



Leopoldina
Nationale Akademie
der Wissenschaften

Workshop

Crossing Boundaries in Science

Modeling Nature and Society – Can We Control the World?

30 June – 2 July 2016

Dorint Hotel am Goethepark | Beethovenplatz 1-2 | 99423 Weimar



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Modeling Nature and Society – Can We Control the World?

**1st workshop “Crossing Boundaries in Science”
of German National Academy of Sciences Leopoldina**

30 June – 2 July 2016 | Weimar

The new Leopoldina workshop format *Crossing Boundaries in Science* is meant to stimulate discussions, without any preconceived views as to their outcome, on trendsetting scientific fields which are particularly dependent on new forms of interdisciplinary cooperation and/or interdisciplinary method transfer. Expected or already emerging social transformations correlated to scientific developments are also meant to be taken into consideration as well as their ethical implications.

The first workshop *Modeling Nature and Society – Can We Control the World?* will take place in Weimar – the hub of the classical period in German cultural history and the residence of Johann Wolfgang von Goethe who also conducted significant research in several scientific disciplines. The workshop will focus on scientific modeling of complex biological and social networks and implications for a targeted and strategical intervention in these systems. Workshop topics will be complex systems such as molecular gene networks, the immune system, epidemiological phenomena, traffic dynamics, financial systems or the man-made climate change. These systems and their complexity are hardly intelligible for the individual citizen. Even scientists who try to create models of complex correlations and connections with different approaches in order to understand them and make them more predictable achieve merely limited understanding for many of these systems so far.

This is reflected for example in the rather insufficient knowledge of widespread multifactorial diseases or vague economical predictions regarding the consequences of different approaches in new macroeconomic policies. Nevertheless, we try to interfere and control these systems repeatedly. *Crossing Boundaries in Science* is meant to approach these challenges and discuss the following questions from an interdisciplinary point of view:

- Which analogue conceptual bases can be used to analyze complex biological and social networks?
- Which and how many variables are relevant or even reasonable for appropriate modeling and understanding complex systems?
- Which advantages do simplified reductionist models provide in contrast to far more comprehensive ones (Big Data)?
- Is science able to deliver reliable instructions for target-oriented strategic intervention in complex cross-linked systems?
- Which principles of self-organization can be utilized for creating resilient fault-tolerant system architectures (e.g. road traffic and financial systems)?

Program

Thursday, 30th June 2016

Goethe-Nationalmuseum | Frauenplan 1 | 99423 Weimar

19:00 – 20:00 Evening Lecture (German language)

Welcoming Speech (Grußworte)

Jörg Hacker ML

German National Academy of Sciences Leopoldina

Vom Modell zur Steuerung –

Sind wir überfordert von der Komplexität der Welt?

Peter Schuster ML

University of Vienna

20:00 – 20:30 Discussion

20:30 Reception

Friday, 1st July 2016

Dorint Hotel am Goethepark | Beethovenplatz 1-2 | 99423 Weimar

09:00 – 9:15 Introductory Remarks

Bärbel Friedrich ML

German National Academy of Sciences Leopoldina

09:15 – 10:45 Session 1

Chair: Jörg Hacker ML

German National Academy of Sciences Leopoldina

Gradient models in developmental biology: a historical perspective

Christiane Nüsslein-Volhard ML

Max Planck Institute for Developmental Biology, Tübingen

Systems biology of infection

Marc Thilo Figge

*Leibniz Institute for Natural Product Research
and Infection Biology, Jena*

Discussion (speakers and chair)

