Roman Stocker

List of Publications by Year
in descending order

159 papers	12,708 citations	26630 56 h-index	29157 104 g-index
174 all docs	174 docs citations	174 times ranked	12047 citing authors

#	Article	IF	Citations
1	Zooming in on the phycosphere: the ecological interface for phytoplanktonâ€“bacteria relationships. Nature Microbiology, 2017, 2, 17065.	13.3	727
2	Marine Microbes See a Sea of Gradients. Science, 2012, 338, 628-633.	12.6	541
3	Single-Cell Genomics Reveals Hundreds of Coexisting Subpopulations in Wild <i>Prochlorococcus</i>. Science, 2014, 344, 416-420.	12.6	506
4	Fluid Mechanics of Planktonic Microorganisms. Annual Review of Fluid Mechanics, 2012, 44, 373-400.	25.0	409
5	Rapid chemotactic response enables marine bacteria to exploit ephemeral microscale nutrient patches. Proceedings of the National Academy of Sciences of the United States of America, 2008, 105, 4209-4214.	7.1	348
6	Chemoattraction to Dimethylsulfoniopropionate Throughout the Marine Microbial Food Web. Science, 2010, 329, 342-345.	12.6	328
7	Bacterial transport suppressed by fluid shear. Nature Physics, 2014, 10, 212-217.	16.7	310
8	High-avidity IgA protects the intestine by enchaining growing bacteria. Nature, 2017, 544, 498-502.	27.8	307
9	Bacteria can exploit a flagellar buckling instability to change direction. Nature Physics, 2013, 9, 494-498.	16.7	262
10	Disruption of Vertical Motility by Shear Triggers Formation of Thin Phytoplankton Layers. Science, 2009, 323, 1067-1070.	12.6	255
11	The Extracellular Matrix Component Psl Provides Fast-Acting Antibiotic Defense in Pseudomonas aeruginosa Biofilms. PLoS Pathogens, 2013, 9, e1003526.	4.7	253
12	Turbulence drives microscale patches of motile phytoplankton. Nature Communications, 2013, 4, 2148.	12.8	246
13	Ecology and Physics of Bacterial Chemotaxis in the Ocean. Microbiology and Molecular Biology Reviews, 2012, 76, 792-812.	6.6	230
14	Bacterial rheotaxis. Proceedings of the National Academy of Sciences of the United States of America, 2012, 109, 4780-4785.	7.1	225
15	Chemotaxis toward phytoplankton drives organic matter partitioning among marine bacteria. Proceedings of the National Academy of Sciences of the United States of America, 2016, 113, 1576-1581.	7.1	220
16	Thin Phytoplankton Layers: Characteristics, Mechanisms, and Consequences. Annual Review of Marine Science, 2012, 4, 177-207.	11.6	206
17	Competitionâ€“dispersal tradeoff ecologically differentiates recently speciated marine bacterioplankton populations. Proceedings of the National Academy of Sciences of the United States of America, 2014, 111, 5622-5627.	7.1	187
18	A bacterial pathogen uses dimethylsulfoniopropionate as a cue to target heat-stressed corals. ISME Journal, 2014, 8, 999-1007.	9.8	180

