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 Microbial Community Assembly Group
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MAIN APPOINTMENTS (Current only)

Head of Department	Dept. Environmental Microbiology, Eawag, Dübendorf, Switzerland	2025-present
Lecturer	Institute of Ecology and Evolution, University of Bern, Bern, Switzerland	2022-present
Group Leader	Microbial Community Assembly Group, Eawag, Dübendorf, Switzerland	2014-present

EDITORIAL AND SOCIETY APPOINTMENTS (Current only)

SSM Delegate	Swiss Coordination Committee for Biotechnology (SCCB)	2024-present
Editorial Board	<i>Biofilm</i>	2024-present
Senior Editor	<i>The ISME Journal</i>	2023-present
Swiss Ambassador	International Society for Microbial Ecology (ISME)	2023-present
Swiss Ambassador	International Union of Microbiological Societies (IUMS)	2022-present
Commission Member	Lay Communication Section of the Swiss Society for Microbiology	2022-present
Editorial Board	<i>Current Opinion in Biotechnology</i>	2021-present
Regional Board	European Federation of Biotechnology (Environmental Biotechnology Division)	2020-present
Elected Head	Microbial Ecology Section of the Swiss Society for Microbiology	2017-present

EDUCATION / TRAINING

PD (Privatdozent)	Microbial Ecology and Evolution, University of Bern, Bern, Switzerland	2025
Ph.D.	Environmental Engineering, University of California, Berkeley, CA, USA	2003-2007
M.S.E.	Environmental Engineering, University of Michigan, Ann Arbor, MI, USA	2001-2002
B.S.	Civil Engineering, Iowa State University, Ames, IA, USA	1996-2000

AWARDS

1. Faculty of Science Teaching Award, University of Bern, 2025
2. Image Volume Cover, *The ISME Journal*, 2025
3. ALL Award: Recognition of Excellence in Teaching, University of Bern, 2024
4. Outstanding Editorial Board Member Award, *The ISME Journal*, 2023
5. Golden Owl Award, VSETH, Swiss Federal Institute of Technology (ETHZ), 2020
6. Image Issue Cover, *Communications Biology*, 2020
7. Image Issue Cover, *Philosophical Transactions of the Royal Society B*, 2020
8. Image Volume Cover, *The ISME Journal*, 2016

TEACHING (Current only)

Introduction to Microbial Ecology and Evolution (B.Sc./M.Sc.; sole lecturer, 28h)	2022-present
Institute of Ecology and Evolution, University of Bern, Bern, Switzerland	
Systems Biology (M.Sc.; guest lecturer, 2h)	2024-present
Institute of Cell Biology, University of Bern, Bern, Switzerland	

PUBLICATIONS

1. Dai J, Chen C, Zhai ZQ, Gao AX, Johnson DR, Kopittke PM, Zhao FJ, Wang P (2025) The balance between microbial arsenic methylation and demethylation in paddy soils underpins global arsenic risk and straighthead disease in rice. *Proceedings of the National Academy of Sciences USA* 122: e2508311122.
2. Han M, Ruan C, Wang G, Johnson DR (2025) Fungal hyphae promote bacterial contact-dependent killing during surface-associated growth. *The ISME Journal* 19: wrf135.

