Announcement

**Advanced Seminar: Collective Systems in Biology**
Prof. Christof Gebhardt

**Description**
Biological systems at all levels, from individual cells to plants and animals to ecosystems evolved to self-assemble from basic unit building blocks. While creating complex phenomena, these self-assembly processes can often be quantitatively understood in terms of simple physical models. In this seminar we will have a closer look at some interesting examples.

**Learning Outcomes**
Students who attended this seminar
- got to know exciting examples of biological self-assembly
- learned how simple physical models can give rise to complex biological phenomena

**Content**
In this advanced seminar we will cover the following topics:
- pattern formation (embryo development, bacterial division, animal colouring, etc.)
- swarm behaviour (fish swarms, path optimization by ants, constructions by social species, etc.)
- competition between species (real-live rock-paper-scissors games)
- molecular self-assembly (DNA origami, artificial molecular machines)
- ...

If there is interest, we will also look at the physics of
- gecko adhesion
- lotus effect

**Prerequisites**
Formal prerequisites: none
Recommended prerequisites: basic physics lectures

**Literature**
- Textbook chapters
- Review articles
- Original research articles

**Additional Information**
The module refers to bachelor and master students

**Lecturer**
Prof. Christof Gebhardt, Institute of Biophysics