RWTH AACHEN UNIVERSITY

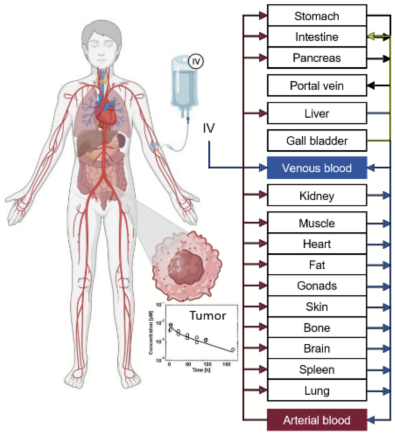
Master thesis

Physiologically based simulation of tumor drug disposition

Project

Inter-individual variability between patients remains a significant challenge in medicine. Amongst others, the functional consequences of (patho-)physiological alterations are usually not taken into account such as for example spatial heterogeneity within a tumor in oncology.

Computational models support the functional translation of clinical findings to targeted treatment design. The goal of this project is to develop and refine physiologically based pharmacokinetic models (PBPK) to simulate distribution of anticancer drugs in a tumor. Thus it will be possible to optimize on-target drug exposure to improve the antitumoral effect in cancer therapies.



Project goals

- Literature review on tumor pathophysiology to understand key physiological and molecular factors that influence drug distribution within the tumor
- Identify critical parameters and interactions that need refinement in existing tumor models
- Develop whole-body PBPK models of anti-cancer drugs using PK-Sim
- Assess sensitivity of simulation results with respect to parameter variation

What do we expect from you?

- Background in biology, mathematics, computer science, engineering, or a related field
- Experience with computational modeling or programming (e.g., in R, Python, or Matlab) is a plus

What do we offer?

- introduction to the field of PBPK modelling and computational biology
- joint supervision by scientists from UK Aachen and Frauhhofer MEVIS (Bremen)

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