

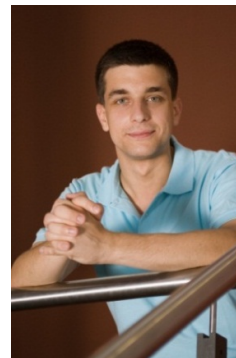
Curriculum Vitae of Harald Janovjak

WORK ADDRESS

Institute of Science and Technology Austria
(IST Austria)
Am Campus 1
3400 Klosterneuburg
Austria

Phone +43 2243 9000-4201
Fax +43 2243 9000-2000
E-mail harald@ist.ac.at

Web <http://ist.ac.at/research/research-groups/janovjak-group/>
Web <http://www.synthetic-physiology.com/>
ORCID: 0000-0002-8023-9315
Res.-ID: O-9070-2016



DATE / PLACE OF BIRTH

1979 / Basel (Switzerland)

MARITAL STATUS

Married

LANGUAGES

German, English, French

EDUCATION

<u>Institution</u>	<u>Degree</u>	<u>Advisor</u>	<u>Dates</u>
Dresden University of Technology (Germ.)	PhD in Biology (highest honors)	Daniel J. Müller	11/2002 - 12/2005
Max Planck Institute of Molecular Cell Biology and Genetics Dresden (Germ.)	Honors Research (highest honors)	Daniel J. Müller	09/2001 - 10/2002
University of Basel (Switzerland)	Graduate Certificate in Biology		10/1998 - 10/2002

POST-DOCTORAL TRAINING

<u>Institution</u>	<u>Advisor</u>	<u>Dates</u>
Ludwig Maximilian University Munich (Germany)	Dirk Trauner	08/2010 - 02/2011
University of California Berkeley (USA)	Ehud Y. Isacoff	10/2006 - 06/2010
Dresden University of Technology / nAmbition GmbH, Dresden (Germany)	Daniel J. Müller	01/2006 - 09/2006

FACULTY APPOINTMENTS

<u>Institution</u>	<u>Title</u>	<u>Dates</u>
IST Austria	Assistant Professor in Synthetic Physiology	03/2011 - to date

FACULTY RESPONSIBILITIES

<u>Institution</u>	<u>Function</u>	<u>Dates</u>
IST Austria	Member, Technology Transfer Committee	09/2015 - to date
PhD Program "MolecularDrugTargets"	Member, Teaching Committee	06/2015 - to date
IST Austria	Member, Faculty Search Committee	03/2011 - to date
IST Austria	Member, Graduate Student Selection Committee	03/2011 - to date
IST Austria	Member, Equipment Investment Committee	09/2015 - 08/2016
IST Austria	Member, Interdisciplinary Projects Committee	09/2013 - 08/2015
IST Austria	Faculty Liaison, Campus Services	09/2013 - 08/2015
IST Austria	Mentor, Graduate Student Class 2012	09/2012 - 08/2013

GROUP MEMBERS

<u>Name</u>	<u>Title</u>	<u>Dates</u>
Miroslava Spanova	Technician	11/2012 - to date
Laura Rodriguez Hernandez	Post-doctoral fellow	11/2014 - to date
Alexandra-Madelaine Tichy	Graduate student	05/2017 - to date
Stephanie Kainrath	Graduate student	05/2016 - to date
Eva Reichhart	Graduate student	09/2013 - to date
Catherine McKenzie	Graduate student	05/2012 - to date
Raimund Huf	Diploma student (medicine, Med. Univ. Vienna)	05/2017 - to date
Lucie Studena	Scientific intern (ISTern)	07/2017 - to date

PUBLICATIONS

July 1, 2017: H-index: 20, >2100 total citations

Submitted Research Articles

"Optogenetic induction and suppression of tissue degeneration"
A. Ingles-Prieto, S. Kainrath, V. Zheden, J. Biebl, A. György, D. Siekhaus & **H. Janovjak**
Submitted.

"Ultrasonic activation of light-dependent gene transcription"
L. Rodriguez, T.N. Grund, M. Morri, R. Hauschild, A. Möglich & **H. Janovjak**
Submitted.

"Optical functionalization of human Class A orphan G-protein coupled receptors"
M. Morri, I. Sanchez-Romero, A.M. Tichy, P. Hirschfeld, J. Schwarz & **H. Janovjak**
Submitted.

"Extracellular glycine levels monitored by the novel sensor GRIP are modulated by plasticity-inducing stimuli and depend on the subcellular compartment"
W. Zhang, M.K. Herde, J.A. Mitchell, J.H. Whitfield, **H. Janovjak**, C.J. Jackson & C. Henneberger
Submitted.

