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Education and appointments:

2010–present	:	**Professor**, Department of Physics, The Ohio State University
2012–present	:	**Courtesy Professor**, Division of Hematology, Department of Internal Medicine, The Ohio State University
2010–present	:	**Courtesy Professor**, Department of Chemistry&Biochemistry, The Ohio State University
2023–2024	:	**Visiting Scholar**, Department of Cellular and Molecular Medicine, University of California at San Diego
2006–2010	:	**Associate Professor**, Department of Physics, The Ohio State University
2008–2010	:	**Courtesy Associate Professor**, Department of Chemistry&Biochemistry, The Ohio State University
2008–2009	:	**Visiting Professor**, Institute for theoretical Physics, University of Cologne
2001–2006	:	**Assistant Professor**, Department of Physics, The Ohio State University
1997–2001	:	**Postdoc**, Physics Department, University of California at San Diego Supervisor: *T. Hwa*
1996–1997	:	**Postdoc**, Institute for theoretical Physics, University of Cologne Supervisor: *M. Zirnbauer*
1994–1996	:	**PhD**, U. of Potsdam and Max–Planck–Institute of Colloids and Interfaces Supervisor: *R. Lipowksy* Grade: *magna cum laude* Title: Critical behavior of strings and semi-flexible polymers
1993–1994	:	**Research assistant**, Jülich research center (Forschungszentrum Jülich) Supervisor: *R. Lipowsky*
1993	:	**Diplom** (MSc) in physics, University of Cologne Supervisor: *M. Zirnbauer* Grade: *A with honor* Title: Ensemble averaging in disordered mesoscopic conductors: superanalytic coordinate systems and their boundary terms
1992–present	:	**Co-founder**, INSIGMA IT-Engineering GmbH
1989	:	**Vordiplom** (BA) in mathematics, University of Cologne (grade: *A*)
1989	:	**Vordiplom** (BA) in physics, University of Cologne (grade: *A*)
1987–1993	:	Studies of physics and mathematics, University of Cologne

Professional activities:

- Co-director of the Interdisciplinary Biophysics Graduate Program at OSU since 2006
- Chair of the scientific advisory board of the arXiv preprint archive 2013–2015
- Chair of the subject advisory commitee of the arXiv/q-bio preprint archive 2009–2019
- Moderator for the q-bio.GN category of the arXiv preprint archive since inception and of q-bio.QM and q-bio.OT since 2009
- Associate editor for Physical Review E since 2010
- Reviewer for over 25 different journals including Science, Nature, PNAS, Physical Review Letters, Nucleic Acids Research, and Bioinformatics
- frequent member of NSF review panels and ad hoc member of NIH study section
- Deputy chair of Physical Sciences Grant Review Panel, Research Grants Council, Hong Kong 2015–2021
- organizer of several workshops: Rustbelt RNA meeting, OSU workshop on membrane Biophysics, Mathematical Biosciences Institute workshop on gene regulatory networks

Awards:

2015	:	ISCB senior member
2013	:	Fellow of the American Physical Society
2006,2009,2013	:	Dr. Elizabeth L. Gross award for faculty excellence
2000	:	Best paper by young scientist award at the Fourth Annual International Conference on Computational Molecular Biology (RECOMB 2000)
1999	:	Outstanding paper award at the Seventh International Conference on Intelligent Systems for Molecular Biology, Heidelberg
1997 – 1999	:	Fellow of the DAAD (German Academic Exchange Service)
1990 – 1993	:	Fellow of the Studienstiftung des Deutschen Volkes

Teaching experience:

- Undergraduate freshmen honors, thermal physics, theoretical mechanics, computational physics, and introduction to biophysics
- Graduate statistical mechanics and classical mechanics
- Graduate mentoring seminar (research ethics, preparation of presentations and fellowship proposals, navigating the academic environment)
- Contributions on Computational Biology and Bioinformatics to various graduate courses
- Supervision of numerous graduate and undergraduate students

Peer-reviewed publications:

(including peer-reviewed Bioinformatics conference proceedings)

148. A. Robbins, H. Hildebolt, M. Neuhoff, P. Beshay, J.O. Winter, C.E. Castro, R. Bundschuh, and M.G. Poirier. *Cooperative control of a DNA origami force sensor*, accepted in Scientific Reports (2024).

147. F.M. Naeem, B.T. Gemler, Z.A. McNutt, R. Bundschuh, and K. Fredrick. *Analysis of programmed frameshifting during translation of prfB in Flavobacterium johnsoniae*, RNA 30, 136-148 (2024).

146. A.C. Aplasca, M.P. Martinez, S.J.M. Evans, M.E. Martinez, R.E. Cianciolo, M. Bundschuh, E. Puchulu-Campanella, X. Chen, P. Yan, R. Bundschuh, K.E. Seeley, P. Bapodra-Villaverde, M.M. Garner, and R.E. Junge. *An outbreak of feline infectious peritonitis in three related sand cats*, J. Zoo Wildl. Med. 54, 628-638 (2023).

145. B.R. Warner, R. Bundschuh, and K. Fredrick. *Roles of the leader-trailer helix and antitermination complex in biogenesis of the 30S ribosomal subunit*, Nucleic Acids Res. 51, 5242-5254 (2023).

144. Z.A. McNutt, B. Roy, B.T. Gemler, E.A. Shatoff, K.-M. Moon, L.J. Foster, R. Bundschuh, and K. Fredrick. *Ribosomes lacking bS21 gain function to regulate protein synthesis in Flavobacterium johnsoniae*, Nucleic Acids Res. 51, 1927-1942 (2023).

143. M. Darcy, K. Crocker, Y. Wang, J.V. Le, G. Mohammadiroozbahani, M.A.S. Abdelhamid, T.D. Craggs, C.E. Castro, R. Bundschuh, and M.G. Poirier, *High-Force Application by a Nanoscale DNA Force Spectrometer*, ACS Nano 16, 5682-5695 (2022).

142. E. Shatoff and R. Bundschuh, *dsRBPBind: Modeling the effect of RNA secondary structure on double stranded RNA-protein binding*, Bioinformatics 38, 687–693 (2022).

141. K. Singh, Y. Rustagi, A.S. Abouhashem, S. Tabasum, P. Verma, E. Hernandez, D. Pal, D.K. Khona, S.K. Mohanty, M. Kumar, R. Srivastava, P.R. Guda, S.S. Verma, S. Mahajan, J.A. Killian, L.A. Walker, S. Ghatak, S.S. Mathew-Steiner, K.E. Wanczyk, S. Liu, J. Wan, P. Yan, R. Bundschuh, S. Khanna, G.M. Gordillo, M.P. Murphy, S. Roy, and C.K. Sen, *Genome-wide DNA hypermethylation opposes healing in patients with chronic wounds by impairing epithelial-mesenchymal transition*, J Clin Invest 132,e157279 (2022).

140. C.-L. Chiang, E.Y. Hu, L. Chang, J. Labanowska, K. Zapolnik, X. Mo, J. Shi, T.-J. Doong, A. Lozanski, P.S. Yan, R. Bundschuh, L.A. Walker, D. Gallego-Perez, W. Lu, M. Long, S. Kim, N.A. Heerema, G. Lozanski, J.A. Woyach, J.C. Byrd, L.J. Lee, and N. Muthusamy, *Leukemia-initiating HSCs in chronic lymphocytic leukemia reveal clonal leukemogenesis and differential drug sensitivity*, Cell Rep 40, 111115 (2022).

139. J. Gaither, Y.-H. Lin, and R. Bundschuh, *RBPBind: Quantitative prediction of Protein-RNA interactions*, J Mol Biol 434, 167515 (2022).

138. Z. Yi, R.M. Arvola, S. Myers, C.N. Dilsavor, R. Abu Alhasan, B.N. Carter, R.D. Patton, R. Bundschuh, and G. Singh, *Mammalian UPF3A and UPF3B can activate NMD independently of their EJC binding*, EMBO J 41, e109202 (2022).

137. A.A. Zayed, J.M. Wainaina, G. Dominguez-Huerta, E. Pelletier, J. Guo, M. Mohssen, F. Tian, A.A. Pratama, B. Bolduc, O. Zablocki, D. Cronin, L. Solden, E. Delage, A. Alberti, J.M. Aury, Q. Carradec, C. da Silva, K. Labadie, J. Poulain, H.J. Ruscheweyh, G. Salazar G, E. Shatoff E, Tara Oceans Coordinators, R. Bundschuh, K. Fredrick, L.S. Kubatko, S. Chaffron, A.I. Culley, S. Sunagawa, J.H. Kuhn, P. Wincker, M.B. Sullivan, S.G. Acinas, M. Babin, P. Bork, E. Boss, C. Bowler, G. Cochrane, C. de Vargas, G. Gorsky, L. Guidi, N. Grimsley, P. Hingamp, D. Iudicone, O. Jaillon, S. Kandels, L. Karp-Boss, E. Karsenti, F. Not, H. Ogata, N. Poulton, S. Pesant, C. Sardet, S. Speich, L. Stemmann, M.B. Sullivan, S. Sungawa, and P. Wincker, *Cryptic and abundant marine viruses at the evolutionary origins of Earth's RNA virome*, Science 376, 156-162 (2022).