3. Ruan C, Vinod DP, Johnson DR (2025) Phage-mediated peripheral kill-the-winner facilitates the maintenance of costly antibiotic resistance. **Nature Communications** 16: 5839
4. Sam SB, Smith SK, Niederdorfer R, Scheidegger A, Ward BJ, Tembo JM, Kabika J, Johnson DR, Bürgmann H, Morgenroth E, Strande L (2025) Microbial community composition reflects water usage and storage conditions in a city-wide study of non-sewered wastewater (fecal sludge). **PLOS Water** 4: e0000386.
5. Zhu C, Wu L, Ning D, Tian R, Gao S, Zhang B, Zhau J, Zhang Y, Xiao N, Wang Y, Brown MR, Tu Q, Global Water Microbiome Consortium, Ju F, Wells GF, Guo J, He Z, Nielsen PH, Wang A, Zhang Y, Chen T, He Q, Criddle CS, Wagner M, Tiedje JM, Curtis TP, Wen X, Yang Y, Alvarez-Cohen L, Stahl DA, Alvarez PJJ, Rittmann BE, Zhou J (2025) Global diversity and distribution of antibiotic resistance genes in human wastewater treatment systems. **Nature Communications** 16: 4006
6. Han M, Ruan C, Wang G, Johnson DR (2025) Evaporation controls contact-dependent bacterial killing during surface-associated growth. **ISME Communications** 5: ycaf034
7. Ma Y, Kan A, Johnson DR (2024) Metabolic interactions control the transfer and proliferation of plasmid-encoded antibiotic resistance during surface-associated microbial growth. **Cell Reports** 43: 114653
8. Gogia G, Johnson DR (2024) Bacteria spiral into control. **Nature Physics** 20: 897-898
9. Ruan C, Ramoneda J, Kan A, Rudge TJ, Wang G, Johnson DR (2024) Phage predation accelerates the spread of plasmid-encoded antibiotic resistance. **Nature Communications** 15: 5397
10. Takahashi K, Oshiki M, Ruan C, Morinaga K, Toyofuku M, Nomura N, Johnson DR (2024) Denitrification in low oxic environments increases the accumulation of nitrogen oxide intermediates and modulates the evolutionary potential of microbial populations. **Environmental Microbiology Reports** 16: e13221
11. Ma Y, Ramoneda J, Johnson DR (2023) Timing of antibiotic administration determines the spread of plasmid-encoded antibiotic resistance during microbial range expansion. **Nature Communications** 14: 3530
12. Karakurt-Fischer S, Johnson DR, Fenner K, Hafner J (2023) Making Waves: Enhancing pollutant biodegradation via rational engineering of microbial consortia. **Water Research** 247: 120756
13. Ge ZB, Zhai ZQ, Xie WY, Dai J, Huang K, Johnson DR, Zhao FJ, Wang P (2023) Two-tiered mutualism improves survival and competitiveness of cross-feeding bacteria in soil. **The ISME Journal** 17: 2090-2102
14. Ruan C, Borer B, Ramoneda J, Wang G, Johnson DR (2023) Evaporation-induced hydrodynamics control plasmid transfer during surface-associated microbial growth. **npj Biofilms and Microbiomes** 9: 58
15. Chen G, Hu Z, Ebrahimi A, Johnson DR, Wu F, Sun Y, Shen R, Liu L, Wang G (2023) Chemotactic movement and zeta potential dominate *Chlamydomonas microspheara* attachment and biocathode development. **Environmental Technology** 44: 1838-1849
16. Ruan C, Ramoneda J, Gogia G, Wang G, Johnson DR (2022) Fungal hyphae regulate bacterial diversity and promote plasmid-mediated functional novelty during range expansion. **Current Biology** 32: 5285-5299e4
17. Dolinšek J, Ramoneda J, Johnson DR (2022) Initial community composition determines the long-term dynamics of a microbial cross-feeding interaction by modulating niche availability. **ISME Communications** 2: 77
18. Ciccacese D, Micali G, Borer B, Ruan C, Or D, Johnson DR (2022) Rare and localized events stabilize microbial community composition and patterns of spatial self-organization in a fluctuating environment. **The ISME Journal** 16: 1453-1463
19. Wang M, Chen X, Ma Y, Tang YQ, Johnson DR, Nie Y, Wu XL (2022) Type IV pilus shapes a ‘bubble-burst’ pattern opposing spatial intermixing of two interacting bacterial populations. **Microbiology Spectrum** 10: e01944-21
20. Chen G, Hu Z, Ebrahimi A, Johnson DR, Wu F, Sun Y, Shen R, Liu L, Wang G (2022) Electrotaxis-mediated cell motility and nutrient availability determine *Chlamydomonas microspheara*-surface interactions in bioelectrochemical systems. **Bioelectrochemistry** 143: 107989
21. Ruan C, Ramoneda J, Chen G, Johnson DR, Wang G (2021) Evaporation-induced hydrodynamics promote conjugation-mediated plasmid transfer in microbial populations. **ISME Communications** 1: 54
22. Goldschmidt F, Caduff L, Johnson DR (2021) Causes and consequences of pattern diversification in a spatially self-organizing microbial community. **The ISME Journal** 15: 2415-2426
23. Dubey M, Hadadi N, Pelet S, Carraro N, Johnson DR, van der Meer JR (2021) Environmental connectivity controls diversity in soil microbial communities. **Communications Biology** 4: 492
24. Borer B, Ciccacese D, Johnson D, Or D (2020) Spatial organization in microbial range expansion emerges from trophic dependencies and successful lineages. **Communications Biology** 3: 685
25. Johnson DR, Pomati F (2020) A brief guide for the measurement and interpretation of microbial functional diversity. **Environmental Microbiology** 22: 3039-3048
26. Ciccacese D, Zuidema A, Merlo V, Johnson DR (2020) Interaction-dependent effects of surface structure on microbial spatial self-organization. **Philosophical Transactions of the Royal Society B** 375: 20190246

