

# Mihály Koltai

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## CURRENT POSITION

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Institut Curie, U900 (**Computational Systems Biology of Cancer group**)

*Bioinformatician postdoctoral research associate*

Paris, France

Sept 2016 -

## EDUCATION

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Ruprecht-Karls-Universität Heidelberg

*PhD in Computational Biology*

Grade: 1.0 (highest distinction)

Heidelberg, Germany

May 2016

Eotvos Lorand University

*Diploma (5-year course) at Department of Biological Physics*

Budapest, Hungary

February 2012

## PROJECTS

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**COLOSYS project: systems biology of drug resistance in colon cancer**

Sept 2016 - Present

- Using stochastic logical and ODE models to predict/reproduce drug responses in colorectal cell lines
- Model optimization/machine learning by using drug screen and CRISPRi data as constraints
- Exact calculation method for stochastic logical models implemented as [MATLAB toolbox](#) (manuscript under review)
- EU project coordination: coordinating collaboration and meetings with experimental partners

**PhD project on mathematical modeling of microbial signaling**

March 2012 - May 2016

- Parameter fitting of systems of ordinary differential and algebraic equations for biological signaling networks
- Stochastic simulations of bacterial motility, derivation of analytical solution
- Collaboration with experimental biologists: model fitting by microscopy and flow cytometry data
- Publications: Nature Communications, PNAS

**M.Sc. project: rule-based modeling of signal transduction**

September 2010 - January 2012

- Manual curation and database entry for the [SignaLink](#) database
- Stochastic rule-based modeling of signal transduction

## SKILLS

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- Quantitative and modeling skills: kinetic and biochemical models, ordinary differential equations, stochastic simulations, Boolean modeling, parameter fitting, local and global optimization methods
- Programming languages: R, MATLAB, Python, Mathematica, Bash, Perl, LaTeX
- Languages (scale: A1-A2-B1-B2-C1-C2-Native): Hungarian (N), English (C2), French (C1), German (C1)
- Recent trainings:
  - [Applied Plotting, Charting & Data Representation in Python](#)
  - Machine Learning: [Machine Learning](#) | [Machine Learning with Python](#) | [Neural Networks and Deep Learning](#) | [Improving Deep Neural Networks](#)

## PUBLICATIONS

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See [Google Scholar profile](#). 4 first author articles (3 shared \*). Total citations (06/2020): 193.

- [1] D. Fazekas\*, [M. Koltai\\*](#), D. Türei\* et al, *SignaLink 2 - a signaling pathway resource with multi-layered regulatory networks*, BMC Syst Biol. 2013 Jan 18;7:7
- [2] S. Bubendorfer\*, [M. Koltai\\*](#), F. Rossmann, V. Sourjik, K. M. Thormann, *Secondary bacterial flagellar system improves bacterial spreading by increasing the directional persistence of swimming*, Proc Natl Acad Sci USA. 2014 Aug 5;111(31):11485-90
- [3] A. Banderas\*, [M. Koltai\\*](#), A. Anders, V. Sourjik, *Sensory input attenuation allows predictive sexual response in yeast*, Nat Commun. 2016 Aug 25;7:12590
- [4] [M Koltai](#), V Noel, A Zinovyev, L Calzone, E Barillot, *Exact solving and sensitivity analysis of stochastic continuous time Boolean models*, BMC Bioinformatics (2020): accepted