136. S. Goswami, R. Mani, J. Nunes, C.-L. Chiang, K. Zapolnik, E. Hu, F. Frissora, X. Mo, L.A. Walker, P. Yan, R. Bundschuh, L. Beaver, R. Devine, Y.-T. Tsai, A. Ventura, Z. Xie, M. Chen, R. Lapalombella, A. Walker, A. Mims, K. Larkin, N. Grieselhuber, C. Bennett, M. Phelps, E. Hertlein, G. Behbehani, S. Vasu, J.C. Byrd, and N. Muthusamy, *PP2A is a therapeutically targetable driver of cell fate decisions via a c-Myc/p21 axis in human and murine acute myeloid leukemia*, Blood 139, 1340-1358 (2022).

135. J.K. Denninger, L.A. Walker, X. Chen, A. Turkoglu, A. Pan, Z. Tapp, S. Senthilvelan, R. Rindani, O.N. Kokiko-Cochran, R. Bundschuh, P. Yan, and E.D. Kirby, *Robust Transcriptional Profiling and Identification of Differentially Expressed Genes With Low Input RNA Sequencing of Adult Hippocampal Neural Stem and Progenitor Populations*, Front Mol Neurosci 15, 810722 (2022).

134. E.A. Shatoff, B.T. Gemler, R. Bundschuh, and K. Fredrick, *Maturation of 23S rRNA includes removal of helix H1 in many bacteria*, RNA Biol 18, 856-865 (2021).

133. K. Crocker, J. Johnson, W. Pfeifer, C. Castro, and R. Bundschuh, *A quantitative model for a nanoscale switch accurately predicts thermal actuation behavior*, Nanoscale 13, 13746-13757 (2021).

132. D.E. Frankhouser, S. Steck, M.G. Sovic, M.A. Belury, Q. Wang, S.K. Clinton, R. Bundschuh, P. Yan, and L.D. Yee, *Dietary omega-3 fatty acid intake impacts peripheral blood DNA methylation -anti-inflammatory effects and individual variability in a pilot study*, J Nutr Biochem 99, 108839 (2021).

131. H. He, S. Liyanarachchi, W. Li, D.F. Comiskey, P. Yan, R. Bundschuh, A.M. Turkoglu, P. Brock, M.D. Ringel, and A. de la Chapelle, *Transcriptome analysis discloses dysregulated genes in normal appearing tumor-adjacent thyroid tissues from patients with papillary thyroid carcinoma*, Sci Rep 11, 14126 (2021).

130. K. Crocker, J. London, A. Medina, R. Fishel, and R. Bundschuh, *Evolutionary advantage of a dissociative search mechanism in DNA mismatch repair*, Phys Rev E 103, 052404 (2021).

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127. Y. Wang, J.V. Le, K. Crocker, M.A. Darcy, P.D. Halley, D. Zhao, N. Andrioff, C. Croy, M.G. Poirier, Ralf Bundschuh, and C.E. Castro *A nanoscale DNA force spectrometer capable of applying tension and compression on biomolecules*, Nucleic Acids Res 49, 8987-8999 (2021).

126. Z.A. McNutt, M.D. Gandhi, E.A. Shatoff, B. Roy, A. Devaraj, R. Bundschuh, and K. Fredrick, *Comparative Analysis of anti-Shine-Dalgarno Function in Flavobacterium johnsoniae and Escheirchia coli*, Front Mol Biosci 8, 787388 (2021).

125. M.R. Gibbs, K.-M. Moon, B.R. Warner, M. Chen, R. Bundschuh, L.J. Foster, and K. Fredrick, *Functional Analysis of BipA in E. coli Reveals the Natural Plasticity of 50S Subunit Assembly*, J Mol Biol 432, S0022-28362030460-5 (2020).

124. R.D. Patton, M. Sanjeev, L.A. Woodward, J.W. Mabin, R. Bundschuh, and G. Singh, *Chemical crosslinking enhances RNA immunoprecipitation for efficient identification of binding sites of proteins that photo-crosslink poorly with RNA*, RNA 26, 1216-1233 (2020).

123. P. Gangras, T.L. Gallagher, M.A. Parthun, Z. Yi, R.D. Patton, K.T. Tietz, N.C. Deans, R. Bundschuh, S.L. Amacher, and G. Singh, *Zebrafish rbm8a and magoh mutants reveal EJC developmental functions and new 3UTR intron-containing NMD targets*, PLoS Genet. 16, e1008830 (2020).

122. E. Shatoff and R. Bundschuh, *Single nucleotide polymorphisms affect RNA-protein interactions at a distance through modulation of RNA secondary structures*, PLoS Comput. Biol. 16, e1007852 (2020).

121. D. del Valle Morales, J.B. Trotman, R, Bundschuh, and D.R. Schoenberg, *Inhibition of cytoplasmic cap methylation identifies 5' TOP mRNAs as recapping targets and reveals recapping sites downstream of native 5' ends*, Nucleic Acids Research 48, 3806-3815 (2020)

120. L.A. Walker, M.G. Sovich, C.-L. Chiang, E. Hu, J.K. Denninger, X. Chen, E.D. Kirby, J.C. Byrd, N. Muthusamy, R. Bundschuh, and P. Yan, *CLEAR: coverage-based limiting-cell experiment analysis for RNA-seq*, J. Transl. Med. 18, 63 (2020)

119. D. Zhao, J.V. Le, M.A. Darcy, K. Crocker, M.G. Poirier, C. Castro, and R. Bundschuh, *Quantitative Modeling of Nucleosome Unwrapping from Both Ends*, Biophys. J. 117 S0006-34951930880-X (2019).

118. M. Westphal, D. Frankhouser, C. Sonzone, P.G. Shields, P. Yan, and R. Bundschuh, *SMaSH: Sample matching using SNPs in humans*, BMC Genomics 20, 1001 (2019).

117. D. Zhao, W. Baez, K. Fredrick, and R. Bundschuh, *RiboProP: A Probabilistic Ribosome Positioning Algorithm for Ribosome Profiling*, Bioinformatics 35, 1486-1493 (2019).

116. B.S. Moreland, K.M. Oman, and R. Bundschuh, *A model of pulldown alignments from SssI-treated DNA improves DNA methylation prediction*, BMC Bioinformatics 20, 431 (2019).

115. W.D. Baez, K.J. Wiese, and R. Bundschuh, *Behavior of random RNA secondary structures near the glass transition*, Phys. Rev. E 99, 022415 (2019).

114. W.D. Baez, B. Roy, Z.A. McNutt, E.A. Shatoff, S. Chen, R. Bundschuh, and K. Fredrick, *Global analysis of protein synthesis in Flavobacterium johnsoniae reveals the use of Kozak-like sequences in diverse bacteria*, Nucleic Acids Res. 47, 10477-10488 (2019).

113. A. Pan, L. Yu, J. Breitbach, R. Bundschuh, V.M. Goettl, Z.A. Hing, P. Kanga, R. Mantel, D. Sampath, L.L. Smith, R. Wasmuth, D.K. White, P. Yan, J.C. Byrd, and J.A. Woyach, *Eμ-TCL1xMyc: A Novel Mouse Model for Concurrent CLL and B-Cell Lymphoma*, Clin. Cancer Res. 25, 6260-6273 (2019).

112. C.-L. Chiang, S. Goswami, F.W. Frissora, Z. Xie, P.S. Yan, R. Bundschuh, L.A. Walker, X. Huang, R. Mani, X.M. Mo, S. Baskar, C. Rader, M.A. Phelps, G. Marcucci, J.C. Byrd, L.J. Lee, and N. Muthusamy, *ROR1-targeted delivery of miR-29b induces cell cycle arrest and therapeutic benefit in vivo in a CLL mouse model.*, Blood 134, 432-444 (2019).

111. M. Brehove, E. Shatoff, B.T. Donovan, C.M. Jipa, R. Bundschuh, and M.G. Poirier, *DNA sequence influences hexasome orientation to regulate DNA accessibility*, Nucleic Acids Res. 47, 5617-5633 (2019).

110. S. Dodbele, B. Moreland, S.M. Gardner, R. Bundschuh, and J.E. Jackman, *5'-End sequencing in Saccharomyces cerevisiae offers new insights into 5'-ends of tRNA^{His} and snoRNAs*, FEBS Letters 593, 971-981 (2019).

109. L.K. Genutis, J. Tomsic, R. Bundschuh, P. Brock, M.D. Williams, S. Roychowdhury, J.W. Reeser, W.L. Frankel, M. Alsomali, M.J. Routbort, R.R. Broaddus, P.E. Wakely Jr, J.E. Phay, C.J. Walker, and A. de la Chapelle, *Microsattelite Instability Occurs in a Subset of Follicular Thyroid Cancers*, Thyroid 29, 523-529 (2019).

108. C.J. Huseby, R. Bundschuh, and J. Kuret, *The role of annealing and fragmentation in human tau aggregation dynamics*, J. Biol. Chem. 294, 4728-4737 (2019).

107. K. Caution, A. Pan, K. Krause, A. Badr, K. Hamilton, A. Vaidya, H. Gosu, K. Daily, S. Estfanous, M.A. Gavrilin, M.E. Drew, E. Cormet-Boyaka, X. Chen, D.E. Frankhouser, R. Bundschuh, P. Yan, D. Dakhlallah, and A.O. Amer, *Methylomic correlates of autophagy activity in cystic fibrosis*, J. Cyst. Fibros. 18, 491-500 (2019).