27. Johnson DR, Noack S (2020) Editorial overview: Causes and biotechnological application of microbial metabolic specialization. **Current Opinion in Biotechnology** 62: iii-vi
28. Achermann S, Mansfeldt CB, Müller M, Johnson DR, Fenner K (2020) Relating metatranscriptomic profiles to the micropollutant biotransformation potential of complex microbial communities. **Environmental Science & Technology** 54: 235-244
29. Wu L, Ning D, Zhang B, Li Y, Zhang P, Shan X, Zhang Q, Brown MR, Li Z, Van Nostrand JD, Ling F, Xiao N, Zhang Y, Vierheilig J, Wells GF, Yang Y, Deng Y, Tu Q, Wang A, Global Water Microbiome Consortium, Zhang T, He Z, Keller J, Nielsen PH, Alvarez PJJ, Criddle CS, Wagner M, Tiedje JM, He Q, Curtis TP, Stahl DA, Alvarez-Cohen L, Rittmann BE, Wen X, Zhou J (2019) Global diversity and biogeography of bacterial communities in wastewater treatment plants. **Nature Microbiology** 4: 1183-1195
30. Mansfeldt C, Achermann S, Men Y, Walser JC, Villez K, Joss A, Johnson DR, Fenner K (2019) Microbial residence time is a controlling parameter of the taxonomic composition and functional profile of microbial communities. **The ISME Journal** 13: 1589-1601
31. Ju F, Beck K, Yin X, Maccagnan A, McArdell CS, Singer H, Johnson DR, Zhang T, Bürgmann H (2019) Wastewater treatment plant resistomes are shaped by bacterial composition, genetic exchange, and upregulated expression in the effluent microbiomes. **The ISME Journal** 13: 346-360
32. Lilja EE, Johnson DR (2019) Substrate cross-feeding affects the speed and trajectory of molecular evolution within a synthetic microbial assemblage. **BMC Evolutionary Biology** 19: 129
33. Tecon R, Mitri S, Ciccarese D, Or D, van der Meer JR, Johnson DR (2019) Bridging the holistic-reductionist divide in microbial ecology. **mSystems** 4: e00265-18
34. Ciccarese D, Johnson DR (2019) Functional microbial landscapes. In **Comprehensive Biotechnology 3rd ed.** Ed. Moo-Young M. Elsevier: Pergamon
35. Patsch D, van Vliet S, Marcantini LG, Johnson DR (2018) Generality of associations between biological richness and the rates of metabolic processes across microbial communities. **Environmental Microbiology** 20: 4356-4368
36. Goldschmidt F, Regoes R, Johnson DR (2018) Metabolite toxicity slows local diversity loss during expansion of a microbial cross-feeding community. **The ISME Journal** 12: 136-144
37. Wells GF, Shi YJ, Laurenzi M, Weissbrodt DG, Joss A, Bürgmann H, Johnson DR, Morgenroth E (2017) Comparing the resistance, resilience, and stability of replicate moving bed biofilm and suspended growth combined nitrification-anammox reactors. **Environmental Science & Technology** 51: 5108-5117
38. Goldschmidt F, Regoes R, Johnson DR (2017) Successive range expansion promotes diversity and accelerates evolution in spatially structured microbial populations. **The ISME Journal** 11: 2112-2123
39. Marchal M, Selina Derksen, Sven Panke, Ackermann M, Johnson DR (2017) A passive mutualistic interaction promotes the evolution of spatial structure within microbial populations. **BMC Evolutionary Biology** 17: 106
40. Lilja EE, Johnson DR (2017) Metabolite toxicity determines the pace of molecular evolution within microbial populations. **BMC Evolutionary Biology** 17: 52
41. Men Y, Achermann S, Helbling DE, Johnson DR, Fenner K (2017) Relative contribution of ammonia oxidizing bacteria and other members of nitrifying activated sludge communities to micropollutant biotransformation. **Water Research** 109: 217-226
42. Men Y, Han P, Helbling DE, Jehmlich N, Herbold C, Guide R, Onnis-Hayden A, Gu AZ, Johnson DR, Wagner M, Fenner K. (2016) Biotransformation of two pharmaceuticals by the ammonia-oxidizing archaeon *Nitrososphaera gargensis*. **Environmental Science & Technology** 50: 4682-4692
43. Filippidou S, Bueche M, Wunderlin T, Junier T, Roussel-Delif L, Jeanneret N, Dorador C, Molina V, Ioannidou A, Vargemzeis G, Johnson DR, Junier P (2016) A combination of extreme environmental conditions favor the prevalence of endospore-forming firmicutes. **Frontiers in Microbiology** 7: 1707
44. Dolinšek J, Goldschmidt F, Johnson DR (2016) Synthetic microbial ecology and the dynamic interplay between microbial genotypes. **FEMS Microbiology Reviews** 40: 961-979
45. Kinnunen M, Dechesne A, Proctor C, Hammes F, Johnson DR, Quintela-Baluja M, Graham D, Daffonchio D, Fodelianakis S, Hahn N, Boon N, Smets BF (2016) A conceptual framework for invasion in microbial communities. **The ISME Journal** 10: 2773-2775
46. Widder S, Allen R, Pfeiffer T, Curtis TP, Wiuf C, Sloan WT, Cordero OX, Brown SP, Momeni B, Shou W, Kettle H, Flint HJ, Haas AF, Laroche B, Kreft JU, Rainey PB, Freilich S, Schuster S, Milferstedt K, van der Meer JR, Grosskopf T, Huisman J, Free A, Picioreanu C, Quince C, Klapper I, Labarthe S, Smets BF, Wang H, Isaac Newton Institute Fellows, Soyer OS (2016) Challenges in microbial ecology: building predictive understanding of community function and dynamics. **The ISME Journal** 10: 2557-2568

