PD Dr. David R. Johnson
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	*Biofilm*	2024-present
Senior Editor	*The ISME Journal*	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	*Current Opinion in Biotechnology*	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. Han M, Ruan C, Wang G, Johnson DR (2025) Fungal hyphae promote bacterial contact-dependent killing during surface-associated growth. ***The ISME Journal****. In press.*
2. Ruan C, Vinod DP, Johnson DR (2025) Phage-mediated peripheral kill-the-winner facilitates the maintenance of costly antibiotic resistance. ***Nature Communications*** 16: 5839

3. 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.
4. 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
5. Han M, Ruan C, Wang G, Johnson DR (2025) Evaporation controls contact-dependent bacterial killing during surface-associated growth**.** ***ISME Communications*** 5: ycaf034
6. 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
7. Gogia G, Johnson DR (2024) Bacteria spiral into control. ***Nature Physics*** 20: 897-898
8. 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
9. 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
10. 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
11. 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
12. 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
13. 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
14. 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 microsphaera* attachment and biocathode development. ***Environmental Technology*** 44: 1838-1849
15. 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
16. 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
17. Ciccarese 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
18. 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
19. 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 microsphaera*-surface interactions in bioelectrochemical systems. ***Bioelectrochemistry*** 143: 107989
20. 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
21. 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
22. 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
23. Borer B, Ciccarese D, Johnson D, Or D (2020) Spatial organization in microbial range expansion emerges from trophic dependencies and successful lineages. ***Communications Biology*** 3: 685
24. Johnson DR, Pomati F (2020) A brief guide for the measurement and interpretation of microbial functional diversity. ***Environmental Microbiology*** 22: 3039-3048
25. Ciccarese 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
26. Johnson DR, Noack S (2020) Editorial overview: Causes and biotechnological application of microbial metabolic specialization. ***Current Opinion in Biotechnology*** 62: iii-vi

27. 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
28. 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
29. 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
30. 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
31. 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
32. 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
33. Ciccarese D, Johnson DR (2019) Functional microbial landscapes. *In* **Comprehensive Biotechnology 3rd ed.** *Ed.* Moo-Young M. Elsevier: Pergamon
34. 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
35. 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
36. Wells GF, Shi YJ, Laureni 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 nitritation-anammox reactors. ***Environmental Science & Technology*** 51: 5108-5117
37. 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
38. 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
39. Lilja EE, Johnson DR (2017) Metabolite toxicity determines the pace of molecular evolution within microbial populations. ***BMC Evolutionary Biology*** 17: 52
40. 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
41. 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
42. Filippidou S, Bueche M, Wunderlin T, Junier T, Roussel-Delif L, Jeanneret N, Dorador C, Molina V, Ioannidou A, Vargemezis G, Johnson DR, Junier P (2016) A combination of extreme environmental conditions favor the prevalence of endospore-forming firmicutes. ***Frontiers in Microbiology*** 7: 1707
43. Dolinšek J, Goldschmidt F, Johnson DR (2016) Synthetic microbial ecology and the dynamic interplay between microbial genotypes. ***FEMS Microbiology Reviews*** 40: 961-979
44. 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
45. 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
46. 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

47. Lilja EE, Johnson DR (2016) Segregating metabolic processes into different microbial cells accelerates the consumption of inhibitory substrates. ***The ISME Journal*** 10: 1568-1578
48. 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
49. 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
50. 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
51. 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
52. 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
53. 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
54. 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
55. 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
56. 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
57. Johnson DR, Goldschmidt F, Lilja EE, Ackermann M (2012) Metabolic specialization and the assembly of microbial communities. ***The ISME Journal*** 6: 1985-1991
58. 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
59. 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
60. 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
61. 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
62. 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
63. 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
64. 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
65. 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
66. 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
67. 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

68. 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
69. 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
70. 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
71. 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
72. 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 and the acquisition of new microbial functions. *Microbial Communities: Energetics and Dynamics Across Space and Time, National Institute for Theory and Mathematics in Biology, Chicago, IL, USA*
2. Johnson DR (2025) Causes and consequences of microbial spatial self-organization. *LS^2 Swiss Systems Biology Symposium 2025, Bern, Switzerland*
3. Johnson DR (2025) Phage predation and the acquisition of new microbial functions. *Department of Biology, University of Konstanz, Germany*
4. Johnson DR (2025) Drivers and consequences of spatial self-organization in microbial systems (Habilitation lecture). *Faculty of Science, University of Bern, Bern, Switzerland*
5. 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*
6. Johnson DR (2024) Phage predation, pattern formation, and the spread of antibiotic resistance. *Division of Environmental Engineering, Hokkaido University, Sapporo, Japan*
7. 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*
8. Johnson DR (2024) Phage predation, pattern formation, and the spread of antibiotic resistance. *Section for Microbial and Chemical Ecology, Danish Technological University, Lyngby, Denmark*
9. Johnson DR (2024) Pattern formation, phage predation, and the spread of antibiotic resistance. *Biocomplexity Seminar Series, Niels Bohr Institute, University of Copenhagen, Copenhagen, Denmark*
10. Johnson DR (2024) Pattern formation, phage predation, and the spread of antibiotic resistance. *Department of Microbiology and Molecular Medicine, University of Geneva, Geneva, Switzerland*
11. Johnson DR (2023) Pattern formation, phage predation, and the spread of antibiotic resistance. *Institute of Cell Biology, University of Bern, Bern, Switzerland*
12. 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*
13. 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*
14. 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*
15. 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*
16. 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*
17. 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*
18. Johnson DR (2022) Consequences of shoving, sliding, and swimming on microbial range expansion. *2022 Annual Assembly of the Swiss Society for Microbiology, Lausanne, Switzerland*
19. 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*