106. J.W. Mabin, L.A. Woodward, R.D. Patton, Z. Yi, M. Jia, V.H. Wysocki, R. Bundschuh, and G. Singh, *The Exon Junction Complex Undergoes a Compositional Switch that Alters mRNP Structure and Nonsense-Mediated mRNA Decay Activity.* Cell Rep 25, 2431-2446.e7 (2018).

105. J. Hanne, B.M. Britton, J. Park, J. Liu, J. Martín-López, N. Jones, M. Schoffner, P. Klajner, R. Bundschuh, J.-B. Lee, and R. Fishel, *MutS homolog sliding clamps shield the DNA from binding proteins.* J. Biol. Chem. 293, 14285-14294 (2018).

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103. D.L. Kiss, W.D. Baez, K. Huebner, R. Bundschuh, and D.R. Schoenberg, *Loss of fragile histidine triad Fhit protein expression alters the translation of cancer-associated mRNAs.* BMC Res. Notes 11, 178 (2018).

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101. D.L. Kiss, W. Baez, K. Huebner, R. Bundschuh, and D.R. Schoenberg, *Impact of FHIT loss on the translation of cancer-associated mRNAs.* Mol. Cancer 16, 179 (2017).

100. D. Papaioannou, D. Nicolet, S. Volinia, K. Mrózek, P. Yan, R. Bundschuh, A.J. Carroll, J. Kohlschmidt, W. Blum, B.L. Powell, G.L. Uy, J.E. Kolitz, E.S. Wang, A.-K. Eisfeld, S.J. Orwick, D.M. Lucas, M.A. Caligiuri, R.M. Stone, J.C. Byrd, R. Garzon, and C.D. Bloomfield, *Prognostic and biologic significance of long non-coding RNA profiling in younger adults with cytogenetically normal acute myeloid leukemia.* Haematologica 102, 1391–1400 (2017).

99. C.J. Walker, A.-K. Eisfeld, L.K. Genutis, M. Bainazar, J. Kohlschmidt, K. Mrózek, A.J. Carroll, J.E. Kolitz, B.L. Powell, E.S. Wang, R.M. Stone, R. Bundschuh, A. de la Chapelle, and C.D.

Bloomfield, *No evidence for microsatellite instability in acute myeloid leukemia.* Leukemia 31, 1474–1476 (2017).

98. D.L. Kiss, C.E. Waters, I.M. Ouda, J.C. Saldivar, J.R. Karras, Z.A. Amin, S. Mahrous, T. Druck, R. Bundschuh, D.R. Schoenberg, and K. Huebner, *Identification of Fhit as a post-transcriptional effector of Thymidine Kinase 1 expression.* Biochim. Biophys. Acta 1860, 374–382 (2017).

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Invited conference presentations (presenter in bold):

45. **R. Bundschuh**, *Quantitative modeling enables understanding and rational design of a temperature actuated DNA origami nanohinge*, 5th International Conference on Mathematical and Computational Medicine, Virtual, 6/7/21-6/11/21

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43. **R. Bundschuh**, *Computational modeling of protein RNA interactions*, 4th International Conference on Computational Science and Engineering, Ho Chi Minh City, Vietnam, 7/24/19-7/28/19

42. **R. Bundschuh**, *RiboProP: A Probabilistic Ribosome Positioning Algorithm for Ribosome Profiling*, presentation as invited participant at workshop on RNA, Benasque, Spain, 7/15/18-7/27/18

41. **R. Bundschuh**, *Nucleosome unwrapping may be easier than you think*, March Meeting of the American Physical Society, Los Angeles, CA, 3/5/18-3/9/18

40. **R. Bundschuh**, *FuSpot and SMaSH: Tools for fusion and sample identification in genomics data*, 1st International Conference on Computational Genomics and Proteomics, Guanacaste, Costa Rica, 10/18/16-10/22/16

39. **R. Bundschuh**, *Quantifying genome-wide DNA methylation from MethylCap-Seq data and its applications in cancer*, Belgrade Bioinformatics Conference BELBi 2016, 6/20/16-6/24/16

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34. **R. Bundschuh**, *Dynamics of the Competition Between Nucleosome Unwrapping and DNA Binding Proteins*, March Meeting of the American Physical Society, San Antonio, TX, 3/2/15-3/6/15

33. **R. Bundschuh**, *Phase transitions in homopolymer models of RNA*, PIMS Analytic RNA Combinatorics, Vancouver, Canada, 4/15/14-4/16/14

32. **R. Bundschuh**, RNA structure mediated cooperativity in RNA-protein interactions Zing conference on protein and RNA structure prediction, Xcaret, Mexico, 12/1/13-12/5/13

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30. **R. Bundschuh**, *Genome-wide DNA methylation profiling in cancer*, Zing conference on Mathematical and Computational Medicine, Xcaret, Mexico, 12/1/12-12/5/12

29. **R. Bundschuh**, *Fitness and structure landscapes for pre-miRNA processing*, *Incorporating RNA-Protein Interactions into RNA Secondary Structure Prediction*, presentations as invited participant at workshop on RNA, Benasque, Spain, 7/22/12-8/3/12

28. **R. Bundschuh**, *Statistical Physics of Sequence Analysis*, March Meeting of the American Physical Society, Boston, MA, 2/27/12-3/2/12

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24. **R. Bundschuh**, *An evolutionary hypothesis and computational identification of insertional RNA editing sites*, 435th WE Heraeus Seminar: Physics of Biological Function, Bad Honnef, Germany, 6/21/09-6/25/09

23. **R. Bundschuh**, *Statistical Physics of RNA*, Workshop on Disorder and Localization Phenomena: from Theory to Applications, Paris, France, 3/17/08-3/19/08

22. **R. Bundschuh**, *Statistical Physics of RNA folding*, Summer School Non-equilibrium in Physics and in Biology, St Etienne de Tineé, France, 8/13/07-10/8/07

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20. **R. Bundschuh**, *Quantitative models of RNA single molecule experiments*, International Workshop Physical and Chemical Foundations of Bioinformatics Methods, Dresden, Germany, 6/18/07-6/22/07

19. **R. Bundschuh**, *Aggregation and folding phase transitions of RNA molecules*, Workshop on Physics Inspired by Biology, Minneapolis, MN, 5/4/07-5/6/07

18. **R. Bundschuh**, *Aggregation and folding phase transitions of RNA molecules*, March Meeting of the American Physical Society 2007, Denver, CO, 3/5/07-3/9/07

17. **R. Bundschuh**, *Structure prediction with force*, *Insertional RNA editing*, and *Translocation through Nanopores*, presentations as invited participant at workshop on Computational approaches to functional and regulatory RNAs, Benasque, Spain, 7/16/06-7/28/06

16. **R. Bundschuh**, *Kinetic modeling of RNA single-molecule experiments*, Canadian Association of Physicists yearly meeting, St. Catherines, ON, 6/11/06-6/14/06

15. **R. Bundschuh**, *Computational Approaches to the Prediction of RNA Editing Sites*, Ohio Collaborative Conference on Bioinformatics, Athens, OH, 6/28/06-6/30/06

14. **R. Bundschuh**, *Modeling the translocation of structured RNA molecules through a nanopore*, Electronic Recognition of Bio-molecules meeting, Urbana, IL, 9/7/05-9/9/05

13. **R. Bundschuh**, *Kinetics of RNA translocation through a nanopore*, March Meeting of the American Physical Society 2005, Los Angeles, CA, 3/20/05-3/25/05

12. **R. Bundschuh**, *Statistical Physics of RNA Secondary Structures*, March meeting (Frühjahrstagung) of the German Physical Society, Regensburg, Germany, 3/8/04-3/12/04

11. **R. Bundschuh**, *Glassiness in RNA secondary structures*, Cecam workshop Statistical Mechanics of Random Copolymers, Lyon, France, 9/22/03-9/26/03

10. **R. Bundschuh**, *Statistical mechanics of secondary structures formed by random RNA sequences*, March Meeting of the American Physical Society 2003, Austin, TX, 3/03/03-3/07/03

9. **R. Bundschuh**, *RNA secondary structure: Statistical physics and quantitative modeling*, Cell Systems Biology workshop, Berlin, Germany, 11/21/02-11/23/02

8. **R. Bundschuh**, *Modeling single molecule RNA force extension experiments*, Satellite meeting to ECCB02 on bioinformatics and statistical physics, Saarbrücken, Germany, 10/6/02-10/11/02

7. **R. Bundschuh**, *Sequence Alignment and Statistical Physics*, 7th Claude Itzykson meeting, Gif-sur-Yvette, France, 6/19/02-6/21/02.