47. Lindemann SR, Bernstein HC, Song HS, Fredrickson JK, Fields MW, Shou W, Johnson DR, Beliaev AS (2016) Engineering microbial consortia for controllable outputs. **The ISME Journal** 10: 2077-2084
48. Lilja EE, Johnson DR (2016) Segregating metabolic processes into different microbial cells accelerates the consumption of inhibitory substrates. **The ISME Journal** 10: 1568-1578
49. Johnson DR, Lee TK, Park J, Fenner K, Helbling DE (2015) The functional and taxonomic richness of wastewater treatment plant microbial communities are associated with each other and with ambient nitrogen and carbon availability. **Environmental Microbiology** 17: 4851-4860
50. Johnson DR, Helbling DE, Men Y, Fenner K (2015) Can meta-omics help to establish causality between contaminant biotransformations and genes or gene products? **Environmental Science: Water Research & Technology** 1: 272-278
51. Johnson DR, Helbling DE, Lee TK, Park J, Fenner K, Kohler HPE, Ackermann M (2015) Association of biodiversity with the rates of micropollutant biotransformations among full-scale wastewater treatment plant communities. **Applied and Environmental Microbiology** 81: 666-675
52. Helbling DE, Johnson DR, Lee TK, Scheidegger A, Fenner K (2015) A framework for establishing predictive relationships between specific bacterial 16S rRNA sequence abundances and biotransformation rates. **Water Research** 70: 471-484
53. West KA, Lee PKH, Johnson DR, Zinder SH, Alvarez-Cohen L (2013) Global gene expression of *Dehalococcoides* within a robust dynamic TCE-dechlorinating community under conditions of periodic substrate supply. **Biotechnology and Bioengineering** 110: 1333-1341
54. Coronado E, Roggo C, Johnson DR, van der Meer JR (2012) Genome-wide analysis of salicylate and dibenzofuran metabolism in *Sphingomonas wittichii* RW1. **Frontiers in Microbiology** 3: 300
55. Fida TT, Breugelmans P, Lavigne R, Coronado E, Johnson DR, van der Meer JR, Mayer AP, Heipieper HJ, Hofkens J, Springael D (2012) Exposure to solute stress affects genome-wide expression but not the polycyclic aromatic hydrocarbon-degrading activity of *Sphingomonas* sp. LH128 in biofilms. **Applied and Environmental Microbiology** 78: 8311-8320
56. Helbling DE, Ackermann M, Fenner K, Kohler HPE, Johnson DR (2012) The activity level of a microbial community function can be predicted from its metatranscriptome. **The ISME Journal** 6: 902-904
57. Helbling DE, Johnson DR, Honti M, Fenner K (2012) Micropollutant biotransformation kinetics associate with WWTP process parameters and microbial community characteristics. **Environmental Science & Technology** 46: 10579-10588
58. Johnson DR, Goldschmidt F, Lilja EE, Ackermann M (2012) Metabolic specialization and the assembly of microbial communities. **The ISME Journal** 6: 1985-1991
59. Men Y, Feil H, VerBerkmoes NC, Shah MB, Johnson DR, Lee PK, West KA, Zinder SH, Andersen GL, Alvarez-Cohen L (2012) Sustainable syntrophic growth of *Dehalococcoides ethenogenes* strain 195 with *Desulfovibrio vulgaris* Hildenborough and *Methanobacterium congolense*: global transcriptomic and proteomic analysis. **The ISME Journal** 6: 410-421
60. Johnson DR, Coronado E, Moreno-Forero SK, Heipieper HJ, van der Meer JR (2011) Transcriptome and membrane fatty acid analyses reveal different strategies for responding to permeating and non-permeating solutes in the bacterium *Sphingomonas wittichii*. **BMC Microbiology** 11: 250
61. Müller S, Johnson DR (2011) Application of cytomics to separate natural microbial communities by their physiological properties. In **Handbook of Molecular Microbial Ecology Vol I: Metagenomics and Complementary Approaches**. Ed. de Bruijn FJ. Wiley-Blackwell
62. Gaillard M, Pradervand N, Minoia M, Sentchilo V, Johnson DR, van der Meer JR (2010) Transcriptome analysis of the mobile genome ICE_{clc} in *Pseudomonas knackmussii* B13. **BMC Microbiology** 10: 153
63. Johnson DR, Czechowska K, Chèvre N, van der Meer JR (2009) Toxicity of triclosan, penconazole, and metalaxyl on *Caulobacter crescentus* and a freshwater microbial community as assessed by flow cytometry. **Environmental Microbiology** 11: 1682-1691
64. Johnson DR, Nemir A, Andersen GL, Zinder SH, Alvarez-Cohen L (2009) Transcriptomic microarray analysis of corrinoid responsive genes in *Dehalococcoides ethenogenes* strain 195. **FEMS Microbiology Letters** 294: 198-206
65. Johnson DR (2009) Transcriptome analysis using high-density oligonucleotide microarrays. In **Handbook of Hydrocarbon and Lipid Microbiology Vol 5: Experimental Protocols and Appendices**. Eds. Timmis KN, McGenity T, van der Meer JR, de Lorenzo V. Springer
66. Czechowska K, Johnson DR, van der Meer JR (2008) Use of flow cytometric methods for single-cell analysis in environmental microbiology. **Current Opinion in Microbiology** 11: 205-212
67. Johnson DR, Brodie EL, Hubbard AE, Andersen GL, Zinder SH, Alvarez-Cohen L (2008) Temporal transcriptomic microarray analysis of "*Dehalococcoides ethenogenes*" strain 195 during the transition into stationary phase. **Applied and Environmental Microbiology** 74: 2864-2872

68. West KA, Johnson DR, Hu P, DeSantis TZ, Brodie EL, Lee PKH, Feil H, Andersen GL, Zinder SH, Alvarez-Cohen L (2008) Comparative genomics of “*Dehalococcoides ethenogenes*” 195 and an enrichment culture containing unsequenced “*Dehalococcoides*” strains. ***Applied and Environmental Microbiology*** 74: 3490-3496
69. Johnson DR, Park J, Kukor JJ, Abriola LM (2006) Effect of carbon starvation on toluene degradation activity by toluene monooxygenase-expressing bacteria. ***Biodegradation*** 17: 437-445
70. Lee PKH, Johnson DR, Holmes VF, He J, Alvarez-Cohen L (2006) Reductive dehalogenase gene expression as a biomarker for physiological activity of *Dehalococcoides* spp. ***Applied and Environmental Microbiology*** 72: 6161-6168
71. Pecson BM, Barrios JA, Johnson DR, Nelson KL (2006) A real-time PCR method for quantifying viable *Ascaris* eggs using the first internally-transcribed spacer region of rRNA. ***Applied and Environmental Microbiology*** 72: 7864-7872
72. Johnson DR, Lee PKH, Holmes VF, Alvarez-Cohen L (2005) An internal reference technique for accurately quantifying specific mRNAs by real-time PCR with application to the *tceA* reductive dehalogenase gene. ***Applied and Environmental Microbiology*** 71: 3866-3871
73. Johnson DR, Lee PKH, Holmes VF, Fortin AC, Alvarez-Cohen L (2005) Transcriptional expression of the *tceA* gene in a *Dehalococcoides*-containing microbial enrichment. ***Applied and Environmental Microbiology*** 71: 7145-7151

INVITED ORAL PRESENTATIONS AND SEMINARS (out of >70)

