

## Benjamin Towbin, PhD

## Curriculum Vitae

SNSF Eccellenza Assistant Professor  
Institute of Cell Biology  
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Date of birth: 7 September 1982  
Married, 2 children (dual career family)  
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I am an SNSF Eccellenza Assistant Professor with an interdisciplinary background in quantitative Systems Biology, Developmental Biology, and Genetics. I strive to break new ground at disciplinary interfaces and motivate students to think across classical disciplinary boundaries.

### Current position

Nov 2019-present day **SNSF Eccellenza Assistant Professor (without tenure track)**  
Institute of Cell Biology, University of Bern, Organismal Systems Biology Lab  
most important output: Stojanovski, Großhans, and Towbin, [Nature Communications](#), 2022

### Education

Dec 2007-Jul 2012 **PhD thesis in Genetics** (*summa cum laude, best thesis award at Univ. of Basel and FMI*)  
Friedrich Miescher Institute for Biomedical Research, Basel (CH)  
Thesis title: “Dynamics of subnuclear chromatin organization during *C. elegans* development: a role for H3K9 methylation”  
most important output: Towbin et al., [Cell](#), 2012  
Advisor: Prof. Dr. Susan Gasser, Date of PhD defense: March 14, 2012

Sep 2005-Nov 2007 **MSc in Biomedical Sciences**  
University of Utrecht (NL)  
Advisors: Prof. Dr. Ronald Plasterk, Prof. Dr. Susan Gasser

Sep 2002-Aug 2005 **BSc in Molecular Biology**  
University of Basel (CH)

### Employment history

Sept 2016-July 2019 **Senior postdoctoral researcher** (independently funded by MSCA, Engelhorn)  
Friedrich Miescher Institute for Biomedical Research, Basel (CH)  
Host laboratory: Dr. Helge Großhans

Mar 2013-Aug 2016 **Postdoctoral researcher** (independently funded by HFSP, SNSF)  
Weizmann Institute of Science, Rehovot (IL)  
Advisor: Prof. Dr. Uri Alon  
most important output: Towbin et al., [Nature Communications](#), 2017

### Career breaks

Paternity leave (dual career family), two children  
Aug 2012-Mar 2013 (7 months, 25% employment) and Nov 2014 - Jan 2015 (3 months)

### Awards and fellowships

2019 SNSF Eccellenza Professorial Fellowship, 5 years  
2017 *Marie Skłodowska-Curie* Individual Fellowship, 2 years  
2017 *Engelhorn-Traudl foundation* postdoctoral-fellowship, 2 year  
2016 *Swiss friends of the Weizmann Institute* fellowship, 5 months  
2015 *Weizmann Institute Azrieli project grant* (with 2 collaborators)  
2013 *HFSP* long-term fellowship, 3 years  
2013 *SNSF* PostDoc mobility fellowship (used 10 out of 18 months)  
2013 *EMBO* and *FEBS* long-term fellowships gratefully declined

2014 Award for best thesis at the Faculty of Natural Sciences, University of Basel  
2013 Ed Fisher Prize for best PhD thesis at the Friedrich Miescher Institute

### Fellowships by junior investigators under my guidance

2021	ThinkSwiss research scholarship to Aaditya Saxena
2022	SNSF Swiss Postdoctoralfellowship to Peter Lenart

### Teaching activities

yearly since 2021	<b>Systems Biology</b> (473205), University of Bern and Fribourg , MSc/PhD level <a href="https://www.towbinlab.org/systems-biology-hs21">https://www.towbinlab.org/systems-biology-hs21</a>	
yearly since 2021	<b>Bioinformatics</b> (8289), University of Bern BSc, 3rd year	(contribution)
yearly since 2019	<b>Cellular and Genetic Networks</b> (11470), University of Bern and Fribourg, MSc/PhD level	(contribution)
yearly since 2022	<b>Aktuelle Themen Biologie I</b> (471676), University of Bern BSc 1st year	(contribution)
yearly since 2019	<b>Methods in microscopy with lab course</b> (25455) University of Bern BSc, 3rd year and MSc	(contribution)
2021	<b>Scientific Presentation Workshop</b> ICB, University of Bern	

### Supervision of junior researchers

**Postdoctoral researcher:** Peter Lenart (starting April 2022)

**PhD students:** Joel Tuomaala (since Feb 2020), Sigma Pradhan (since Jan 2021), Ioana Gheorghe (since Mar 2022)

**MSc students:** Franziska Schmid (Feb 2020 – Jan 2021), Ioana Gheorghe (since Nov 2020-Feb 2022), Julie Perey (since Feb 2022), Garima Yadav (since Feb 2022), Sacha Psalmon (since Mar 2022) Erasums/SEMP student from Polytech Nice Sophia

**Undergraduate students:** Stefano von Wyttenbach (Feb 2020 – May 2020), Julie Perey (Feb 2021 – May 2021), Aaditya Saxena (Nov 2020 – Jan 2021, June 2021 – August 2021), ThinkSwiss fellow from IIT Khargapur, Urs Nösberger (since Feb 2022), Noelia Gerber (since Feb 2022)

### Publications in peer-reviewed journal

*total citation count: 1972, publication count: 17, h-index:14 (source: google.scholar on 13/3/2022)*

