Marc Friedli

Bio-491
New tools and research strategies in personalized health

Midterm and projects

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Thank you for your feedback

- 🔁 Yes — it's a lot of disciplines. That's by design!

- 🧭 There IS a common thread: making personalized health real.

- 📅 Lecture order depends on speaker availability — not ideal, but we tried to keep it coherent.

- 🧪 To help with midterm prep, you're getting a mock exam today!

- 🗂️ Project topics are previewed today — full descriptions coming next week.

Bio- 491 2024-2025

Program Bio491, 2025

Marc Friedli

BIO-491 New tools & research strategies in personalized health
Master course
2024-2025

Date	Schedule	Topic	Speaker
February 20	15.15-16.15	*New tools and research technologies in personalized health: Introduction*	**Marc Friedli**, Scientist, Unit of Precision Medicine, EPFL // Program Manager, Health 2030 (https://health2030.ch)
	16.15-18.00	*Opportunities and challenges of implementing genomic medicine*	**Katrin Männik**, Head of Genomics Strategy, Health 2030 Genome Center, Geneva
February 27	15.15-16.00	*Leveraging Single-Cell and Spatial Data for Personalized Health: A Computational Perspective*	**Raphael Gottardo**, Director, Translational Biomedical Data Science Group @ CHUV & Full Professor in the Faculty of Biology and Medicine @ UNIL
	16.15-17.00	*Digital Epidemiology*	**Marcel Salathé**, Epidemiology Lab, EPFL
	17h15-18h00	*Genomic Medicine*	**Flavia Hodel**, Data scientist, Precision Medicine Unit, CHUV
March 6	15.15-17.00	*Ethical and social issues in personalized health*	**Gaia Barazzetti**, Research Ethics Compliance Officer, Research Office, EPFL
	17h15-19h00	*Highthroughput bioinformatics*	**Ioannis Xenarios,** CHUV-UNIL, Health 2030 Genome Center
March 13	15.15-17.00	*Pharmacogenomics and personalized therapies: the right drug at the right dose for the right patient*	**Caroline Samer**, Pharmacogenomics and Personalised Therapy Unit, HUG & UNIGE
	17.15-19.00	*Leveraging Electronic Health Records, Medical Knowledge, and Information Technologies for Medical Discoveries*	**Mina Bjelogrlic**, Head of Machine Learning, Human-Machine Interfaces in clinical settings Group, UNIGE
March 20	15.15-17.00	*Economical and governance aspects of personalized health*	**Joël Wagner**, Department of Actuarial Science, Faculty of Business and Economics (HEC Lausanne)
	17.15-19.00	*The Role of Organoids in Precision Health*	**Nathalie Brandenberg**, PhD, Co-Founder, SUN bioscience SA and Doppl SA
March 27	15.15-17.00	*Towards personalized treatment strategies in neurological disorders*	**Friedhelm Hummel**, Institute Neuro-X and Defitech Chair of Clinical Neuroengineering, EPFL
April 3	15.15-17.00	*Precision nutrition*	**Murielle Bochud**, Department of Epidemiology and Health System, Unisanté, Lausanne
	17.15-19.00	*Precision medicine in cancer*	**Filipe Martins**, TBC

Date	Schedule	Event
April 10	15.15-16.45	!!! Midterm written exam !!!
April 17		Group Work 1/3 (free schedule)
April 24		*Easter*
May 1		Group Work 2/3 (free schedule)
May 8		Group Work 3/3 (free schedule)
May 15	15.00-19.00	Exam / Group presentation 1/2
May 22	15.00-19.00	Exam / Group presentation 2/2
May 29		*Ascension*

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All the projects will be available on the class' moodle close to the end of lectures schedule

The presentations will take place either on **May 15 or May 22**

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Procedure is as follow within 1 week of projects available:

- Read the projects carefully.
- Choose between the projects and make a selection of three (choice n°1, 2, 3 (1 = best))
- Form a group of 4/5 students (as soon as possible, do not lose any time!!!). Each formed group will have one person send an email to marc.friedli@epfl.ch, cecile.hayward@epfl.ch with the composition of the group and the selected projects listed from 1 to 3.
- We cannot guarantee that your first choice will be attributed to you but we will try. Please also note that all proposed projects will be attributed.
- We are aware that it may be difficult to create groups or find one but we will help you.

As for the presentations:

- Format is very flexible and in a creative and multidisciplinary spirit.
- Projects presentations of **May 15 and May 22** will be in mini-symposium format where groups present and the rest of the class participate by asking questions. This means that each one of you must attend all the presentations, from 15.15 to 19.00.
- **You MUST make contact with the head of the project, and/or TAs for that specific project as soon as project is assigned,** they will guide you and answer your questions. It is expected that you work in close collaboration with them.
- Each presentation will last 40 minutes in total, including questions and discussion. Please prepare a 30-minute presentation and allow 10 minutes for questions/discussion.

