Kick Off Meeting

21st to 22nd May 2024

Medical Biotechnology Department
Technische Universität Berlin

This 2-day event is dedicated to share the strategic vision of TOP-GUT and the individual projects between the members.

We aim to start TOP-GUT enhancing team building and cooperation to last for the consecutive years of our network.

Date: 21st and 22nd May 2024

Location: Medical Biotechnology Department, TUB, Gustav-Meyer-Allee 25, 13355 Berlin. Door 17a/b, 1st floor. (see map bellow)

Contact persons: Sina Bartfeld s.bartfeld@tu-berlin.de
Pilar Samperio-Ventayol samperio.ventayol@tu-berlin.de

Info for Supervisors: Each Project supervisor will present a short description of the individual research project (15 min including questions).

Info for DCs: Each DCs will bring a poster to report on their background and motivations to join TOP-GUT and the individual teams.

Poster template: https://www.dropbox.com/scl/fo/6mg87rfthuwc6qyeb99uk/AMiVZy-8nVtbxD5Oj52Qg2I?rlkey=nkv782qncyd20rvx1bgz6zjie&dl=0

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AGENDA

Tuesday 21st May

13:00 – 13:30	**Welcome address and TOP-Gut strategic vision by Sina Bartfeld.**
13:30 – 14:30	**Keynote speaker:** Stefan Krauss, Group leader and Director of the Center Hybrid Technology Hub at the Faculty of Medicine, University of Oslo, Norway.
14:30 – 15:00	*Coffee break*
15:00 – 15:45	**Supervisors strategic vision and individual research project presentations**
	Project 1: Characterization of carbohydrate complexity along the GI tract. Hans Wandall (UCPH) **Project 2:** The impact of carbohydrate complexity on host-microbe interaction. Sina Bartfeld (TUB) **Project 3:** Cross-tissue organoid immune cell integration and function. Birgit Sawitzki (CHAR)
15:45 – 16:00	*Coffee break*
16:00 – 16:30	**Supervisors strategic vision and individual research project presentations**
	Project 4: Automation of PDO models in microphysiological systems. Eva Dehne (TissUse) **Project 5:** Building gut architecture. Silvia Mihăilă (UU)
16:30	*Walk to social event. Tour at the Museum für Naturkunde Berlin.*
19:30	*Dinner*

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AGENDA

Wednesday 22nd May

09:00 – 09:45	**Keynote speakers:** Dr. Thomas Steger-Hartmann, Head of Investigational Toxicology at Bayer AG, Germany. **Title: Advanced Cellular Models in the Pharmaceutical Industry – Current Use Cases and Future Perspectives**
09:45 – 10:00	*Coffee break*
10:00 – 10:45	**Supervisors strategic vision and individual research project presentations** **Project 6:** An 3D platform to model gut-stroma interactions. Cristina Barrias (i3S) **Project 7:** Gut on a chip for IBD research. Dorota Kurek (MIM) **Project 8:** Gastric cancer PDOs as model for personalized T-cell targeted immune cell therapy. Hans Wandall (UCPH)
10:45 – 11:00	*Coffee break*
11:00 – 11:45	**Supervisors strategic vision and individual research project presentations** **Project 9:** Gastric cancer organoids as model for personalized cancer therapy. Celso Reis (i3S) **Project 10:** The ethics and law of GI models. Søren Holm and Heidi Beate Bentzen (UiO) **Project 11:** Metabolic modulation of cancer PDOs with engineered probiotic bacteria for immunotherapy. Roger Geiger (IRB)
12:45 – 14:30	**Get to know each other** - Poster presentations of DCs with fingerfood
14:30 – 16:30	**Meeting of the PIs and DCs separately.**
16:30 – 17:30	**Joint discussion and concluding remarks.**
17:30	*Evening at own leisure (table in bar is reserved)*

