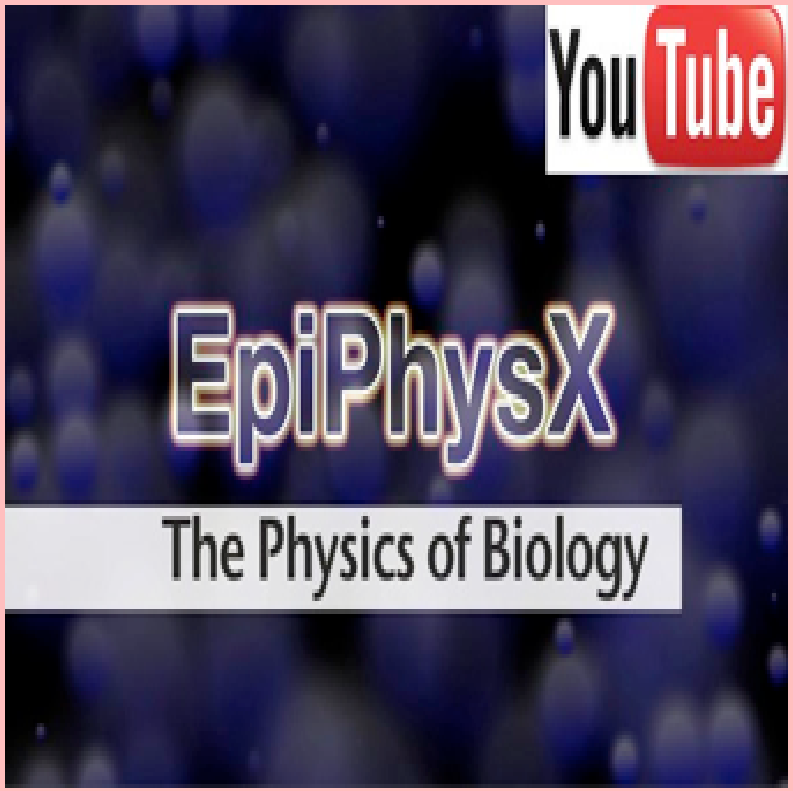
Robustness of tissue growth to cell mechanics

Charles N. de Santana,
Institute of Evolutionary Biology and Environmental Studies, UZH.

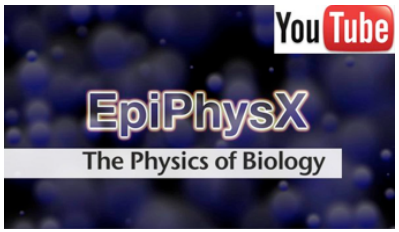
Robustness of tissue growth,
22 October 2015, IEU/UZH, Switzerland.

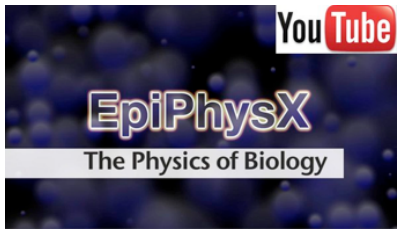
Tissue growth: cells as polygons, tissues as networks