6. **R. Bundschuh**, *The role of disorder in RNA folding*, Statistical Physics and Biological Information program at the Institute for Theoretical Physics, Santa Barbara, CA, 1/31/01

5. **R. Bundschuh**, *Tutorial on RNA secondary structure*, Statistical Physics and Biological Information program at the Institute for Theoretical Physics, Santa Barbara, CA, 1/31/01

4. **R. Bundschuh**, *Sequence Alignment, Directed Polymers, and the Asymmetric Exclusion Process*, Statistical Physics and Biological Information program at the Institute for Theoretical Physics, Santa Barbara, CA, 1/24/01

3. **R. Bundschuh**, *Large-score Statistics for Sequence Alignment with Gaps*, Stochastics in sequence alignment and population biology workshop, Frankfurt, Germany, 10/12/00-10/14/00

2. **R. Bundschuh**, U. Gerland, and T. Hwa, *The Stability of RNA Secondary Structures*, International Workshop on Biological Evolution and Statistical Physics, Dresden, Germany, 5/10/00-5/14/00

1. **R. Bundschuh** and T. Hwa, *Sequence Alignment, Extremal Distribution, and the Asymmetric Exclusion Process*, Nordita Workshop on Non Equilibrium Physics, Copenhagen, Denmark, 9/23/99-9/25/99

Invited seminars and colloquia:

67. *Quantitative modeling of protein-RNA interactions*, Physics Colloquium, Williams College, Williamstown, MA, 9/30/22

66. *The intricate interplay of RNA structure and RNA-protein interactions*, Biological Physics & Physical Biology Seminar, virtual, 9/9/22

65. *Quantitative modeling of protein RNA interactions*, Mathematical Biology Seminar, Georgia Institute of Technology, Atlanta, GA 2/5/21

64. *Quantitative modeling of nucleic-acid protein interactions*, Center for Theoretical Biological Physics Seminar, Rice University, Houston, TX 2/23/16

63. *Quantitative modeling of nucleosome dynamics*, Physics colloquium, Kent State University, Kent, OH, 9/25/14

62. *Quantitative modeling of nucleic-acid protein interactions*, Biophysics seminar, Simon Fraser University, Vancouver, Canada, 4/16/14

61. *Quantitative modeling of nucleic-acid protein interactions*, Center for Biological Physics seminar, UCLA, CA, 3/14/14

60. *Gene discovery in the presence of RNA editing*, Biochemistry seminar, Texas A&M University, College Station, TX, 9/25/13

59. *Biophysical modeling of RNA structures*, Biophysics lecture, Xavier University, OH, 4/10/13

58. *From the Ising Model to Biological Sequence Analysis*, Colloquium of the center for synthetic microbiology, Marburg, Germany, 6/19/12

57. *Quantitative modeling of nucleosome dynamics*, Special seminar, University of California at Riverside, Riverside, CA, 1/3/12

56. *Quantitative Modeling of Nucleosome Dynamics*, Biophysics seminar, Arizona State University, Tempe, AZ, 9/7/11

55. *Fitness and structure landscapes for pre-miRNA processing*, Biophysics seminar, Princeton University, Princeton, NJ, 4/4/11

54. *Flexibility of short DNA*, BioMaPS seminar, Rutgers University, Piscataway, NJ, 3/3/10

53. *From the Ising Model to Biological Sequence Analysis*, Physics Colloquium, Ohio State University, Columbus, OH, 11/10/09

52. *From the Ising Model to Biological Sequence Analysis*, Physics Colloquium, University of Waterloo, Waterloo, ON, 10/22/09

51. *Flexibility of short DNA*, Physics Colloquium, McMaster University, Hamilton, ON, 10/21/09

50. *Gene discovery in the presence of RNA editing*, chemistry and biochemistry seminar, Northern Arizona University, Flagstaff, AZ, 9/25/09

49. *From the Ising Model to Biological Sequence Analysis*, Physics Colloquium, Carnegie Mellon University, Pittsburgh, PA, 9/21/09

48. *Vom Ising-Modell zur biologischen Sequenzanalyse*, Physics colloquium at the Universität des Saarlandes, Saarbrücken, Germany, 7/16/09

47. *Aggregation and folding phase transitions of RNA molecules*, Seminar of the Laboratoire de Physique Théorique, Ecole Normale Supérieure, Paris, France, 3/30/09

46. *Quantitative modeling of RNA single-molecule experiments*, Soft condensed matter theory group seminar, Institute for condensed matter research, Forschungszentrum Jülich, Jülich, Germany, 1/29/09

45. *From the Ising Model to Biological Sequence Analysis*, Colloquium for theoretical Physics, Universität zu Köln, Köln, Germany, 10/24/08

44. *Vom Ising-Modell zur biologischen Sequenzanalyse*, Physics colloquium, Universität Duisburg-Essen, Duisburg, Germany, 10/15/08

43. *From the Ising Model to Biological Sequence Analysis*, Physics Colloquium, University of California at Riverside, Riverside, CA, 5/08/08

42. *Computational Prediction of Insertional RNA Editing*, Mathematical Biosciences Institute seminar, Ohio State University, Columbus, OH, 4/15/08

41. *Quantitative modeling of RNA single-molecule experiments*, Departmental seminar of the department of Biophysics and Biochemistry, University of Rochester, Rochester, NY, 9/12/07

40. *An Evolutionary Hypothesis and Computational Identification of Insertional RNA Editing Sites*, Evolution of Molecular Networks program at the Kavli Institute for Theoretical Physics, Santa Barbara, CA, 1/25/07

39. *Gene discovery in the presence of RNA editing*, biochemistry seminar, The Ohio State University, Columbus, OH, 10/10/06

38. *Quantitative modeling of RNA single-molecule experiments*, condensed matter seminar, Ohio University, Athens, OH, 6/1/06.

37. *A practical approach to significance assessment in alignment with gaps*, postdoc seminar of the Mathematical Biosciences Institute, The Ohio State University, Columbus, OH, 1/19/06

36. *Quantitative modeling of RNA single-molecule experiments*, condensed matter seminar, Case Western Reserve University, Cleveland, OH, 11/28/05

35. *Quantitative modeling of RNA single-molecule experiments*, biophysics seminar, Rice University, Houston, TX, 11/18/05

34. *Gene discovery in the presence of RNA editing*, biology seminar, NYU, New York, NY, 9/19/05

33. *Quantitative modeling of single molecule RNA force-extension experiments*, special physics seminar, Universität Bielefeld, Bielefeld, Germany, 6/15/05

32. *Statistical Assessment of Sequence Alignments*, seminar of the MPIMG, Max Planck Institute for molecular genetics, Berlin, Germany, 6/14/05

31. *A Practical Approach to Significance Assessment in Alignments with Gaps*, Graduiertenkolleg Strukturbildungsprozesse colloquium, Universität Bielefeld, Bielefeld, Germany, 6/9/05

30. *Quantitative modeling of RNA single-molecule experiments*, AG Praktische Informatik seminar, Universität Bielefeld, Bielefeld, Germany, 6/6/05

29. *Statistical Assessment of Sequence Alignments*, CeBiTec colloquium, Universität Bielefeld, Bielefeld, Germany, 5/30/05

28. *Significance assessment in local sequence alignment with gaps*, Physics colloquium, Virginia Tech, Blacksburg, VA, 4/29/05

27. *Quantitative modeling of single-molecule RNA force-extension experiments*, Condensed matter seminar, University of Cincinnati, Cincinnati, OH, 4/13/05

26. *Statistical Assessment of Sequence Alignments*, Department of Chemistry and Center for Photochemical Sciences seminar, Bowling Green University, Bowling Green, OH, 1/28/04

25. *Significance assessment in local sequence alignment with gaps*, Biophysics program seminar, The Ohio State University, Columbus, OH, 12/4/03

24. *Quantitative modeling of single-molecule RNA force-extension experiments*, Center for Physics and Biology seminar, Rockefeller University, New York, NY, 11/18/03

23. *Quantitative modeling of single-molecule RNA force-extension experiments*, Condensed matter and applied physics colloquium, Harvard University, Cambridge, MA, 11/14/03

22. *Directed Polymers and Sequence Comparison*, Alumni meeting of the Max-Planck institute for colloid and interface research, Potsdam, Germany, 6/20/03

21. *Statistical Physics of Biological Sequences*, Physics colloquium at Ohio University, Athens, OH, 10/25/02

20. *Rare events and statistical physics of biological sequences*, Biological physics seminar of the Max-Planck-Institute for Physics of Complex Systems, Dresden, Germany, 6/17/02.