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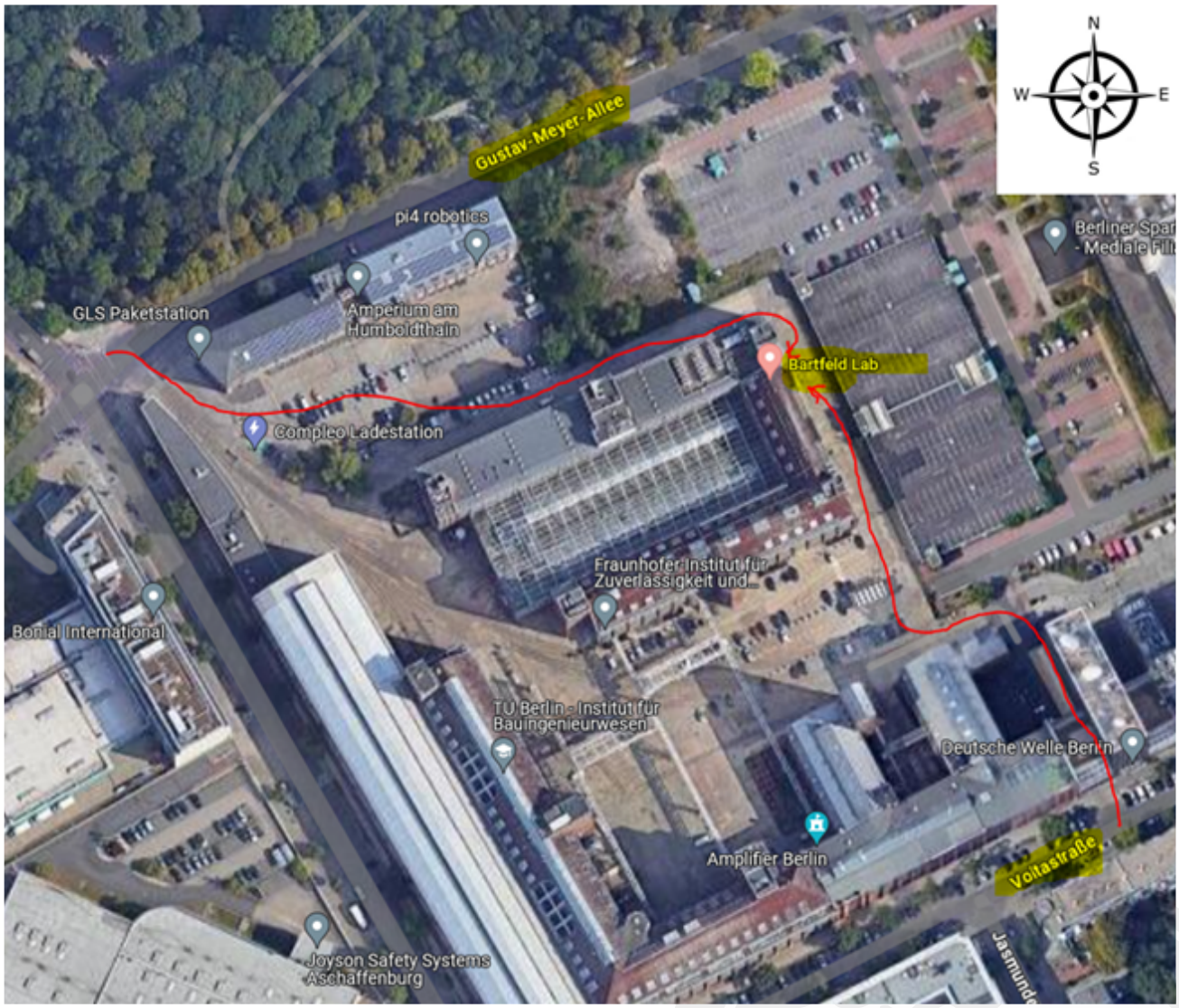
MEETING VENUE

MEDICAL BIOTECHNOLOGY DEPARTMENT

TUB, Gustav-Meyer-Allee 25, 13355 Berlin.
Door 17a/b, 1st floor.



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KEYNOTE SPEAKERS ABSTRACTS

Advanced Cellular Models in the Pharmaceutical Industry – Current Use Cases and Future Perspectives

Steger-Hartmann, Thomas, Marian Raschke
Bayer AG, Berlin, Germany

E-mail: thomas.steger-hartmann@bayer.com

Even though animal studies still represent the mainstay of preclinical safety assessment, ethical concerns and limited predictivity regarding clinical outcome drives the development for alternative human-relevant models. Recent developments in organ-on-a-chip (OoC) microfluidic devices have shown great promise to mimic human biology better than conventional systems, particularly for so-called new modalities, i.e. drug candidates beyond the small molecule space.

Our presentation will provide an overview of the current R&D processes established in the pharmaceutical industry and will discuss the problem of lacking translational capabilities of preclinical test system known as the "Translational Gap". We will then describe the emerging role of advanced cellular models with a particular focus on microphysiological systems (MPS). General requirements of such systems for the applicability in the pharmaceutical context will be explained. Subsequently, we will present a series of use cases to illustrate the advances but also the limitations of the new systems.

Our outlook will provide perspectives for the future direction of MPS development for the pharmaceutical industry.

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KEYNOTE SPEAKERS ABSTRACTS

Unravelling the potential of microphysiological systems

Stefan Kraus
University of Oslo, Norway.

E-mail: s.j.k.krauss@medisin.uio.no

Microphysiological systems (MPS) are in vitro models that replicate higher-level physiological or pathological states of tissues and organs. MPS have experienced explosive growth in the past decade and are widely regarded by academia, the pharmacological industry, and regulators as key biomedical developments.

I will first give an overview of the academic field based on a recent meta-analysis (PMID: 37479227). I will then expand into the perspective of the industry and show focus areas and collaborative approaches.

Next, I will exemplify MPS development by giving an example of a stepwise development towards functionally (close to) mature liver organoids that are integrated into a scalable chip platform to i) model the metabolic crosstalk between two organoid entities and to ii) interrogate the interplay between healthy/diseased liver organoids and monocytes/macrophages.

Finally, I will expand into approaches and hurtles of stem cell derived embryo models as a potential source for increased organ model complexity.

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