

# Mathematical Models in Cancer

Wolfgang Pauli Institute, Vienna  
[www.wpi.ac.at](http://www.wpi.ac.at)

August 1 – August 2, 2019

## **Workshop Venue:**

**"SkyLounge"**, 12<sup>th</sup> floor OMP1

Fakultät f. Mathematik, Univ. Wien  
Oskar Morgenstern Platz 1, 1090

## **Organizers:**

- Michael Bergmann (Medical University, Wien)
- Marie Doumic Jauffret (INRIA, Paris)
- Doron Levy (U. Maryland & NCI)
- Norbert J. Mauser (WPI c/o U. Wien)

**Opening: Thursday, 1 Aug 2019, 9h00**

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### Thursday, 1 August

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|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 9:00–9:10   | <b>Norbert Mauser</b> (WPI c/o Uni Wien): <i>Opening Remarks</i>                                                                                                                  |
| 9:10–9:50   | <b>Marcello Delitala</b> (Politecnico di Torino)<br><i>Combination Therapies and Drug Resistance in Heterogeneous Tumoral Populations</i>                                         |
| 9:50–10:30  | <b>Alexander Tolios</b> (Medical University of Vienna)<br><i>Predicting Healthy and Cancerous Tissue Samples by Applying Predictive Modeling Techniques on Epigenetic Markers</i> |
| 10:30–11:00 | COFFEE BREAK                                                                                                                                                                      |
| 11:00–11:40 | <b>Svetlana Bunimovich</b> (Ariel University)<br><i>Mathematical Model of CRC Lung Metastases Growth Patterns</i>                                                                 |
| 11:40–12:20 | <b>Dietmar Pils</b> (Medical University of Vienna)<br><i>Network Analysis for Hypothesis Generation, Target Definition, and (Multiomics) Data Integration</i>                     |
| 12:20–14:00 | LUNCH                                                                                                                                                                             |
| 14:00–14:40 | <b>Olivier Saut</b> (CNRS, INRIA Monc Bordeaux)<br><i>Early Evaluation of Cancer Treatment Using Modeling and AI</i>                                                              |
| 14:40–15:20 | <b>Gergely Szakacs</b> (Medical University of Vienna)<br><i>Treasure Hunting in the NCI60 Anticancer Drug Screen Database</i>                                                     |
| 15:20–15:   | COFFEE BREAK                                                                                                                                                                      |
| 15:45–16:25 | <b>Thomas Eder</b> (University of Veterinary Medicine, Vienna)<br><i>Benchmarking Differential ChIP-Seq Tools</i>                                                                 |

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### Friday, 2 August

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|-------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|
| 9:00–9:40   | <b>Tommaso Lorenzi</b> (University of St. Andrews)<br><i>Dissecting the Evolutionary Dynamics of Cancer Cell Populations in Fluctuating Environments</i> |
| 9:40–10:20  | <b>Walter Berger</b> (Medical University of Vienna)<br><i>Contribution of Immune Mechanisms to the Anticancer Activity of Platinum Drugs</i>             |
| 10:20–10:40 | COFFEE BREAK                                                                                                                                             |
| 10:40–11:20 | <b>Sophie Hecht</b> (Imperial College, London)<br><i>An Individual-Based Model for Inter-Kinetic Nuclear Movement</i>                                    |
| 11:20–12:20 | <b>Michal Komorowski</b> (Polish Academy of Sciences)<br><i>Making Sense of Signaling Complexity</i>                                                     |
| 12:20–14:00 | LUNCH                                                                                                                                                    |
| 14:00–14:40 | <b>Diane Peurichard</b> (INRIA, Paris)<br><i>Modelling adhesion-independent cell migration: how cells can cross biological barriers</i>                  |
| 14:40–15:20 | <b>Jörg Menche</b> (CeMM Research Center for Molecular Medicine, Vienna)<br><i>From Protein-Protein to Drug-Drug Interactions</i>                        |
| 15:20–15:45 | COFFEE BREAK                                                                                                                                             |
| 15:45–16:25 | <b>Michael Bergmann</b> (Medical University of Vienna)<br><i>Interplay of Therapy and Tumor Microenvironment in Human Colorectal Cancer</i>              |
| 16:25–16:30 | <b>Doron Levy</b> (U. Maryland & NCI): <i>Closing Remarks</i>                                                                                            |