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Title
Using Biorobots to Investigate Extant and Extinct Animal Locomotion

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Abstract
The ability to efficiently move in complex environments is a fundamental property both for animals and for robots, and the problem of locomotion and movement control is an area in which neuroscience, biomechanics, and robotics can fruitfully interact. In this talk, I will present how biorobots and numerical models can be used to explore the interplay of the four main components underlying animal locomotion, namely central pattern generators (CPGs), reflexes, descending modulation, and the musculoskeletal system. Going from lamprey to human locomotion, I will present a series of models that tend to show that the respective roles of these components have changed during evolution with a dominant role of CPGs in lamprey and salamander locomotion, and a more important role for sensory feedback and descending modulation in human locomotion. I will also present a recent project showing how robotics can provide scientific tools for palaeontology.