Darwin finches, Cichlids, Orchids and Moths

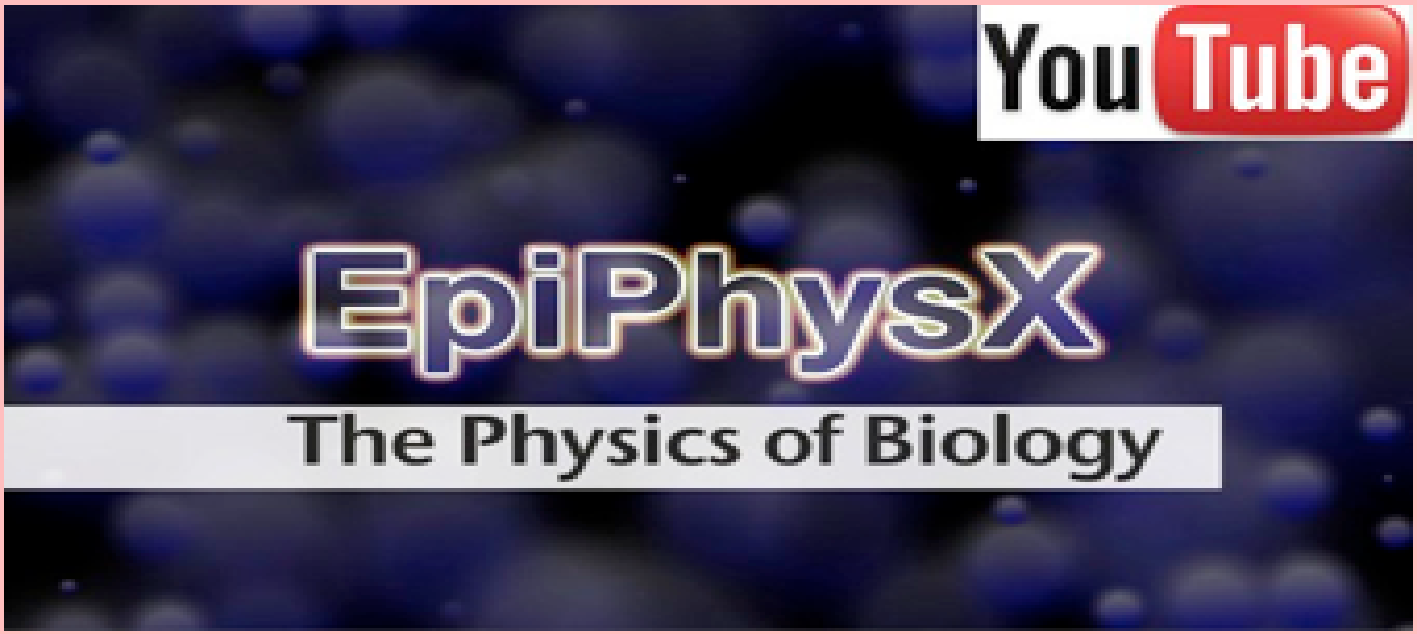


Darwin finches, Cichlids, Orchids and Moths

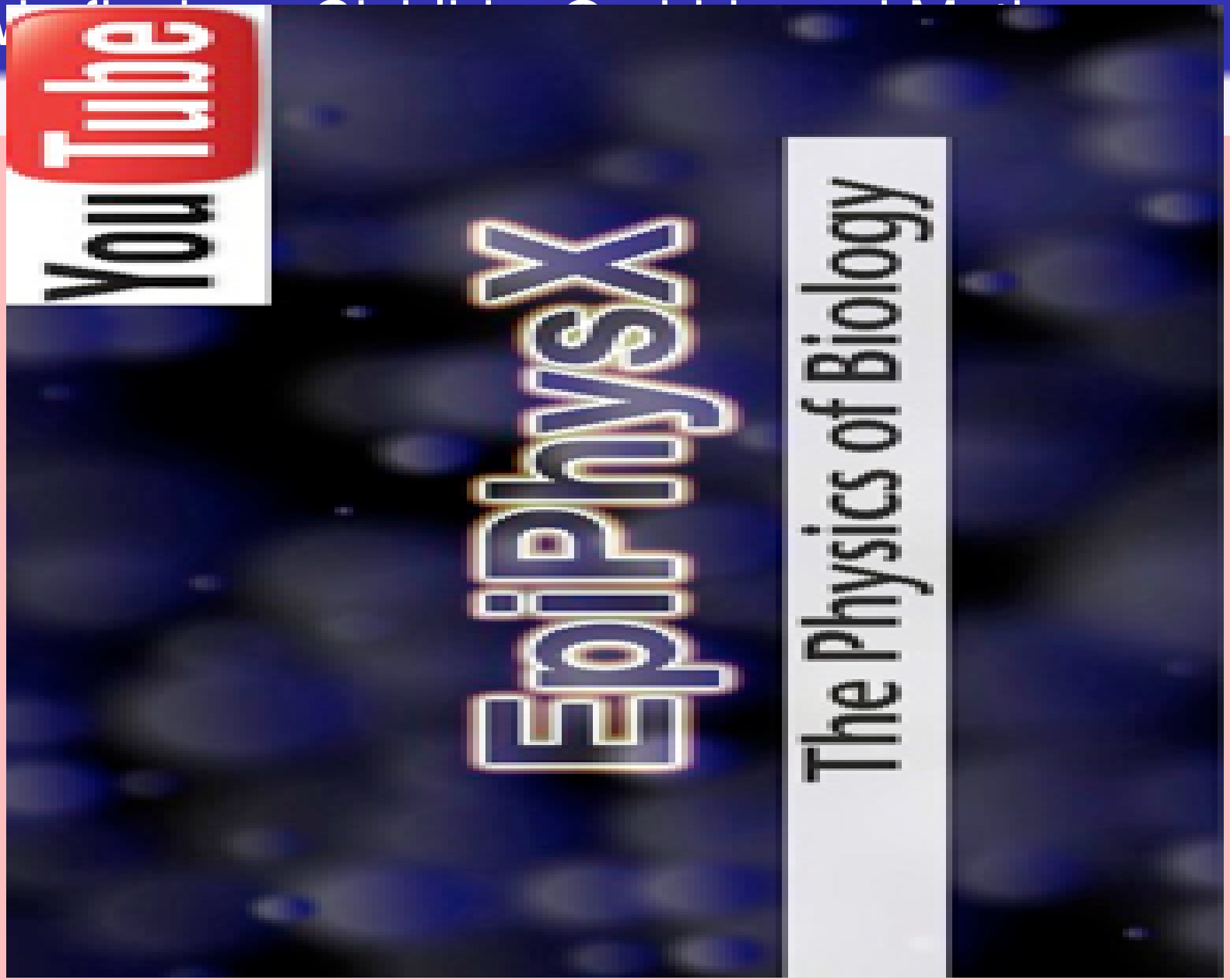




Darwin finches, Cichlids, Orchids and Moths



Darw



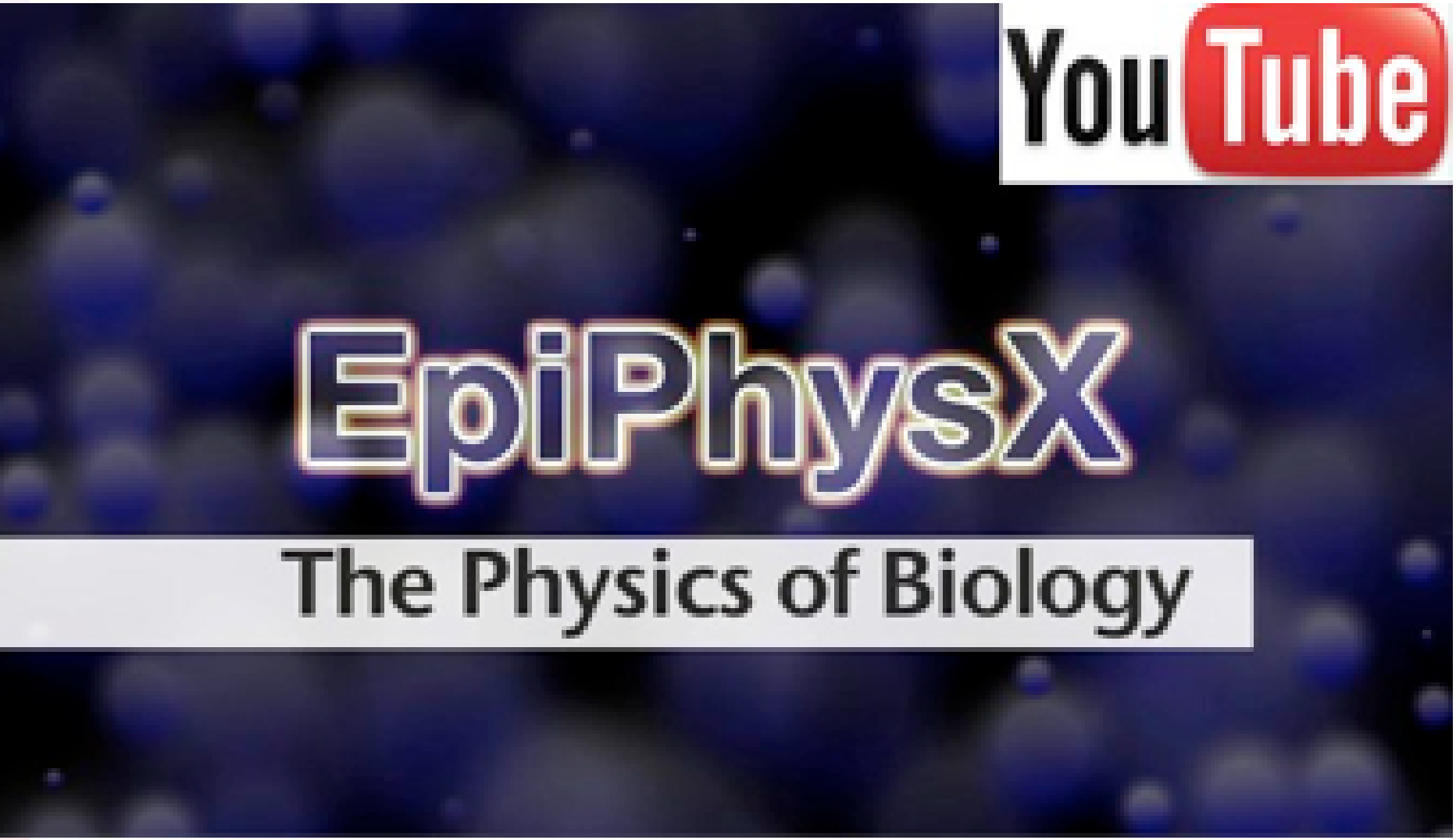
Questions

- Do we need to invoke niche driven mechanisms to predict radiations and biodiversity patterns?