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19	Rational design of a microbial consortium of mucosal sugar utilizers reduces Clostridiodes difficile colonization. Nature Communications, 2020, 11, 5104.	12.8	177
20	Trade-Offs of Chemotactic Foraging in Turbulent Water. Science, 2012, 338, 675-679.	12.6	174
21	Vortical ciliary flows actively enhance mass transport in reef corals. Proceedings of the National Academy of Sciences of the United States of America, 2014, 111, 13391-13396.	7.1	173
22	An automated Raman-based platform for the sorting of live cells by functional properties. Nature Microbiology, 2019, 4, 1035-1048.	13.3	170
23	Microfluidics Expanding the Frontiers of Microbial Ecology. Annual Review of Biophysics, 2014, 43, 65-91.	10.0	167
24	Trophic Interactions and the Drivers of Microbial Community Assembly. Current Biology, 2020, 30, R1176-R1188.	3.9	165
25	Failed Escape: Solid Surfaces Prevent Tumbling of<i>Escherichia coli</i>. Physical Review Letters, 2014, 113, 068103.	7.8	160
26	The role of microbial motility and chemotaxis in symbiosis. Nature Reviews Microbiology, 2019, 17, 284-294.	28.6	160
27	Modeling circulation in lakes: Spatial and temporal variations. Limnology and Oceanography, 2003, 48, 983-994.	3.1	150
28	Synergistic Prevention of Biofouling in Seawater Desalination by Zwitterionic Surfaces and Lowâ€Level Chlorination. Advanced Materials, 2014, 26, 1711-1718.	21.0	146
29	Response rescaling in bacterial chemotaxis. Proceedings of the National Academy of Sciences of the United States of America, 2011, 108, 13870-13875.	7.1	142
30	Increased seawater temperature increases the abundance and alters the structure of natural Vibrio populations associated with the coral Pocillopora damicornis. Frontiers in Microbiology, 2015, 6, 432.	3.5	142
31	Microfluidics for bacterial chemotaxis. Integrative Biology (United Kingdom), 2010, 2, 604.	1.3	138
32	Live from under the lens: exploring microbial motility with dynamic imaging and microfluidics. Nature Reviews Microbiology, 2015, 13, 761-775.	28.6	134
33	Filtration of submicrometer particles by pelagic tunicates. Proceedings of the National Academy of Sciences of the United States of America, 2010, 107, 15129-15134.	7.1	127
34	Bacterial Chemotaxis in Linear and Nonlinear Steady Microfluidic Gradients. Nano Letters, 2010, 10, 3379-3385.	9.1	127
35	Microfluidic Characterization and Continuous Separation of Cells and Particles Using Conducting Poly(dimethyl siloxane) Electrode Induced Alternating Current-Dielectrophoresis. Analytical Chemistry, 2011, 83, 9579-9585.	6.5	115
36	Phytoplankton can actively diversify their migration strategy in response to turbulent cues. Nature, 2017, 543, 555-558.	27.8	113

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37	How Cats Lap: Water Uptake by <i>Felis catus</i>. Science, 2010, 330, 1231-1234.	12.6	109
38	Microbes in flow. Current Opinion in Microbiology, 2015, 25, 1-8.	5.1	101
39	Separation of Microscale Chiral Objects by Shear Flow. Physical Review Letters, 2009, 102, 158103.	7.8	95
40	The wiggling trajectories of bacteria. Journal of Fluid Mechanics, 2012, 705, 58-76.	3.4	94
41	Gyrotaxis in a Steady Vortical Flow. Physical Review Letters, 2011, 106, 238102.	7.8	93
42	Turbulent Fluid Acceleration Generates Clusters of Gyrotactic Microorganisms. Physical Review Letters, 2014, 112, 044502.	7.8	92
43	Speed-dependent chemotactic precision in marine bacteria. Proceedings of the National Academy of Sciences of the United States of America, 2016, 113, 8624-8629.	7.1	92
44	Experimental Verification of the Behavioral Foundation of Bacterial Transport Parameters Using Microfluidics. Biophysical Journal, 2008, 95, 4481-4493.	0.5	89
45	Environmental fluctuations and their effects on microbial communities, populations and individuals. FEMS Microbiology Reviews, 2021, 45, .	8.6	87
46	Reverse and flick: Hybrid locomotion in bacteria. Proceedings of the National Academy of Sciences of the United States of America, 2011, 108, 2635-2636.	7.1	86
47	A coral-on-a-chip microfluidic platform enabling live-imaging microscopy of reef-building corals. Nature Communications, 2016, 7, 10860.	12.8	79
48	Low-Reynolds-number swimming at pycnoclines. Proceedings of the National Academy of Sciences of the United States of America, 2012, 109, 3856-3861.	7.1	77
49	The ecological roles of bacterial chemotaxis. Nature Reviews Microbiology, 2022, 20, 491-504.	28.6	77
50	Enhanced drag of a sphere settling in a stratified fluid at small Reynolds numbers. Journal of Fluid Mechanics, 2009, 632, 49-68.	3.4	75
51	Bacterial chemotaxis in a microfluidic T-maze reveals strong phenotypic heterogeneity in chemotactic sensitivity. Nature Communications, 2019, 10, 1877.	12.8	74
52	Resource Patch Formation and Exploitation throughout the Marine Microbial Food Web. American Naturalist, 2009, 173, E15-E29.	2.1	71
53	Microfluidic Studies of Biofilm Formation in Dynamic Environments. Journal of Bacteriology, 2016, 198, 2589-2595.	2.2	71
54	Not Just Going with the Flow: The Effects of Fluid Flow on Bacteria and Plankton. Annual Review of Cell and Developmental Biology, 2019, 35, 213-237.	9.4	71