20. 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*
21. 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*
22. Johnson DR (2021) Microbial range expansion and the spread of antibiotic resistance. *Department of Civil and Environmental Engineering, Cornell University, Ithaca, NY, USA*
23. Johnson DR (2021) Microbial spatial self-organization in a dynamic environment. *International Workshop on Understanding Soil Microbiome for Agricultural Sustainability, Peking University, Beijing, China*
24. 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*
25. Johnson DR (2019) Spatial chaos and the self-organization of microbial communities. *Department of Biosciences, University of Exeter, Penryn, England, UK*
26. Johnson DR (2018) Metabolic specialization and the causes of diversity in microbial ecosystems. *European Water Tech Week Leeuwarden 2018, Leeuwarden, Netherlands*
27. Johnson DR (2018) The ecological and evolutionary consequences of microbial range expansions. *Department of Microbiology and Molecular Medicine, University of Geneva, Geneva, Switzerland*
28. Johnson DR (2018) The ecological and evolutionary consequences of microbial range expansions. *Microbiology Society Annual Conference 2018, Birmingham, England, UK*
29. Johnson DR (2018) The ecological and evolutionary consequences of microbial range expansions. *Department of Biology, University of Fribourg, Fribourg, Switzerland*
30. Johnson DR (2017) Is biodiversity important for the functional performance of engineered systems? *Bundesanstalt für Materialforchung und –prüfung, Berlin, Germany*
31. Johnson DR (2017) Is biodiversity important for the functional performance of engineered systems? *2017 ESA Annual Meeting, Portland, OR, USA*
32. Johnson DR (2017) Why does cross-feeding occur within microbial communities? *Scientific Spring Meeting KNVM & NVMM 2017, Arnhem, Netherlands*
33. Johnson DR (2016) The causes and consequences of metabolic specialization. *Department of Ecology and Evolutionary Biology, University of Michigan, Ann Arbor, MI, USA*
34. Johnson DR (2016) The causes and consequences of metabolic specialization. *Department of Civil and Environmental Engineering, University of Illinois, Urbana, Il, USA*
35. Johnson DR (2016) The causes and consequences of metabolic specialization. *Department of Civil and Environmental Engineering, Massachusetts Institute of Technology, Cambridge, MA, USA*
36. Johnson DR (2016) The causes and consequences of metabolic specialization. *FAS Center for Systems Biology, Harvard University, Cambridge, MA, USA*
37. Johnson DR (2016) The causes and consequences of metabolic specialization. *Department of Aquatic Chemistry, Federal Institute of Hydrology, Koblenz, Germany*
38. Johnson DR (2016) The causes and consequences of metabolic specialization. *Department of Civil and Environmental Engineering, Technical University of Denmark, Lyngby, Denmark*
39. Johnson DR (2014) The causes and consequences of metabolic specialization. *Infrastructure and Environment Division, University of Glasgow, Glasgow, Scotland, UK*
40. Johnson DR (2014) The causes and consequences of metabolic specialization. *Institute of Biology, University of Neuchâtel, Neuchâtel, Switzerland*
41. 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*
42. 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*
43. 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*
44. 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*
45. 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*

46. 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*
47. 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*
48. Johnson DR (2008) A functional genomics approach to improve chlorinated organic bioremediation processes. *Department of Civil and Environmental Engineering, Northwestern University, Evanston, IL, USA*
49. 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*
50. Johnson DR (2007) Characterizing stress responses in *Dehalococcoides* bacteria to improve bioremediation processes. *Max Planck Institute for Terrestrial Microbiology, Marburg, Germany*
51. 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

2024-2027 Korean-Swiss Science and Technology Program; Joint Research Project SNSF-NRF | *Incorporating µm-scale spatial organization into our systems-level understanding of the functioning and dynamics of microbial communities* | Role: co-PI | Award: 423'726 CHF | To MCA group: 227'738 CHF

2022-2026 Swiss National Science Foundation, Division 3 | *Spatial self-organization and the fate of plasmids during microbial range expansion* | Role: sole PI | Award: 568'368 CHF | To MCA group: 568'368 CHF

2022-2026 Swiss National Science Foundation, Sinergia | *Why do toxic cyanobacteria bloom? A gene to ecosystem approach* | Role: co-PI | Award: CHF 1'781'682 | To MCA group: 363'125 CHF

