Curriculum vitae - Jan Lipfert, Ph.D.

Address:	Jan Lipfert	Email:	j.lipfert@tudelft.nl
	Lorentzweg 1	Date of birth:	October 8, 1977
	2628 CJ Delft, The Netherlands	Place of birth:	Frankfurt am Main, Germany
Phone:	+31-152783552	Citizenship:	German

Education

10/2007	**Ph.D. in Physics**, *Stanford University, CA, USA* Specialization in theoretical and experimental biophysics Adviser: Sebastian Doniach Co-advisers: Daniel Herschlag and Vijay S. Pande
5/2002	**Master of Science**, *University of Illinois at Urbana-Champaign, IL, USA* Graduate coursework in mathematical, biological and condensed matter physics Minor: economics
6/2001	**M. Phil.** ("Filosofie Magister"), *Uppsala Universitet, Sweden* Major: physics, minor: mathematics; thesis in computational quantum chemistry Advisers: Leif A. Erikson, Janos Hajdu
7/2000	**Pre-diploma in Economics** ("Vordiplom"), *Ruprecht-Karls-Universität Heidelberg, Germany*
6/2000	**Pre-diploma in Physics** ("Vordiplom"), *Ruprecht-Karls-Universität Heidelberg, Germany*
6/1997	**High School Diploma** ("Abitur"), *Friedrichsgymnasium Kassel, Germany*

Employment and Internships

since 10/2007	**Post doc**, *Delft University of Technology, The Netherlands* PI: Nynke Dekker, Molecular Biophysics Group • Single molecule magnetic and optical tweezer experiments • Topoisomerase supercoil removal and drug interactions
9/2002-10/2007	**Research Assistant**, *Stanford University, CA, USA* • Small-angle x-ray scattering and molecular modeling of RNA, peptides, proteins, and membrane protein-detergent complexes • RNA wet lab chemistry and electrostatic modeling • Large scale simulations of conformations and free energies in amyloidogenic peptides
1/2006 – 3/2006	**Research Assistant**, *Institut Pasteur, Paris, France* RNA electrostatics calculations; modeling of RNA thermodynamics and conformational changes
6/2003 – 8/2003	**Research Assistant**, *Institut Pasteur, Paris, France* Simulation of protein dynamics using stochastic differential equations
6/2002 – 8/2002	**Business Consultant**, *Siemens Management Consulting, Munich, Germany* Strategic management consulting internship with the Siemens group
7/1999 – 8/1999	**Financial Analyst**, *Wintershall U.K. Ltd, London, U.K.* Internship as assistant of the financial manager, implementation of financial models
6/1998 – 7/1998	**Assistant for Quality Control**, *Alstom Energy Systems - SHG, Kassel, Germany* Quality control and material science internship
7/1997 – 6/1998	**Emergency Medical Technician**, *Arbeiter-Samariter-Bund, Kassel, Germany* Compulsory national service as paramedic

Honors and Awards

7/2007	Margaret C. Etter Student Lecturer Award, American Crystallographic Association
6/2006	Student travel award for the SAS 2006 meeting, Kyoto, Japan
2001 – 2004	Fellowship of the German National Merit Foundation ("Studienstiftung des deutschen Volkes")
2001 – 2002	Fulbright Fellowship for the academic year 2001/2002
1999 – 2001	Student Fellowship of the "Studienstiftung der deutschen Wirtschaft"
1/1994	First place German National Latin Competition ("Bundeswettbewerb Fremdsprachen")
1992 – 1996	Men's crew state champion in 1992, 1994, 1995 and 1996
	Participation in German crew nationals in 1994 and 1996 (2nd and 6th place)

Teaching

since 2007	**Supervisor** for several students during their Bachelor and Master theses:
	Tessa Jager (Master), Peter Jan Laverman (Master), Iris Koster (Bachelor),
	Maylon S. R. G. Roger (Master), Sven Klijnhout (Bachelor), Xiaomin Hao (Master)
Fall 2009	**Instructor**: Designed and taught a journal club on physical methods in the biological sciences
	as part of the TU Delft B.Sc."honors track" program
Summer 2009	**Instructor** (joint with B. Menze): Designed and taught a three week summer course
	on bioinformatics for gifted high school seniors from five countries as part of the
	Deutsche SchülerAkademie (German Student Academy) program.
	Course website: www.dsa-bioinformatik.de
Fall 2008	**Instructor** for the section on polymer statistics for *"Biophysics"* at TU Delft
2004-2007	**Supervisor** for several undergraduate students in thesis and summer research projects
	Served as judge for high school science fairs
Spring 2004	**Teaching Assistant** for *"Computational Physics"*
	Course on numerical methods and applications in the physical sciences (Prof. Cabrera)
Winter 2003	**Teaching Assistant** for *"Mathematical Methods of Physics"*
	Course on advanced mathematical techniques for 2nd and 3rd year physics majors (Prof. Fetter)
Fall 2002	**Teaching Assistant** for *"Mechanics and Heat"*
	Introductory course for non-physics majors (Prof. Wojcicki)