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55	Variability in Microbial Community Composition and Function Between Different Niches Within a Coral Reef. Microbial Ecology, 2014, 67, 540-552.	2.8	68
56	Synthesis and degradation of FtsZ quantitatively predict the first cell division in starved bacteria. Molecular Systems Biology, 2018, 14, e8623.	7.2	66
57	The effect of flow on swimming bacteria controls the initial colonization of curved surfaces. Nature Communications, 2020, 11, 2851.	12.8	66
58	Chemotactic response of marine bacteria to the extracellular products of Synechococcus and Prochlorococcus. Aquatic Microbial Ecology, 2010, 59, 161-168.	1.8	65
59	Validation of picogram- and femtogram-input DNA libraries for microscale metagenomics. PeerJ, 2016, 4, e2486.	2.0	64
60	A Compact, Low-Cost GPS Drifter for Use in the Oceanic Nearshore Zone, Lakes, and Estuaries. Journal of Atmospheric and Oceanic Technology, 2003, 20, 1880-1884.	1.3	61
61	Stratlets: Low Reynolds Number Point-Force Solutions in a Stratified Fluid. Physical Review Letters, 2010, 105, 084502.	7.8	60
62	Chemotaxis by natural populations of coral reef bacteria. ISME Journal, 2015, 9, 1764-1777.	9.8	60
63	Generalized receptor law governs phototaxis in the phytoplankton <i>Euglena gracilis</i>. Proceedings of the National Academy of Sciences of the United States of America, 2015, 112, 7045-7050.	7.1	60
64	A microfluidics-based in situ chemotaxis assay to study the behaviour of aquatic microbial communities. Nature Microbiology, 2017, 2, 1344-1349.	13.3	60
65	Dual function of tropodithietic acid as antibiotic and signaling molecule in global gene regulation of the probiotic bacterium Phaeobacter inhibens. Scientific Reports, 2017, 7, 730.	3.3	57
66	Raman microspectroscopy for microbiology. Nature Reviews Methods Primers, 2021, 1, .	21.2	57
67	Temperature-induced behavioral switches in a bacterial coral pathogen. ISME Journal, 2016, 10, 1363-1372.	9.8	54
68	Bacterial Glycogen Provides Short-Term Benefits in Changing Environments. Applied and Environmental Microbiology, 2020, 86, .	3.1	53
69	Horizontal transport and dispersion in the surface layer of a mediumâ€sized lake. Limnology and Oceanography, 2003, 48, 971-982.	3.1	51
70	Chemotaxis shapes the microscale organization of the oceanâ€™s microbiome. Nature, 2022, 605, 132-138.	27.8	51
71	Shear-induced orientational dynamics and spatial heterogeneity in suspensions of motile phytoplankton. Journal of the Royal Society Interface, 2015, 12, 20150791.	3.4	48
72	Diffusion-limited retention of porous particles at density interfaces. Proceedings of the National Academy of Sciences of the United States of America, 2010, 107, 22163-22168.	7.1	47

