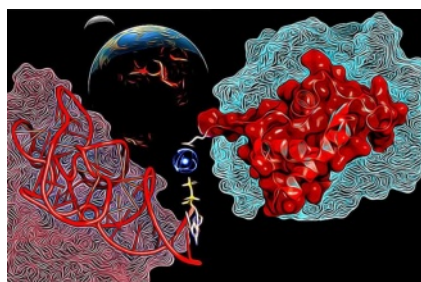

Synthetic Biology Laboratory

(Dr. Klára Hlouchová)

The **Synthetic Biology Laboratory**, led by **Dr. Klára Hlouchová** at the Department of Cell Biology, Faculty of Science, Charles University, explores the **origin and evolution of life** from a molecular perspective. Her team bridges **biology and chemistry** to understand how the key molecular players of life – especially **proteins** – emerged and evolved.



The group investigates why life on Earth is based on exactly **20 amino acids**, which make up all known proteins, and how life might function if this molecular repertoire were different.

These questions reach beyond evolutionary biology toward **synthetic biology** and the **design of artificial cells and organisms**, with potential applications in biotechnology and drug development.

The multidisciplinary team of Klára Hlouchová studies fundamental chemical and biological processes that could explain not only how life originated on Earth, but also how it might arise elsewhere in the universe.

Klára Hlouchová earned her Ph.D. in **biochemistry** at Charles University and conducted postdoctoral research at the **University of Colorado Boulder** and the **NASA Astrobiology Institute** in the United States. She is one of the few Czech scientists to have repeatedly received support from the **Human Frontier Science Program**, and in **2024** she was awarded a prestigious **ERC Consolidator Grant**. In the same year, she received the **Neuron Award for Promising Young Scientists in Biology**.

Photo: Petr Jan Juračka, illustration: Valerio G. Giacobelli