

### *Personal data*

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- Date and Country of Birth: 07.09.1982 - Hungary
- Nationality: Hungarian

### *Education*

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- 2005 – 2009 PhD, BUTE, field of study: chemistry  
thesis: Mathematical modelling of yeast cell cycle transitions  
supervisor: Professor Béla Novák
- 2000 – 2005 MSc, BUTE, field of study: bioengineering, specialized in food science  
thesis: Mathematical model for fission yeast septation control  
supervisor: Professor Béla Novák

### *Scientific appointments*

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- Jan. 2012 to date assistant professor  
Semmelweis University, Department of Medical Chemistry,  
Molecular Biology and Pathobiochemistry  
lab head: Professor Gábor Bánhegyi
- April 2011 – Dec. 2011 research associate  
Semmelweis University, Department of Medical Chemistry,  
Molecular Biology and Pathobiochemistry  
lab head: Professor József Mandl
- Febr. 2009 – April 2011 research associate  
Oxford University, Department of Biochemistry  
Centre for Integrative Systems Biology  
lab head: Professor Béla Novák

### *Professional work experiences*

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- Current research work is focusing on studying the activation of unfolded protein response (UPR) due to different ER stress-dependent accumulation of misfolded proteins. The primer role of UPR is to reduce the bulk of damages and try to drive back the system to the former or a new homeostatic state by autophagy, while excessive stress results in apoptotic cell death. Our goal is to explore the essential elements of these control network by using both experimental techniques and theoretical methods
- March 2008 to 2011: working on irreversibility of mitotic exit in budding yeast and in mammalian cells, under the guidance of Béla Novák, DSc, professor
- Oct. 2007 – May 2009: mathematical modelling the kinetic behaviour of multiple phosphorylation, under the guidance of Béla Novák, DSc, professor

- Dec. 2006 – Dec. 2008: studying the regulatory connections between Cdk substrates and their Cdk regulated transcription factors, under the guidance of Béla Novák, DSc, professor
- April 2004 – April 2007: working on mathematical model of cell division regulation in fission yeast, under the guidance of Béla Novák, DSc, professor and Béla Györfy, PhD, assistant professor
- 2003/2004: laboratory experiences of wheat nutrient proteins by SDS PAGE

### *Other skills and expertise*

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- Language skills:  
Hungarian (native speaker), English (fluent in speaking and writing), German (basic)
- Teaching experience:  
Biology course at entry exam preparation camp for grammar school students  
Biochemical and microbiological lab practises for undergraduate bioengineer students  
Supervision of graduate students  
Chemical and biochemical lab practises for undergraduate medical/dental students

### *Study trips*

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- June 2010 – July 2010: Cancer Research UK – Clare Hall Laboratories, South Mimms, UK, lab head: Professor Tim Hunt
- Oct. 2007 – Dec. 2008: University of Oxford, Oxford, UK, lab head: Professor Béla Novák

### *Publications*

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- O. Kapuy, Vinod P.K., J. Mandl, G. Bánhegyi (2013), A cellular stress-directed bistable switch controls the crosstalk between autophagy and apoptosis, *Molecular BioSystems*, 2:296-306.
- H. Moriya, A. Chino, O. Kapuy, A. Csikász-Nagy, B. Novák (2011), Overexpression limits of fission yeast cell-cycle regulators in vivo and in silico, *Molecular Systems Biology*, 7:556. Epub 2011 Dec 6.
- M.R. Domingo-Sananes, O. Kapuy, T. Hunt, B. Novák (2011), Switches and latches: a biochemical tug-of-war between the kinases and phosphatases that control mitosis, *Philosophical Transactions of the Royal Society B*, 1584: 3584-3594.
- L. Krasinska, M.R. Domingo-Sananes, O. Kapuy, N. Parisi, M. Rossignol, G. Moorhead, B. Novák, D. Fisher (2011), Protein phosphatase 2A controls the order and dynamics of cell cycle transitions, *Molecular Cell*, 3: 437-450.
- E. He, O. Kapuy, R. Oliviera, F. Uhlmann, J.J. Tyson, B. Novák (2011), System-level feedbacks make the anaphase switch irreversible, *PNAS*, 24: 10016-10021.

