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NetLand: quantitative modeling and visualization of Waddington's epigenetic landscape using probabilistic potential



NetLand quantitative modeling and visualization of Waddington's epigenetic landscape using probabilistic potential.pdf (138.0Kb)

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Abstract

Summary: Waddington's epigenetic landscape is a powerful metaphor for cellular dynamics driven by gene regulatory networks (GRNs). Its quantitative modeling and visualization, however, remains a challenge, especially when there are more than two genes in the network. A software tool for Waddington's landscape has not been available in the literature...

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Zheng, Jie, 2017, "NetLand: quantitative modeling and visualization of Waddington's epigenetic landscape using probabilistic potential", doi:10.21979/N9/IP6DBD, DR-NTU (Data), V1

Description

NetLand is a software for quantitative modeling and visualization of Waddington's epigenetic landscape. NetLand is intended for modeling, simulation and visualization of gene regulatory networks (GRNs) and their corresponding quasi-potential landscapes. Users can import models of GRNs from a file (e.g. TSV, SBML format etc.), and manually edit the network structure. Then, NetLand will automatically encode differential equations for the kinetics of transcriptional regulations. The computational model will be used to simulate the dynamics of the input networks. Model equations and parameters can be easily modified.

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The software NetLand is written in Java, with a graphical user interface (GUI). The user manual contains detailed instruction about installation and basic usage. It also includes running time and memory usage assessment and case studies.

Subject

Computer and Information Science

Related Publication

Jing Guo, Feng Lin, Xiaomeng Zhang, Tanavde, Vivek, Zheng, Jie, 2017, "NetLand: quantitative modeling and visualization of Waddington's epigenetic landscape using probabilistic potential", doi:10.21979/N9/IP6DBD, DR-NTU (Data), V1

Links to datasets deposited in external repository

<https://github.com/NetLand-NTU>

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