10:45 – 11:00 Coffee Break

11:00 – 12:30	Session 2
	<p>Chair: Angela Friederici ML <i>Max Planck Institute for Human Cognitive and Brain Sciences, Leipzig</i></p> <p>Real neuronal networks: Resilience despite or because of complexity? Wolf Singer ML <i>Max Planck Institute for Brain Research, Frankfurt</i></p> <p>Autonomous intelligent systems in robotics Wolfram Burgard ML <i>Albert-Ludwigs-University Freiburg</i></p> <p>Discussion (speakers and chair)</p>
12:30 – 13:30	Lunch
13:30 – 15:00	Session 3
	<p>Chair: Carmen Buchrieser ML <i>Institut Pasteur, Paris</i></p> <p>Host microbiome interactions in health and disease Eran Elinav <i>Weizmann Institute of Science, Rehovot</i></p> <p>Modeling ecosystem – From plant to animal communities Thorsten Wiegand <i>Helmholtz Centre for Environmental Research, Leipzig</i></p> <p>Discussion (speakers and chair)</p>
15:00 – 15:15	Coffee Break
15:15 – 16:45	Session 4
	<p>Chair: Axel Brakhage ML <i>Leibniz Institute for Natural Product Research and Infection Biology, Jena</i></p> <p>Modeling biodiversity and collective behavior Iain Couzin <i>Max Planck Institute für Ornithology, Constance</i></p> <p>Evolution and control of societies Rudolf Stichweh <i>University of Bonn</i></p> <p>Discussion (speakers and chair)</p>

Saturday, 2nd July 2016

Dorint Hotel am Goethepark | Beethovenplatz 1-2 | 99423 Weimar

9:00 – 10:30	Session 5 Chair: Bärbel Friedrich ML <i>German National Academy of Sciences Leopoldina</i> Modeling viral infections and the development of drug resistance Thomas Lengauer ML <i>Max Planck Institute for Informatics, Saarbrücken</i> Global connectivity and the spread of infectious diseases Dirk Brockmann <i>Humboldt University Berlin</i> Discussion (speakers and chair)
10:30 – 12:00	Session 6 Chair: Thomas Lengauer ML <i>Max Planck Institute for Informatics, Saarbrücken</i> Modelling the economy as a complex interactive system: unintended consequences Alan Kirman <i>CAMS, Ecole des Hautes Etudes en Sciences Sociales Paris and Aix Marseille University</i> The dream to control the world – and why it often fails Dirk Helbing ML <i>ETH Zurich</i> Discussion (speakers and chair)
	Closing Remarks: Thomas Lengauer ML <i>Max Planck Institute for Informatics, Saarbrücken</i>
12:00	Lunch
13:00	Weimar City Tour



Axel Brakhage

Director, Hans-Knöll- Institut, Jena

Affiliation and address:

Leibniz Institute for Natural Product Research and Infection Biology –
Hans Knoell Institute (HKI) | Dept. Microbiology and Molecular Biology
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Beutenbergstrasse 11a | 07745 Jena | Germany

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Academic background and career:

- since 2005** Director, Hans-Knöll-Institut Jena
- since 2005** Head, Department Molecular and Applied Microbiology, HKI Jena
- since 2004** Full Professor and Chair of Microbiology and Molecular Biology
Friedrich Schiller University Jena
- 2001 – 2004** Full Professor and Chair of Microbiology, University of Hanover
- 1998 – 2001** Associate Professor of Microbiology, Darmstadt University of
Technology
- 1992 – 1998** Assistant Professor, University of Munich
- 1990 – 1992** Postdoctoral researcher, The University of Sheffield, UK
- 1989 – 1990** Group leader, Research Department Biotechnology, BASF AG
- 1989** PhD in Microbiology, with distinction (summa cum laude),
University of Muenster and Institut de Biologie Physico-Chimique
(IBPC) Paris, France

Further positions, memberships and distinctions (selection):

- 2014** Main Research Award of the German Society for Hygiene and
Microbiology (DGHM)
- since 2013** Speaker DFG CRC/Transregio Pathogenic fungi and their human
host – Networks of interaction (FungiNet)
- since 2012** Speaker of the consortium “InfectControl 2020 –
New Anti-infection Strategies
- 2009 – 2011** President Association of General and Applied Microbiology (VAAM)
- since 2008** Elected Member of the University Council of the Friedrich Schiller
University Jena
- since 2008** Elected Member of the German National Academy of Sciences
Leopoldina
- since 2007** Speaker DFG Excellence Graduate School Jena School for Microbial
Communication

Areas of expertise:

Infection biology of the human-pathogenic fungus *Aspergillus fumigatus*; host
response to fungal pathogens; molecular/synthetic biotechnology of fungal
natural products

Dirk Brockmann

Professor, Humboldt-Universität zu Berlin & Robert-Koch-Institute, Berlin

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Academic background and career:

