Cell cycle modelling: entrance into M-phase

Mateusz Debowski
Institute of Applied Mathematics
Faculty of Mathematics, Informatics and Mechanics
University of Warsaw
mateusz.debowski@mimuw.edu.pl

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Cell cycle in mysterious and very important process in every living cell, because it causes division of a cell. There are many regulators of this system called *cell cycle control system*. In 2001 Leland Hartwell, Tim Hunt and Paul Nurse won the Nobel Prize in Physiology or Medicine for their discoveries concerning cell cycle control system.

We are modelling the entrance into M-phase in order to explain the two step activation of CDK1 (the main protein of M-phase entry) observed in experiments which is represented in model by inflection points. This in a novelty caused by CDC6 and we are trying to answer the question: how does CDC6 affect on the other proteins during entry into mitosis?

In a talk I will show analytical and numerical results.

More biological background and description of experiments one can find in [1].

References

[1] M. El Dika, K. Laskowska-Kaszub, M. Koryto, D. Dudka, C. Prigent, J. Tassan, M. Kloc, Z. Polanski, E. Borsuk, J. Kubiak *CDC6 controls dynamics of the first embryonic M-phase entry and progression via CDK1 inhibition*, Developmental Biology, 2014, **396**, 67–80.