19. *Statistical Assessment of Sequence Alignments*, Molecular and microbiology seminar at Case Western Reserve University, Cleveland, OH, 5/13/02

18. *Large Score Statistics for Sequence Alignment with Gaps*, Applied mathematics seminar of The Ohio State University, Columbus, OH, 2/28/02

17. *Statistical Physics of Biological Sequences*, Physics colloquium of The Ohio State University, Columbus, OH, 11/6/01

16. *Statistics of RNA secondary structures and what we can learn from single-molecule experiments*, RNA group seminar of The Ohio State University, Columbus, OH, 10/10/01

15. *Statistical Physics of RNA folding*, Condensed matter physics seminar of the University of Cincinnati, Cincinnati, 2/14/01

14. *Biopolymers - Information Carriers and Structural Building Blocks*, ITP blackboard lunch, Santa Barbara, CA, 2/5/01

13. *Rare events and statistical physics of sequence alignments*, Condensed matter theory seminar of The Ohio State University, Columbus, OH, 11/20/00

12. *Statistical physics of sequence alignment*, Career issues seminar of the University of Michigan, Ann Arbor, MI, 11/9/00

11. *Statistical Physics of RNA folding*, Physics colloquium, George Washington University, Washington, DC, 3/28/00
10. *Statistical Physics of RNA folding*, Special physics colloqium, University of Wisconsin at Milwaukee, Milwaukee, WI, 3/9/00
9. *Statistical Physics of RNA folding*, Special condensed matter physics seminar, Ohio State University, Columbus, OH, 3/7/00
8. *Bioinformatics: Overview and Perspectives*, Special bioengineering seminar, University of Illinois at Chicago, Bioengineering department, Chicago, IL, 2/29/00
7. *Statistical Assessment of Sequence Alignments*, Special bioengineering seminar, University of Illinois at Chicago, Bioengineering department, Chicago, IL, 2/28/00
6. *Statistical Physics of RNA folding*, Special physics seminar, Iowa State University, Department of Physics and Astronomy, Ames, Iowa, 2/25/00
5. *Statistical Physics of RNA folding*, Special condensed matter seminar, MIT Physics department, Cambridge, MA, 2/10/00
4. *Statistical Assessment of Sequence Alignments*, Special seminar, MIT Biology department, Cambridge, MA, 2/9/00
3. *Statistical Physics of RNA folding*, Condensed matter seminar, Harvard, Cambridge, MA, 2/3/00
2. *Statistical Assessment of Sequence Alignments*, National Center for Biotechnology Information seminar, Bethesda, MD, 10/4/99
1. *RNA secondary structure formation: a solvable model of heteropolymer folding*, Complex dynamical systems seminar at UCSD, La Jolla, 5/3/99

Contributed conference talks and posters (presenter in bold):

110. **D. Bingman**, and R. Bundschuh, *Computational modelling of RNA-protein binding interactions using an external force*, contributed poster at the 2023 RustBelt RNA meeting, East Lansing, MI, 10/27/23-10/28/23
109. F.M. Naeem, B.T. Gemler, Z.A. McNutt, R. Bundschuh, and K. Fredrick, *Analysis of programmed frameshifting during translation of prfB in Flavobacterium johnsoniae*, contributed poster at the 2023 RustBelt RNA meeting, East Lansing, MI, 10/27/23-10/28/23
108. **M. Sanjeev**, L. Woodward, R. Patton, R. Bundschuh, and G. Singh, *PYM1 controls of Exon Junction Complex occupancy at canonical and non-canonical positions and can thereby modulate NMD*, contributed talk at the 2022 RustBelt RNA meeting, Cleveland, OH, 10/14/22-10/15/22
107. **B. Warner**, R. Bundschuh, and K. Fredrick, *A crucial role for the leader-trailer helix and minor role for the antitermination complex in biogenesis of the 30S ribosomal subunit*, contributed poster at the 2022 RustBelt RNA meeting, Cleveland, OH, 10/14/22-10/15/22
106. **B. Roy**, Z.A. McNutt, B.T. Gemler, E.A. Shatoff, K.-M. Moon, L.J. Foster, R. Bundschuh, and K. Fredrick, *Ribosomes lacking bS21 gain function to regulate protein synthesis*, contributed poster at the 2022 RustBelt RNA meeting, Cleveland, OH, 10/14/22-10/15/22

105. **B. Carter**, M. Sanjeev, L. Woodward, R. Patton, S. Myers, R. Bundschuh, and G. Singh, *Investigating PYM1 function in cellular and flaviviral gene expression*, contributed poster at the 2022 RustBelt RNA meeting, Cleveland, OH, 10/14/22-10/15/22

104. E.A. Shatoff, B.T. Gemler, K. Fredrick, and **R. Bundschuh**, *Maturation of 23S rRNA includes removal of helix H1 in many bacteria*, contributed poster at RIBOSOME 2022, Lyon, France, 7/10/22-7/14/22

103. **B. Warner**, R. Bundschuh, and K. Fredrick, *A crucial role for the leader-trailer helix and minor role of the antitermination complex in biogenesis of the 30S ribosomal subunit*, contributed poster at RIBOSOME 2022, Lyon, France, 7/10/22-7/14/22

102. **R. Bundschuh** and C. Owusu-Ansah, *Insertions and deletions affect RNA-protein interactions through RNA secondary structure*, contributed (virtual) talk at the March Meeting of the American Physical Society, 3/14/22-3/18/22

101. **Z. Yi**, R.M. Arvola, S. Myers, C.N. Dilsavor, R.A. Alhasan, B.N. Carter, R.D. Patton, R. Bundschuh, and G. Singh, *Mammalian UPF3A and UPF3B activate NMD independently of their EJC binding*, contributed (virtual) talk at the 2021 RustBelt RNA meeting, 9/10/21-9/11/21

100. **M. Sanjeev**, L. Woodward, R. Patton, R. Bundschuh, and Guramrit Singh, *PYM controls Exon Junction Complex occupancy at non-canonical positions*, contributed (virtual) poster at the 2021 RustBelt RNA meeting, 9/10/21-9/11/21

99. **E. Shatoff** and R. Bundschuh, *Integrating double stranded RNA binding proteins into RNA secondary structure prediction*, contributed (virtual) talk at the March Meeting of the American Physical Society, 3/15/21-3/19/21

98. **Z.A. McNutt**, B. Roy, B.L. Boleratz, D.E. Watkins, V. Jha, D. Jahagirdar, K. Basu, E.A. Shatoff, R. Bundschuh, J. Ortega, and K. Fredrick, *Structural basis of sequestration of the Anti-Shine-Dalgarno sequence in the Bacteroidetes ribosome*, contributed (virtual) talk at the 2020 RustBelt RNA meeting, 10/23/20-10/24/20

97. L. Woodward, J. Mabin, **M. Sanjeev**, R. Bundschuh, and G. Singh, *PYM controls exon junction complex occupancy at non-canonical positions*, contributed (virtual) poster at the 2020 RustBelt RNA meeting, 10/23/20-10/24/20

96. **E. Shatoff**, B. Roy, Z.A. McNutt, B.L. Boleratz, D.E. Watkins, V. Jha, D. Jahagirdar, K. Basu, J. Ortega, R. Bundschuh, and K. Fredrick, *Evidence for autoregulation of bS21 in Flavobacteria*, contributed (virtual) poster at the 2020 RustBelt RNA meeting, 10/23/20-10/24/20

95. R. Bundschuh and **E. Shatoff**, *Single nucleotide polymorphisms affect RNA-protein interactions at a distance through modulation of RNA secondary structures*, contributed (virtual) talk at the March Meeting of the American Physical Society, Denver, CO, 3/2/20-3/6/20

94. **K. Crocker**, J. Johnson, C.E. Castro, and R. Bundschuh, *A quantitative model of temperature actuated DNA origami nanocaliper constructs*, contributed (virtual) talk at the March Meeting of the American Physical Society, Denver, CO, 3/2/20-3/6/20

93. **E. Shatoff** and R. Bundschuh, *Integrating double stranded RNA binding proteins into RNA secondary structure prediction*, contributed poster at the 2019 RustBelt RNA meeting, Cleveland, OH, 10/25/19-10/26/19

92. **B. Roy**, W.D. Baez, Z.A. McNutt, E.A. Shatoff, R. Bundschuh, and K. Fredrick, *Global analysis of protein synthesis in Flavobacterium johnsoniae reveals the use of Kozak-like sequences in diverse bacteria*, contributed poster at the 2019 RustBelt RNA meeting, Cleveland, OH, 10/25/19-10/26/19

91. **R. Patton**. M. Sanjeev, L.A. Woodward, J.W. Mabin, R. Bundschuh, and G. Singh, *Chemical crosslinking enhances RNA immunoprecipitation for efficient identification of binding sites of proteins that photo-crosslink poorly with RNA*, contributed poster at the 2019 RustBelt RNA meeting, Cleveland, OH, 10/25/19-10/26/19

90. **M. Gibbs**, K.-M. Moon, B.R. Warner, R. Bundschuh, L.J. Foster, and K. Fredrick, *Functional analysis of BipA in E. coli reveals the plasticity of 50S ribosome assembly*, contributed poster at the 2019 RustBelt RNA meeting, Cleveland, OH, 10/25/19-10/26/19

89. **S. Dodbele**, B. Moreland, Y. Long, R. Bundschuh, and J. Jackman, *Investigation into the function and mechanism of an orphan 3'-5' polymerase implicated in noncoding RNA processing*, contributed poster at the 2019 RustBelt RNA meeting, Cleveland, OH, 10/25/19-10/26/19

88. **D. del Valle-Morales**, J.B. Trotman, R. Bundschuh, and D.R. Schoenberg, *Inhibition of cytoplasmic cap methylation identifies 5' TOP mRNAs as recapping targets and reveals recapping sites downstream of native 5' ends*, contributed talk at the 2019 RustBelt RNA meeting, Cleveland, OH, 10/25/19-10/26/19

87. **K. Crocker**, J. Johnson, C. Castro, and R. Bundschuh, *A quantitative model of temperature actuated DNA origami nanocaliper constructs*, contributed poster at the 2019 RustBelt RNA meeting, Cleveland, OH, 10/25/19-10/26/19

86. W. Baez, K.J. Wiese, and **R. Bundschuh**, *On the behavior of random RNA secondary structures near the glass transition*, contributed at the March Meeting of the American Physical Society, Boston, MA, 3/4/19-3/8/19