- since 2013** Professor, Institute for Theoretical Biology, Humboldt-Universität zu Berlin
- since 2013** Head of project group, Robert Koch-Institute, Berlin
- 2008 – 2013** Associate Professor, Dept. of Engineering Sciences and Applied Mathematics, Northwestern University, Evanston USA
- 2008 – 2013** Associate Professor, Northwestern Institute on Complex Systems, Northwestern University, Evanston USA
- 2003 – 2008** Postdoctoral Researcher, Max-Planck-Institute for Dynamics and Self-Organization
- 2003** PhD (theoretical physics) Georg-August-University, Göttingen

Areas of expertise:

Physics of complex systems, network sciences, computational social science, computational epidemiology



Carmen Buchrieser

Director of the unit Biology of Intracellular Bacteria/Institut Pasteur, Paris

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Academic background and career:

- since 2014** Professor at the Institut Pasteur, Paris, France
- since 2008** Director of the unit Biology of Intracellular Bacteria/Institut Pasteur, Paris
- 2006 – 2013** Associate Professor, Institut Pasteur, Paris, France
- 2000 – 2005** Assistant Professor, Institut Pasteur, Paris, France
- 1998 – 2000** Research assistant, Institut Pasteur, Paris, France
- 1995 – 1998** Postdoctoral scientist. Institut Pasteur, Paris, France
- 1992 – 1995** Research Associate Food Research Institute, University Madison, USA
- 1991 – 1992** Postdoctoral scientist, Institut Pasteur, Paris, France
- 1987 – 1990** Research assistant at the Hygiene Institute of the University of Graz, Austria
- 1986** PhD (Biology) University of Salzburg, Austria
- 1983** Mag. rer.nat (Biology) Graz University, Austria

Memberships and distinctions (selection):

- 2015** Elected member of the European Academy of Microbiology
- 2013** Elected member of the American Academy of Microbiology, USA
- 2013** EMBO member
- 2013** Elected member of the German National Academy of Sciences Leopoldina
- 2012** Humboldt Research Award, Humboldt Foundation
- 2009** Pasteur Vallery-Radot Prize, Academy of Science/National Library, France
- 2008** René Descartes Prize for collaborative research, Brussels (coordinated by P. Cossart)
- 2005** Charles-Louis de Saulses de Freycinet Prize, Academy of Science, France

Areas of expertise:

Infectious diseases, microbiology, molecular biology, cellular biology, genomics

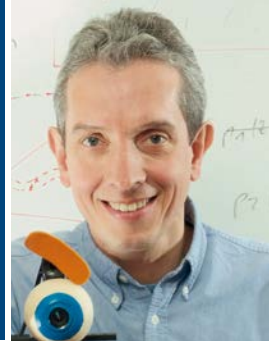
Wolfram Burgard

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Academic background and career:

- 2002** Visiting Professor at the Carnegie Mellon University, Pittsburgh, USA
- since 1999** Professor for Autonomous Intelligent Systems at the University of Freiburg
- 1991-1999** Post-Doctoral Research Assistant at the University of Bonn
- 1991** PhD (Computer Science), University of Bonn

Further positions and memberships (selection):

- since 2015** Fellow of the Institute of Electrical and Electronics Engineers (IEEE)
- since 2014** Member of the German National Academy of Sciences Leopoldina
- since 2012** Coordinator of the Cluster of Excellence BrainLinks-BrainTools
- since 2012** Member of the Heidelberger Akademie der Wissenschaften
- 2010 – 2015** Coordinator of the Research Training Group Embedded Microsystems
- 2010** ERC Advanced Grant
- 2009** Gottfried Wilhelm Leibniz Prize
- since 2009** Fellow of the Association for the Advancement of Artificial Intelligence (AAAI)
- since 2008** Fellow of the European Coordinating Committee for Artificial Intelligence (ECCAI)

Areas of expertise:

Robotics, artificial intelligence



Iain D. Couzin

Director, Max Planck Institute for Ornithology, Department of Collective Behaviour & Chair of Biodiversity and Collective Behaviour, University of Konstanz

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Academic background and career:

- since 2015** Director, Max Planck Institute for Ornithology, Department of Collective Behaviour, University of Konstanz
Chair of Biodiversity and Collective Behaviour, University of Konstanz
- 2013 – 2015** Full Professor, Department of Ecology and Evolutionary Biology, Princeton University, USA
- 2013 – 2014** Visiting Professor, Department of Neurobiology, Weizmann Institute of Science, Israel
- 2007 – 2013** Assistant Professor, Department of Ecology and Evolutionary Biology, Princeton University, USA
- 2007 – 2015** Affiliated Faculty in Princeton Environmental Institute, Program in Applied and Computational Mathematics, Quantitative and Computational Biology, Princeton Institute for Computational Science and Engineering, USA
- 2005 – 2007** Royal Society University Research Fellow, Dept. of Zoology, University of Oxford, UK
- 2003 – 2006** Junior Research Fellow in the Sciences, Balliol College, University of Oxford, UK
- 2002 – 2005** Postdoctoral Fellow, Dept. of Zoology and Center for Mathematical Biology, University of Oxford, UK
- 2002 – 2005** Pew Biocomplexity Postdoctoral Fellow, Department of Ecology and Evolutionary Biology, Princeton University, USA
- 2000 – 2002** Postdoctoral Researcher, Department of Biology, University of Leeds, UK
- 1996 – 1999** PhD (Biology), University of Bath, UK

Selected honors:

- 2013** The Scientific Medal of the Zoological Society of London
- 2012** National Geographic's Emerging Explorer Award
- 2010** Popular Science Magazine's 'Brilliant 10' Award
- 2008** Searle Scholar Award

Areas of expertise:

Collective animal behavior, social evolution, computational biology

Eran Elinav

Director, Weizmann Institute research center
for the study of the microbiome

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Academic background and career:

- since 2015** Director, Weizmann Institute research center for the study of the microbiome
- since 2012** Primary investigator, Weizmann Institute of Science, Israel
- 2009 – 2012** Post Doctorate fellow, Yale University School of Medicine, USA
- 2006 – 2009** Senior physician scientist, Gastroenterology Institute, Tel Aviv Medical Center, Israel
- 2006 – 2009** PhD, Immunology department, Weizmann Institute of Science, Israel
- 2001 – 2005** Resident, Internal Medicine, Hadassah Hebrew University Medical Center, Israel
- 1993 – 2000** Medical School, Hebrew University, Jerusalem, Israel

Areas of expertise:

Microbiome, immunology, gastrointestinal disease, metabolism



Marc Thilo Figge

Professor for Applied Systems Biology, Friedrich Schiller University Jena

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Academic background and career:

- since 2011** Professor (W2) for Applied Systems Biology, Friedrich Schiller University Jena
- since 2011** Head of research group Applied Systems Biology, HKI Jena
- 2005 – 2010** Junior Fellow in Theoretical Immunology, Frankfurt Institute for Advanced Studies (FIAS), Goethe University Frankfurt
- 2000-2005** Scientific co-worker, Computer Physics, University Groningen, Netherlands, Prof. Dr. H. De Raedt
- 2000** PhD (Physics), University Groningen, Netherlands, Prof. Dr. J. Knoester
- 1995** Diploma (Physics), University Dortmund, Prof. Dr C. Gros

Further positions and memberships (selection):

- since 2015** Project coordinator of the project *Whole Blood Imaging* (BLOODi) at the Leibniz ScienceCampus *InfectoOptics*
- 2012 – 2015** Member of the Steering Committee of the DFG-funded core facility network *Joint Intravital Microscopy and Imaging platform* (JIMI)
- since 2011** Adjunct Fellow at the Frankfurt Institute for Advanced Studies (FIAS)

Areas of expertise:

Systems biology, mathematical modeling, automated analysis of image data

Bärbel Friedrich

Former Vice President of the German National Academy of Sciences Leopoldina
Director of Alfried Krupp Institute of Advanced Studies Greifswald

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Academic background and career (selection):