1. Johnson DR (2025) Phage predation, pattern formation, and the spread of antibiotic resistance. *Institute of Veterinary Bacteriology, University of Bern, Bern, Switzerland*
2. Johnson DR (2025) Phage predation enables the spread of metabolically costly traits. *Microbial Communities: Energetics and Dynamics Across Space and Time, National Institute for Theory and Mathematics in Biology, Chicago, IL, USA*
3. Johnson DR (2025) Causes and consequences of microbial spatial self-organization. *LS² Swiss Systems Biology Symposium 2025, Bern, Switzerland*
4. Johnson DR (2025) Phage predation, pattern formation, and the spread of antibiotic resistance. *Department of Biology, University of Konstanz, Germany*
5. Johnson DR (2025) Drivers and consequences of spatial self-organization in microbial systems (Habilitation lecture). *Faculty of Science, University of Bern, Bern, Switzerland*
6. Johnson DR (2025) Bacterial-phage interactions as drivers of the spread of antibiotic resistance. *College of Resources and Environmental Sciences, Nanjing Agricultural University, Nanjing, China*
7. Johnson DR (2024) Phage predation, pattern formation, and the spread of antibiotic resistance. *Division of Environmental Engineering, Hokkaido University, Sapporo, Japan*
8. Johnson DR (2024) Phage predation, pattern formation, and the spread of antibiotic resistance. *Unit of Molecular Genetics, Genomics and Microbiology, University of Strasbourg, Strasbourg, France*
9. Johnson DR (2024) Phage predation, pattern formation, and the spread of antibiotic resistance. *Section for Microbial and Chemical Ecology, Danish Technological University, Lyngby, Denmark*
10. Johnson DR (2024) Pattern formation, phage predation, and the spread of antibiotic resistance. *Biocomplexity Seminar Series, Niels Bohr Institute, University of Copenhagen, Copenhagen, Denmark*
11. Johnson DR (2024) Pattern formation, phage predation, and the spread of antibiotic resistance. *Department of Microbiology and Molecular Medicine, University of Geneva, Geneva, Switzerland*
12. Johnson DR (2023) Pattern formation, phage predation, and the spread of antibiotic resistance. *Institute of Cell Biology, University of Bern, Bern, Switzerland*
13. Johnson DR (2023) The importance of space for the acquisition and spread of new microbial functions. *College of Resources and Environmental Sciences, Nanjing Agricultural University, Nanjing, China*
14. Johnson DR (2023) The importance of space for the acquisition and spread of new microbial functions. *Department of Soil and Water Sciences, China Agricultural University, Beijing, China*
15. Johnson DR (2023) The importance of space for the horizontal spread of new microbial functions. *Workshop on Biological Interactions and Spatial Dynamics: Linking Experiments and Theory, University of Neuchâtel, Neuchâtel, Switzerland*
16. Johnson DR (2022) Causes and consequences of microbial range expansion. *International Forum on Soil, Fertilizer, Crop and Environment (SFCE 2022), Northwest A&F University, Xianyang, China*
17. Johnson DR (2022) Microbial spatial self-organization and the fate of plasmid-encoded antibiotic resistance. *Microbial Communities: Current Approaches and Open Challenges. Isaac Newton Institute for Mathematical Sciences, Cambridge, England, UK*
18. Johnson DR (2022) How is microbial diversity maintained during range expansion and why should we care? *Earth-Surface Ecosystems Sciences Lecture, China Agricultural University, Beijing, and Zhejiang University, Hangzhou, China*

19. Johnson DR (2022) Consequences of shoving, sliding, and swimming on microbial range expansion. *2022 Annual Assembly of the Swiss Society for Microbiology, Lausanne, Switzerland*
20. Johnson DR (2022) Consequences of small-scale hydrodynamics on microbial spatial self-organization and the spread of plasmid-encoded antibiotic resistance. *18th International Symposium on Microbial Ecology (ISME18), Lausanne, Switzerland*
21. Johnson DR (2022) Causes and consequences of microbial spatial self-organization (and why we should care). *Center for Applied Geoscience, University of Tübingen, Tübingen, Germany*
22. Johnson DR (2022) How is microbial diversity maintained during range expansion (and why should we care)? *Institute of Ecology and Evolution, University of Bern, Bern, Switzerland*
23. Johnson DR (2021) Microbial range expansion and the spread of antibiotic resistance. *Department of Civil and Environmental Engineering, Cornell University, Ithaca, NY, USA*
24. Johnson DR (2021) Microbial spatial self-organization in a dynamic environment. *International Workshop on Understanding Soil Microbiome for Agricultural Sustainability, Peking University, Beijing, China*
25. Johnson DR (2020) Bifurcations and the creation of pattern diversity during microbial spatial self-organization. *Discussion Meeting on Conflict and Cooperation in Cellular Populations, National Centre for Biological Sciences, Bangalore, India*
26. Johnson DR (2019) Spatial chaos and the self-organization of microbial communities. *Department of Biosciences, University of Exeter, Penryn, England, UK*
27. Johnson DR (2018) Metabolic specialization and the causes of diversity in microbial ecosystems. *European Water Tech Week Leeuwarden 2018, Leeuwarden, Netherlands*
28. Johnson DR (2018) The ecological and evolutionary consequences of microbial range expansions. *Department of Microbiology and Molecular Medicine, University of Geneva, Geneva, Switzerland*
29. Johnson DR (2018) The ecological and evolutionary consequences of microbial range expansions. *Microbiology Society Annual Conference 2018, Birmingham, England, UK*
30. Johnson DR (2018) The ecological and evolutionary consequences of microbial range expansions. *Department of Biology, University of Fribourg, Fribourg, Switzerland*
31. Johnson DR (2017) Is biodiversity important for the functional performance of engineered systems? *Bundesanstalt für Materialforschung und –prüfung, Berlin, Germany*
32. Johnson DR (2017) Is biodiversity important for the functional performance of engineered systems? *2017 ESA Annual Meeting, Portland, OR, USA*
33. Johnson DR (2017) Why does cross-feeding occur within microbial communities? *Scientific Spring Meeting KNVM & NVMM 2017, Arnhem, Netherlands*
34. Johnson DR (2016) The causes and consequences of metabolic specialization. *Department of Ecology and Evolutionary Biology, University of Michigan, Ann Arbor, MI, USA*
35. Johnson DR (2016) The causes and consequences of metabolic specialization. *Department of Civil and Environmental Engineering, University of Illinois, Urbana, IL, USA*
36. Johnson DR (2016) The causes and consequences of metabolic specialization. *Department of Civil and Environmental Engineering, Massachusetts Institute of Technology, Cambridge, MA, USA*
37. Johnson DR (2016) The causes and consequences of metabolic specialization. *FAS Center for Systems Biology, Harvard University, Cambridge, MA, USA*
38. Johnson DR (2016) The causes and consequences of metabolic specialization. *Department of Aquatic Chemistry, Federal Institute of Hydrology, Koblenz, Germany*
39. Johnson DR (2016) The causes and consequences of metabolic specialization. *Department of Civil and Environmental Engineering, Technical University of Denmark, Lyngby, Denmark*
40. Johnson DR (2014) The causes and consequences of metabolic specialization. *Infrastructure and Environment Division, University of Glasgow, Glasgow, Scotland, UK*
41. Johnson DR (2014) The causes and consequences of metabolic specialization. *Institute of Biology, University of Neuchâtel, Neuchâtel, Switzerland*
42. Johnson DR (2014) The causes and consequences of metabolic specialization. *Understanding Microbial Communities; Function, Structure and Dynamics. Isaac Newton Institute for Mathematical Sciences, Cambridge, England, UK*
43. Johnson DR (2014) When does metabolic specialization lead to more rapid substrate consumption? Roundtable discussion on Microbial Consortia for Controllable Outputs. *15th International Symposium on Microbial Ecology (ISME15), Seoul, Republic of Korea*
44. Johnson DR (2013) Metabolic specialization and the causes of diversity in microbial ecosystems. *Department of Civil, Environmental, and Architectural Engineering, University of Colorado, Boulder, CO, USA*