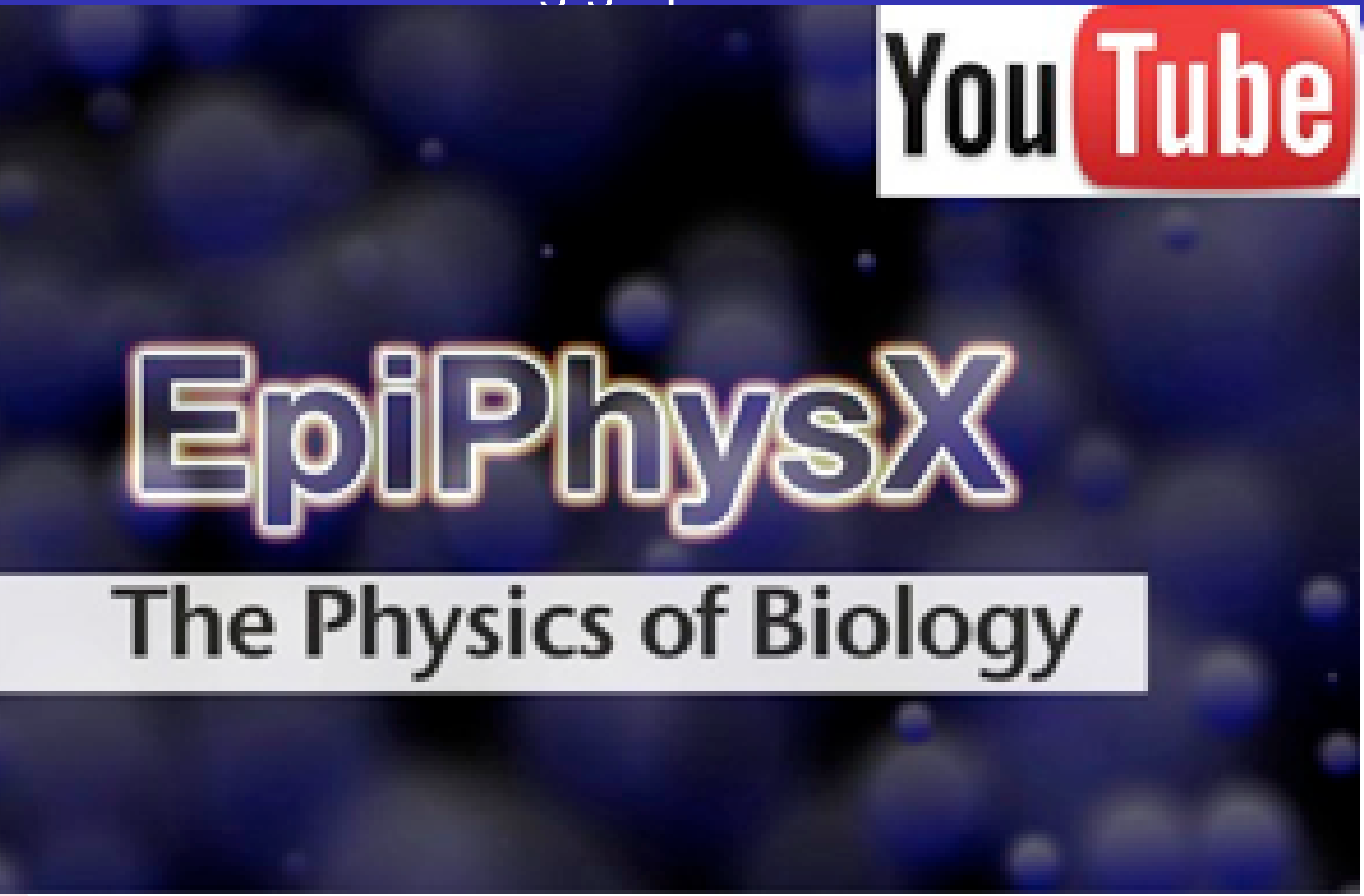
Questions

- Do we need to invoke niche driven mechanisms to predict radiations and biodiversity patterns?
- Do quantitative genetics traits predict bimodal distributions in the absence of selection?

