

Curriculum Vitae of Dr. Harald Janovjak

University of California, Berkeley
Department of Molecular and Cell Biology
279 Life Sciences Addition
Berkeley, CA 94720

Phone +1-510-642-9882
Fax +1-510-642-4968

e-mail harald@berkeley.edu



Personal Data

Born 1979 in Basel, Switzerland (Swiss citizen)
Languages: German (Native), English (Fluent), French (Basic), Slovak (Basic)

Education and Work Experience

- Since October 2006 **University of California, Berkeley**
Post-doctoral fellow funded by the European Molecular Biology Organization
Project title: "Optical manipulation of ion channel structure and function"
Advisor: Prof. Ehud Y. Isacoff
Division of Neurobiology, Department of Molecular and Cell Biology
- January 2006 **University of Technology, Dresden**
- September 2006 Post-doctoral fellow
Advisor: Prof. Daniel J. Müller
Chair of Cellular Machines, Center for Biotechnology
- November 2002 **University of Technology, Dresden**
- December 2005 PhD in Biology with highest honors (*summa cum laude*)
Thesis title: "Exploring the mechanical stability and visco-elasticity of membrane proteins by single-molecule force measurements"
Advisors: Prof. Daniel J. Müller and Prof. Petra Schwille
Chair of Cellular Machines and Chair of Biophysics, Center for Biotechnology
- September 2001 **Max Planck Institute of Molecular Cell Biology and Genetics, Dresden**
- October 2002 Diploma Thesis in Single-Molecule Biophysics with highest honors (grade 6.0)
Thesis advisors: Prof. Daniel J. Müller and Prof. Andreas Engel
(latter from the Biozentrum, University of Basel)
- October 1998 **Biozentrum, University of Basel**
- October 2002 Diploma in Molecular Biology

Supervised Students

November 2009 - February 2010	Benji Gaub (Graduate rotation student in Neuroscience, UC Berkeley)
July 2009 - November 2009	Josh Levitz (Graduate rotation student in Biophysics, UC Berkeley)
August 2008 - November 2008	Lowry Kirkby (Graduate rotation student in Biophysics, UC Berkeley)
November 2007 - February 2008	Kevin Mann (Graduate rotation student in Neuroscience, UC Berkeley)
March 2005 - October 2005	Helene Knaus (Diploma student in Biotechnology, TU Dresden)
January 2004 - July 2004	Maurice Hubain (Diploma student in Bioinformatics, TU Dresden)
April 2003 - August 2003	Jana Doehner (Undergraduate in Biotechnology, TU Dresden)
February 2003 - August 2003	Michael Kuhn (Undergraduate in Bioinformatics, TU Dresden)

Reviewer Service

The following journals requested my reviewer service:

Biophysical Journal	Journal of Physics - Condensed Matter
European Biophysics Journal	Journal of the American Chemical Society
FEBS Letters	Nature Methods
Int. Journal of Biochemistry and Cell Biology	Nanotechnology
Journal of Chemical Physics	

Selected Awards and Memberships

Since April 2009	Post-doctoral representative of the National Institutes of Health Nanomedicine Development Center for the Optical Control of Biological Function
October 2006	Fellowships of the European Molecular Biology Organization, German Research Foundation and Swiss National Science Foundation
December 2005	PhD thesis honored with highest honors (<i>summa cum laude</i>)
October 2002	Diploma thesis honored with highest honors (grade 6.0)
September 2001	Fellowship of the ERASMUS program

Member of the Biophysical Society, Deutsche Gesellschaft für Biophysik and Swiss Physical Society

Scientific Consulting

Since October 2009	InSystea GmbH, Zurich Member of scientific advisory board
January 2006 - March 2009	nAmbition GmbH, Dresden (part of JPK Instruments Group, Berlin) Scientific advisor and business developer

Other Skills and Activities

Computational biology	Experience in molecular dynamics and Monte-Carlo simulations, molecular force fields and development of data analysis software. Programming skills in Perl, C, SQL, Igor and ImageJ. Molecular modeling and computations with Schrödinger Maestro, Macromodel, Jaguar and Visual Molecular Dynamics.
Signal processing	Development of data acquisition, signal processing and digital feedback systems
Military service	Swiss Armed Forces (Since 1998)

