Mathematical modelling of skin pattern formation in the corn snake

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In the context of highly multidisciplinary studies investigating the development of skin colour patterns in the corn snake (*Pantherophis guttatus*), we are seeking creative and highly motivated students with a background in physics or applied mathematics to investigate physical models of pattern formation in a multicellular biological tissue. The model will be used to understand pattern variation on the skin of the corn snake. The successful candidates will interact with a multidisciplinary team of physicists, computer scientists and biologists and will be trained in theoretical physics applied to biological systems.



References

The Chemical Basis of Morphogenesis by A. M. Turing Philos. Trans. R. Soc. B, 237, 641: 37-72 (1952)

Genome mapping of a LYST mutation in corn snakes indicates that vertebrate chromatophore vesicles are lysosome-related organelles

PNAS 117, 42 : 26307-26317 (2020)

A Living Mesoscopic Cellular Automaton Made of Skin Scales

Nature 544, 7649 : 173-179 (2017)

Patterning and growth control in vivo by an engineered GFP gradient

Science, 370(6514), 321-327 (2020)

Links

https://genev.unige.ch/research/laboratory/guillaume-salbreux https://genev.unige.ch/research/laboratory/Michel-Milinkovitch - https://www.lanevol.org