

Curriculum Vitae of Harald Janovjak

WORK ADDRESS

Australian Regenerative Medicine Institute (ARMI)
EMBL Australia Partnership Laboratory (EMBL Australia)

Monash University, Faculty of Medicine, Nursing and Health Sciences
15 Innovation Walk, Clayton VIC 3800, Australia

Phone +61 3 99029612
Mobile +61 435 229612
E-mail harald.janovjak@monash.edu

Web <http://www.armi.org.au/research-leadership/janovjak-group>
Web <http://www.synthetic-physiology.com/> OR <http://www.janovjak-lab.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 (Germany)	PhD in Biology (highest honors)	Daniel J. Müller	11/2002 - 12/2005
Max Planck Institute of Molecular Cell Biology and Genetics Dresden (Germany)	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>
Australian Regenerative Medicine Institute (ARMI), Faculty of Medicine, Nursing and Health Sciences, Monash University and	Group Leader	02/2018 - to date
EMBL Australia Partnership Laboratory (EMBL Australia)	Group Leader	02/2018 - to date
Institute of Science and Technology Austria (IST Austria)	Assistant Professor	03/2011 - 12/2017

FACULTY RESPONSIBILITIES

<u>Institution</u>	<u>Function</u>	<u>Dates</u>
ARMI	Member, External Speaker Series Committee	05/2018 - to date
PhD Program MolecularDrugTargets	Member, Teaching Committee	06/2015 - 12/2017
IST Austria	Member, Faculty Search Committee	03/2011 - 12/2017
IST Austria	Member, Graduate Student Selection Committee	03/2011 - 12/2017
IST Austria	Member, Interdisciplinary Projects Committee	09/2013 - 08/2015
IST Austria	Mentor, Graduate Student Class 2012	09/2012 - 08/2013

CURRENT GROUP MEMBERS

<u>Group Member</u>	<u>Title</u>	<u>Dates</u>
Mia De Seram	Laboratory manager	11/2017 - to date
Christina Gangemi	Research assistant	02/2018 - to date
Eva Gschaidler-Reichhart	Post-doctoral fellow	01/2018 - to date
Elliot Gerrard	Post-doctoral fellow	05/2018 - to date
Catherine McKenzie	Graduate student	05/2012 - to date
Stephanie Kainrath	Graduate student	05/2016 - to date
Alexandra-Madelaine Tichy	Graduate student	05/2017 - to date

PUBLICATIONS

May, 2018: H-index: 20, 2300 total citations

Peer-Reviewed Research Articles

- 29 "Optical functionalization of human Class A orphan G-protein coupled receptors"
M. Morri, I. Sanchez-Romero, A.M. Tichy, S. Kainrath, E. Gerrard, P. Hirschfeld, J. Schwarz & **H. Janovjak**
Nature Communications (2018) 9: 1950.
- 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 "Rangefinder: 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.