- since 2014** Member of the advisory council of the University of Vienna, Austria
- since 2008** Scientific director of the Alfried Krupp Institute of Advanced Studies in Greifswald
- 1994 – 2013** Full Professor of Microbiology at the Humboldt-University, Berlin
- 1985 – 1994** Full Professor of Microbiology at the Free University Berlin
- 1977 – 1984** Research Associate at the Institute of Microbiology, Göttingen
- 1975 – 1976** Postdoctoral fellow at the Institute of Technology (MIT), Cambridge, USA
- 1973** Doctorate in Microbiology, University of Göttingen

Further positions and memberships (selection):

- 2005 – 2015** Vice President of the German National Academy of Sciences Leopoldina
- 2003 – 2005** Member of the German Federal Parliament Enquete Committee "Ethical and legal aspects of modern medicine"
- 1997 – 2003** Vice President of the German Research Foundation (DFG)
- since 1994** Member of the German Academy of Sciences Leopoldina
- since 1994** Member of the Berlin-Brandenburg Academy of Sciences and Humanities

Areas of expertise:

Synthesis, structure and function of hydrogen-converting enzymes; functional genome research of lithoautotrophic bacterial metabolism



Angela D. Friederici

Director, Max Planck Institute for Human Cognitive and Brain Sciences, Leipzig; Vice-President, Max Planck Society, Munich

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Academic background and career (selection):

- since 2014** Vice-President, Max Planck Society, Munich
- since 2004** Honorary Professor, Neurology Department, Charité, Berlin
- since 1997** Honorary Professor, Neuropsychology of Language, University of Potsdam
- since 1995** Honorary Professor for Cognitive Neuropsychology, University of Leipzig
- since 1994** Director, Max Planck Institute for Human Cognitive and Brain Sciences, Leipzig
- 1991 – 1994** Full Professor (C4) for Psychology, Free University Berlin
- 1989 – 1991** Full Professor (C3) for Cognitive Psychology, Free University Berlin
- 1979 – 1989** Research fellow at the Max Planck Institute for Psycholinguistics, Nijmegen, Université René Descartes, Paris University of California San Diego
- 1978 – 1979** Post Doc, Department of Psychology, Massachusetts Institute of Technology (MIT), Cambridge, USA and Boston University School of Medicine, Boston, USA
- 1980** Dipl.-Psych., University of Bonn
- 1976** Dr. phil. Linguistics, University of Bonn

Further positions, memberships and distinctions (selection):

- 2006 – 2009** Chair of Scientific Council of the Max Planck Society
- 2005 – 2007** Vice President of the Berlin-Brandenburg Academy of Sciences
- 2011** ERC Advanced Grant, European Research Council
- 2010** Scholarship at Center for Advanced Study at Stanford University, Stanford, USA
- 2000** Member of the German National Academy of Sciences Leopoldina
- 1997** Gottfried Wilhelm Leibniz Prize of the German Research Foundation
- 1987** Heisenberg Award of the German Research Foundation

Areas of expertise:

Neurocognition of language

Jörg Hacker

President of the German National Academy of Sciences Leopoldina

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Academic background and career:

- since 2010** President German National Academy of Sciences Leopoldina, Halle (Saale)
- 2008 – 2010** President Robert Koch-Institute, Berlin
- 2006** Visiting Professor at the Sackler Institute for Advanced Studies, Tel Aviv University, Israel
- 2000, 2005** Research visits at the Institute Pasteur, Paris, France
- 1988 – 2008** Professor for Microbiology, since 1993 Head of the Institute for Molecular Infection Biology, University of Würzburg
- 1980 – 1988** Research Assistant at the Department of Microbiology, Würzburg
- 1979** PhD (Biology), Martin-Luther-University of Halle (Saale)

Further positions and memberships (selection):

- since 2013** Member Scientific Advisory Board of the UN Secretary-General
- since 2010** Member of the Innovation Dialog of the Chancellor of Germany
- since 2010** Member of the Committee of the Excellence Initiative
- 2003-2009** Vice President German Research Foundation (DFG)

Areas of expertise:

Science policy, molecular biology



Dirk Helbing

Professor of Computational Social Science at the Department of Humanities, Social and Political Sciences and affiliate of the Computer Science Department at ETH Zurich

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Academic background and career:

