Project Offer for Student

Simulating tissue that is alife

Our intestine is a very active living organism. It is constantly working to supply the rest of the body with nutrients while being exposed to all kinds of malicious chemicals as well as physical stress. To maintain its function it has to renew itself constantly, much like the skin. At the same time the DNA of the cells has to be safeguarded from mutations which can occur due to chemicals in the food or due to increased risk arising from rapid proliferation.

How do cells in the intestine organize themselves to accomplish all these tasks?

We use simulations of the intestinal tissue at the cell level to address these questions. We explore the communication, organization and architecture of cell populations and are constantly surprised by the emerging self-organization and intelligent self-regulation living systems seem to exhibit.

The knowledge we are generating in this project is in direct relation to fighting cancer as the understanding of the healthy intestine is the basis for understanding cancer.

You can be part of this project by establishing biological hypothesis, performing simulation studies and developing our simulation system.

Based on your background and your experience we will shape a project according to you interests.

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Keywords

- learning widely applicable simulation techniques
- Software development in JAVA, MATLAB
- in-depth biological research connected to fighting cancer