Physics-Based Numerical Simulations of Animal Development & Evolution:
Position for a **Computer Scientist**
at the University of Geneva (Switzerland)

UNIVERSITÉ DE GENÈVE
FACULTY OF SCIENCE

In the context of a multidisciplinary study funded by an **ERC** advanced grant, the Milinkovitch lab offers one position for an outstanding, highly motivated, and creative **computer scientist** (at the Post-doc level or, possibly, the PhD student level) to investigate the interactions between physical and biological processes that generate and constrain Life's complexity and diversity. The successful candidate will develop **mathematical modelling** and **high performance physics-based numerical simulations** that will require **strong programming skills**. The position is for 3 to 5 years and must start between September and December 2019. In this academic research position, you will join a multidisciplinary team of physicists, mathematicians, computer scientists and biologists, and you will apply your creative talent to uncover the self-organisational processes that generate complexity during morphogenesis and evolution. Excellent written and verbal communication skills in English are mandatory. Other specific requirements are strong expertise in

- **Physics**: mechanics of elastic solids and mechanics of fluids, reaction-diffusion;
- **Programming**: C/C++ and GPU, including performance optimisation;
- **Algorithmics**: deep-learning, evolutionary algorithms, cellular automata;
- **Computer graphics**: image processing/analysis, pattern recognition, point cloud and mesh processing, surface reconstruction.

Candidates must have a **Master's degree in Computer Science**. The position is available at the level of **Post-Doc / Research Associate** (requiring a PhD degree or at least 3 years of professional experience). Exceptional master students can be considered for a **PhD student position**.

The University of Geneva (UNIGE) is world-renowned for its research and is among the top 1% best universities in the world. Geneva is an international city occupying a privileged geographical situation.

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 three persons of reference — to: **lane-jobs@unige.ch**

Deadline for application: July 15, 2019.

References: *Elastic instability during branchial ectoderm development causes folding of the Chlamydosaurus erectile frill.* **eLIFE** (in press). *Locally-curved geometry generates bending cracks in the African elephant skin.* **Nature Communications 9 (2018)**; *A Living Mesoscopic Cellular Automaton Made of Skin Scales.* **Nature 544: 173-179 (2017)**; *Bifurcation Analysis of Reaction Diffusion Systems on Arbitrary Surfaces.* **Bulletin of Mathematical Biology (2017)**; *Photonic Crystals Cause Active Colour Change in Chameleons.* **Nature Communications 6: 6368 (2015)**; *R²OBBIE-3D, a Fast Robotic High-Resolution System for Quantitative Phenotyping of Surface Geometry and Colour-Texture.* **PlosOne 10(6): e0126740 (2015)** ; *Crocodile Head Scales Are Not Developmental Units But Emerge from Physical Cracking.* **Science 339, 78-81 (2013)**.