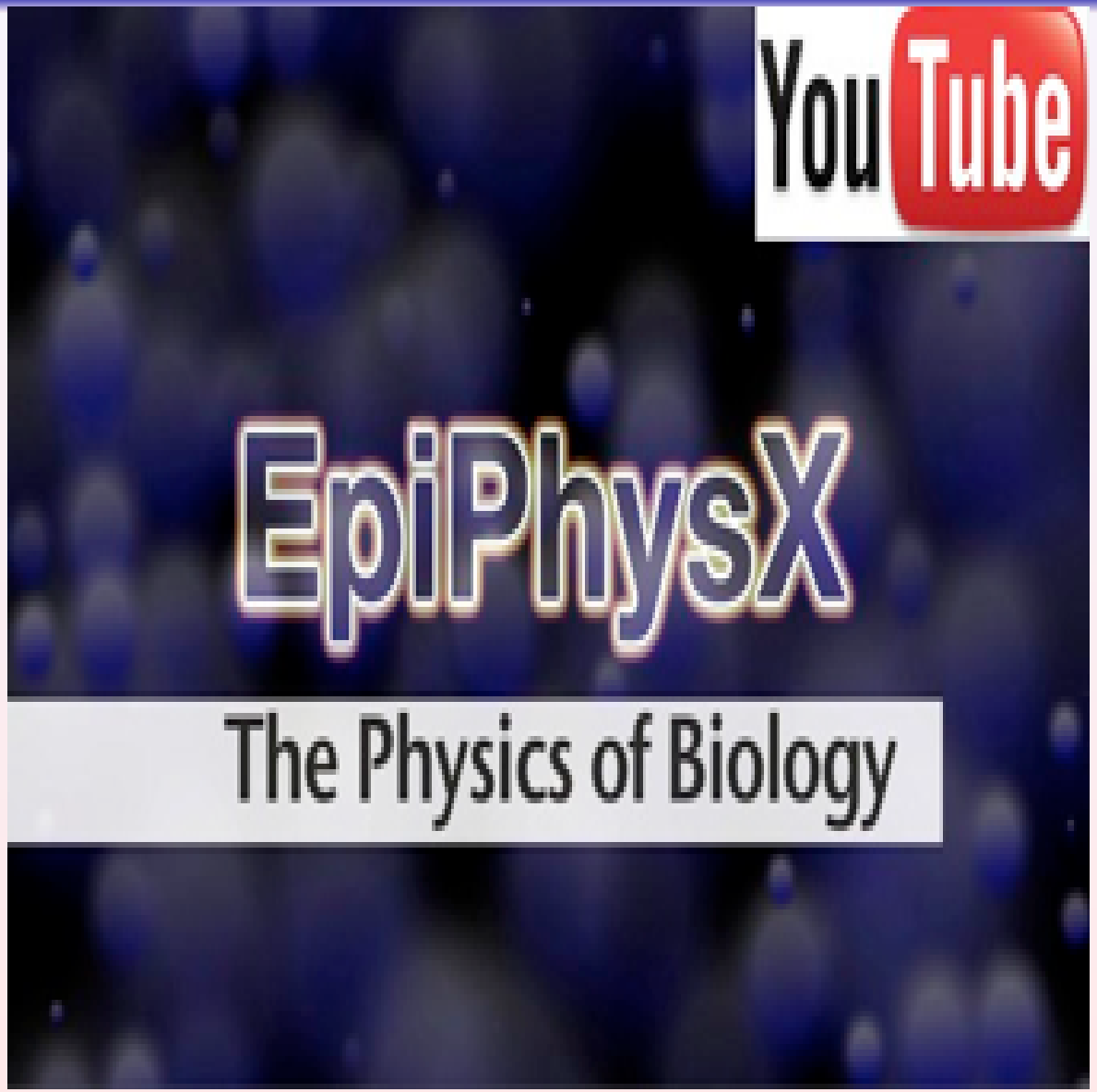
Genomes



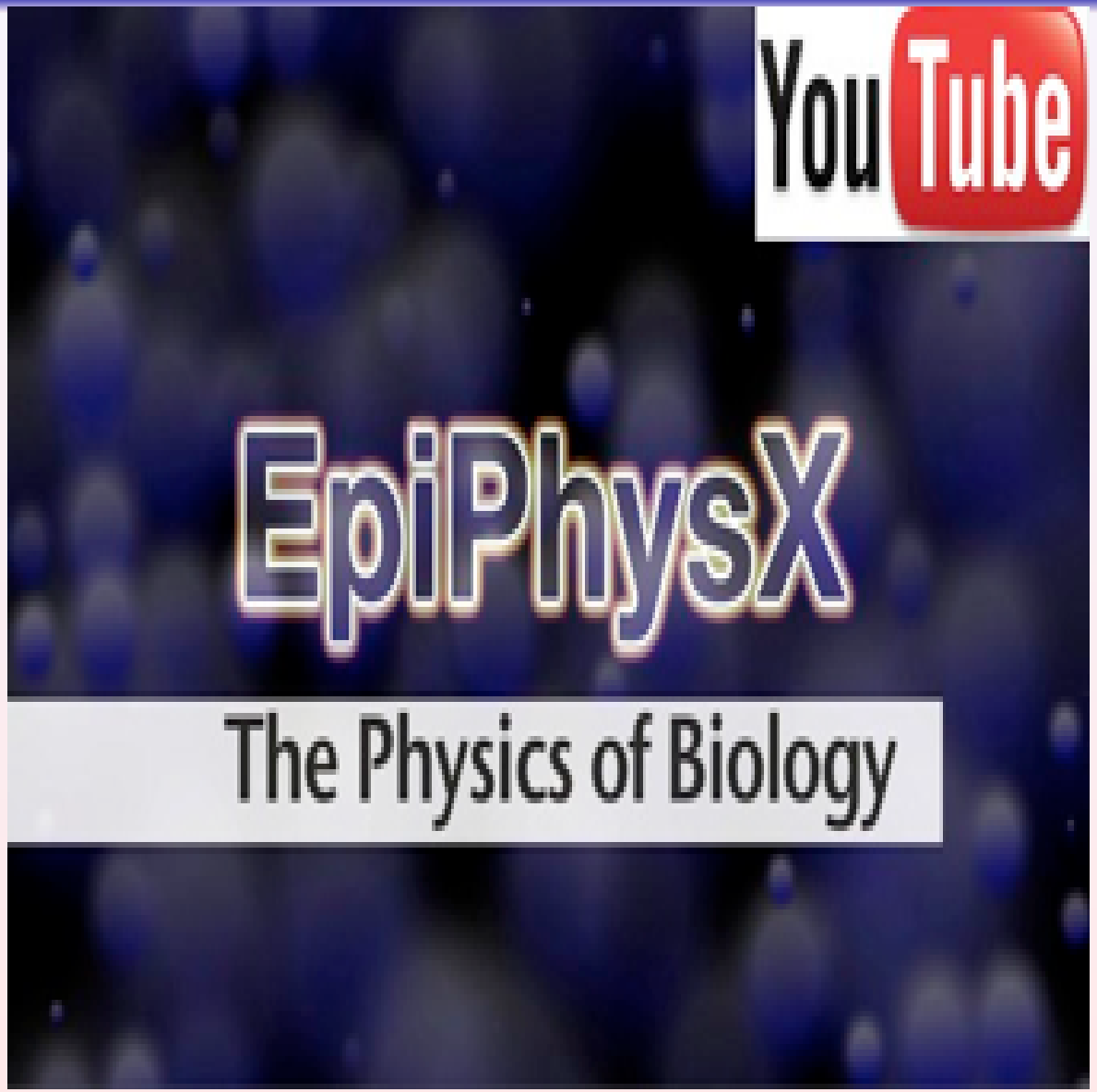
Genomes in a mating graph



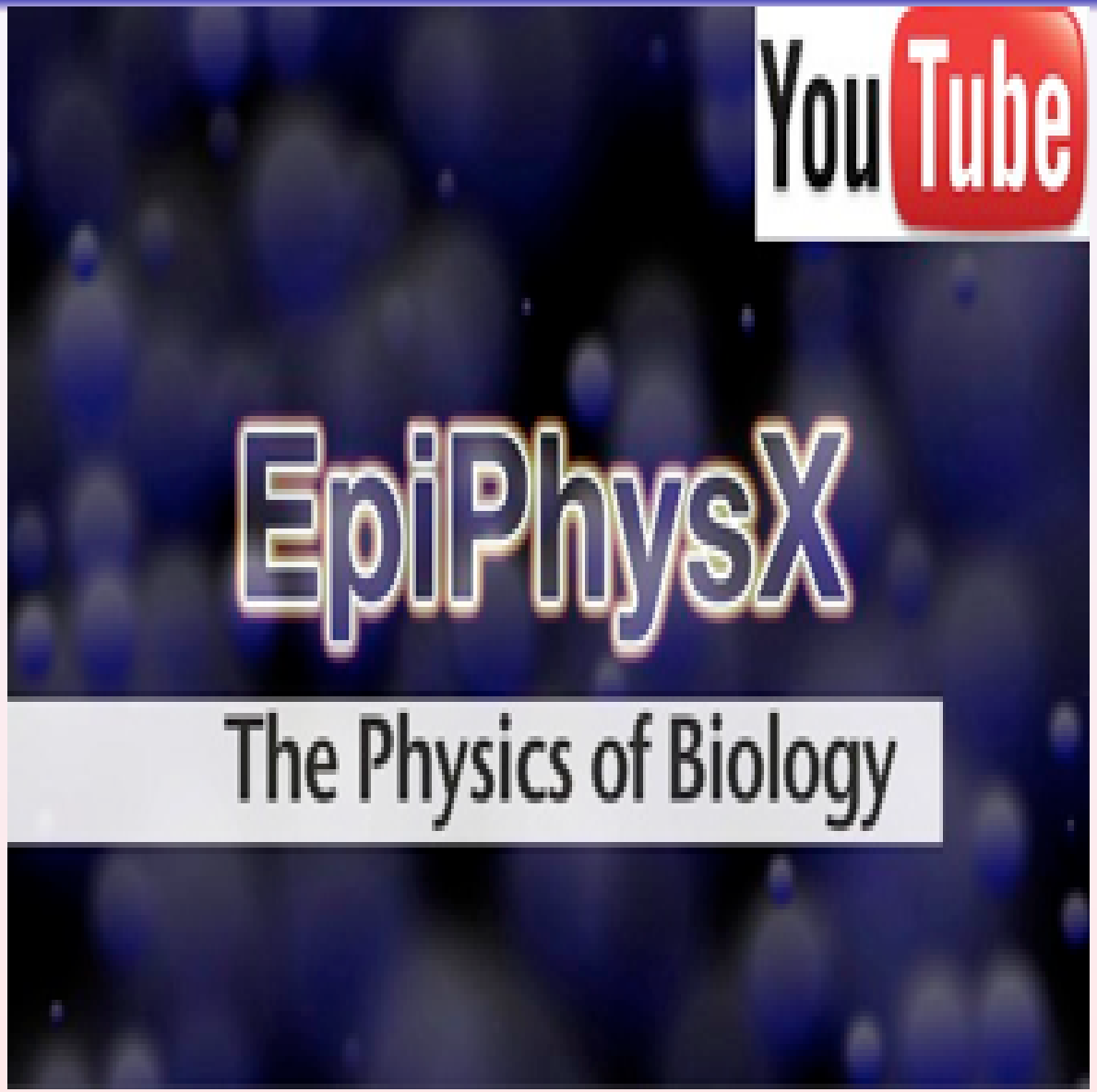
Genomes in spatial landscapes



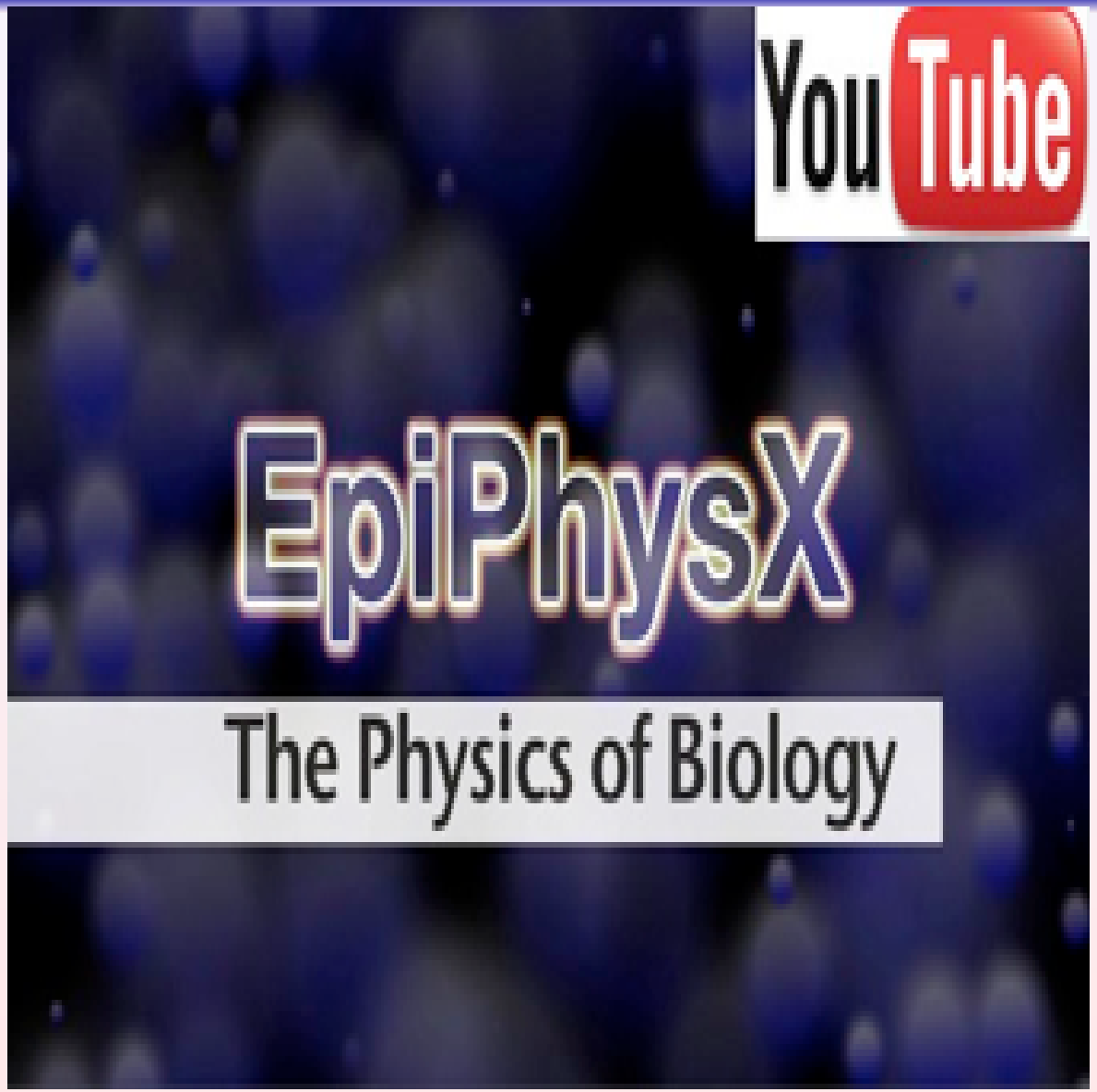
Genomes in spatial landscapes



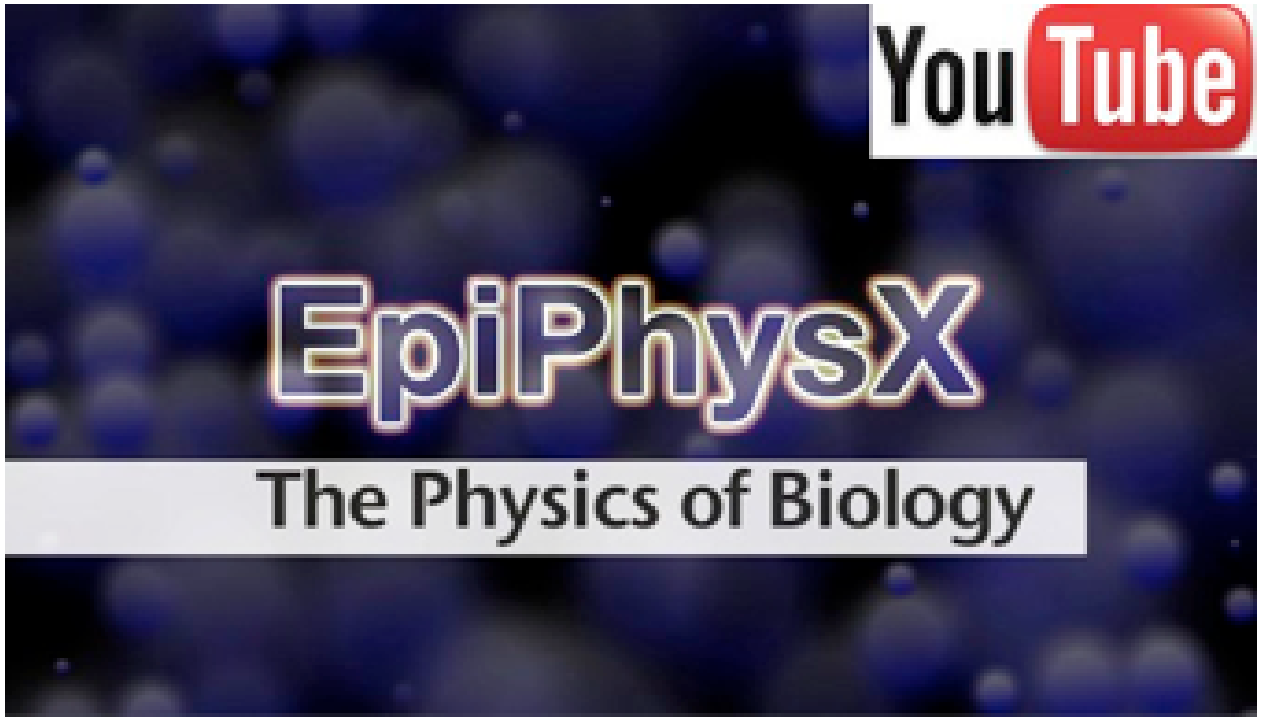
