

Welcome to Spolecne DBX Projects !

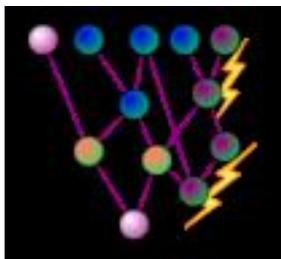
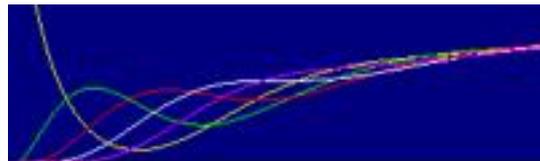


The current ongoing research in the field of biology and bioinformatics is very wide and deep. As an example, the human genome has been deciphered; one question was answered, though more questions arise. The problematic, teams and approach gets more complicated, sophisticated and detail oriented with each major breakthrough. Combined with constantly new and more powerful modern technologies, the amount of data and information is overwhelming.

We have decided to approach biology and bioinformatics differently. We do not have the cutting-edge instruments, neither the latest results. However we believe, that we can come up with a unifying theory explaining behavior of different biological aspects from a mathematical point of view. For our purposes we consider sufficient, when the theory is able to cover whole biology in it's diversity, rather than coverage of separate specific details. The theory should provide an answer to what happens behind the scenes on cellular level, give leads for treatment, and allow to conduct a computer based simulations of cellular processes.

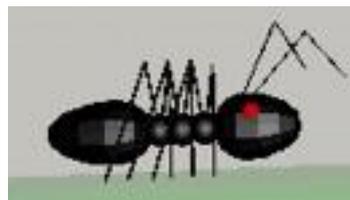
The theory is based on a model of an eukaryotic cell, which we call [Digital Biological Cell](#), shortly DBC. Given the model, we applied the theory to different parts of biology. Some of the applications are covered by this website, others are developed by a partner team at the Charles University, Prague; Faculty of Mathematics and Physics, project Contra Cancrum [CUNI CC \(external link\)](#). The applications are as follows:

Cell production, communication and division. The virtual laboratory shows in step-by-step approach how cells communicate, how do they respond to the injected antibodies or how a homoeostasis is achieved.



Communication between neurons using multiple mediators. The key focus is on relation between mind and brain, however the theory also explains how the brain development is influenced by inputs and genetic information.

Simulation of ants, visualization of the results, events on anthropological level described on cellular level.



Our partner team [CUNI CC \(external link\)](#) has been working on:

- Cancer, development of, accelerators and retarders
- Immune system, diversity of, mechanism
- Vascular system, growth
- Ontogenesis, differentiation from zygote to embryo

Other applications are not excluded and we do not see any restriction to their development other than limited amount of time we possess. We welcome any kind of cooperation, which will push the theory further.

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