Memberships and Professional Service

Member of the German Physical Society (DPG) since 1999; Member of the Biophysical Society since 2003;
Student representative on the **Graduate Studies Committee**, Department of Physics, Stanford University, 2003-2007;
Referee for *RNA*, *EMBO J.*, *Biophysical J.*, *Analytical Chemistry*, *J. Appl. Cryst.*, and *Physical Review Letters*

Languages (human)

German (native), English (fluent), French (fluent), Swedish (good knowledge), Dutch (good knowledge), Spanish (basic knowledge), Latin

Languages (computer)

C/C++, MPI, Perl, Matlab, Mathematica, LabView, Linux OS, LaTeX, Windows, Microsoft Office

Other Activities

Soccer, running (10 K and marathon), biking, hiking, traveling, and politics

Contributions to books

4. Sebastian Doniach and JL
"Use of Small Angle X-ray Scattering (SAXS) to characterize conformational states of functional RNAs", *Methods Enzymol., in press*
3. JL, Daniel A. Koster, Igor D. Vilfan, Susanne Hage, and Nynke H. Dekker
"Single Molecule Magnetic Tweezers Studies of Type IB Topoisomerases", *Methods in Mol. Biol.* 582:71-89 (2009)
2. Igor D. Vilfan, JL, Daniel A. Koster, Serge G. Lemay, and Nynke H. Dekker
"Magnetic Tweezers for Single-Molecule Experiments", P. Hinterdorfer and A. van Oijen (eds.), *Handbook of Single-Molecule Biophysics*, Springer (2009)
1. JL, Daniel Herschlag, and Sebastian Doniach
"Riboswitch Conformations Revealed by Small-Angle X-ray Scattering", *Methods in Mol. Biol.* 540:141-59 (2009)

Journal Publications

24. JL, Sven Klijnhout, and Nynke H. Dekker
"Small-Molecule Binding to DNA under Tension and Twist", *to be submitted*
23. JL, Adelene Y. L. Sim, Daniel Herschlag, and Sebastian Doniach
"The Glycine-Riboswitch Requires Specific Divalent Ions for Glycine Binding", *to be submitted*
22. Mona Ali, JL, Sönke Seifert, Daniel Herschlag, and Sebastian Doniach
"The Ligand-Free State of the TPP Riboswitch: Towards Modeling Partially Folded RNA Structures", *submitted*
21. JL and Sebastian Doniach
"Unzipping the polar zipper: Molecular Dynamics Simulations of Force-Induced β-Amyloid Disassembly and Implication for Future Experiments", *under revision*
20. Vincent B. Chu, JL, Yu Bai, Vijay S. Pande, Sebastian Doniach, and Daniel Herschlag
"Do Conformational Biases Arising From the Simple Junctions That Join Helices Influence Folding Specificity in RNA", *RNA, in press*
19. JL, Xiaomin Hao, and Nynke H. Dekker
"Quantitative Modeling and Optimization of Magnetic Tweezers", *Biophys. J.* 96:5040-9 (2009)
18. Linda Columbus, JL, K. Jambunathan, Daniel A. Fox, Adelene Y. L. Sim, Sebastian Doniach, and Scott A. Lesley
"Mixing and Matching Detergents for Membrane Protein NMR Structure Determination", *J. Am. Chem. Soc.* 131:7320-6 (2009)
17. Vincent B. Chu, Yu Bai, JL, Daniel Herschlag, and Sebastian Doniach
"A repulsive field: advances in the electrostatics of the ion atmosphere", *Curr. Opin. Chem. Biol.* 12:619-25 (2008)
16. JL[†], Jonathan Ouellet[†], David G. Norman, Sebastian Doniach, and David M. J. Lilley
"The Structure of the Complete VS Ribozyme in Solution by Small-Angle X-Ray Scattering", *Structure* 16:1357-67 (2008) ([†]Authors contributed equally)
15. Yu Bai, Vincent B. Chu, JL, Vijay S. Pande, Daniel Herschlag, and Sebastian Doniach
"Critical assessment of nucleic acid electrostatics via experimental and computational investigation of an unfolded state ensemble", *J. Am. Chem. Soc.* 130:12334-41 (2008)
14. Benjamin J. Spink, Sivaraj Sivaramakrishnan, JL, Sebastian Doniach, and James A. Spudich
"Long Single alpha-Helical Tail Domains Bridge the Gap between Structure and Function of Myosin VI", *Nature Struct. Mol. Biol.* 15:591-597 (2008)
13. Yu Bai, Kevin Travers, Vincent B. Chu, JL, Daniel Herschlag, and Sebastian Doniach
"Quantitative and Comprehensive Decomposition of the Ion Atmosphere around Nucleic Acids", *J. Am. Chem. Soc.* 129:14981-88 (2007)
12. JL, Linda Columbus, Vincent B. Chu, Scott A. Lesley, and Sebastian Doniach
"Size and Shape of Detergent Micelles by Small-Angle X-ray Scattering", *J. Phys. Chem. B* 111:12427-38 (2007)