Genomes in spatial landscapes



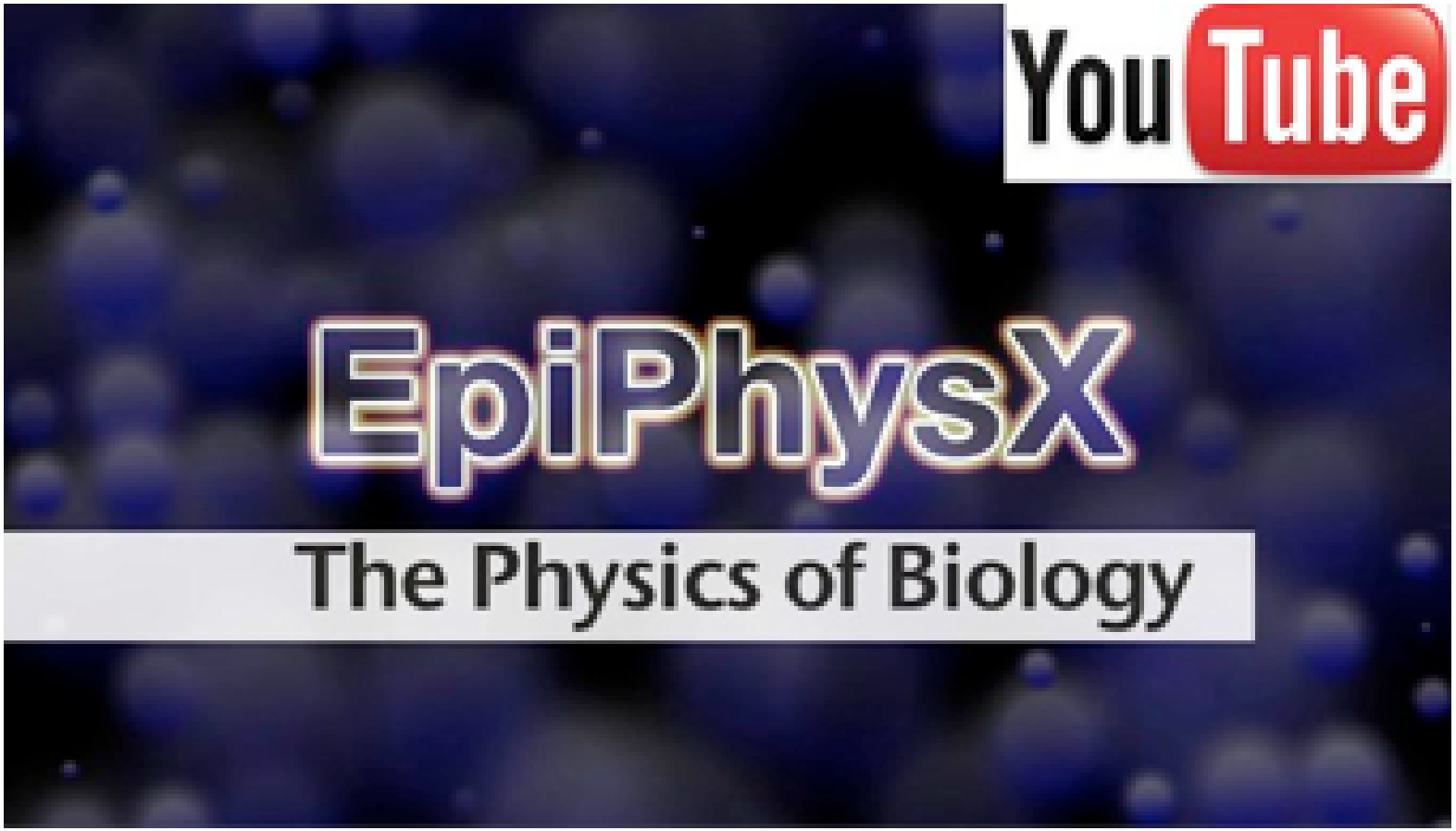
Genomes in spatial landscapes



Radiations: theory



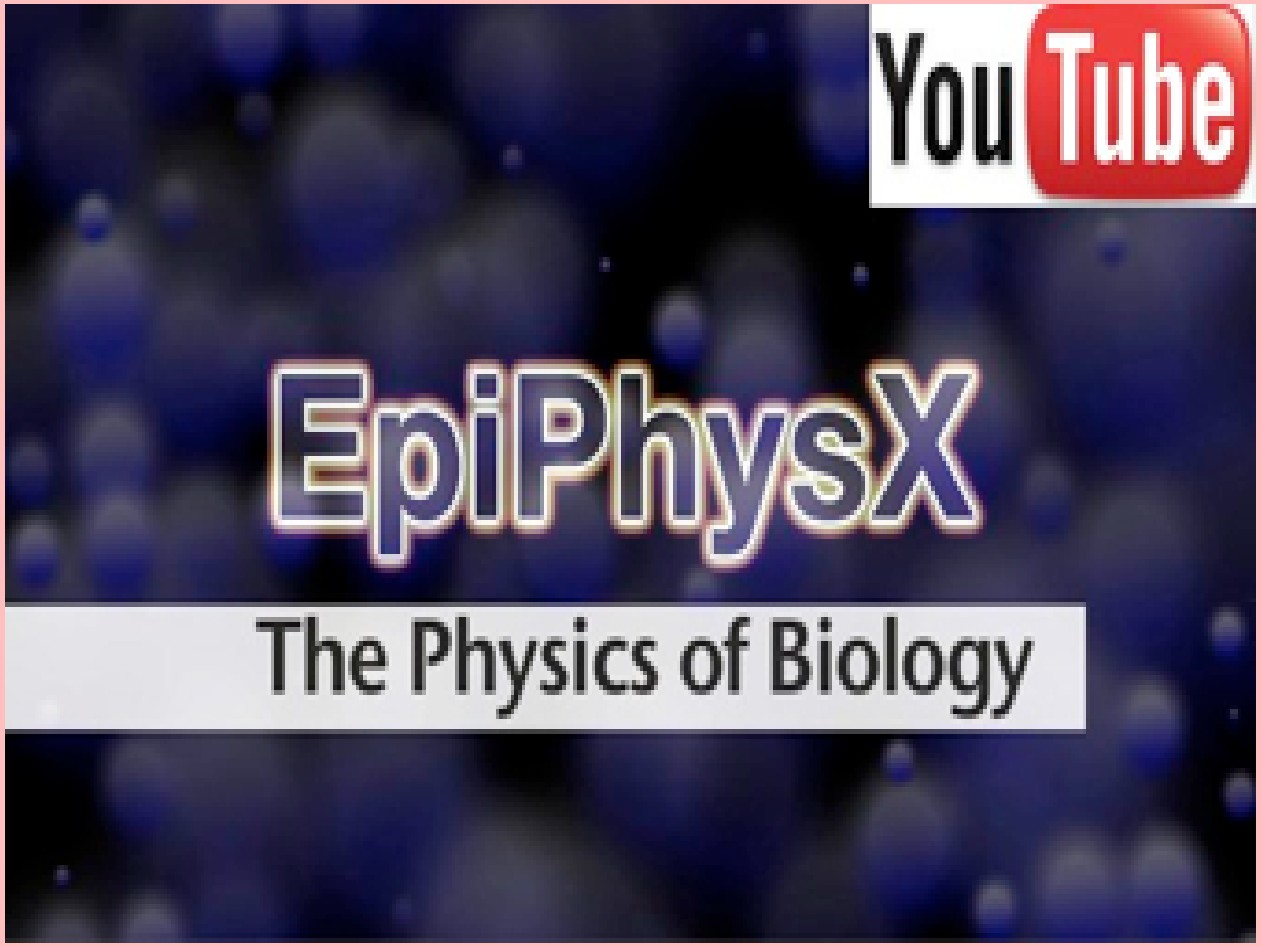
Radiations: data



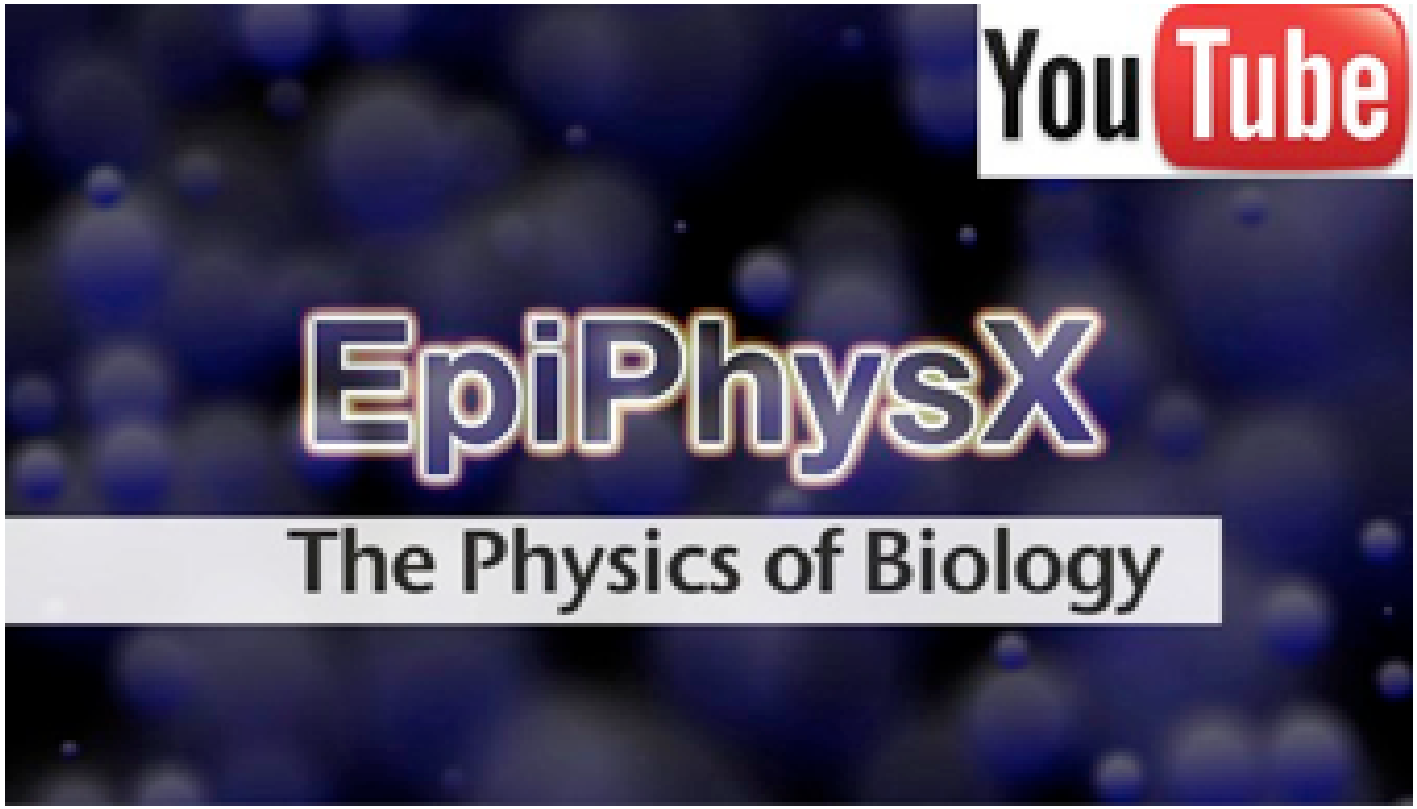
Melián, C. J. et. al (2010). Frequency-dependent