

## Benjamin R.K. Roller

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### Education and Experience

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Postdoctoral Researcher, University of Vienna Division of Microbial Ecology, Centre for Microbiology & Environmental Systems Science Mentor: Martin Polz	2021-Present
Postdoctoral Researcher, ETH Zürich Department of Environmental Systems Science & Center for Adaptation to a Changing Environment Mentor: Martin Ackermann	2015-2021
Ph.D., Michigan State University Department of Microbiology & Molecular Genetics and Program in Ecology, Evolutionary Biology, & Behavior Mentor: Thomas M. Schmidt	2008-2015
B.S. Microbiology, University of Minnesota Research mentor: Daniel R. Bond (2007-2008)	2004-2008
Non-Degree Education:	
Zurich Image and Data Analysis School, ETH Zürich, Switzerland	2017
Mother Machine Analysis Workshop, Biozentrum University of Basel, Switzerland	2017
Microbial Diversity Course, Marine Biological Laboratory, Woods Hole, MA	2014
Visiting graduate student, Schmidt Lab, University of Michigan, Ann Arbor, MI	2013-2015
Kadner Institute for Career Development, American Society of Microbiology	2012

### Publications

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- 6) [Roller, BRK](#), C Hellerschmied, Y Wu, TP Miettinen, AL Gomez, SR Manalis, MF Polz. Single-cell mass distributions reveal simple rules for achieving steady-state growth. **mBio**, 14(5): e01585-23 (2023). doi: 10.1128/mbio.01585-23
  - 5) Schwartzman JA, A Ebrahimi, G Chadwick, Y Sato, [BRK Roller](#), VJ Orphan, OX Cordero. Bacterial growth in multicellular aggregates leads to the emergence of complex life cycles. **Current Biology**, 32: 3059-3069. doi: <https://doi.org/10.1016/j.cub.2022.06.011>
  - 4) Courcol J-D, CF Invernizzi, ZC Landry, M Minisini, DA Baumgartner, S Bonhoeffer, B Chabriw, EE Clerc, M Daniels, P Getta, M Girod, K Kazala, H Markram, A Pasqualini, C Martínez-Pérez, FJ Peaudecerf, MS Peaudecerf, U Pfreundt, [BRK Roller](#), J Słomka, M Vasse, JD Wheeler, CMJA Metzger, R Stocker and F Schürmann. ARC: An Open Web-Platform for Request/Supply Matching for a Prioritized and Controlled COVID-19 Response. **Front. Public Health** 9:607677 (2021). doi: 10.3389/fpubh.2021.607677
  - 3) [Roller, BRK](#), SF Stoddard, and TM Schmidt. Exploiting rRNA operon copy number to investigate bacterial reproductive strategies. **Nature Microbiology**, 1, 16160 (2016). doi: 10.1038/nmicrobiol.2016.160
  - 2) [Roller, BRK](#) and TM Schmidt. The physiology and ecological implications of efficient growth. **ISME Journal**, 9,1481-1487 (2015). doi: 10.1038/ismej.2014.235
  - 1) Stoddard, SF, BJ Smith, R Hein, [BRK Roller](#), and TM Schmidt. *rrnDB*: improved tools for interpreting rRNA gene abundance in Bacteria and Archaea and a new foundation for future development. **Nucleic Acids Research** 43(D1): D593-D598 (2014). doi: 10.1093/nar/gku1201

#### Pre-prints

- 2) Schmider, T, AG Hestnes, J Brzykcy, H Schmidt, A Schintlmeister, [BRK Roller](#), A Söllinger, O Schmidt, MF Polz, A Richter, M Svenning, A Tveit. Metabolic Basis for the Microbial Oxidation of Atmospheric Methane. *Research Square* (2023). doi: <https://doi.org/10.21203/rs.3.rs-3461927/v1>
- 1) Miettinen, TP, AL Gomez, Y Wu, W Wu, TR Usherwood, [BRK Roller](#), MF Polz, SR Manalis. Direct quantification of sinking velocities across unicellular algae. *bioRxiv* (2023). doi: <https://doi.org/10.1101/2023.06.20.545838>

#### Non-Peer Reviewed

- 1) Nelson, MB, AB Chase, JBH Martiny, R Stocker, J Nguyen, K Lloyd, RT Oshiro, DB Kearns, JP Schneider, PD Ringel, M Basler, CA Olson, HE Vuong, EY Hsiao, [BRK Roller](#), M Ackermann, C Smillie, D Chien, E Alm, & A.J. Jermy. The Microbial Olympics 2016. **Nature Microbiology**, 1, 16122 (2016). doi:10.1038/nmicrobiol.2016.122