85. **S. Dodbele**, B. Moreland, Y. Long, R. Bundschuh, and J. Jackman, *An orphan 3'-5' polymerase implicated in noncoding RNA processing*, contributed talk at the 2018 RustBelt RNA meeting, Columbus, OH, 10/26/18-10/27/18

84. **P. Gangras**, T.L. Gallagher, R.D. Patton, K.T. Tietz, N.C. Deans, R. Bundschuh, S.L. Amacher, and G. Singh, *Proximal 3'UTR introns elicit EJC-dependent NMD during zebrafish development*, contributed poster at the 2018 RustBelt RNA meeting, Columbus, OH, 10/26/18-10/27/18

83. **R. Patton**, J. Mabin, L. Woodward, R. Bundschuh, and G. Singh, *RIPiT-Seq analysis suggests a compositional switch between structurally and functionally distinct exon junction complexes*, contributed poster at the 2018 RustBelt RNA meeting, Columbus, OH, 10/26/18-10/27/18

82. **E.A. Shatoff** and R. Bundschuh, *The effect of SNPs on RNA-protein binding as mediated by RNA secondary structure*, contributed poster at the 2018 RustBelt RNA meeting, Columbus, OH, 10/26/18-10/27/18

81. **L. Woodward**, J. Mabin, R. Patton, R. Bundschuh, and G. Singh, *EJC protein composition and position on mRNAs are influenced by translation*, contributed poster at the 2018 RustBelt RNA meeting, Columbus, OH, 10/26/18-10/27/18

80. **P. Yan**, M.G. Sovic, X. Chen, C.-L. Chiang, E. Hu, J. Denninger, E. Kirby, L.A. Walker, R. Bundschuh, J.C. Byrd, and N. Muthusamy, *CLEAR: Coverage-based Limiting-cell Experiment Analysis for RNA-seq*, contributed poster at the 2018 RustBelt RNA meeting, Columbus, OH, 10/26/18-10/27/18

79. **L.A. Walker**, M.G. Sovic, C.-L. Chiang, E. Hu, J.K. Denninger, X. Chen, E.D. Kirby, J.C. Byrd, N. Muthusamy, R. Bundschuh, and P. Yan, *CLEAR: Coverage-based Limiting-cell Experiment Analysis for RNA-seq*, contributed poster at the 2018 Asia Pacific Society for Biology and Medical Sciences annual meeting, 7/20/18-7/23/18

78. **L.A. Walker**, R. Bundschuh, and P. Yan, *Oversight: A Fast and Nimble Utility to Evaluate RNA-Seq Data Quality*, contributed poster at the 2018 Asia Pacific Society for Biology and Medical Sciences annual meeting, 7/20/18-7/23/18

77. **D. del Valle-Morales**, G. Singh, R. Bundschuh, and D.R. Schoenberg, *A new approach to NGS identification of capped 5' ends*, contributed poster at the 2017 RustBelt RNA meeting, Indianapolis, IN, 10/13/17-10/14/17

76. **S. Dodbele**, B. Moreland, Y. Long, R. Bundschuh, and J. Jackman, *Investigation of a Non-coding RNA Handyman in Dictyostelium discoideum*, contributed poster at the 2017 RustBelt RNA meeting, Indianapolis, IN, 10/13/17-10/14/17

75. **D.L. Kiss**, W.D. Baez, B. Agana, V.H. Wysocki, R. Bundschuh, and D.R. Schoenberg, *Cytoplasmic mRNA Recapping, Cap Homeostasis and its Implications for the Proteome*, contributed talk at the 2017 RustBelt RNA meeting, Indianapolis, IN, 10/13/17-10/14/17

74. **L.A. Walker**, M.G. Sovic, N.C. Chiang, E. Hu, M.B. Broe, J.C. Byrd, N. Muthusamy, R. Bundschuh, and P. Yan, *Gene Expression Analysis at the Ultralow RNA Input Levels*, contributed poster at the 2017 Cancer Systems Biology Consortium Annual Meeting, 10/2/17-10/3/17

73. **C. Shipps**, and R. Bundschuh, *Determining the dominant secondary structures of a RNA molecule during contranscriptional folding dynamics by grouping similar dominant structures*, contributed poster at the 2016 RustBelt RNA meeting, Cleveland, OH, 10/14/16-10/15/16

72. **L. Walker**, D. Frankhouser, M.B. Broe, J.A. Muszynski, P. Yan, and R. Bundschuh, *Using patient-derived data to customize smRNA-seq databases*, contributed poster at the 2016 RustBelt RNA meeting, Cleveland, OH, 10/14/16-10/15/16

71. **B. Moreland**, S. Dodbele, S. Gardner, J. Jackman, and R. Bundschuh, *Applications of 5'-end sequence analysis of small RNA: Nucleotide addition by Thg1/BtTLP and TSS annotations in S. cerevisiae*, contributed poster at the 2016 RustBelt RNA meeting, Cleveland, OH, 10/14/16-10/15/16

70. **D.E. Frankhouser**, M. Westphal, A. Pelletier, A. Urdaneta, P. Stump, P. Shields, P. Yan, H. He , A. de la Chapelle, C. Sonzone, and R. Bundschuh, *MetaComb: Meta-Transcriptomic Alignment with a Combined Genome*, contributed poster at the 2016 RustBelt RNA meeting, Cleveland, OH, 10/14/16-10/15/16

69. **J. Killian**, T. Topiwala, A. Pelletier, D. Frankhouser, P. Yan, and R. Bundschuh, *A tool for fusion detector post-analysis coverage visualization of chimeric RNA-seq data*, contributed poster at the 2016 RustBelt RNA meeting, Cleveland, OH, 10/14/16-10/15/16.

68. **B. Moreland**, K. Oman, J. Curfman, P. Yan, and R. Bundschuh, *Characterization of DNA-protein interactions using high-throughput sequencing data from pulldown experiments*, contributed talk at the 2016 March Meeting of the American Physical Society, Baltimore, MD, 3/14/16-3/18/16

67. **W. Baez**, K. Wiese, and R. Bundschuh, *Characterization of the full base pairing probability distribution in RNA secondary structure folding*, contributed talk at the 2016 March Meeting of the American Physical Society, Baltimore, MD, 3/14/16-3/18/16

66. **C. Chen** and R. Bundschuh, *A-to-I editing is cancer subtype specific*, contributed poster at the 2014 RustBelt RNA meeting, Pittsburgh, PA, 10/17/14-10/18/14

65. **Y.-H. Lin** and R. Bundschuh, *Structure-mediated cooperativity between single-stranded RNA binding partners on 5' and 3'UTRs*, contributed poster at the 2014 RustBelt RNA meeting, Pittsburgh, PA, 10/17/14-10/18/14

64. **W. Baez** and R. Bundschuh, *RNA secondary structure critical exponents of random sequences near the glass transition*, contributed talk at the 2014 March Meeting of the American Physical Society, Denver, CO, 5/3/14-5/7/14

63. **Y.-H. Lin** and R. Bundschuh, *Loop cost in RNA secondary structures and the long-range cooperativity between RNA-binding proteins*, contributed talk at the 2014 March Meeting of the American Physical Society, Denver, CO, 5/3/14-5/7/14

62. **R. Bundschuh**, P. Klajner, J. Hanne, B.M. Britton, J. Liu, J. Park, J.-B. Lee, and R. Fishel, *The DNA mismatch repair protein MutS forms a one-dimensional Tonks gas on DNA*, contributed talk at the 2014 March Meeting of the American Physical Society, Denver, CO, 5/3/14-5/7/14

61. **C. Chen** and R. Bundschuh, *Transcriptome-wide RNA editing can be used in cancer subtype discrimination*, contributed poster at the 2013 RustBelt RNA meeting, Cleveland, OH, 10/18/13-10/19/13

60. **Y.-H. Lin** and R. Bundschuh, *Cooperativity between single-stranded binding proteins on RNA secondary structure*, contributed poster at the 2013 RustBelt RNA meeting, Cleveland, OH, 10/18/13-10/19/13

59. **K. Oman**, K. Fredrick, D. Schoenberg, and R. Bundschuh, *Computational methods for the analysis of high throughput sequencing data in RNA biology*, contributed poster at the 2013 RustBelt RNA meeting, Cleveland, OH, 10/18/13-10/19/13

58. **R. Bundschuh** and C. Chen, *Mechanisms for enhanced protein dissociation driven by nucleosomes*, contributed talk at the 2013 March Meeting of the American Physical Society, Baltimore, MD, 18/3/13-22/3/13

57. **Y.-H.** Lin and R. Bundschuh, *The interplay between single-stranded binding proteins on RNA secondary structure*, contributed talk at the 2013 March Meeting of the American Physical Society, Baltimore, MD, 18/3/13-22/3/13

56. **W. Baez** and R. Bundschuh, *Localizing the critical point of random RNA secondary structures*, contributed talk at the 2013 March Meeting of the American Physical Society, Baltimore, MD, 18/3/13-22/3/13

55. **C. Chen** and R. Bundschuh, *Systematic investigation of insertional and deletional RNA-DNA differences in the human transcriptome*, contributed talk at the 2012 RustBelt RNA meeting, Dayton, OH, 10/19/12-10/20/12