11. Vincent B. Chu, Yu Bai, JL, Daniel Herschlag, and Sebastian Doniach
"Evaluation of Ion Binding to DNA Duplexes Using a Size-Modified Poisson-Boltzmann Theory", *Biophys. J.* 93:3202-3209 (2007)
This article was selected as a Research highlight "Size is Important" in *Biopolymers* 87(1):iii (2007)
10. JL, Vincent B. Chu, Yu Bai, Daniel Herschlag, and Sebastian Doniach
"Low Resolution Models for Nucleic Acids from Small-Angle X-ray Scattering with Applications to Electrostatic Modeling", *J. Appl. Cryst.* 40:235-239 (2007)
9. JL, Linda Columbus, Vincent B. Chu, and Sebastian Doniach
"Analysis of Small-Angle X-ray Scattering Data of Protein-Detergent Complexes by Singular Value Decomposition", *J. Appl. Cryst.* 40:229-234 (2007)
8. JL and Sebastian Doniach
"Small-Angle X-Ray Scattering from RNA, Proteins, and Protein Complexes", *Ann. Rev. Biophys. Biomol. Struct.* 36:307-27 (2007)
7. JL, Rhiju Das, Vincent B. Chu, Madhuri Kudaravalli, Nathan Boyd, Daniel Herschlag, and Sebastian Doniach
"Structural Transitions and Thermodynamics of a Glycine-Dependent Riboswitch from *Vibrio cholerae*", *J. Mol. Biol.* 365:1393-1406 (2007)
This article was selected as an *APS Science Highligh* "Watching a Glycine Riboswitch 'Switch"' (March 2007) and classified as "of special interest" (*Curr. Opin. Struct. Biol.* 17:562-71, 2007) and as "of outstanding interest" (*Curr. Opin. Microbiol.* 10:176-81, 2007)
6. Gautam Dantas, Alexander L. Watters, Bradley Lunde, Ziad Eletr, Nancy Isern, JL, Sebastian Doniach, Brian Kuhlman, Barry L. Stoddard, Gabriele Varani, and David Baker
"Mis-translation of a Computationally Designed Protein Yields an Exceptionally Stable Homodimer: Implications for Protein Engineering and Evolution", *J. Mol. Biol.* 362:1004-1024 (2006)
5. JL, Ian S. Millett, Sönke Seifert, and Sebastian Doniach
"A Sample Holder for Small-Angle X-ray Scattering Static and Flow Cell Measurements", *Rev. Sci. Instrum.* 77:046108 (2006)
This article was featured in *Vir. J. Bio. Phys. Res.* vol. 11 issue 8 (2006) and in *APS Science, the Advanced Photon Source Annual Report 2005*, p. 153-154 (2006)
4. Linda Columbus, JL, Heath Klock, Ian S. Millett, Sebastian Doniach, and Scott Lesley
"Expression, Purification, and Characterization of *Thermotoga maritima* α-Helical Membrane Proteins for Structure Determination", *Protein Sci.* 15:1-15 (2006)
3. Bojan Zagrovic, JL, Erik J. Sorin, Ian S. Millett, Wilfred F. van Gunsteren, Sebastian Doniach, and Vijay S. Pande
"Unusual Compactness of a Polyproline type II Structure", *Proc. Nat. Acad. Sci.* 102:11698-11703 (2005)
2. JL, Joel Franklin, Fang Wu, and Sebastian Doniach
"Protein Misfolding and Amyloid Formation for the Peptide GNNQQNY from Yeast Prion Protein Sup35: Simulation by Reaction Path Annealing", *J. Mol. Biol.* 349:648-658 (2005)
1. JL, Jorge Llano, and Leif A. Eriksson
"Radiation-Induced Damage in Serine Phosphate - Insights into a Mechanism for Direct DNA Strand Breakage", *J. Phys. Chem. B* 108:8036-8042 (2004)