Publications

Peer-Reviewed Research Articles

19. "Missing link in glutamate receptor evolution"
H. Janovjak, G. Sandoz & E.Y. Isacoff
Under revision.
18. "A light-gated, potassium-selective glutamate receptor for the optical inhibition of neuronal firing"
H. Janovjak, S. Szobota, C. Wyart, D. Trauner & E.Y. Isacoff
Nature Neuroscience (2010) 13: 1027-1032.
17. "Periodic forces trigger a complex mechanical response in ubiquitin"
P. Syzmcyak & **H. Janovjak**
Journal of Molecular Biology (2009) 390: 443-456 (with frontcover).
16. "Fully automated single-molecule force spectroscopy for screening applications"
J. Struckmeier, R. Wahl, M. Leuschner, J. Nunes, **H. Janovjak**, U. Geisler, G. Hofmann, T. Jähnke & D.J. Müller
Nanotechnology (2008) 19: 384020.
15. "Digital force-feedback for protein unfolding experiments using atomic force microscopy"
C.A. Bippes, **H. Janovjak**, A. Kedrov & D.J. Müller
Nanotechnology (2007) 18: 044022.
14. "Transmembrane helices have rough energy surfaces"
H. Janovjak, H. Knaus & D.J. Müller
Journal of the American Chemical Society (2007) 129: 246-247.
13. "Free energy of membrane protein unfolding derived from single-molecule force measurements"
J. Preiner, **H. Janovjak**, C. Rankl, H. Knaus, D.A. Cisneros, A. Kedrov, F. Kienberger, D.J. Müller & P. Hinterdorfer
Biophysical Journal (2007) 93: 930-937.
12. "Pulling single bacteriorhodopsin out of a membrane: Comparison of simulation and experiment"
M. Cieplak, S. Filipek, **H. Janovjak** & K.A. Krzysko
Biochimica et Biophysica Acta (2006) 1758: 537-544 (with frontcover).
11. "Bacteriorhodopsin folds into the membrane against an external force"
M. Kessler, K.E. Gottschalk, **H. Janovjak**, D.J. Müller & H.E. Gaub
Journal of Molecular Biology (2006) 357: 644-654.
10. "Observing folding pathways and kinetics of a single sodium-proton antiporter from *E. coli*"
A. Kedrov, **H. Janovjak**, C. Ziegler, W. Kühlbrandt & D.J. Müller
Journal of Molecular Biology (2006) 355: 2-8.
9. "Direct measurement of single-molecule visco-elasticity in atomic force microscopy force-extension experiments"
C.A. Bippes, A.D.L. Humphris, M. Stark, D.J. Müller & **H. Janovjak**
European Biophysics Journal (2006) 35: 287-292.
8. "Complex stability of single proteins explored by forced unfolding experiments"
H. Janovjak, K.T. Sapra & D.J. Müller
Biophysical Journal (2005) 88: 37-39.
7. "Molecular force modulation spectroscopy revealing the dynamic response of single bacteriorhodopsins"
H. Janovjak, D.J. Müller & A.D.L. Humphris
Biophysical Journal (2005) 88: 1423-1431.

6. "Automated alignment and pattern recognition of single-molecule force spectroscopy data"
M. Kuhn, **H. Janovjak**, M. Hubain & D.J. Müller
Journal of Microscopy (2005) 218: 125-132.
5. "Hydrodynamic effects in fast AFM single molecule force measurements"
H. Janovjak, J. Struckmeier & D.J. Müller
European Biophysics Journal (2005) 34: 91-96.
4. "Probing the energy landscape of the membrane protein bacteriorhodopsin"
H. Janovjak, J. Struckmeier, M. Hubain, M. Kessler, A. Kedrov & D.J. Müller
Structure (2004) 12: 871-879 (with frontcover).
3. "Controlled unfolding and refolding of a single sodium/proton antiporter using atomic force microscopy"
A. Kedrov, C. Ziegler, **H. Janovjak**, W. Kühlbrandt & D.J. Müller
Journal of Molecular Biology (2004) 340: 1143-1152.
2. "Unfolding pathways of native bacteriorhodopsin depend on temperature"
H. Janovjak, M. Kessler, D. Oesterhelt, H.E. Gaub & D.J. Müller
EMBO Journal (2003) 22: 5220-5229.
1. "Processing of gene expression data generated by quantitative real-time RT-PCR"
P.Y. Müller, **H. Janovjak**, A.R. Miserez & Z. Dobbie
Biotechniques (2002) 32: 1372-1380.

Peer-Reviewed Review Articles

4. "From valleys to ridges: Exploring the energy landscape of single membrane proteins"
H. Janovjak, K.T. Sapra, A. Kedrov & D.J. Müller
ChemPhysChem (2008) 9: 954-966.
3. "Deciphering molecular interactions of native membrane proteins by single-molecule force spectroscopy"
A. Kedrov, **H. Janovjak**, K.T. Sapra & D.J. Müller
Annual Review of Biophysics and Biomolecular Structure (2007) 36: 233-260.
2. "Imaging and detecting molecular interactions of single membrane proteins"
H. Janovjak, A. Kedrov, D. Cisneros, K.T. Sapra, J. Struckmeier & D.J. Müller
Neurobiology of Aging (2006) 27: 546-561.
1. "Observing structure, function and assembly of single proteins by AFM"
D.J. Müller, **H. Janovjak**, T. Lehto, L. Kuerschner & K. Anderson
Progress in Biophysics and Molecular Biology (2002) 79: 1-43.

Book Chapters

4. "Structure-based design of light-controlled proteins"
H. Janovjak & E.Y. Isacoff
To appear in *Photosensitive Molecules for Controlling Biological Function* (J. Chambers & R. Kamer, Editors)
Humana Press, Totowa, NJ / Springer Verlag GmbH, Heidelberg.
3. "Single-molecule microscopy and force spectroscopy of membrane proteins"
A. Engel, **H. Janovjak**, D. Fotiadis, A. Kedrov, D. Cisneros & D.J. Müller
In *Single Molecules and Nanotechnology* (Springer Series in Biophysics Vol. 12, 2008,
R. Rigler & H. Vogel, Editors)
Springer Verlag GmbH, Heidelberg.

2. "Rastersondenmikroskopie"
H. Janovjak & D.J. Müller
In *Bioanalytik* (2nd Edition, 2006, F. Lottspeich & H. Zorbas, Editors)
Spektrum Akademischer Verlag, Heidelberg.
1. "Atomic force microscopy"
H. Janovjak, R. K. Sawhney, M. Stark & D.J. Müller
In *Techniques in Microscopy for Biomedical Applications* (Manuals in Biomedical Research,
2006, H. Dokland, D.W. Hutmacher & M.M. Ng, Editors)
World Scientific Publishing Company, Singapore.