*[link to google.scholar](#). ResearchID: [C-8545-2018](#)*

#### three most relevant publications (chronological order)

1. Stojanovski K, Grosshans H\*, Towbin BD\* (2022) *Coupling of growth rate and developmental tempo reduces body size heterogeneity in C. elegans*, **Nature Communications**, 13, 3132, citations: 6 (as preprint)  
\*) co-corresponding authors
2. Towbin BD, Korem Y, Bren A, Doron S, Sorek R, Alon U (2017) *Optimality and sub-optimality in a bacterial growth law*, **Nature Communications**, 8:14123, citations:72
3. Towbin BD, Gonzalez C, Meister P, Gaidatzis D, Kalck V, Sack R, Askjaer P, Gasser SM (2012) *Step-wise methylation of histone H3K9 positions heterochromatin at the nuclear envelope*. **Cell** 150(5): 934-47, citations: 510

#### other publications (chronological order)

4. Padeken J, Zeller P, Towbin BD, Katic I, Kalck V, Methot SP, Gasser SM (2019), *Synergistic lethality between BRCA1 and H3K9me2 loss reflects satellite derepression*, **Genes & development** 33 (7-8), 436-451, citations: 27
5. Korem Y, Levi D, Jona G, Towbin BD, Bren A, Alon U (2018), *A bacterial growth law out of steady state*, **Cell reports** 23(10):2891-2900., citations: 32
6. Hastings J., [..], Towbin BD, [..], and Casanueva O (38 authors) (2017) *WormJam: A consensus C. elegans Metabolic Reconstruction and Metabolomics Community and Workshop Series*, **Worm**, 6(2): e1373939, citations:14
7. Bren A, Park JO, Towbin BD, Dekel E, Rabinowitz JD, Alon U (2016), *Glucose becomes one of the worst carbon sources for E.coli on poor nitrogen sources due to suboptimal levels of cAMP*. **Scientific Reports**, 6:24834, citations: 110

8. Gonzalez-Sandoval A, Towbin BD, Kalck V, Gaidatzis D, Hauer MH, Geng L, Cebianca DS, Wang X, Yang T, Zhao K, Gasser SM (2015) Perinuclear anchoring of H3K9-methylated chromatin stabilizes induced cell fate. *Cell*, 163(6):1333-47, citations: 148
9. Aidelberg G, Towbin BD, Rothschild D, Dekel E, Bren A, Alon U (2014) Hierarchy of non-glucose sugars in Escherichia coli. *BMC Systems Biology*. 8:133, citations: 120
10. Ferreira HC, Towbin BD, Jegou T, Gasser SM (2013) The shelterin protein POT-1 anchors Caenorhabditis elegans telomeres through SUN-1 at the nuclear periphery. *Journal of Cell Biology* 203(5):727-35, citations: 31
11. Gonzalez-Sandoval A, Towbin BD, Gasser SM (2013) The formation and sequestration of heterochromatin during development. *FEBS Journal* 280(14):3212-9 (review), citations: 6
12. Towbin BD, Gonzalez-Sandoval A, Gasser SM (2013) Mechanisms of heterochromatin subnuclear localization. *Trends in Biochemical Sciences* 38(7):356-63 (review), citations: 84
13. Dion V, Kalck V, Horigome C, Towbin BD & Gasser SM (2012) Increased mobility of double-strand breaks requires Mec1, Rad9 and the homologous recombination machinery. *Nature Cell Biology* 14: 502-509, citations: 281
14. Mattout A, Pike BL, Towbin BD, Bank EM, Gonzalez-Sandoval A, Stadler MB, Meister P, Gruenbaum Y & Gasser SM (2011) An EDMD mutation in C. elegans lamin blocks muscle-specific gene relocation and compromises muscle integrity. *Current Biology* 21: 1603-1614, citations: 127
15. Towbin BD, Meister P, Pike BL & Gasser SM (2011) Repetitive transgenes in C. elegans accumulate heterochromatic marks and are sequestered at the nuclear envelope in a copy-number- and lamin-dependent manner. *Cold Spring Harbor Symposia on Quantitative Biology* 75: 555-565. (book chapter/ conference paper), citations: 55
16. Meister P, Towbin BD, Pike BL, Ponti A & Gasser SM (2010) The spatial dynamics of tissue-specific promoters during C. elegans development. *Genes & Development* 24: 766-782, citations: 206
17. Towbin BD, Meister P & Gasser SM (2009) The nuclear envelope - a scaffold for silencing? *Current Opinion in Genetics & Development* 19: 180-186 (review), citations: 147

#### **Institutional and societal responsibilities**

since 2022	Vice-president LS2 Systems Biology
since 2021	Member Equal Opportunity Commission of the Phil-Nat faculty, University of Bern
since 2021	Deputy faculty representative of Oberer Mittelbau, Universität Bern
since 2019	Member of Graduate School Evaluation Committee, University of Bern (GCB)

#### **Memberships in boards and individual scientific reviewing activities**

Editorial board member: *Frontiers in Physiology*  
 Served as reviewer: *Scientific reports*, *BMC Biology*, *Frontiers in Cell and Developmental Biology*, *Proceedings of the Royal Society B*  
 Co-review as PostDoc: *Nature*, *Cell*, *Journal of Cell Science*, *PLoS Biology*, *Molecular Systems Biology*, *Genome Research*, *Genes and Development*

#### **Selected outreach activities from last 5 years**

2022	Guest lecturer in Pestalozzi school camp: "Warum wir altern"
2020	Workshop panellist for Science and Youth school project ("Wollen wir 200 Jahre alt werden?")
2018	Guest lecturer "Numbers day", Gymnasium am Münsterplatz, Basel
2015/2016	Presentation to federal parliament members and business delegations at Weizmann Institute
2009-2019	Workshop leader, Tage der Genforschung, FMI, Basel