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73	RecA Protein Plays a Role in the Chemotactic Response and Chemoreceptor Clustering of Salmonella enterica. PLoS ONE, 2014, 9, e105578.	2.5	47
74	Chemotaxis under flow disorder shapes microbial dispersion in porous media. Nature Physics, 2021, 17, 68-73.	16.7	46
75	Roadmap on emerging concepts in the physical biology of bacterial biofilms: from surface sensing to community formation. Physical Biology, 2021, 18, 051501.	1.8	46
76	Biofilm disruption by an air bubble reveals heterogeneous age-dependent detachment patterns dictated by initial extracellular matrix distribution. Npj Biofilms and Microbiomes, 2017, 3, 6.	6.4	45
77	A microfluidic chemotaxis assay to study microbial behavior in diffusing nutrient patches. Limnology and Oceanography: Methods, 2008, 6, 477-488.	2.0	44
78	Natural search algorithms as a bridge between organisms, evolution, and ecology. Proceedings of the National Academy of Sciences of the United States of America, 2016, 113, 9413-9420.	7.1	44
79	Microbial alignment in flow changes ocean light climate. Proceedings of the National Academy of Sciences of the United States of America, 2011, 108, 3860-3864.	7.1	42
80	Bacteria push the limits of chemotactic precision to navigate dynamic chemical gradients. Proceedings of the National Academy of Sciences of the United States of America, 2019, 116, 10792-10797.	7.1	41
81	Optofluidic Raman-activated cell sorting for targeted genome retrieval or cultivation of microbial cells with specific functions. Nature Protocols, 2021, 16, 634-676.	12.0	41
82	Energy Partitioning and Horizontal Dispersion in a Stratified Rotating Lake*. Journal of Physical Oceanography, 2003, 33, 512-529.	1.7	40
83	A distinct growth physiology enhances bacterial growth under rapid nutrient fluctuations. Nature Communications, 2021, 12, 3662.	12.8	40
84	Microorganisms in vortices: a microfluidic setup. Limnology and Oceanography: Methods, 2006, 4, 392-398.	2.0	37
85	Sperm chemotaxis promotes individual fertilization success in sea urchins. Journal of Experimental Biology, 2016, 219, 1458-66.	1.7	37
86	Nutrient complexity triggers transitions between solitary and colonial growth in bacterial populations. ISME Journal, 2021, 15, 2614-2626.	9.8	36
87	A Foraging Mandala for Aquatic Microorganisms. ISME Journal, 2019, 13, 563-575.	9.8	35
88	Capillary Interception of Floating Particles by Surface-Piercing Vegetation. Physical Review Letters, 2013, 111, 164501.	7.8	34
89	Microbial Morphology and Motility as Biosignatures for Outer Planet Missions. Astrobiology, 2016, 16, 755-774.	3.0	34
90	Sinking enhances the degradation of organic particles by marine bacteria. Nature Geoscience, 2021, 14, 775-780.	12.9	34

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91	Bacterial chemotaxis towards the extracellular products of the toxic phytoplankton Heterosigma akashiwo. Journal of Plankton Research, 2009, 31, 1557-1561.	1.8	33
92	Cell Patterning with Mucin Biopolymers. Biomacromolecules, 2013, 14, 3010-3016.	5.4	33
93	Motility drives bacterial encounter with particles responsible for carbon export throughout the ocean. Limnology and Oceanography Letters, 2019, 4, 113-118.	3.9	33
94	Spontaneous oscillations of a sessile lens. Journal of Fluid Mechanics, 2007, 583, 465-475.	3.4	32
95	Chain formation can enhance the vertical migration of phytoplankton through turbulence. Science Advances, 2019, 5, eaaw7879.	10.3	32
96	PhenoChip: A single-cell phenomic platform for high-throughput photophysiological analyses of microalgae. Science Advances, 2020, 6, .	10.3	32
97	Deployable micro-traps to sequester motile bacteria. Scientific Reports, 2017, 7, 45897.	3.3	30
98	Single-cell bacterial transcription measurements reveal the importance of dimethylsulfoniopropionate (DMSP) hotspots in ocean sulfur cycling. Nature Communications, 2020, 11, 1942.	12.8	30
99	Microbes contribute to setting the ocean carbon flux by altering the fate of sinking particulates. Nature Communications, 2022, 13, 1657.	12.8	30
100	The structural role of bacterial eDNA in the formation of biofilm streamers. Proceedings of the National Academy of Sciences of the United States of America, 2022, 119, e2113723119.	7.1	30
101	Logarithmic sensing in Bacillus subtilis aerotaxis. Npj Systems Biology and Applications, 2017, 3, 16036.	3.0	29
102	That sinking feeling: Suspended sediments can prevent the ascent of coral egg bundles. Scientific Reports, 2016, 6, 21567.	3.3	28
103	Resilience of bacterial quorum sensing against fluid flow. Scientific Reports, 2016, 6, 33115.	3.3	25
104	Constrained optimal foraging by marine bacterioplankton on particulate organic matter. Proceedings of the National Academy of Sciences of the United States of America, 2020, 117, 25571-25579.	7.1	25
105	Physical limits on bacterial navigation in dynamic environments. Journal of the Royal Society Interface, 2016, 13, 20150844.	3.4	24
106	Tumbling for Stealth?. Science, 2009, 325, 400-402.	12.6	23
107	Encounter rates between bacteria and small sinking particles. New Journal of Physics, 2020, 22, 043016.	2.9	22
108	An experimental investigation of the angular dependence of diffusion-driven flow. Physics of Fluids, 2004, 16, 3503-3505.	4.0	20