## Grants, Fellowships, and Awards

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Career Seed Grant for Postdoctoral Researchers ( <b>US \$31 800</b> ), ETH Zürich 2 years of funding for innovative research projects, awarded through competitive peer-reviewed process.	2017-2019
ACE Postdoctoral Fellowship ( <b>US \$300 000</b> ), ETH Zürich 2.5 years of salary and travel support. 1 of 15 awards from over 150 reviewed proposals.	2015-2018
Science Graduate Fellowship ( <b>US \$150 000</b> ), U.S. Dept. of Energy 3 years of graduate funding. 1 of 150 awards from 3,200 reviewed proposals.	2010-2013
C.A. and Sasikala Reddy Endowed Graduate Award in Microbial Physiology-Ecology ( <b>US \$500</b> ), Microbiology & Molecular Genetics, Michigan State University	2014
Summer Fellowship ( <b>US \$1 800</b> ), Ecology, Evolutionary Biology & Behavior, Michigan State University	2014
Awards to attend Microbial Diversity Course ( <b>US \$7 420</b> ) Professional Development Grant, Council of Graduate Students, Michigan State University Research Enhancement Award, Graduate School, Michigan State University William Randolph Hearst Educational Endowment, Marine Biological Laboratory, Woods Hole, MA Planetary Biology Internship Scholarships, Marine Biological Laboratory, Woods Hole, MA	2014
Travel Grant ( <b>US \$300</b> ), Council of Graduate Students, Michigan State University	2012
Undergraduate Research Opportunities Program ( <b>US \$1 700</b> ), University of Minnesota	2008

## Invited talks

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University of Minnesota, Biotechnology Institute seminar series. St. Paul, MN, USA <i>Resource availability &amp; bacterial reproduction across individual &amp; evolutionary scales</i>	September 2018
ETH Zürich, Center for Adaptation to a Changing Environment Final Conference. Horgen, Switzerland <i>Nutrient variation and life history tactics among individual bacteria</i>	February 2018
Eawag, Department of Environmental Microbiology seminar series. Dübendorf, Switzerland <i>Phenotypic heterogeneity of oligotrophic bacteria</i>	April 2017
The Genomic Basis of Eco-Evolutionary Change Conference, Monte Verità, Ascona, Switzerland <i>Life history tactics explain similarity in bacterial genome content</i>	June 2016
ETH Zürich, Adaptation to a Changing Environment seminar series. Zürich, Switzerland <i>Bacterial genome evolution reflects life history tactics</i>	March 2016
MicroSeminar: Web-based microbiology seminar series. <a href="http://microseminar.wordpress.com">http://microseminar.wordpress.com</a> <i>Every 'bug' has its day: predicting bacterial life history tactics using rRNA operon copy number</i>	September 2015
ETH Zürich Mini Symposium on Microbial Ecology, Evolution, and Genomics. Zürich, Switzerland <i>Life histories of bacteria: genomic foundations and ecological implications</i>	March 2015

## Contributed talks

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Vnat 2022-Virtual Conference on Vibrio natriegens, <a href="https://sites.williams.edu/vnatconference/">https://sites.williams.edu/vnatconference/</a>	February 2022
Vnat 2021-Virtual Conference on Vibrio natriegens, <a href="https://sites.williams.edu/vnatconference/">https://sites.williams.edu/vnatconference/</a>	February 2021
Microbial Ecology & Evolution Virtual Conference, MEEvirtual.org	August 2020
International Conference on the Biology of Vibrios, Montréal, Canada	November 2019
Marine Particles and Phycospheres Conference, Monte Verità, Ascona, Switzerland	May 2019
ISME16 – The 16 <sup>th</sup> International Symposium on Microbial Ecology, Montréal, Canada	August 2016
Lunch Seminar, Ecology & Evolutionary Biology, University of Michigan	September 2014
W.K. Kellogg Biological Station LTER Field Tour, Michigan State University	September 2014
Graduate Colloquium, Ecology, Evolutionary Biology, & Behavior, Michigan State University	January 2013
ISME14 – The 14 <sup>th</sup> International Symposium on Microbial Ecology, Copenhagen, Denmark	August 2012