45. Johnson DR (2013) Metabolic specialization and the causes of diversity in microbial ecosystems. *Department of Environmental Science and Engineering, Colorado School of Mines, Golden, CO, USA*
46. Johnson DR (2013) Metabolic specialization and the causes of diversity in microbial ecosystems. *School of Civil and Environmental Engineering, Yonsei University, Seoul, Republic of Korea*
47. Johnson DR (2009) Stressed out! A functional genomics approach for improving our understanding of bioremediation processes. *Department of Civil Engineering, University of Minnesota, Minneapolis, MN, USA*
48. Johnson DR (2009) Stressed out! A functional genomics approach for improving our understanding of bioremediation processes. *Department of Civil and Environmental Engineering, University of Iowa, Iowa City, IA, USA*
49. Johnson DR (2008) A functional genomics approach to improve chlorinated organic bioremediation processes. *Department of Civil and Environmental Engineering, Northwestern University, Evanston, IL, USA*
50. Johnson DR (2007) A functional genomics approach to improve chlorinated organic bioremediation processes. *Joint Seminar to the Departments of Civil and Environmental Engineering and Biological Sciences, University of Southern California, Los Angeles, CA, USA*
51. Johnson DR (2007) Characterizing stress responses in *Dehalococcoides* bacteria to improve bioremediation processes. *Max Planck Institute for Terrestrial Microbiology, Marburg, Germany*
52. Johnson DR (2007) Characterizing stress responses in *Dehalococcoides* bacteria to improve bioremediation processes. *Department of Fundamental Microbiology, University of Lausanne, Lausanne, Switzerland*

PROJECT MANAGEMENT / RESEARCH GRANTS

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|-----------|---|
| 2024-2027 | Korean-Swiss Science and Technology Program; Joint Research Project SNSF-NRF <i>Incorporating μm-scale spatial organization into our systems-level understanding of the functioning and dynamics of microbial communities</i> Role: co-PI Award: 423'726 CHF To MCA group: 227'738 CHF |
| 2022-2026 | Swiss National Science Foundation, Division 3 <i>Spatial self-organization and the fate of plasmids during microbial range expansion</i> Role: sole PI Award: 568'368 CHF To MCA group: 568'368 CHF |
| 2022-2026 | Swiss National Science Foundation, Sinergia <i>Why do toxic cyanobacteria bloom? A gene to ecosystem approach</i> Role: co-PI Award: CHF 1'781'682 To MCA group: 363'125 CHF |
| 2022-2024 | Eawag Discretionary Funds <i>Elucidating the role of metabolite-mediated interactions on the diversity and productivity of phytoplankton communities</i> Role: co-PI Award: 234'034 CHF To MCA group: 0 CHF |
| 2020-2021 | Eawag Discretionary Funds <i>Microbial invasion demographics: A general chromosomal barcoding method to monitor invasive microbial populations</i> Role: lead PI Award: 121'572 CHF To MCA group: 121'572 CHF |
| 2018-2021 | Swiss National Science Foundation, Division 3 <i>The evolutionary and ecological consequences of microbial range expansions</i> Role: sole PI Award: 426'776 CHF To MCA group: 426'776 CHF |
| 2015-2018 | SystemsX.ch Program of the Swiss National Science Foundation <i>Design and systems biology of functional microbial landscapes (MicroScapesX.ch)</i> Role: co-PI Award: 2'530'587 CHF To MCA group: 381'300 CHF |
| 2014-2017 | Swiss National Science Foundation, Division 3 <i>Metabolic specialization and the causes of diversity in microbial ecosystems</i> Role: sole PI Award: 447'101 CHF To MCA group: 447'101 CHF |
| 2014-2017 | Marie Curie Actions - Initial Training Network <i>Microbial resource management and engineering in the urban water cycle (MERMAID)</i> Role: co-PI Award: 4'062'590 CHF To MCA group: 330'332 CHF |
| 2015-2016 | Eawag Discretionary Funds <i>Understanding resistance gene flow during passage of wastewater treatment (RESIST-Flow)</i> Role: co-PI Award: 170'687 CHF To MCA group: 0 CHF |
| 2013-2016 | Swiss National Science Foundation, Interdisciplinary <i>Can community transcription profiles be used to predict environmental biotransformation of organic contaminants?</i> Role: co-PI Award: 265'116 CHF To MCA group: 0 CHF |
| 2013-2014 | Eawag Discretionary Funds <i>The evolution and stabilization of mutualistic interactions in microbial ecosystems</i> Role: lead PI Award: 127'578 CHF To MCA group: 127'578 CHF |
| 2011-2014 | Swiss National Science Foundation, Division 3 <i>Cross-feeding and the maintenance of diversity in microbial ecosystems</i> Role: sole PI Award: 288'000 CHF To MCA group: 288'000 CHF |
| 2012-2013 | Korean-Swiss Science and Technology Cooperation <i>Predicting the biotransformation capacities of microbial communities from their taxonomic composition</i> Role: lead PI Award: 33'000 CHF To MCA group: 33'000 CHF |
| 2011-2013 | SystemsX.ch Program of the Swiss National Science Foundation <i>Predicting the metabolic profile of cells from the topology of the universal metabolic network</i> Role: lead PI Award: 116'000 CHF To MCA group: 116'000 CHF |
| 2010-2011 | Eawag Discretionary Funds <i>Can the biotransformation capacities of microbial communities be predicted?</i> Role: co-PI Award: 122'820 CHF To MCA group: 0 CHF |

