Curriculum Vitae **June, 2020**

Stefan Badelt

Institute for Theoretical Chemistry
University of Vienna
Währingerstrasse 17/3/307
1180 Vienna, Austria
http://www.tbi.univie.ac.at/~stef
stef@tbi.univie.ac.at

Educational Background

2011 – 2016	Graduate studies in Molecular Biology, University of Vienna PhD thesis with Prof. Ivo Hofacker: *Control of RNA function by conformational design* Graduation with distinction, PhD
2004 – 2011	Undergraduate studies in Molecular Biology, University of Vienna Master's thesis with Prof. Ivo Hofacker: *RNA folding kinetics including pseudoknots* Graduation with distinction, Mag. rer. nat.

Professional Experience

2020/06 – *present*	**Postdoctoral Scholar** with Ivo L. Hofacker – Theoretical Biochemistry *Institute for Theoretical Chemistry, Vienna, Austria*
2016/04 – 2020/05	**Postdoctoral Scholar** – Compilers for DNA strand displacement systems with Erik Winfree – Division of Biology and Biological Engineering *California Institute of Technology, Pasadena, USA*
2011/10 – 2016/03	**Ph.D. thesis** – Control of RNA function by conformational design with Ivo L. Hofacker – Theoretical Biochemistry *Institute for Theoretical Chemistry, Vienna, Austria*
WS2013 – SS2015	**Teaching** – Exercises for Foundations of Bioinformatics *University of Vienna, Austria*
2009/05 – 2011/09	**Master's thesis** – RNA folding kinetics including pseudoknots with Ivo L. Hofacker – Theoretical Biochemistry *Institute for Theoretical Chemistry, Vienna, Austria*
2008/07 – 2008/09	**Internship** – Chromosome degradation in apoptotic cells with Reinhard Ullmann – Molecular Cytogenetics *Max Planck Institute for Molecular Genetics, Berlin, Germany*
2008/03 – 2008/04	**Internship** – Interaction of Stat1-GRDBD-Stat1 and GRE with Pavel Kovarik – Infection Biology *Max F. Perutz Laboratories, Vienna, Austria*
2006/07 – 2009/03	**Technician** – Plasmid library administration, genotyping *Max F. Perutz Laboratories, Vienna, Austria* Group Kovarik – Infection Biology

Funding Awards

2016/05	Caltech Biology and Biological Engineering Division Fellowship
2011/05	Max F. Perutz Laboratories PhD program selection - Track RNA biology

Skills

- Languages: German (native), fluent English
- Computer Skills: Python, Perl, Bash, LaTeX, julia, R, C, C++, ...
- Lab-Techniques: PCR, Real Time PCR, Tissue Culture work (including Nucleofection), Immunfluorescence, Immunoprecipitation, Nuclear Extract, Western Blot Analysis, Electrophoretic Mobility Shift Assay, DNA/RNA Extraction, DNA/RNA Gel Electrophoresis, Reverse Transcription, Array CGH, Oligoarray, BAC Array, ChIP on Chip.
- Snowboard and Windsurfing instructor

Selected Publications

[2020] S. Badelt, C. Grun, K. Sarma, B. Wolfe, S. W. Shin, and E. Winfree, "A domain-level DNA strand displacement reaction enumerator allowing arbitrary non-pseudoknotted secondary structures," *Journal of the Royal Society Interface*, vol. 17, p. 20190866, 2020.

[2018] J. Berleant, C. Berlind, S. Badelt, F. Dannenberg, J. Schaeffer, and E. Winfree, "Automated sequence-level analysis of kinetics and thermodynamics for domain-level DNA strand-displacement systems," *Journal of the Royal Society Interface*, vol. 15, p. 20180107, 2018.

[2017] S. Badelt, S. W. Shin, R. F. Johnson, Q. Dong, C. Thachuk, and E. Winfree, "A general-purpose CRN-to-DSD compiler with formal verification, optimization, and simulation capabilities," in *International Conference on DNA-Based Computers*, pp. 232–248, Springer, 2017.

[2016] S. Badelt, *Control of RNA function by conformational design.* PhD thesis, University of Vienna, 2016.

[2016] M. Tajaddod, A. Tanzer, K. Licht, M. T. Wolfinger, S. Badelt, F. Huber, O. Pusch, S. Schopoff, M. Janisiw, I. Hofacker, and M. F. Jantsch, "Transcriptome-wide effects of inverted SINEs on gene expression and their impact on RNA Polymerase II activity," *Genome Biology*, vol. 17, p. 220, 2016.

[2016] S. Badelt, C. Flamm, and I. L. Hofacker, "Computational design of a circular RNA with prionlike behavior," *Artificial Life*, vol. 22, pp. 1–13, 2016.

[2015] S. Petkovic, S. Badelt, S. Block, C. Flamm, M. Delcea, I. L. Hofacker, and S. Müller, "Sequence-controlled RNA self-processing: computational design, biochemical analysis and visualization by AFM," *RNA*, vol. 21, pp. 1249–1260, 2015.

[2015] S. Badelt, S. Hammer, C. Flamm, and I. L. Hofacker, "Thermodynamic and kinetic folding of riboswitches," in *Methods in Enzymology*, vol. 553, pp. 193–213, Elsevier, 2015.

[2014] M. Marz, A. R. Gruber, C. Höner zu Siederdissen, F. Amman, S. Badelt, S. Bartschat, S. H. Bernhart, W. Beyer, S. Kehr, R. Lorenz, A. Tanzer, D. Yusuf, H. Tafer, I. L. Hofacker, and P. F. Stadler, "Animal snoRNAs and scaRNAs with exceptional structures," *RNA biology*, vol. 8, pp. 938–946, 2011.

Selected Conferences, Talks & Posters

- *FNANO19 Conference* in Snowbird, Utah, April 15 - 18, 2019
  Talk: Enumeration, condensation and simulation of pseudoknot-free domain-level DNA strand displacement systems
- *Gordon Research Conference on RNA nanotechnology* in Ventura, USA, Jan 13 - 18, 2019
  Poster: Compilation and verification of nucleic acid reaction networks
- *DNA23 Conference* in Austin, Texas, Sept 24 - 28, 2017
  Talk: A General-Purpose CRN-to-DSD Compiler with Formal Verification, Optimization, and Simulation Capabilities
- *DNA22 Conference* in Munich, Germany, Sept 4 - 8, 2016
  Talk: Energy landscapes and folding kinetics of pairwise interacting RNAs
  Poster: Nuskell: A verifying and optimizing CRN-to-DSD compiler
- *Gordon Research Conference on RNA nanotechnology* in Ventura, USA, Feb 1 - 6, 2015
  Poster: Design of XOR riboswitches
- *Artificial Life Conference* in New York, USA, Jul 30 - Aug 2, 2014
  Talk: Design of a circular RNA with prion-like behavior
- *International Synthetic and Systems Biology Summer School* in Taormina, Italy, Jun 15 - 19, 2014
  Poster: Sequence-controlled RNA self-processing: computational design, biochemical analysis and visualization by AFM
- *Herbstseminar Bioinformatik* in Decin, Czech Republic, Oct 2 - 7, 2013
  Talk: Circularization and multimerization of synthetic ribozymes
- *TBI Winterseminar* in Bled, Slovenia, Feb 13 - 20, 2011
  Talk: Energy barriers in pseudoknot conformation space
- *TBI Winterseminar* in Bled, Slovenia, Feb 14 - 21, 2010
  Talk: Design of artificial RNA-switches