- since 2016** Affiliate Professor, Faculty of Technology, Policy and Management at TU Delft, Netherlands
- since 2007** Professor of Computational Social Science at the Department of Humanities, Social and Political Sciences and affiliate of the Computer Science Department at ETH Zurich, Switzerland
- 2000 – 2007** Full Professor and Managing Director, Institute of Transport & Economics Dresden University of Technology
- 1997 – 2010** Visiting Scientist at Weizmann Institute, Eötvös University, Tel Aviv University, INREST, Harvard University, University of Oxford
- 1997** Assistant Professor, University of Stuttgart
- 1996** Habilitation, Theoretical Physics (Traffic Modeling), University of Stuttgart
- 1992** PhD (Physics, Collective Social Behavior), University of Stuttgart

Further positions, memberships and honors (selection):

- Coordination of the FuturICT Initiative
- 2014** Honorary PhD from Delft University of Technology, Netherlands
- since 2008** Member of the German National Academy of Sciences Leopoldina

Areas of expertise:

Pedestrian crowds, vehicle traffic, and agent-based models of social systems

Alan Kirman

Professor Emeritus Aix Marseille University, Director of Studies
at the Ecole des Hautes Etudes en Sciences Sociales

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Academic background and career:

- 1995 – 2008** Professor at Université d'Aix Marseille and Directeur d'Etudes à l'Ecole des Hautes Etudes en Sciences Sociales, France
- 1987 – 1995** Professor of Economics at the European University Institute, Florence, Head of Economics Department, Italy
- 1977 – 1986** Professor at Université d'Aix Marseille and Directeur d'Etudes à l'Ecole des Hautes Etudes en Sciences Sociales, France
- 1976 – 1984** Professor at Ecole Nationale de Statistique et Administration Economique, Paris, France
- 1976 – 1979** Professor of Economics à l'Université d'Aix-Marseille II, France
- 1974 – 1976** Professor of Economics, Warwick University, UK
- 1973 – 1974** Reader in Economics Warwick University, UK
- 1971** Ph. D., Princeton University, USA
- 1969 – 1970** Teaching Fellow, Princeton University, USA

Further positions, memberships and distinctions (selection):

- since 2012** Member of the Executive Board of OTMed a multidisciplinary Labex on global change and natural hazards in the Mediterranean basin
Editor of the Journal of Economic Behavior and Organisation
Associate editor of the Journal of Mathematical Economics and of the Journal of Economic Dynamics and Control
- 2004** Fellow of the European Economic Association (EEA)
- 1995** Humboldt Research Award
- 1995** Membre de l'Institut Universitaire de France
- 1990** Elected Fellow of the Econometric Society
- 1981** Founding director of the GREQAM UMR CNRS

Areas of expertise:

Game theory, economics of interaction, behavioural economics, history of economic thought, complexity theory



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Thomas Lengauer

Director at Max Planck Institute for Informatics

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Max Planck Institute for Informatics
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Academic background and career:

- since 2003** Adjunct Professor at University of Bonn
- since 2001** Adjunct Professor at Saarland University, Saarbrücken
- since 2001** Director at Max Planck Institute for Informatics, Saarbrücken
- 1992 – 2001** Full professor of Computer Science at University of Bonn
- 1992 – 2001** Director at the Institute for Algorithms and Scientific Computing, GMD – German Research Center for Information technology, Sankt Augustin
- 1984 – 1992** Full professor of Computer Science, University of Paderborn
- 1981 – 1984** Research Assistant, Department of Computer Science, Saarland University, Saarbrücken
- 1979 – 1981** Member of Technical Staff, Bell Laboratories, Murray Hill, NJ, USA
- 1979** Ph.D. (Computer Science), Stanford University, USA
- 1976** Dr.rer. nat. (Mathematics), Free University of Berlin

Further positions and memberships (selection):

- since 2015** Member of the Presidential Board of Leopoldina
- 2011 – 2014** Vice President of the International Society for Computational Biology
- 2007** Member of German Academy of Science and Technology acadtech
- 2003** Member of German National Academy of Sciences Leopoldina
- 1994 – 1995** Vice President of the German Society for Informatics (GI)

Areas of expertise:

Computational biology

Christiane Nüsslein-Volhard

Director Emeritus, Max-Planck-Institute for Developmental Biology

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Entwicklungsbiologie Tübingen

Academic background and career:

- since 2014** Head of emeritus research group, MPI for Developmental Biology, Tübingen
- 1985 – 2014** Director, Department of Genetics, MPI for Developmental Biology, Tübingen
- 1981 – 1985** Research Group leader, Friedrich-Miescher-Laboratory of the Max-Planck-Society, Tübingen
- 1978 – 1980** Research Group leader, European Molecular Biology Laboratory (EMBL), Heidelberg
- 1975 – 1977** Postdoctoral Fellow, Biozentrum Basel and University of Freiburg
- 1973** PhD, Genetics, Max-Planck-Institut für Virusforschung, Tübingen
- 1969** Diplom, Biochemistry, University of Tübingen

Memberships (selection):

- 1991** German National Academy of Sciences Leopoldina
- 1990** National Academy of Sciences, Washington, USA
- 1990** Royal Society, London, UK

Professional activities (selection):

- 2013 – 2017** Chancellor of the Order Pour le Mérite
- 2007 – 2012** Member Scientific Council of the European Research Council, ERC
- 2004 – 2009** Secretary General EMBO
- 2001 – 2007** Member German Ethics Council

Honors (selection):

- 1986** Gottfried Wilhelm Leibniz Prize, German Research Foundation
- 1995** Nobelprice Medicine or Physiology
Dr h.c. (selection) Yale, Princeton, Harvard, Rockefeller, Oxford, München

Areas of expertise:

Embryogenesis, developmental genetics, pattern formation, drosophila, zebrafish



Peter Schuster

Professor emeritus

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Academic background and career:

- since 2009** Professor emeritus at the University of Vienna, Austria
- 2006 – 2009** President of the Austrian Academy of Sciences
- 2000 – 2003** Vice-President of the Austrian Academy of Sciences
- 1992 – 1995** Founding director of the Institute of Molecular Biotechnology, Jena
- since 1991** External Professor at the Santa Fe Institute, Santa Fe, USA
- 1973 – 1992/** Head of Institute for Theoretical Chemistry, University of Vienna,
1996 – 2010 Austria
- 1973 – 2009** Full Professor of Theoretical Chemistry at the University of Vienna, Austria
- 1968 – 1969** Postdoc at the Max Planck Institute for Biophysical Chemistry, Göttingen
- 1967** PhD (Chemistry) sub auspiciis praesidentis, University of Vienna, Austria

Memberships (selection):

- since 2014** Member of the European Molecular Biology Organization (EBMO)
- since 2009** Foreign Associate of the National Academy of Sciences USA
- since 2009** Member of the Academia Europaea, London, UK
- since 1993** Member of German National Academy of Sciences Leopoldina
- since 1984** Member of the Austrian Academy of Sciences

Areas of expertise:

Theoretical chemistry, mathematical biology, RNA structure and function

Wolf Singer

Director em. (MPI), Senior Fellow (ESI)

Affiliation and address:

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for Neuroscience in Cooperation with Max Planck Society
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Academic background and career (selection):

- since 2011** Emeritus Status at the Max Planck Institute for Brain Research and Senior Fellow at the Ernst Strüngmann Institute (ESI) for Neuroscience in Cooperation with Max Planck Society
- 2008 – 2011** Founding Director of the Ernst Strüngmann Institute (ESI) for Neuroscience in Cooperation with Max Planck Society, Frankfurt
- since 2006** Founding Director of the Ernst Strüngmann Forum (former Dahlem Conference), Frankfurt
- since 2004** Founding Co-Director of the Brain Imaging Center (BIC), Frankfurt
- since 2004** Founding Director of the Frankfurt Institute for Advanced Studies (FIAS), Frankfurt
- 2003** Guest Professorship at the Collège de France, Paris, France
- 1981 – 2011** Director at the Max Planck Institute for Brain Research, Frankfurt
- 1975** Habilitation for Physiology at the Medical Faculty, Technical University, Munich
- 1968** State Examination in Medicine and Defense of MD Thesis at LMU Munich

Honors (selection):

- 2016** Karl von Frisch-Lecture, Austrian Academy, Wien
- 1997** NIH Presidential Lecture, Washington, USA
- 1989** Lambert Lecture, American Society for Neuroscience, Phoenix, USA

Awards (selection):