54. **C. Chen**, D. Frankhouser, and R. Bundschuh, *Comparison of insertional RNA editing in Myxomycetes*, contributed poster at the 2011 RustBelt RNA meeting, Dayton, OH, 10/21/11-10/22/11

53. H.-H. Tam, S. Faith, D. Bornman, S. Nelson, P. Yan, B. Young, and **R. Bundschuh**, *Identifying STRs in next generation sequencing data*, contributed poster at the twenty-second international symposium on human identification, National Harbor, MD, 10/3/11-10/6/11

52. **R. Bundschuh**, J. de Meaux, and M. Lässig, *Fitness and structure landscapes for pre-miRNA processing*, contributed talk at the 2011 March meeting of the American Physical Society, Dallas, TX, 3/21/11-3/25/11

51. **R. Forties**, J. North, S. Javaid, O. Tabaa, R. Fishel, M. Poirier, and R. Bundschuh, *A quantitative model of nucleosome dynamics*, contributed talk at the 2011 March meeting of the American Physical Society, Dallas, TX, 3/21/11-3/25/11

50. **R. Bundschuh**, J. Altmüller, C. Becker, P. Nürnberg, and J. Gott, *Complete characterization of the edited transcriptome of the mitochondrion of Physarum polycephalum using deep sequencing of RNA*, contributed poster at Gordon conference on Editing and Modification of RNA and DNA, Galveston, TX, 1/9/11-1/14/11

49. **C. Chen** and R. Bundschuh, *Comparative sequence analysis in insertional RNA editing*, contributed poster at the 2010 Rustbelt RNA meeting, Cleveland, OH, 10/21/10-10/22/10

48. **R. Bundschuh**, J. de Meaux, and M. Lässig, *Fitness and structure landscapes for pre-miRNA processing*, contributed talk at SMBE2010, Lyon, France, 7/4/10-7/8/10

47. **R. Bundschuh**, J. de Meaux, and M. Lässig, *Fitness and structure landscapes for pre-miRNA processing*, poster at Cold Spring Harbor meeting on Biology of Genomes, Cold Spring Harbor, NY, 5/11/10-5/15/10

46. **R. Bundschuh**, J. Altmüller, C. becker, P. Nürnberg, and J. Gott, *Complete characterization of mitochondrial insertional editing sites in Physarum polycephalum using deep sequencing of RNA*, contributed talk at the 2009 RustBelt RNA meeting, Mt. Sterling, OH, 10/16/09-10/17/09

45. **R. Forties** and R. Bundschuh, *Modeling the interplay of single-stranded binding proteins and nucleic acid secondary structure*, contributed poster at the 2009 RustBelt RNA meeting, Mt. Sterling, OH, 10/16/09-10/17/09

44. **R. Forties** and R. Bundschuh, *Modeling nucleic acid structure in the presence of single-stranded binding proteins*, contributed talk at the 2009 March meeting of the American Physical Society, Pittsburgh, PA, 3/16/09-3/20/09

43. **M. McCauley**, R. Forties, U. Gerland, and R. Bundschuh, *Anomalous scaling of nano-pore translocation times of structured biomolecules*, contributed talk at the 2009 March meeting of the American Physical Society, Pittsburgh, PA, 3/16/09-3/20/09

42. C. Beargie, T. Liu, M. Corriveau, W. Zhang, H.Y. Lee, M. Silliker, J. Gott, and **R. Bundschuh**, *Computational genome annotation in the presence of insertional RNA editing*, poster at Gordon conference on RNA editing, Galveston, TX, 1/11/09-1/16/09

41. **R. Forties**, R. Bundschuh, and M. Poirier, *Sequence and Temperature Dependence of DNA Bending Fluctuations*, contributed talk at the 2008 March meeting of the American Physical Society, New Orleans, LA, 3/10/08-3/14/08

40. **R. Forties**, R. Bundschuh, and M. Poirier, *A model for the flexibility of double-stranded DNA incorporating local melting*, contributed poster at the 2007 RustBelt RNA meeting, Mt. Sterling, OH, 10/19/07-10/20/07

39. **F. Habib**, A. Johnson, R. Bundschuh, and D. Janies, *Large scale genotype-phenotype correlation for continuous phenotypes*, contributed talk at the 2007 Ohio Collaborative Conference on Bioinformatics, Oxford, OH, 7/9/07-7/11/07

38. C. Ainsley, H. Lee, T. Liu, N. Parimi, J. Gott, and **R. Bundschuh**, *Computational prediction of RNA editing sites in Myxomycetes*, poster at the Gordon conference on RNA editing, Ventura, CA, 1/14/07-1/19/07

37. **F. Habib**, A. Johnson, R. Bundschuh, and D. Janies, *Genotype-Phenotype Correlations Using Phylogenetic Trees for Large Datasets*, contributed talk at the 2006 Ohio Collaborative Conference on Bioinformatics, Athens, OH, 6/28/06-6/30/06

36. **P. Messer**, R. Bundschuh, M. Vingron, and P. Arndt, *Alignment Statistics for Long-Range Correlated Genomic Sequences*, contributed talk at the Tenth Annual International Conference on Computational Molecular Biology (RECOMB2006), Venice, Italy, 4/2/06-4/5/06

35. **M. Lee**, R. Bundschuh, and M. Chan, *Distant Homology Detection Using a LEngth and STructure-based Sequence Alignment Tool (LESTAT)*, poster at the Tenth Annual International Conference on Computational Molecular Biology (RECOMB2006), Venice, Italy, 4/2/06-4/5/06

34. **Y. Li**, M. Lauria, and R. Bundschuh, *Suboptimal Alignments Improve the Detection of Weak Homologs in Sequence Database Searches*, contributed talk at BIBE05, Minneapolis, MN, 10/19/05-10/21/05

33. **R. Bundschuh** and T. Liu, *A model for codon position bias in RNA editing*, contributed talk at the March Meeting of the American Physical Society 2006, Baltimore, MD, 3/13/06-3/17/06

32. **V. Guttal** and R. Bundschuh, *A Model for Folding and Aggregation in RNA Secondary Structures*, contributed talk at the March Meeting of the American Physical Society 2006, Baltimore, MD, 3/13/06-3/17/06

31. **F. Habib**, D. Janies, and R. Bundschuh, *Phylogenetic methods for computationally correlating genotypes and phenotypes*, contributed talk at the 2005 Fall Meeting of the Ohio Section of the American Physical Society, Cleveland, OH, 10/14/05-10/15/05

30. **N. Chia** and R. Bundschuh, *A Practical Approach to Significance Assessment in Alignment with Gaps*, contributed talk at the Ninth Annual International Conference on Computational Molecular Biology (RECOMB2005), Cambridge, MA, 5/14/05-5/18/05

29. **F. Habib** and R. Bundschuh, *Modeling DNA unzipping in the presence of DNA binding proteins*, contributed talk at the 2005 Spring Meeting of the Ohio Section of the American Physical Society, Dayton, OH, 4/8/05-4/9/05

28. **N. Chia** and R. Bundschuh, *Universal scaling function in discrete time asymmetric exclusion processes*, contributed talk at the March Meeting of the American Physical Society 2005, Los Angeles, LA, 3/20/05-3/25/05

27. C. Ainsley, H. Lee, N. Parimi, J. Gott, and **R. Bundschuh**, *Computational identification of RNA editing sites in Physarum polycephalum*, poster at the Gordon conference on RNA editing, Ventura, CA, 1/23/05-1/28/05

26. **J. Gott**, N. Parimi, and R. Bundschuh, *Identification and characterization of new RNA editing substrates in Physarum mitochondria*, talk at the RustBelt RNA meeting, Mt. Sterling, OH, 11/19/04-11/20/04

25. **R. Bundschuh** and J. Gott, *Gene finding in the presence of RNA editing*, poster at the Eighth Annual International Conference on Computational Molecular Biology (RECOMB 2004), San Diego, CA, 3/27/04-3/31/04

24. Y. Li, M. Lauria, and **R. Bundschuh**, *Can Hybrid Alignment Enhance PSI-BLAST*, Poster-Blitz presentation at the BISTI workshop Digital Biology: The Emerging Paradigm, Bethesda, MD, 11/6/03-11/7/03

23. **T. Liu** and R. Bundschuh, *Analytical description of finite size effects for RNA secondary structures*, contributed talk at the March Meeting of the American Physical Society 2003, Austin, TX, 3/03/03-3/07/03

22. **R. Bundschuh**, *Computational prediction of RNA editing sites*, talk at the RustBelt RNA meeting, Mt. Sterling, OH, 11/1/02-11/2/02

21. **R. Bundschuh** and T. Hwa, *Two possible phases for the secondary structure of random RNA sequences*, talk at the March Meeting of the American Physical Society 2002, Indianapolis, IN, 3/18/02-3/22/02

20. **R. Bundschuh**, U. Gerland, and T. Hwa, *Force-induced denaturation of RNA*, talk at the RustBelt RNA meeting, Mt. Sterling, OH, 11/2/01-11/3/01

19. **R. Bundschuh**, *Rapid Significance Estimation in Local Sequence Alignment with Gaps*, talk at Fifth Annual International Conference on Computational Molecular Biology (RECOMB 2001), Montreal, 4/23/01-4/25/01