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109	Redefining the spongeâ€symbiont acquisition paradigm: sponge microbes exhibit chemotaxis towards hostâ€derived compounds. Environmental Microbiology Reports, 2017, 9, 750-755.	2.4	20
110	Mechanistic model of nutrient uptake explains dichotomy between marine oligotrophic and copiotrophic bacteria. PLoS Computational Biology, 2021, 17, e1009023.	3.2	20
111	Finding patches in a heterogeneous aquatic environment: pHâ€taxis by the dispersal stage of choanoflagellates. Limnology and Oceanography Letters, 2017, 2, 37-46.	3.9	19
112	The 100 Âµm length scale in the microbial ocean. Aquatic Microbial Ecology, 2015, 76, 189-194.	1.8	19
113	Systematic Spatial Bias in DNA Microarray Hybridization Is Caused by Probe Spot Position-Dependent Variability in Lateral Diffusion. PLoS ONE, 2011, 6, e23727.	2.5	18
114	Intermittent turbulence in flowing bacterial suspensions. Journal of the Royal Society Interface, 2016, 13, 20160175.	3.4	17
115	Visualization of coral hostâ€"pathogen interactions using a stable GFP-labeled Vibrio coralliilyticus strain. Coral Reefs, 2015, 34, 655-662.	2.2	16
116	Generalized size scaling of metabolic rates based on single-cell measurements with freshwater phytoplankton. Proceedings of the National Academy of Sciences of the United States of America, 2019, 116, 17323-17329.	7.1	16
117	Microscale Synthetic Schlieren. Experiments in Fluids, 2006, 42, 41-48.	2.4	15
118	Sensitivity of the rate of nutrient uptake by chemotactic bacteria to physical and biological parameters in a turbulent environment. Journal of Theoretical Biology, 2015, 387, 120-135.	1.7	15
119	Coral mucus rapidly induces chemokinesis and genome-wide transcriptional shifts toward early pathogenesis in a bacterial coral pathogen. ISME Journal, 2021, 15, 3668-3682.	9.8	14
120	Raman-based sorting of microbial cells to link functions to their genes. Microbial Cell, 2020, 7, 62-65.	3.2	14
121	Competition between growth and shear stress drives intermittency in preferential flow paths in porous medium biofilms. Proceedings of the National Academy of Sciences of the United States of America, 2022, 119, .	7.1	14
122	Baroclinic geostrophic adjustment in a rotating circular basin. Journal of Fluid Mechanics, 2004, 515, 63-86.	3.4	13
123	Flagella, flexibility and flow: Physical processes in microbial ecology. European Physical Journal: Special Topics, 2015, 224, 3119-3140.	2.6	13
124	Lubrication in a corner. Journal of Fluid Mechanics, 2005, 544, 353.	3.4	12
125	Cutting Through the Noise: Bacterial Chemotaxis in Marine Microenvironments. Frontiers in Marine Science, 2020, 7, .	2.5	12
126	Simultaneous visualization of flow fields and oxygen concentrations to unravel transport and metabolic processes in biological systems. Cell Reports Methods, 2022, 2, 100216.	2.9	12