Peer-Reviewed Research Articles

- 28 "Green light-induced inactivation of receptor signaling using cobalamin-binding domains"
S. Kainrath, M. Stadler, E. Reichhart, M. Distel & **H. Janovjak**
Angewandte Chemie Int. Ed. (2017) 56: 4608-4611.
- 27 "Range-finder: A semisynthetic FRET sensor design algorithm"
J.A. Mitchell, J.H. Whitfield, W.H. Zhang, C. Henneberger, **H. Janovjak**, M.L. O'Mara & C.J. Jackson
ACS Sensors (2016) 1: 1286-1290.
- 26 "Optogenetic control of nodal signaling reveals a temporal pattern of nodal signaling regulating cell fate specification during gastrulation"
K. Sako, S.J. Pradhan, V. Barone, A. Ingles-Prieto, K.W. Rogers, P. Müller, V. Ruprecht, D. Capek, S. Galande, **H. Janovjak** & C.P. Heisenberg
Cell Reports (2016) 16: 866-877.
- 25 "A phytochrome sensory domain permits receptor activation by red light"
E. Reichhart, A. Ingles-Prieto, A.M. Tichy, C. McKenzie & **H. Janovjak**
Angewandte Chemie Int. Ed. (2016) 55: 6339-6342.
- 24 "Light-assisted small molecule screening against protein kinases"
A. Ingles-Prieto, E. Reichhart, M.K. Muellner, M. Nowak, S.M. Nijman, M. Grusch & **H. Janovjak**
Nature Chemical Biology (2015) 11: 952-954.
- 23 "Construction of a robust and sensitive arginine biosensor through ancestral protein reconstruction"
J.H. Whitfield, W. Zhang, M.K. Herde, B.E. Clifton, J. Radziejewski, **H. Janovjak**, C. Henneberger & C.J. Jackson
Protein Science (2015) 24: 1412-1422.
- 22 "Quantification of riboflavin, flavin mononucleotide, and flavin adenine dinucleotide in mammalian model cells by CE with LED-induced fluorescence detection"
J. Hühner, A. Ingles-Prieto, C. Neusüss, M. Lämmerhofer & **H. Janovjak**
Electrophoresis (2015) 36: 518-525.
- 21 "Spatio-temporally precise activation of engineered receptor tyrosine kinases by light"
M. Grusch*, K. Schelch*, R. Riedler*, E. Reichhart, C. Differ, W. Berger, A. Ingles-Prieto & **H. Janovjak**
EMBO Journal (2014) 33: 1713-1726. (* equal contribution)
- 20 "Optical control of metabotropic glutamate receptors"
J. Levitz, C. Pantoja, B. Gaub, **H. Janovjak**, A. Reiner, A. Hoagland, D. Schoppik, B. Kane, P. Stawski, A.F. Schier, D. Trauner & E.Y. Isacoff
Nature Neuroscience (2013) 16: 507-516.
- 19 "A modern ionotropic glutamate receptor with a potassium-selectivity signature sequence"
H. Janovjak*, G. Sandoz* & E.Y. Isacoff
Nature Communications (2011) 2: 232. (* equal contribution)
- 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. Szymczyk & **H. Janovjak**
Journal of Molecular Biology (2009) 390: 443-456 (with front cover).
- 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 front cover).
- 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 front cover).
- 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.

Review Articles and Perspectives

- 8 "Optogenetic methods in drug screening: Technologies and applications"
V. Agus & **H. Janovjak**
Current Opinion in Biotechnology (2017) 5: 8-14.
- 7 "Light at the end of the protein: Crystal structure of a C-terminal light-sensing domain"
H. Janovjak
Structure (2016) 24: 213-215.
- 6 "The optogenetic promise for oncology: episode I"
A. Ingles-Prieto, E. Reichhart, K. Schelch, **H. Janovjak** & M. Grusch
Molecular and Cellular Oncology (2014) 1: e964045.
- 5 "Pharmacology of ionotropic glutamate receptors: A structural perspective"
P. Stawski, **H. Janovjak** & D. Trauner
Bioorganic & Medicinal Chemistry (2010) 18: 7759-7772 (with front cover).
- 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 and Protocol Articles

- 9 "Ancestral protein reconstruction and circular permutation for improving the stability and dynamic range of FRET sensors"
B.E. Clifton, J.H. Whitfield, I. Sanchez-Romero, M.K. Herde, C. Henneberger, **H. Janovjak** & C.J. Jackson
Methods in Molecular Biology (2017) 1596: 71-87.
- 8 "Method for developing optical sensors using a synthetic dye-fluorescent protein FRET pair and computational modeling and assessment"
J.A. Mitchell, W.H. Zhang, M.K. Herde, C. Henneberger, **H. Janovjak**, M.L. O'Mara & C.J. Jackson
Methods in Molecular Biology (2017) 1596: 89-99.
- 7 "Flipping the photoswitch: Ion channels under light control"
C. McKenzie, I. Sanchez-Romero & **H. Janovjak**
Advances in Experimental Biology and Medicine (2015) 869: 101-117.
- 6 "Optical control of ligand-gated ion channels"
S. Szobota, C. McKenzie & **H. Janovjak**
Methods in Molecular Biology (2013) 998: 417-435.
- 5 "Rastersondenmikroskopie"
H. Janovjak & D.J. Müller
In *Bioanalytik* (3rd Edition, 2012, F. Lottspeich & H. Zorbas, Editors), Spektrum Akademischer Verlag, Heidelberg.
- 4 "Structure-based design of light-controlled proteins"
H. Janovjak & E.Y. Isacoff
In *Photosensitive Molecules for Controlling Biological Function* (2012, J. Chambers & R.H. Kramer, 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. Huttmacher & M.M. Ng, Editors) World Scientific Publishing Company, Singapore.