2022-2024 Eawag Discretionary Funds | *Elucidating the role of metabolite-mediated interactions on the diversity and productivity of phytoplankton communities* | Role: co-PI | Award: 234'034 CHF | To MCA group: 0 CHF

2020-2021 Eawag Discretionary Funds | *Microbial invasion demographics: A general chromosomal barcoding method to monitor invasive microbial populations* | Role: lead PI | Award: 121'572 CHF | To MCA group: 121'572 CHF

2018-2021 Swiss National Science Foundation, Division 3 | *The evolutionary and ecological consequences of microbial range expansions* | Role: sole PI | Award: 426'776 CHF | To MCA group: 426'776 CHF

2015-2018 SystemsX.ch Program of the Swiss National Science Foundation | *Design and systems biology of functional microbial landscapes (MicroScapesX.ch)* | Role: co-PI | Award: 2'530'587 CHF | To MCA group: 381'300 CHF

2014-2017 Swiss National Science Foundation, Division 3 | *Metabolic specialization and the causes of diversity in microbial ecosystems* | Role: sole PI | Award: 447'101 CHF | To MCA group: 447'101 CHF

2014-2017 Marie Curie Actions - Initial Training Network | *Microbial resource management and engineering in the urban water cycle (MERMAID)* | Role: co-PI | Award: 4'062'590 CHF | To MCA group: 330'332 CHF

2015-2016 Eawag Discretionary Funds | *Understanding resistance gene flow during passage of wastewater treatment (RESIST-Flow)* | Role: co-PI | Award: 170'687 CHF | To MCA group: 0 CHF

2013-2016 Swiss National Science Foundation, Interdisciplinary | *Can community transcription profiles be used to predict environmental biotransformation of organic contaminants?* | Role: co-PI | Award: 265'116 CHF | To MCA group: 0 CHF

2013-2014 Eawag Discretionary Funds | *The evolution and stabilization of mutualistic interactions in microbial ecosystems* | Role: lead PI | Award: 127'578 CHF | To MCA group: 127'578 CHF

2011-2014 Swiss National Science Foundation, Division 3 | *Cross-feeding and the maintenance of diversity in microbial ecosystems* | Role: sole PI | Award: 288'000 CHF | To MCA group: 288'000 CHF

2012-2013 Korean-Swiss Science and Technology Cooperation | *Predicting the biotransformation capacities of microbial communities from their taxonomic composition* | Role: lead PI | Award: 33'000 CHF | To MCA group: 33'000 CHF

2011-2013 SystemsX.ch Program of the Swiss National Science Foundation | *Predicting the metabolic profile of cells from the topology of the universal metabolic network* | Role: lead PI | Award: 116'000 CHF | To MCA group: 116'000 CHF

2010-2011 Eawag Discretionary Funds | *Can the biotransformation capacities of microbial communities be predicted?* | 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, Current Biology, 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 Welcome Trust, Human Frontier Science Program (HFSP)

SELECTED CONFERENCE ORGANIZING

1. Organizing committee member for the 9th Swiss Microbial Ecology Meeting, Zürich, Switzerland (2025)
2. 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)
3. Organizing committee member for the Annual Assembly of the Swiss Society for Microbiology, Bern, Switzerland (2024)
4. Session organizer of the session entitled "What Mechanisms Drive Toxic Algal Blooms?" at the ASLO Aquatic Sciences Meeting 2023, Palma de Mallorca, Spain (2023)
5. Organizing committee member for the Annual Assembly of the Swiss Society for Microbiology, Lausanne, Switzerland (2023)
6. Organizing committee member for the 18th International Symposium on Microbial Ecology (ISME18), Lausanne, Switzerland (2022)
7. President of the Annual Assembly of the Swiss Society for Microbiology, Virtual (2021)
8. Scientific committee member for the 11th International Conference on Environmental Engineering and Management, Muttenz, Switzerland (2021)
9. Organizing committee member for the Annual Assembly of the Swiss Society for Microbiology, Zürich, Switzerland (2019)
10. Organizing committee member 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. Organizing committee member for the 6th Swiss Microbial Ecology Meeting, Ascona, Switzerland (2015)
13. Organizing committee member for the 5th Swiss Microbial Ecology Meeting, Neuchâtel, Switzerland (2013)

SUPERVISION

Postdoctoral researchers

Dr. Ana-Hermina Ghenu | Role: co-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

Xiaoqing Zhang | University of Bern, Switzerland | Role: co-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-present
Sahil Oza (B.Sc.) | ETHZ, Switzerland | Role: lead supervisor 2024-present
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: supervisor 2025-present
Lea Caduff | Role: co-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 at Eawag, Switzerland 2021-2022
Dr. Tae Kwon Lee | Yonsei University, Republic of Korea | Role: main host | Subsequent position: Postdoc at the University of Vienna, Austria 2012

Visiting faculty

Dr. Dan Xiao | Institute of Subtropical Agriculture, Chinese Academy of 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: co-host	2014
Prof. Dr. Ruth E. Richardson | Cornell University, USA | Role: main host	2010