Computational models of *Synechocystis sp. PCC* 6803

Jun.Prof. Dr. Anna Matuszyńska
Computational Life Science
RWTH Aachen University
Germany

anna.matuszynska@rwth-aachen.de

Mathematical and computational models have emerged as indispensable tools in modern biological research, particularly in the context of understanding and exploring complex systems. In this talk, we highlight the significance of these models in deciphering the primary energy production capacity of cyanobacteria and their biotechnological relevance.

Our computational endeavors focus on modeling cyanobacteria, with a specific emphasis on the cyanobacteria strain *Synechocystis* sp. PCC 6803. We present our most recent mechanistic model of photosynthesis, which provides insights into the dynamic interplay of light quality and quantity on its efficiency. By investigating the role of these parameters, we aim to enhance our understanding of the underlying mechanisms governing photosynthetic activity in cyanobacteria.

Furthermore, we delve into the importance of comprehending photosynthetic activity to explore the theoretical boundaries of terpenoid production in cyanobacteria. Through our modeling efforts, we shed light on the intricate secondary metabolism in cyanobacteria, laying the groundwork for potential advancements in the field.

This talk serves as an opportunity to present our latest findings and preliminary work in computational modeling, providing valuable insights into the fundamental aspects of cyanobacterial biology. Ultimately, our research contributes to the broader goal of harnessing the untapped potential of cyanobacteria for biotechnological applications.