

## Biographical Sketch

NAME Dr. FORST, Christian	POSITION TITLE Technical Staff Member		
Education			
INSTITUTION AND LOCATION	DEGREE	YEAR(S)	FIELD OF STUDY
University of Vienna, Vienna, Austria	B.S.	1989	Astronomy
University of Vienna, Vienna, Austria	M.S.	1990	Chemistry
University of Vienna, Vienna, Austria	Ph.D.	1993	Theoretical Chemistry

### Professional Appointments

- Nov. 1999-present: Staff Member: Computational Biology. Bioscience Division, Los Alamos National Laboratory, Los Alamos, NM
- Nov. 1997-Oct. 1999: Postdoctoral Research Associate: Bioinformatics. Theoretical Biophysics Group, Beckman Institute / UIUC, Urbana, IL
- Oct. 1997: Visiting Scientist: Theory of Molecular Evolution. Institute of Theoretical Biology, Humboldt University, Berlin, Germany
- April 1994-Sept. 1997: Group Leader: Theory of Evolutionary Dynamics. Department of Molecular Evolutionary Biology, Institute of Molecular Biotechnology, Jena, Germany
- Sept. 1993-Sept. 1997: Scientist: Theory of Evolutionary Dynamics. Department of Molecular Evolutionary Biology, Institute of Molecular Biotechnology, Jena, Germany
- Aug. 1993: System Administrator: Installation of a UNIX computer network. Institute of Molecular Biotechnology, Jena, Germany
- April 1993-Aug. 1993: Postdoctoral Fellow: Nonlinear Systems. Institute of Operations Research, University of Technology, Vienna, Austria

### Professional Service

- Ad hoc Reviewer: *Adv. Complex Systems, American Naturalist, Bioinformatics, BioMed Central Bioinformatics, BioSilico, Cell Biochemistry and Biophysics, Gene, ISMB Conferences, J. Theor. Biol., Molecular Biology and Evolution, Molecular Systems Biology, Pacific Symposium on Biocomputing 2003, Proteomics, The New Scientist, Virology Research*
- Editorial Board: International Journal of *Cancer Genomics and Proteomics*
- Organizing Committees: 7<sup>th</sup> International Conference on Anticancer Research
- Review Panels: Life Science Informatics Program of IUCRP, Univ. of California, 2000-present  
US Department of Energy, 2002  
National Science Foundation, 2004  
European Systems Biology Program, 2006

### Honors and Awards

- Dissertation with Magna Cum Laude: Univ. of Vienna, Austria, 1993
- Distinguished Performance Scholarship: Univ. of Vienna, 1990
- Elected student participant of 1989 Nobel Laureate Conference, Lindau/Bodensee, Germany

### Professional Memberships

- American Association for the Advancement of Science  
International Society of Computational Biology

### Invited Publications

- Forst C.V.: Host-Pathogen Systems Biology.** *Drug Discovery Today*, Vol. 11(5/6), 220-227, 2006.
- Forst C.V.: Modeling Systems Biology for Research and Target Prioritization.** *Pharmacogenomics*, Vol. 3(6), 739-743, 2002.
- Forst C.V.: Using a Systems Biological Approach to Develop Novel Therapeutics.** *Pharmacogenomics*, Vol. 3(1), 12-14, 2002.

### Journal Publications

- Forst C.V., Cabusora L., Mawuenyega K.G., and Chen X.: Biological Systems Analysis by a Network Proteomics Approach and Subcellular Protein Profiling.** *Adv. Complex Sys.*, 2006 (in press).

