

# PhD position opened in Switzerland for a Computer Scientist or Physicist

## *Numerical Modelling of Physical & Biological Processes Generating Diversity & Complexity During Animal Development*

In the context of a multidisciplinary study combining mathematical modelling (of physical & biological processes), numerical simulations, and biology experiments, we offer one PhD student position for an outstanding, highly motivated, and creative physicist or computer scientist with strong skills & interest in numerical simulations of physical phenomena in biological systems. The position is for 3 to 5 years and is available immediately.

A major research project in Michel Milinkovitch's group (Laboratory of Artificial & Natural Evolution; [www.lanevol.org](http://www.lanevol.org)) at the University of Geneva (UNIGE) is to better understand the physical constraints to biological development and evolution. More specifically, the successful PhD candidate will investigate the interactions between physical (mechanics, reaction-diffusion) and biological (cell signalling, proliferation) processes that generate and constrain Life's complexity and diversity. He/she will develop high performance numerical simulations that will require strong mathematical and programming skills.

Candidates must have a master's degree in physics or computer science. Experience with numerical simulations of physical phenomena is mandatory. Skills in artificial life, neural networks, computer vision, image processing/analysis, pattern recognition, cell automata, and robotics are useful. The successful candidate will have a genuine interest to interact with researchers from multiple disciplines (Biology, Physics, Computer Science, Mathematics).

The University of Geneva is world-renowned for its research in Biology and Physics and is among the top 1% best universities in the world.

PhD students are remunerated according to the standards of UNIGE, which are very generous when compared to other international programs.

Geneva is an international city occupying a privileged geographical situation with its beautiful lake and the close-by Alps.

**Refs:** Manukyan *et al.* *A Living Mesoscopic Cellular Automaton Made of Skin Scales.* [\*Nature\* 544: 173-179 \(2017\)](#); Dhillon *et al.* *Bifurcation Analysis of Reaction Diffusion Systems on Arbitrary Surfaces.* [\*Bulletin of Mathematical Biology\* \(2017\)](#); Teyssier *et al.* *Photonic Crystals Cause Active Colour Change in Chameleons.* [\*Nature Communications\* 6: 6368 \(2015\)](#); Martins *et al.* *R<sup>2</sup>OBBIE-3D, a Fast Robotic High-Resolution System for Quantitative Phenotyping of Surface Geometry and Colour-Texture.* [\*PlosOne\* 10\(6\): e0126740 \(2015\)](#); Milinkovitch *et al.* *Crocodile Head Scales Are Not Developmental Units But Emerge from Physical Cracking.* [\*Science\* 339, 78-81 \(2013\)](#).



**Candidates** must send their application — in the form of a single PDF file including a brief letter of interest, a CV, as well as contact information (not support letters) of two to three persons of reference — to: Prof. Michel Milinkovitch ([michel.Milinkovitch@unige.ch](mailto:michel.Milinkovitch@unige.ch)).