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127	A <i>particularly</i> useful system to study the ecology of microbes. Environmental Microbiology Reports, 2017, 9, 16-17.	2.4	10
128	Flagellar kinematics reveals the role of environment in shaping sperm motility. Journal of the Royal Society Interface, 2020, 17, 20200525.	3.4	10
129	In Situ Chemotaxis Assay to Examine Microbial Behavior in Aquatic Ecosystems. Journal of Visualized Experiments, 2020, , .	0.3	10
130	Bistability in oxidative stress response determines the migration behavior of phytoplankton in turbulence. Proceedings of the National Academy of Sciences of the United States of America, 2021, 118, .	7.1	10
131	A microfluidic platform for characterizing the structure and rheology of biofilm streamers. Soft Matter, 2022, 18, 3878-3890.	2.7	10
132	The Ciliate Paramecium Shows Higher Motility in Non-Uniform Chemical Landscapes. PLoS ONE, 2011, 6, e15274.	2.5	9
133	Focus on the physics of biofilms. New Journal of Physics, 2015, 17, 030401.	2.9	9
134	Bursts Characterize Coagulation of Rods in a Quiescent Fluid. Physical Review Letters, 2020, 124, 258001.	7.8	9
135	On the collision of rods in a quiescent fluid. Proceedings of the National Academy of Sciences of the United States of America, 2020, 117, 3372-3374.	7.1	8
136	Settling of highly porous and impermeable particles in linear stratification: implications for marine aggregates. Journal of Fluid Mechanics, 2022, 931, .	3.4	8
137	The Microbial Olympics 2016. Nature Microbiology, 2016, 1, 16122.	13.3	7
138	Heterologous Expression of Pseudomonas putida Methyl-Accepting Chemotaxis Proteins Yields Escherichia coli Cells Chemotactic to Aromatic Compounds. Applied and Environmental Microbiology, 2018, 84, .	3.1	6
139	Using High-Sensitivity Lipidomics To Assess Microscale Heterogeneity in Oceanic Sinking Particles and Single Phytoplankton Cells. Environmental Science & Technology, 2021, 55, 15456-15465.	10.0	6
140	Corner flow in free liquid films. Journal of Engineering Mathematics, 2004, 50, 267-288.	1.2	4
141	Reduced gravity promotes bacterially mediated anoxic hotspots in unsaturated porous media. Scientific Reports, 2020, 10, 8614.	3.3	4
142	On the water lapping of felines and the water running of lizards. Communicative and Integrative Biology, 2011, 4, 213-215.	1.4	3
143	A laboratory model of marine snow: Preparation and characterization of porous fiber particles. Limnology and Oceanography: Methods, 2015, 13, 664-671.	2.0	3
144	An interdisciplinary and application-oriented approach to teach microfluidics. Biomicrofluidics, 2021, 15, 014104.	2.4	3

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145	Flagella, flexibility and flow: Physical processes in microbial ecology. European Physical Journal: Special Topics, 2015, 224, 3119-3140.	2.6	3
146	Optimizing diffusion-driven flow in a fissure. Physics of Fluids, 2005, 17, 128104.	4.0	2
147	Chemotactic Response of Marine Micro-Organisms to Micro-Scale Nutrient Layers. Journal of Visualized Experiments, 2007, , 203.	0.3	2
148	Generating Controlled, Dynamic Chemical Landscapes to Study Microbial Behavior. Journal of Visualized Experiments, 2020, , .	0.3	2
149	Bacterial maze runners reveal hidden diversity in chemotactic performance. Microbial Cell, 2019, 6, 370-372.	3.2	2
150	Non-linear dynamic analysis with deterministic and random seas: the case of minimum platforms. , 2003, , .		1
151	Modus vivendi. Nature Physics, 2017, 13, 326-327.	16.7	1
152	ARC: An Open Web-Platform for Request/Supply Matching for a Prioritized and Controlled COVID-19 Response. Frontiers in Public Health, 2021, 9, 607677.	2.7	1
153	Microfluidic-based Time-kill Kinetic Assay. Bio-protocol, 2014, 4, .	0.4	1
154	Survival in a Sea of Gradients: Bacterial and Archaeal Foraging in a Heterogeneous Ocean. The Microbiomes of Humans, Animals, Plants, and the Environment, 2022, , 47-102.	0.6	1
155	Bacterial chemotaxis to saccharides is governed byÂa trade-off between sensing and uptake. Biophysical Journal, 2022, 121, 2046-2059.	0.5	1
156	Response to Comment on â€œHow Cats Lap: Water Uptake by <i>Felis catus</i> â€• Science, 2011, 334, 311-311	12.6	0
157	The effect of reversals for a stochastic source-seeking process inspired by bacterial chemotaxis. , 2014, , .		0
158	Patterning of Microorganisms and Microparticles through Sequential Capillarity-assisted Assembly. Journal of Visualized Experiments, 2021, , .	0.3	0
159	Transport of Pseudomonas aeruginosa in Polymer Solutions. Frontiers in Physics, 0, 10, .	2.1	0