## Posters

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Theodor Escherich Symposium, Graz, Austria	January 2024
ISME18 – The 17 <sup>th</sup> International Symposium on Microbial Ecology, Lausanne, Switzerland	August 2022
Major Ideas in Quantitative Microbial Physiology, Copenhagen, Denmark	June 2022
Joint Simons Marine Collaborations Meeting, Virtual meeting	October 2020
Simons Foundation Collaboration on Principles of Microbial Ecosystems, Virtual meeting	September 2020
Simons Foundation Collaboration on Principles of Microbial Ecosystems, Montecastelli, Italy	September 2019
Bacterial Networks (EMBO), Sant Feliu de Guixols, Spain	September 2019

Simons Foundation Collaboration on Principles of Microbial Ecosystems, New York, NY, USA	September 2018
ISME17 – The 17 <sup>th</sup> International Symposium on Microbial Ecology, Leipzig, Germany	August 2018
Marine Microbiology Gordon Research Conference, Lucca (Barga), Italy	July 2018
Bacterial Networks (EMBO), Sant Feliu de Guixols, Spain	September 2017
American Society of Microbiology General Meeting, New Orleans, LA	June 2015
Kellogg Biological Station LTER Symposium – Farming for Ecosystem Services. East Lansing, MI	April 2015
American Society of Microbiology General Meeting, Denver, CO	May 2013
ISME14 – The 14 <sup>th</sup> International Symposium on Microbial Ecology, Copenhagen, Denmark	August 2012
U.S. DOE Science Graduate Fellowship Annual Research Meeting, Brookhaven National Lab	July 2012
Tiedje Symposium, Michigan State University, East Lansing, MI	October 2011
U.S. DOE Science Graduate Fellowship Annual Research Meeting, Oak Ridge National Lab	July 2011
ISME13 – The 13 <sup>th</sup> International Symposium on Microbial Ecology, Seattle, WA	August 2010
American Society of Microbiology General Meeting, Boston, MA	June 2008

## Teaching & Mentoring/Supervising Experience

Students Mentored/Supervised	
Anina Hold, MSc, ETH Zürich	2019
Alexandra Bernasconi, BSc, ETH Zürich	2018-2019
William Chardon, MSc, ETH Zürich	2018
Co-organizer & Instructor, Microfluidics for Microbial Ecology (graduate course), ETH Zürich	2017
Teaching Assistant, Practical in microbiology (undergraduate course), ETH Zürich	2016-2020
Teaching Assistant, Advanced Microbiology Lab, Michigan State University	2009
Research Mentor, Global Change Ecology REU, University of Minnesota	2008
Mentored undergraduate student in the research experience for undergraduates (REU) program.	
Peer Mentor/Teaching Assistant, Nature of Life Program, University of Minnesota	2006 & 2007
Mentored biology undergraduate students & assisted in laboratory courses at Biological Field Station.	

## Service and Outreach

Ad hoc reviewer	
eLife, The ISME Journal, Frontiers in Microbiology, Microbiome, Environmental Microbiology, Environmental Science & Technology, Ecology & Evolution, G3: Genes Genomes Genetics	
Committee member	
Organizing committee, PriME Collaboration Annual Meeting, Simons Foundation	2018
Seminar Committee, Microbiology & Molecular Genetics, Michigan State University	2012-2013
Graduate Committee, Microbiology & Molecular Genetics, Michigan State University	2010-2011
Council of Graduate Students, Michigan State University	2009-2010
Professional Society Memberships	
American Society of Microbiology	
International Society for Microbial Ecology	
Guest speaker	
Data analysis networking group, University of Michigan	June 2015
Undergraduate Microbiology Club, Michigan State University	February 2012

## References

<p><b>Dr. Martin Polz</b>  <i>Postdoctoral Advisor</i>  Phone: +43 1 4277 91207  Email: martin.f.polz@univie.ac.at  Address: Centre for Microbiology &amp; Environmental Systems Science, University of Vienna  Althanstrasse 14  A-1090 Vienna, Austria</p>	<p><b>Dr. Thomas M. Schmidt</b>  <i>PhD Advisor</i>  Phone: +1 734 763 8206  Email: schmidt@umich.edu  Address: Center for Microbial Systems  University of Michigan, 1520 MSRB I  1150 W. Medical Center Dr.  Ann Arbor, MI 48109, USA</p>
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