- 2013** Cothenius-Medaille, Leopoldina
- 2011** Order of Merit (First Class) of the Federal Republic of Germany
- 2008** Dr. honoris causa Rutgers University, NJ, USA
- 2000** Körber Prize for the European Sciences
- 1994** Zülch Prize
- 1991** Prize of the IPSEN Foundation (shared with Thorsten Wiesel and Ursula Bellugi)

Areas of expertise:

Cognitive neuroscience



Rudolf Stichweh

Director of the “Forum International Science”, University of Bonn

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Academic background and scientific career:

- 2017** Visiting Professor University of Chicago, Department of Sociology, USA
- since 2012** Dahrendorf Professor for theory of modern society and Director of the “Forum International Science”, Head of Department Democracy Research, University of Bonn
- 2011** Visiting Professor at Princeton University, N.J., USA
- 2003 – 2012** Professor for sociology, University of Lucerne, Switzerland
- 2001 – 2002** Visiting Professor at the University of Vienna, Austria
- 1999 – 2001** Dean of the Faculty of Sociology, Bielefeld University
- 1994 – 2003** Professor for sociology, Bielefeld University
- 1989 – 1994** Research associate at the Max Planck Institute for European Legal History, Frankfurt (Main)
- 1987** Research Fellowship, Maison des Sciences de l'Homme, Paris, France
- 1985 – 1989** Research Fellowship Max Planck Institute for the Study of Societies, Cologne
- 1984 – 1986** Research Fellowship Fritz Thyssen Foundation, Cologne
- 1983** PhD (Sociology), Bielefeld University

Further positions and memberships (selection):

- since 2012** Permanent Visiting Professor, University of Lucerne, Switzerland

Areas of expertise:

Sociology of science and universities

Thorsten Wiegand

Senior Scientist

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Academic background and career (selection):

- 2009 – 2015** ERC advanced grant SPATIODIVERSITY
- 1999 – 2010** Lecturer, Graduate School of Faculty of Agronomy, University Buenos Aires
- 1999** Habilitation in Theoretical Ecology, LMU Munich
- since 1997** Staff Scientist at the Department of Ecological Modelling, UFZ Leipzig
- 1992 – 1997** Postdoc at the Department of Ecological Modelling, UFZ Leipzig
- 1992** PhD (Physics), University of Marburg
- 1992** Diploma (Physics), University of Marburg

Further positions and memberships (selection):

- Member of the German Centre for Integrative Biodiversity Research (iDiv) Halle-Jena-Leipzig
- Subject editor of Ecography and Oikos
- Member of the editorial board of Landscape Ecology
- Faculty Member of F1000

Areas of expertise:

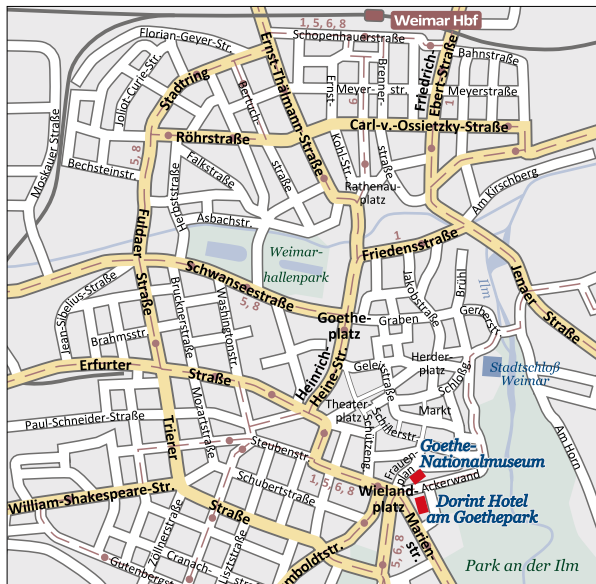
Ecological modeling, spatial pattern analysis, spatially-explicit and individual-based simulation models, optimization



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Venue workshop



30 June 2016 Evening Lecture

Goethe-Nationalmuseum | Frauenplan 1 | 99423 Weimar

1-2 July 2016 Workshop

Dorint Hotel am Goethepark | Beethovenplatz 1-2 | 99423 Weimar

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