The TAs will be at your disposal should you have questions.

Projects 2025

1. Population scale sequencing: The Genome of Switzerland

2. Rapid whole-genome sequencing in hospitalised infants: focus on pediatric oncology

3. How to develop Precision Nutrition based on sustainable diets

4. Leveraging Large Language Models (LLMs) for Personalized Health

5. Economical and governance aspects of personalized health

6. Development of an In-Vitro Functional Assay for Personalized Oncology Treatment

7. Diagnostic and therapeutic applications of molecular profiling in a given malignancy: Build a therapeutic strategy on a hypothetical patient cancer case.

8. Project in Genomic Medicine: To develop a personal pharmacogenomic passport to improve drug prescription

9. Beyond Healthcare Thresholds
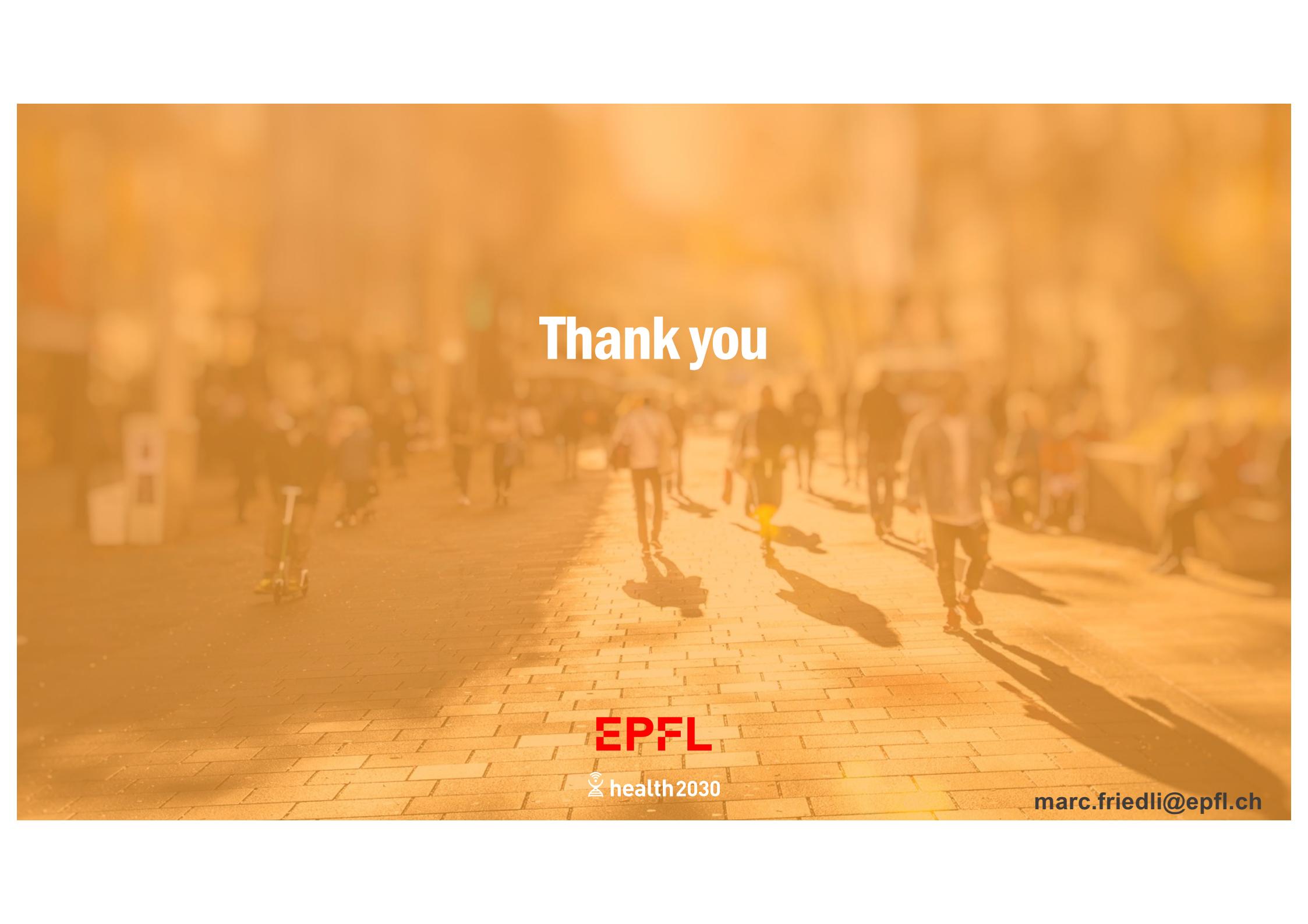
Thank you

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