

FBS SEMINAR

September 8, 2016 (2:00pm, 2F Seminar room, BioSystems Bldg.)

Michel C. Milinkovitch

Laboratory of Artificial & Natural Evolution (LANE)
Dept of Genetics & Evolution
& Swiss Institute of Bioinformatics (SIB)
University of Geneva, Switzerland

The EvoDevo & Physics of Skin Appendage and Skin Colour patterning in Vertebrates



Combining evolutionary developmental biology, physics and computer science, my research group investigates the emergence of complexity and diversity of integumentary traits in vertebrates. More specifically, we perform descriptive and mechanistic analyses of morphogenesis

and patterning of skin colour and skin appendages in reptiles and mammals. Using as showcases some of our recent results in snakes and lizards, I will argue that it becomes possible to understand, in non-model species, the genetic and physical determinisms of developmental processes that generate both intra- and inter-specific variation of skin traits.

First, I will show that the scales on the face and jaws of crocodilians are not genetically-controlled developmental units and that their spatial patterning is generated through physical cracking of the skin. Second, I will show that rapid skin colour changes in chameleons are not caused by dispersion/aggregation of pigment-containing organelles but by the active tuning of an intracellular 3D photonic structure. Third, I will discuss our analyses of skin patterning in snakes and lizards, with special emphasis on our gene mapping program in corn snakes for the identification of mutations affecting colour traits.



Host: Shigeru Kondo (Ex. 7975)