

Prof. Dr. Thomas Höfer



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Modeling of Biological Systems (B086)
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SCIENTIFIC VITA

1981-1985 Martin Andersen Nexö High School Dresden, with extended curriculum in natural sciences
1988-1993 Humboldt University Berlin, studies of biophysics
1992/93 University of Oxford, visiting student
1993 Diplom-Biophysiker, Humboldt University Berlin
1993-1996 University of Oxford, PhD student at Centre for Mathematical Biology
1996 PhD, mathematical biology, University of Oxford

PROFESSIONAL EXPERIENCE

1996-1997 Postdoc, Max-Planck Institute for Physics of Complex Systems, Dresden
1997-2002 Lecturer in biophysics, Humboldt University Berlin
Extended research visits to Collège de France (2000/01) and New Jersey Medical School (2001/02)
2002-2006 Junior professor in theoretical biophysics, Humboldt University Berlin
since 2006 Group leader, Modeling of Biological Systems, German Cancer Research Center, Heidelberg

SCHOLARSHIPS

1991-1993 Fellow, Studienstiftung des deutschen Volkes
1993-1996 PhD scholarship, Boehringer Ingelheim Fonds
1994-1996 Jowett Senior Scholar, Balliol College Oxford

PROFESSIONAL ACTIVITIES

since 1996 Ad-hoc reviewer and editor for >30 international journals, reviewer for funding agencies (e.g., NSF, BBSRC)
since 1999 Organized 7 international workshops and invited conference sessions, e.g. Hiddensee Workshop on Signal Transduction and Gene Regulation, 2004
2002 - 2007 Member of governing body, Collaborative Research Center Theoretical Biology (SFB 618) Berlin
since 2006 Speaker of scientific advisory board, Stuttgart Center for Systems Biology
since 2007 Member of DECHEMA working group Systems Biology
2007 Scientific expert in EU-Framework Programme 7 Health-Systems Biology
since 2008 Scientific advisory board, BMBF INREMOS

RESEARCH TOPICS

| | |
|------------|--|
| 1991-1993 | Metabolic networks, control theory and stoichiometric analysis |
| 1993-1996 | Biological pattern information (<i>Dictyostelium</i> aggregation, chemotaxis, reaction-diffusion systems) |
| since 1997 | Signal transduction, (calcium signaling, calcineurin/NFAT and Jak/Stat pathways) |
| since 2001 | Gene-regulatory networks in T lymphocytes |
| since 2007 | Molecular machines of DNA repair and replication |

GRANTS

Current:

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|-----------|---|
| 2008-2013 | EU-FP7 network SYBILLA Systems Biology of T-cell Activation in Health and Disease (work package leader mathematical modeling) |
| 2007-2010 | BMBF-FORSYS network ViroQuant (PI of subproject) |
| 2007-2010 | DFG-SFB 740 Von Molekülen zu Modulen (co-PI of subproject) |
| 2004-2010 | BMBF network HepatoSys (PI of 3 subprojects) |
| 2002-2009 | DFG-SFB 618 Theoretical Biology (PI of subproject) |

Previous:

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| 2006-2007 | DFG-GK 1360 Genomics and Systems Biology of Molecular Networks (PI of subproject, interim speaker in 2006) |
| 2006-2007 | DAAD-PPP travel grant for collaboration with New Jersey Med School (PI) |
| 2004-2006 | DFG-SFB 555 Complex Nonlinear Processes (PI of subproject) |
| 2002-2003 | DAAD-PPP travel grant for collaboration with Collège de France (PI) |
| 2000-2006 | DFG-GK 268 Dynamics and Evolution of Cellular Processes (PI of subproject) |

PUBLICATIONS

Scheffold, A., Murphy, K.M., and **Höfer, T.** (2007) Competition for cytokines: Treg cells take all. *Nat. Immunol.* 8, 1285-1287.

Salazar, C. and **Höfer, T.** (2007) Versatile regulation of multisite protein phosphorylation by the order of phosphate processing and protein-protein interactions. *FEBS J.* 274, 1046-1061

Politi, A., Gaspers, L.D., Thomas, A.P., and **Höfer, T.** (2006) Models of IP₃ and Ca²⁺ oscillations: Frequency encoding and identification of underlying feedbacks. *Biophys. J.* 90, 3120-3133.

Höfer, T., Mühlhans, G., Moser, K., Yoshida, T.E., Mei, H., Hebel, K., Hauser, A., Hoyer, B., Luger E., Dörner, T., Manz, R.A., Hiepe, F., and Radbruch A. (2006) Adaptation of humoral memory. *Immunol. Rev.* 211, 295-302.

Salazar, C. and **Höfer, T.** (2003) Allosteric regulation of the transcription factor NFAT1 by multiple phosphorylation sites: a mathematical analysis. *J. Mol. Biol.* 327, 31-45.

Höfer, T., Nathanson, H., Löhning, M., Radbruch, A., and Heinrich, R. (2002) GATA-3 transcriptional imprinting in Th2 lymphocytes: a mathematical model. *Proc. Natl. Acad. Sci. USA* 99, 9364-9368.

Schuster, S., Marhl, M., and **Höfer, T.** (2002) Modelling of simple and complex calcium oscillations: From single-cell responses to intercellular signalling. *Eur. J. Biochem.* 269, 1333-1355.

Höfer, T., Venance, L., and Giaume, C. (2002) Control and plasticity of intercellular calcium waves in astrocytes: a modeling approach. *J. Neurosci.* 22, 4850-4859

Höfer, T. and Maini, P.K. (1996) Turing patterns in fish skin? *Nature* 380, 678.

Höfer, T., Sherratt, J.A., and Maini, P.K. (1995) *Dictyostelium discoideum*: Cellular self-

organization in an excitable biological medium. *Proc. Roy. Soc. Lond. B* 259, 249-257.