

Streszczenie popularnonaukowe (EN)

The aim of the Live 2.0 project is to create an open computational platform to study how life could have emerged from simple molecules. To achieve this, we will combine chemical simulations running on modern graphics processors (GPUs) with artificial intelligence methods. This approach will make it possible to reproduce well-known chemical reactions, such as the classic Miller-Urey experiment, as well as to discover new ones that may have occurred on Earth billions of years ago.

The project addresses one of the most fundamental questions in science: how non-living matter could give rise to the first life-like structures. We plan to investigate the formation of RNA-like polymers, the creation of simple membranes, and autocatalysis – chemical reactions that sustain themselves. Machine learning will help identify promising reaction pathways and predict their outcomes more efficiently.

Expected outcomes include the development of free open-source software, new datasets and hypotheses on the origins of life, and scientific publications. The project is important not only for science but also for education and outreach – the Live 2.0 tool will be accessible to researchers and students worldwide.