REVIEWING (*ad hoc*)**Scientific Journals**

Too many to list, but includes *Science*, *Nature*, *Nature Microbiology*, *Nature Ecology & Evolution*, *Nature Physics*, *Nature Communications*, *Proceedings of the National Academy of Sciences USA*, and *The ISME Journal*.

Grant Proposals

Swiss National Science Foundation (SNSF), British Research Council (EPSRC), French National Agency for Research (ANR), German Research Foundation (Deutsche Forschungsgemeinschaft), Dutch Research Council (NWO), Israeli Science Foundation (ISF), ETH Zürich Research Commission, The Wellcome Trust, Human Frontier Science Program (HFSP)

SELECTED CONFERENCE ORGANIZING

1. Member of the organizing committee for the Satellite Symposium of the Annual Assembly of the Swiss Society for Microbiology, Montreux, Switzerland (2026)
2. Member of the organizing committee for the 9th Swiss Microbial Ecology Meeting, Zürich, Switzerland (2025)
3. Panel member of the roundtable discussion entitled “Synthetic Microbial Ecology for Theory Testing and Applications” at the 19th International Symposium on Microbial Ecology (ISME15), Cape Town, South Africa (2024)
4. Member of the organizing committee for the Annual Assembly of the Swiss Society for Microbiology, Bern, Switzerland (2024)
5. Session organizer of the session entitled “What Mechanisms Drive Toxic Algal Blooms?” at the ASLO Aquatic Sciences Meeting 2023, Palma de Mallorca, Spain (2023)
6. Member of the local organizing committee for the 18th International Symposium on Microbial Ecology (ISME18), Lausanne, Switzerland (2022)
7. President of the organizing committee for the Annual Assembly of the Swiss Society for Microbiology, Virtual (2021)
8. Member of the scientific committee for the 11th International Conference on Environmental Engineering and Management, Muttentz, Switzerland (2021)
9. Member of the organizing committee for the Annual Assembly of the Swiss Society for Microbiology, Zürich, Switzerland (2019)
10. Member of the organizing committee for the Annual Assembly of the Swiss Society for Microbiology, Lausanne, Switzerland (2018)
11. Panel member of the roundtable discussion entitled “Microbial Consortia for Controllable Outputs” at the 15th International Symposium on Microbial Ecology (ISME15), Seoul, Republic of Korea (2016)
12. Member of the organizing committee for the 6th Swiss Microbial Ecology Meeting, Ascona, Switzerland (2015)
13. Member of the organizing committee for the 5th Swiss Microbial Ecology Meeting, Neuchâtel, Switzerland (2013)

SUPERVISION**Postdoctoral researchers**

Dr. Tess E. Brewer Role: lead supervisor	2025-present
Dr. Ana-Hermina Ghenu Role: secondary supervisor	2024-present
Dr. Chujin Ruan Role: lead supervisor	2022-present
Dr. Sema Karakurt-Fischer Role: lead supervisor Subsequent position: Postdoc at Eawag, Switzerland	2022-2024
Dr. Josep Ramoneda Role: lead supervisor Subsequent position: Postdoc at Univ. Colorado, USA	2020-2022
Dr. Jan Dolinšek Role: lead supervisor Subsequent position: Kompetenzzentrum Holz, Austria	2015-2018
Dr. Feng Ju Role: co-supervisor Subsequent position: Assist. Prof. at Westlake Univ., China	2015-2018
Dr. Yujie Men Role: co-supervisor Subsequent position: Assist. Prof. at Univ. Illinois, USA	2014-2015
Dr. Marie Marchal Role: lead supervisor	2012-2014
Dr. George F. Wells Role: co-supervisor Subsequent position: Assist. Prof. at Northwestern Univ., USA	2011-2013
Dr. Damian E. Helbing Role: co-supervisor Subsequent position: Assist. Prof. at Cornell Univ., USA	2010-2011

Doctoral students

Basil Vogelsanger ETHZ, Switzerland Role: secondary supervisor	2025-present
Xiaoqing Zhang University of Bern, Switzerland Role: lead supervisor	2025-present
Trang Nguyen University of Bern, Switzerland Role: lead supervisor	2025-present
Deepthi Vinod ETHZ, Switzerland Role: lead supervisor	2022-present
Agustina Ziliani ETHZ, Switzerland Role: lead supervisor	2022-present