selection predicts patterns of radiations and biodiversity, PLoS Comp. Biol., 6:e1000892.

Ecological, developmental, and evolutionary processes

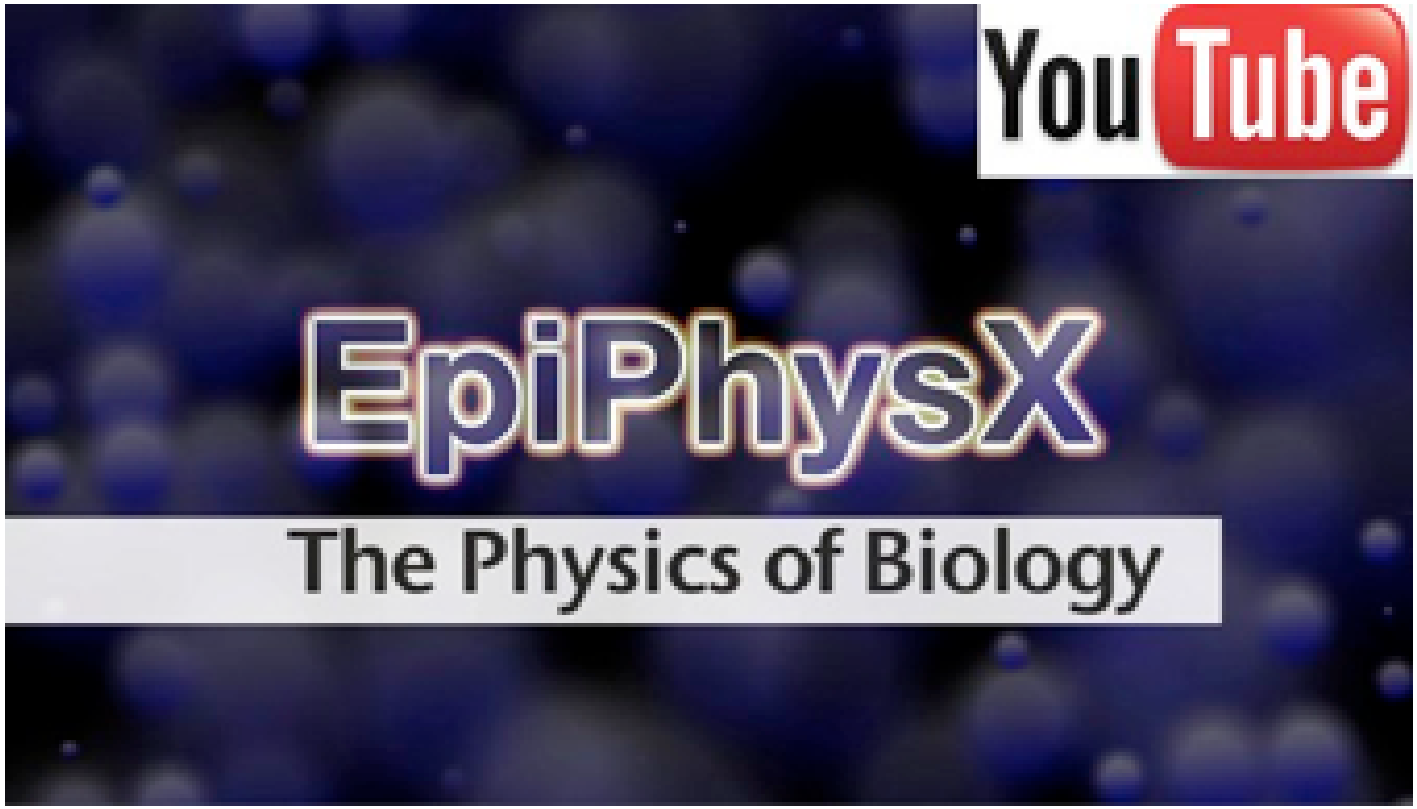
Eco-devo-evo spatial dynamics



Genotype-phenotype: theory



Genotype-phenotype: theory



Outlook

1. In addition to adaptive radiations driven by natural selection, just drift or negative frequency-dependent sexual selection may both predict some radiations.

Outlook

1. In addition to adaptive radiations driven by natural selection, just drift or negative frequency-dependent sexual selection may both predict some radiations.
2. An incipient and testable framework to connect quantitative traits, speciation and biodiversity dynamics in ecological networks.

Thank you!

- Scientists and technical staff at Wagnerś group (IEU/UZH).
- Scientists at Bastienś group (Unige).
- SystemsX.