- Radde N., Gebert J., **Forst C.V.:** **Systematic Component Selection for Gene-Network Refinement.** *Bioinformatics*, 2006 (in press).
- Forst C.V.**, Flamm C., Hofacker I.L., Stadler P.F.: **Algebraic Comparison of Metabolic Networks, Phylogenetic Inference, and Metabolic Innovation.** *BMC Bioinformatics*, 2006, **Vol. 7**, p.67, 2006.
- Cabusora L., Sutton E., Fulmer A., **Forst C.V.:** **Differential Network Expression During Drug and Stress Response.** *Bioinformatics*, **Vol. 21**, pp. 2898-2905, 2005.
- Mawuenyega K.G., **Forst C.V.**, Dobos K.M., Belisle J.T., Chen J., Bradbury M.E., Bradbury A., Chen X.: ***Mycobacterium tuberculosis* network analysis by global subcellular protein profiling.** *Mol. Biol. Cell*, **Vol. 16**, pp. 396-404, 2005.
- Forst C.V.:** **Network Genomics – A Novel Approach for the Analysis of Biological Systems in the Post-Genomic Era.** *Mol. Biol. Rep.*, **Vol. 29**, pp. 265-280, 2002.
- Göbel, and **Forst C.V.:** **RNA-Pathfinder - How to Search for Optimal RNA Molecules.** *Z. Phys. Chem.*, **Vol. 216**, 175-192, 2002.
- Xie G., **Forst. C.**, Bonner C., and R.A. Jensen: **Significance of Two Distinct Types of Tryptophan Synthase Beta Chain in Bacteria, Archaea and Higher Plants.** *Genome Biology*, **Vol. 3**(1), 2002.
- Forst C.V.**, and Schulten K.: **Phylogenetic Analysis of Metabolic Pathways.** *J. Mol. Evol.*, **Vol. 52**, pp. 471-489, 2001.
- Reidys C., **Forst C.V.**, and Schuster P.: **Replication and Mutation on Neutral Networks.** *Bull. Math. Biol.*, **Vol. 63**, pp. 57-94, 2001. Santa Fe Institute Preprint: 00-11-061.
- Forst C.V.:** **Molecular Evolution of Catalysis.** *J. Theor. Biol.*, **Vol. 205**, pp. 409-431, 2000.
- Forst C.V.**, and Schulten K.: **Evolution of Metabolisms: A new Method for the Comparison of Metabolic Pathways using Genomics Information.** *J. Comput. Biol.*, **Vol. 64**, pp. 343-360, 1999.
- Forst C.V.** **Molecular Evolution: A Theory approaches Experiments.** *J. Biotechnology*, **Vol. 64**, pp. 101-118, 1998.
- Forst,C.V.:** **Chaotic Interactions of Self-Replicating RNA.** *Computers Chem.*, **Vol. 20**, pp. 69-83, 1996.
- Feichtinger G., **Forst C.V.**, and Piccardi C.: **A nonlinear dynamical Model for the Dynastic Cycle.** *Chaos, Solitons & Fractals*, **7** (2), pp. 257-271, 1996.
- Stadler P.F., Schnabl W., **Forst C.V.** and Schuster P.: **Small Autocatalytic Reaction Networks II. Replication, Mutation and Catalysis.** *Bull. Math. Biol.*, **57**(1), pp. 21-61, 1995.
- Schnabl W., Stadler P.F., **Forst C.**, and Schuster P.: **Full Characterization of a Strange Attractor: Chaotic Dynamics in Low Dimensional Replicator Systems.** *Physica D*, **48**, pp. 65-90, 1991.

### Refereed Conference Papers

- Huang C.-F., Tsee M., and **Forst C.V.:** **Pathway Optimization of Biological Drug Response Networks.** In: *IEEE CIBCB 2005 Proceedings*, La Jolla, CA, 14-15 Nov. 2005.
- Forst C.V.** and Schulten K.: **Evolution of Metabolisms: A new Method for the Comparison of Metabolic Pathways,** *Proceedings of the Third Annual International Conference on Computational Molecular Biology ( RECOMB'99)*, Lyon, France. Sorin Istrail, Pavel Pevzner, Michael Waterman, eds., pp. 174-180, ACM Press, New York, 1999.
- Forst C.V.:** **Complex Dynamics of Molecular Evolutionary Processes.** In: *Proceedings of the International Conference on Complex Systems* (Y. Bar-Yam ed.), Nashua, NH, 21-26 Sept. 1997.
- Forst C.V.:** **Molecular Evolution of Catalysis.** In P. Husbands and I. Harvey (eds.), *Proceedings of the Fourth European Conference on Artificial Life, ECAL97.* MIT Press/Bradford Books, 1997.
- Göbel U., **Forst C.V.**, and Schuster P.: **Structural Constraints and Neutrality in RNA.** In R. Hofestädt, T. Lengauer, M. Löffler, D. Schomburg (eds.), LNCS/LNAI Proceedings of GCB96, *Lecture Notes in Computer Science. Vol. 1278*, Springer Verlag, Berlin, Heidelberg, New York, 1997.
- Forst,C.V.**, and Reidys,C.: **On Evolutionary Dynamics.** In C.G. Langton and K. Shimohara (eds.): *Artificial Life V, Complex Adaptive Systems*, pp. 453-461, Cambridge, Massachusetts, 1997.
- Forst,C.V.**, and Reidys,C.: **Evolution of Interaction: Neutrality and Adaption in Reaction Networks.** *3rd European Conference on Mathematics Applied to Biology and Medicine (proceedings)*, October 1996.
- Forst,C.V.**, Reidys, C. and Weber,J.: **Evolutionary Dynamics and Optimization.** In: F.Moran, A.Moreno, J.J.Merelo, P.Chacon (eds.): *Lecture Notes in Artificial Intelligence*, vol. 929: *Advances in Artificial Life.* Springer, Berlin, Heidelberg, New York, 1995.

### Refereed Book Chapters

- Forst C.V.:** **Optimisation of molecular function.** In: *Microsystem Technology - A Powerful Tool for Biomolecular Studies* (Saluz, H.-P., Köhler, M., Mejevaia, T. eds.), *Biomethods*, pp. 529-553. Birkhäuser, 1999.
- Forst C.V.:** **Molecular Evolutionary Dynamics.** In J. Parisi, S.C. Müller, and W. Zimmermann (eds.), *A Perspective Look at Nonlinear Media in Physics, Chemistry, and Biology, Lecture Notes in Physics.* Springer Verlag, 1997.