Dr. Yinyin Ma ETHZ, Switzerland Role: lead supervisor Subsequent position : Digit Soil, Switzerland	2018-2022
Dr. Davide Ciccarese ETHZ, Switzerland Role: lead supervisor Subsequent position: Postdoc. at MIT, USA	2016-2020
Dr. Deborah Patsch ETHZ, Switzerland Role: co-supervisor Subsequent position: Microsynth AG, Switzerland	2014-2017
Dr. Felix Goldschmidt ETHZ, Switzerland Role: lead supervisor Subsequent position: Janssen Schweiz, Switzerland	2011-2015
Dr. Elin E. Lilja ETHZ, Switzerland Role: lead supervisor Subsequent position: Postdoc. at Univ. Edinburgh, UK	2011-2015

M.Sc. and B.Sc. students

Ronja Flück (B.Sc.) ETHZ, Switzerland Role: lead supervisor	2025-present
Helena Moser (B.Sc.) University of Bern, Switzerland Role: lead supervisor	2024-2025
Sahil Oza (B.Sc.) ETHZ, Switzerland Role: lead supervisor	2024-2025
Janis Steiner (B.Sc.) University of Bern, Switzerland Role: lead supervisor	2024
Jelena Bitterli (B.Sc.) University of Bern, Switzerland Role: lead supervisor	2024
Anna Sassara (B.Sc.) University of Bern, Switzerland Role: lead supervisor	2023
Gaétane Sallard (B.Sc.) ETHZ, Switzerland Role: lead supervisor	2022-2023
Philipp Tandler (B.Sc.) ETHZ, Switzerland Role: lead supervisor	2021-2023
Deepthi Vinod (M.Sc.) ETHZ, Switzerland Role: lead supervisor	2020-2022
Ella Flükiger (B.Sc.) University of Applied Sciences and Arts NW, Switzerland Role: lead supervisor	2021
Julian Schmidt (B.Sc.) University of Applied Forest Sciences, Germany Role: lead supervisor	2021
Zi Shan Kow (B.Sc.) Nanyang Technological University, Singapore Role: lead supervisor	2019-2020
Leon Nissen (B.Sc.) ETHZ, Switzerland Role: lead supervisor	2019
Valeria Merlo (B.Sc.) ETHZ, Switzerland Role: lead supervisor	2018-2019
Florian Rothenbühler (B.Sc.) ETHZ, Switzerland Role: lead supervisor	2018
Anita Zuidema (B.Sc.) ETHZ, Switzerland Role: lead supervisor	2017-2018
Claudia Keller (B.Sc.) ETHZ, Switzerland Role: lead supervisor	2013
Samuel Bickel (B.Sc.) ETHZ, Switzerland Role: lead supervisor	2013
Johanna Otto (M.Sc.) ETHZ, Switzerland Role: lead supervisor	2012-2013
Sofia van Moorsel (M.Sc.) University of Zürich, Switzerland Role: lead supervisor	2012-2013
Benedict Borer (B.Sc.) ETHZ, Switzerland Role: lead supervisor	2011-2012
Anja Bernet (B.Sc.) ETHZ, Switzerland Role: lead supervisor	2010-2011
Selina Müller (B.Sc.) ETHZ, Switzerland Role: lead supervisor	2010

Scientific research staff

Sarah Daker Role: lead supervisor	2025-present
Lea Caduff Role: co-lead supervisor	2015-2025
Severin Stierli Role: lead supervisor	2021-2022
Teresa Colangelo Failla Role: lead supervisor	2012-2022
Oliver Roos Role: lead supervisor	2013-2014
Lara Pfister Role: lead supervisor	2010-2011

Visiting Doctoral students

Jing Wu University of Science and Technology of China, China Role: main host	2025-present
Dr. Miao Han China Agricultural University, China Role: main host Subsequent position: Postdoc at the University of Konstanz, Germany	2024-2025
Dr. Mireia Coronado University of Copenhagen, Denmark Role: main host	2024
Dr. Soo Bin Kim Yonsei University, Republic of Korea Role: main host Subsequent position: Postdoc at Yonsei University, Republic of Korea	2023
Dr. Eun Sun Lyou Yonsei University, Republic of Korea Role: main host Subsequent position: Postdoc at Yonsei University, Republic of Korea	2023
Dr. Kohei Takahashi Tsukuba University, Japan Role: main host Subsequent position: Postdoc at Hokkaido University, Japan	2022-2023
Dr. Chujin Ruan China Agricultural University, China Role: main host Subsequent position: Postdoc	2021-2022

at Eawag, Switzerland

Dr. Tae Kwon Lee | Yonsei University, Republic of Korea | Role: main host | Subsequent position: 2012
Postdoc at the University of Vienna, Austria

Visiting scientists / faculty

Ciaran Cole Fullbright Fellow / Swiss Government Excellence Scholar Role: main host	2025-present
Prof. Dr. Dan Xiao Institute of Subtropical Agriculture, Chinese Acad Sciences, China Role: main host	2025-present
Prof. Dr. Ming-Ming Chen Nanjing Agricultural University, China Role: main host	2024
Prof. Dr. Ramesh Goel University of Utah, USA Role: main host	2023
Prof. Dr. Say Kee Ong Iowa State University, USA Role: main host	2020
Dr. Eva Figuerola National Scientific and Technical Research Council, Argentina Role: main host	2018-2019
Dr. Brian Rahm Cornell University, USA Role: main host	2017
Prof. Dr. Ramesh Goel University of Utah, USA Role: secondary host	2014
Prof. Dr. Ruth E. Richardson Cornell University, USA Role: main host	2010