Invited Talks

15. Molecular Biophysics Meeting, Veldhoven, The Netherlands, September 2009
14. Small-Angle Scattering 2009 Conference, Oxford, UK, September 2009
13. Biophysical Society Meeting, Boston, MA, February 2009
12. Structural Biology Seminar, Institut Pasteur, Paris, France, February 2009
11. Biophysical Society Meeting, "RNA Folding" session, Long Beach, CA, February 2008
10. Biophysical Society Meeting,"Single Molecule Biophysics I" session, Long Beach, CA, February 2008
9. SSRL and LCLS Users' Meeting, Menlo Park, CA, October 2007
8. American Crystallographic Association meeting, Salt Lake City, UT, July 2007
7. Physics Colloquium, Reed College, Portland, OR, April 2007
6. Molecular Biophysics Seminar, Stanford University, CA, February 2007
5. Small-Angle Scattering 2006 conference, Kyoto, Japan, July 2006
4. Structural Biology Seminar, Institut Pasteur, Paris, France, March 2006
3. PPG meeting, Stanford University, CA, October 2005
2. Molecular Biophysics Seminar, Stanford University, CA, November 2004
1. Javits meeting, San Francisco, CA, April 2004

Poster Presentations (first author only)

13. JL, Linda Columbus, Adelene Y. L. Sim, K. Jambunathan, Daniel A. Fox, Scott Lesley, and Sebastian Doniach
    Poster presented at the Small-Angle Scattering 2009 conference, Oxford, UK, September 2009
12. JL, Sven Klijnhout, and Nynke H. Dekker
    Poster presented at the Molecular Biophysics meeting in Veldhoven, The Netherlands, September 2008
11. JL, Xiaomin Hao, and Nynke H. Dekker
    Poster presented at the Molecular Biophysics meeting in Veldhoven, The Netherlands, September 2008
10. JL, Sven Klijnhout, Xiaomin Hao, Daniel A. Koster, and Nynke H. Dekker
    Poster presented at the Gordon Research Conference on *Single Molecule Approaches to Biology* in New London, NH, August 2008
9. JL, Adelene Y. Sim, Vincent Chu, Daniel Herschlag, and Sebastian Doniach
    Poster presented at the meeting of the RNA Society in Berlin, Germany, August 2008
8. JL, Komaraiaha Palle, Mary-Ann Bjornsti, and Nynke H. Dekker
    Poster presented at the TOPO2008 meeting in Norwich, UK, July 2008
7. JL, Vincent B. Chu, Yu Bai, Jonathan Ouellet, David M. J. Lilley, Daniel Herschlag, Sebastian Doniach,
    Poster presented at the Biophysical Society meeting in Baltimore, MD, March 2007
6. JL, Vincent B. Chu, Yu Bai, Daniel Herschlag, and Sebastian Doniach,
    Poster presented at the Biomedical Computation at Stanford (BCATS) meeting, October 2006
5. JL and Sebastian Doniach,
    Poster presented at the Biomedical Computation at Stanford (BCATS) meeting, October 2005
4. JL and Sebastian Doniach, *Biophys. J.* 88 (1): 401A-401A
    Poster presented at the Biophysical Society meeting in Long Beach, CA, February 2005
3. JL, Ki Jung Sung, David Eliezer, Sebastian Doniach,
    Poster presented at the Biomedical Computation at Stanford (BCATS) meeting, October 2004
2. JL, Joel Franklin, Fang Wu, and Sebastian Doniach, *Biophys. J.* 86 (1): 416A-416A
    Poster presented at the Biophysical Society meeting in Baltimore, MD, Januar 2004
1. JL, Joel Franklin, Fang Wu, and Sebastian Doniach,
    Poster presented at the Biomedical Computation at Stanford (BCATS) meeting October 2003

Delft, September 2009