18. **U. Gerland**, R. Bundschuh, and T. Hwa, *Force-induced denaturation of RNA*, talk at the 221st ACS National Meeting, San Diego, 4/01/01-4/05/01

17. **U. Gerland**, R. Bundschuh, and T. Hwa, *Force-induced denaturation of RNA*, talk at the March Meeting of the American Physical Society 2001, Seattle, WA, 3/12/01-3/16/01

16. **R. Bundschuh**, *A New Method in Rapid Significance Assessment of Smith-Waterman Alignments*, poster at the Eighth International Conference on Intelligent Systems for Molecular Biology (ISMB 2000), San Diego, CA, 8/19/00-8/23/00

15. **U. Gerland**, R. Bundschuh, and T. Hwa, *Force-induced denaturation of RNA*, poster at the Eighth International Conference on Intelligent Systems for Molecular Biology (ISMB 2000), San Diego, CA, 8/19/00-8/23/00

14. **Y.-K. Yu**, T. Hwa, and R. Bundschuh, *Statistical Significance of Probabilistic Hybrid Alignment*, poster at the Eighth International Conference on Intelligent Systems for Molecular Biology (ISMB 2000), San Diego, CA, 8/19/00-8/23/00

13. **R. Bundschuh**, *An Analytic Approach to Significance Assessment in Local Sequence Alignment with Gaps*, talk at Fourth Annual International Conference on Computational Molecular Biology (RECOMB 2000), Tokyo, 4/8/00-4/11/00

12. U. Gerland, **R. Bundschuh**, and T. Hwa, *Weak Glassiness in the Secondary Structure of Random RNA Sequences*, talk at the March Meeting of the American Physical Society 2000, Minneapolis, 3/20/00-3/24/00

11. **R. Bundschuh**, *The Asymmetric Exclusion Process and Computational Biology*, talk at the March Meeting of the American Physical Society 2000, Minneapolis, 3/20/00-3/24/00

10. T. Hwa, **R. Bundschuh**, and Y.-K. Yu, *Generating Rare Events in Systems with Quenched Disorder*, talk at the March Meeting of the American Physical Society 2000, Minneapolis, 3/20/00-3/24/00

9. **R. Olsen**, R. Bundschuh, and T. Hwa, *Rapid Assessment of Extremal Statistics for Gapped Local Alignment*, talk at the Seventh International Conference on Intelligent Systems for Molecular Biology (ISMB 99), Heidelberg, 8/20/99-8/23/99.

8. **R. Bundschuh** and T. Hwa, *An Analytic Study of the Phase Transition Line in Local Sequence Alignment with Gaps*, talk at the Third Annual International Conference on Computational Molecular Biology (RECOMB99), Lyon, 4/11/99-4/14/99

7. **R. Bundschuh**, K. Hamacher, and T. Hwa, *Statistical Mechanics of RNA folding*, talk at the march meeting of the American Physical Society 1999, Atlanta, 3/21/99-3/26/99

6. **R. Bundschuh** and T. Hwa, *Detectability of Sequence Homology by DNA Hybridization*, poster at the Program for Mathematics and Molecular Biology Meeting, Mathematics and Molecular Biology VI, Understanding Structure, Santa Fe, 1/9/99-1/14/99

5. **R. Bundschuh** and T. Hwa, *Detectability of Sequence Homology by DNA Hybridization*, talk at the German Conference on Bioinformatics 98, Bensberg, 10/7/98-10/10/98

4. **R. Bundschuh** and T. Hwa, *Secondary Structure Formation in Model RNA*, poster at STATPHYS 20, Paris, 7/20/98-7/24/98

3. **R. Bundschuh**, M. Lässig, and R. Lipowsky, *Unbinding Transitions of Semi-flexible Polymers*, poster at "Applications of Field Theory to Statistical Physics" workshop, Bonn, 7/15/98-7/18/98

2. **R. Bundschuh** and T. Hwa, *Detectability of Sequence Homology by DNA Hybridization*, poster at the Second Annual International Conference on Computational Molecular Biology (RECOMB98), New York, 3/22/98-3/25/98

1. **R. Bundschuh** and T. Hwa, *Structure Formation in Model Heteropolymers*, talk at the march meeting of the American Physical Society 1998, Los Angeles, 3/16/99-3/20/99

Funding:

Current:

- NIH T32 GM144293-01 (MPI Bundschuh, Kuret, Magliery), Molecular Biophysics predoctoral training at The Ohio State University, $1,277,849, 7/1/2022-6/30/2027
- DoE DE-SC0017270 (PI Winter), Energy Exchange in Dynamic DNA-Metal Hybrid Materials, $350,000 (5% for Bundschuh lab), 1/3/2023-2/29/2024
- NSF MCB-2029502 (PI Fredrick), Studies of protein synthesis in the Bacteroidetes, $850,000 (7% for Bundschuh lab), 8/1/2020-7/31/2024

Completed:

- NIH NIGMS R01GM120209-01A1 (PI Singh), Regulation of RNA surveillance by the dynamic exon junction complex, $1,848,329 (17% for Bundschuh lab), 1/9/2017-8/31/2023
- NIH NIGMS R01GM072528-14 (PI Fredrick), Molecular analysis of accurate ribosomal translocation, $1,193,545 (9% for Bundschuh lab), 7/1/2019-6/30/2023
- NIH T32 GM118291-01A1 (MPI Bundschuh, Kuret, Magliery), Molecular Biophysics predoctoral training at The Ohio State University, $859,771, 7/1/2017-6/30/2022
- NIH NHLBI R01HL134544 (PI Funderburg), Cellular mediators of vascular inflammation in treated HIV infection, $43,318 (amount is fraction for Bundschuh lab), 9/1/2016-6/30/2021
- NSF DMR-1719316, Quantitative modeling of nucleic acid-protein interactions, $335,787, 9/1/2017-8/31/2020
- NSF MCB-1614990 (PI Fredrick), Studies of translation initiation in bacteria, $645,000 (11% for Bundschuh lab), 9/1/2016-8/31/2020
- NIH NIGMS R01GM084277-05A1 (PI Schoenberg), Relationship of cytoplasmic capping to post-transcriptional gene regulation, $256,000 (amount is fraction for Bundschuh lab), 7/1/2015-6/30/2020
- NSF DMR-1410172, Cooperativity in nucleic-acid protein interactions, $252,603, 9/1/2014-8/31/2017
- NIH NAID R21AI122981 (PI Yoder), $19,250 (amount is fraction for Bundschuh lab), 9/1/2016-6/30/2018
- NIH NCI R01CA188269 (PI Garzon) Developing CRM1 inhibitors in AML, $19,988 (amount is fraction for Bundschuh lab), 7/16/2014-5/31/2019
- NIH NCI R01CA102031 (PI Marcucci, Guzman), Pharmacological modulation of epigenetic changes in AML, $19,773 (amount is fraction for Bundschuh lab), 7/1/2013-3/31/2018
- NSF MCB-1243997 (PI Fredrick), Studies of translation initiation in bacteria, $709,396 (12% for Bundschuh lab), 9/1/2013-8/31/2016
- NIH NCI P50CA140158 subaward (PI Byrd), Genome wide methylation as a prognostic tool in leukemia, $245,000, 11/1/2011-7/31/2015

- NSF DMR-1105458, Biophysics of protein nucleic acids interactions, $259,000, 9/15/2011-8/31/2015
- Statistical Physics approaches to RNA editing, $240,000, NSF, 9/1/2007–8/31/2012
- RustBelt RNA meeting 2007, $5,000, NSF, 9/1/2007–8/31/2010
- Translocation of structured polymers through nanopores, $35,000, ACS–PRF, 9/1/2005–8/31/2009
- Statistical physics of biological sequence analysis, $167,000, NSF, 9/1/2004–8/31/2009
- Iterative hybrid alignment: improving the sensitivity of biological database searches, $350,141, NSF, 9/1/2003–8/31/2006

Graduate students:

- Ayman Hussein, current
- Michael Schiff, current
- Bryan Gemler, current
- Danielle Bingman, current
- Elan Shatoff, 2021, Bioinformatics Specialist, Ultima Genomics
- Kyle Crocker, 2021, Postdoctoral Researcher, University of Chicago
- Robert Patton, 2020, Postdoctoral Researcher, Fred Hutchinson Cancer Center
- Blythe Moreland, 2018, Postdoctoral Researcher, Nationwide Children's Hospital
- Dengke Zhao, 2018, MBA program, UC Berkeley
- Bill Baez, 2018, Director of Research and Development, Ascend Innovations
- Kenji Oman, 2015, Technical Business Analyst, Indeed
- Yi-Hsuan Lin, 2015, Molecular Modeling Lead, HTuO Biosciences Inc
- Cai Chen, 2014, Bioinformatics Specialist, Merck
- Robert Forties, 2011, Software Engineer, GrammaTech Inc
- Marianne Lee, 2009, Research Fellow, The Chinese University of Hong Kong
- Wei Zhang, 2008, Chairman Assistant, Beijing CapitalBio MedLab
- Farhat Habib, 2007, Director, TruFactor Research
- Tsunglin Liu, 2006, Associate Professor, National Cheng-Kung University Taiwan
- Nicholas Chia, 2006, Computational Biologist, Argonne National Laboratory
- Yuheng Li, 2006, Bioinformatics Consultant, BLC Consulting