key terms related to Batch GM Models; ii) Describe volunteer recruitment and inoculum preparation steps; iii) Identify main components of a Batch GM Model; iv) Outline sampling and sample processing for omics analyses; v) Explain how to set up and operate a Batch GM Model.
12:15	Synthetic Communities: The creation and use of SynComs to study the gut microbiota	Tom Hitch (Uni ACHEN)	Remote	The lecture will introduce the concept of SynComs, why they exist, their history, and their complexity. Then, the major methods by which SynComs are created, and the limitations of each approach, as well as their benefits, will be discussed. Use-cases of existing SynComs will be made throughout to highlight their application in research. As a case study, a variety of strains, as well as a specific ecosystem will be provided. The students will aim to create a suitable SynCom for the ecosystem based on the information provided. We will go over which strains were selected, and why.
13:30	Lunch time			
14:15	Models with GM and the Small Intestine	Ludovica Marinelli (Uni GHENT)	Remote	To develop a foundational understanding of host–bacteria interactions along the human gastrointestinal tract, with emphasis on the role of gut microbiota and host parameters. The session also aims to familiarize students with experimental approaches used to investigate these mechanisms, enabling them to describe, identify, and explain key features of host–microbiota relationships.
15:45	Applied Genomics to GM Models	Sabrina Tamburini (Ca' Foscari)	FtoF	This lesson aims to introduce students to state-of-the-art microbial genomic sequencing technologies specifically applied to microbiota research, with particular emphasis on their implementation in gut microbiota studies. Students will gain detailed understanding of library construction protocols and quality control procedures essential for 16S rRNA, metagenomic and transcriptomics sequencing applications, ensuring robust and reproducible results. Applications of genomic profiling techniques

				in characterizing microbial community diversity and functional capacity will be explored, highlighting how these approaches can reveal the intricate relationships between microbial composition and metabolic potential in controlled laboratory environments.
17.30	Coffe break			
24/09				
09:00	MICRO-B: a gut microenvironment-mimicking bioreactor for the human gut microbiota in vitro culture	Irene Chiesa and Costanza Daddi (UNIPI)	FtoF	The objective of our lecture is to instruct the participants on the main requirements and operational steps to develop a dynamic bioreactor for relevant in vitro cultures in tissue engineering and regenerative medicine. As a case study, MICRO-B bioreactor's development steps and its use in the human gut microbiota and the intestinal epithelium contexts will be shown.
10:30	Coffe break			
10:45	Using nuclear magnetic resonance to extract metabolomic information from biological samples for fecal metabotype classification	Francesco Capozzi (UNIBO)	FtoF	Have training on (i) sample preparation and the effect of sample nature on spectroscopic data quality, (ii) spectrum interpretation and metabolite identification, and (iii) data preparation for multivariate analysis.
12:15	Basics of Bioinformatics Applied to GM Models	Alise Ponsero (Quadram)	Remote	1) Enable participants to critically evaluate and interpret metagenomic results from colon fermentation experiments; 2) Demonstrate best practices for quality control and statistical analysis of microbiome compositional data.
13:30	End of the Training School			