- B. Novák, P.K. Vinod, P. Freire, O. Kapuy (2010), Systems-level feedback in cell-cycle control, *Biochemical Society Transactions*, 5: 1242-1246.
- B. Novák, O. Kapuy, M.R. Domingo-Sananes, J.J. Tyson (2010), Regulated protein kinases and phosphatases in cell cycle decisions, *Current Opinion in Cell Biology*, 22: 801-808.  
IF: 13.540
- O. Kapuy, E. He, F. Uhlmann, B. Novák (2009), Mitotic exit in mammalian cells, *Molecular Systems Biology*, 5:324. Epub 2009 Nov 3.
- O. Kapuy, E. He, S. Lopez-Aviles, F. Uhlmann, J.J. Tyson, B. Novák (2009), System level feedbacks control cell cycle progression, *FEBS Letters*, 583: 3992-3998.
- O. Kapuy, D. Barik, M.R. Domingo-Sananes, J.J. Tyson, B. Novák (2009), Bistability by multiple phosphorylation of regulatory proteins, *Progress in Biophysics and Molecular Biology*, 100: 47-56.
- S. Lopez-Aviles, O. Kapuy, B. Novák, F. Uhlmann (2009), Irreversibility of mitotic exit is the consequence of systems level feedback, *Nature*, 459: 592-595.
- A. Csikász-Nagy, O. Kapuy, A. Tóth, C. Pál, L.J. Jensen, F. Uhlmann, J.J. Tyson, B. Novák (2009), Cell cycle regulation by feed-forward loops coupling transcription and phosphorylation, *Molecular Systems Biology*, 5:236. Epub 2009 Jan 20.  
IF: 12.125
- A. Csikász-Nagy, O. Kapuy, B. Györfy, B. Novák, J.J. Tyson (2007), Modelling the Septation Initiation Network (SIN) in fission yeast, *Current Genetics*, 51: 245-255.
- F. Bartha, O. Kapuy, C. Kozmutza, C. Van Alsenoy (2003), Analysis of weakly bound structures: hydrogen bond and the electron density in a water dimer, *Journal of Molecular Structure (Theochem)*, Vol 666-667, 117-122.

### *Presentations*

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- 2010 - *The Regional Meeting of Hungarian Biochemistry Society*, Budapest, Hungary
- 2010 - *OCISB Advisory Board Meeting*, Oxford, UK
- 2008 - *The Regional Meeting of Hungarian Biochemistry Society*, Szeged, Hungary
- 2007 - *15<sup>th</sup> International Congress of the Hungarian Society for Microbiology*, Budapest, Hungary
- 2007 - *4<sup>th</sup> Conference of PhD students*, Budapest, Hungary
- 2005 - *OTDK national scientific conference of Hungary in chemistry*, Hungary

### *Posters*

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- 2012 - *Conference for 75th Anniversary of Albert Szent-Györgyi's Nobel Prize Award*, Szeged, Hungary
- 2010 - *11<sup>th</sup> International Conference on Systems Biology*, Edinburgh, UK
- 2010 - *British Yeast Meeting 2010*, Oxford, UK

- 2009 - *ICC on the Cell Cycle 2009*, Barcelona, Spain
- 2008 - *Annual Retreat of the Biochemistry Department*, Oxford, UK
- 2008 - *Computational Cell Biology*, Hinxton, UK
- 2007 - *FEBSysBIO2007: Advanced Lecture Course on Systems Biology – From Molecules to Life*, Gosau, Austria
- 2006 - *ISSY25 Systems Biology of Yeasts – From Models to Applications*, Hanasaari, Finland
- 2006 - *European Fission Yeast Meeting*, Hinxton, UK
- 2005 - *6<sup>th</sup> European Conference on Mathematical and Theoretical Biology*, Dresden, Germany

### *Honours and Awards*

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- 2011/14 - János Bolyai Research Scholarship of the Hungarian Academy of Sciences
- 2008 - Best Young Speaker, *15<sup>th</sup> International Congress of the Hungarian Society for Microbiology*, Budapest, Hungary
- 2004/5 - Scholarship of the Hungarian Republic
- 2004 - Second prize of TDK scientific student conference of BUTE, Hungary

### *Courses*

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- 2010 - Teaching Course, “Preparation for Teaching in Oxford”, UK
- 2008 - Mathematical Biology. Oxford Systems Biology Doctoral Training Centre, Oxford, UK
- 2007 - 2<sup>nd</sup> FEBS Advanced Lecture Course on Systems Biology, Gosau, Austria

### *Memberships*

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- Hungarian Biochemical Society
- Hungarian Microbiological Society