

Abstract Submitted
for the MAR16 Meeting of
The American Physical Society

Nonlinear dynamics, Waddington landscape and stem cells CHAO

TANG, Peking University — There are hundreds of different cell types (skin, neuron, muscle, etc.) in human body, all derived from the stem cell and all have the same genetic information. About 60 years ago, Waddington speculated that the different cell types correspond to different minima in a landscape emerged from genetic interactions. Recently, biologists succeeded in transforming one cell type to another by perturbing the genetic interactions in a cell. I will discuss the experiments and a mathematical model of a set of such cell type transformations in mice, in which we can see an actual example of the Waddington landscape and ways to alter it to facilitate cell type transformation – in particular, to reprogram a differentiated cell back into a stem cell.

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Date submitted: 04 Nov 2015

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