Kerwyn Casey Huang

List of Publications by Year
in descending order

144 papers	10,518 citations	41344 49 h-index	45317 90 g-index
185 all docs	185 docs citations	185 times ranked	11211 citing authors

#	Article	IF	Citations
1	A Comprehensive, CRISPR-based Functional Analysis of Essential Genes in Bacteria. Cell, 2016, 165, 1493-1506.	28.9	593
2	The Gut Microbiome: Connecting Spatial Organization to Function. Cell Host and Microbe, 2017, 21, 433-442.	11.0	453
3	GTPase activityâ€“coupled treadmilling of the bacterial tubulin FtsZ organizes septal cell wall synthesis. Science, 2017, 355, 744-747.	12.6	410
4	The bacterial actin MreB rotates, and rotation depends on cell-wall assembly. Proceedings of the National Academy of Sciences of the United States of America, 2011, 108, 15822-15827.	7.1	391
5	The outer membrane is an essential load-bearing element in Gram-negative bacteria. Nature, 2018, 559, 617-621.	27.8	388
6	Quantitative Imaging of Gut Microbiota Spatial Organization. Cell Host and Microbe, 2015, 18, 478-488.	11.0	359
7	A Gut Commensal-Produced Metabolite Mediates Colonization Resistance to Salmonella Infection. Cell Host and Microbe, 2018, 24, 296-307.e7.	11.0	329
8	The Tabula Sapiens: A multiple-organ, single-cell transcriptomic atlas of humans. Science, 2022, 376, eabl4896.	12.6	289
9	Cell shape and cell-wall organization in Gram-negative bacteria. Proceedings of the National Academy of Sciences of the United States of America, 2008, 105, 19282-19287.	7.1	280
10	Dynamic structures inEscherichia coli: Spontaneous formation of MinE rings and MinD polar zones. Proceedings of the National Academy of Sciences of the United States of America, 2003, 100, 12724-12728.	7.1	258
11	Rod-like bacterial shape is maintained by feedback between cell curvature and cytoskeletal localization. Proceedings of the National Academy of Sciences of the United States of America, 2014, 111, E1025-34.	7.1	236
12	Measuring the stiffness of bacterial cells from growth rates in hydrogels of tunable elasticity. Molecular Microbiology, 2012, 84, 874-891.	2.5	212
13	Transient Osmotic Perturbation Causes Long-Term Alteration to the Gut Microbiota. Cell, 2018, 173, 1742-1754.e17.	28.9	171
14	Response of Escherichia coli growth rate to osmotic shock. Proceedings of the National Academy of Sciences of the United States of America, 2014, 111, 7807-7812.	7.1	170
15	Recovery of the Gut Microbiota after Antibiotics Depends on Host Diet, Community Context, and Environmental Reservoirs. Cell Host and Microbe, 2019, 26, 650-665.e4.	11.0	166
16	Cell size and growth regulation in the Arabidopsis thaliana apical stem cell niche. Proceedings of the National Academy of Sciences of the United States of America, 2016, 113, E8238-E8246.	7.1	162
17	Sizing up the bacterial cell cycle. Nature Reviews Microbiology, 2017, 15, 606-620.	28.6	157
18	A Curvature-Mediated Mechanism for Localization of Lipids to Bacterial Poles. PLoS Computational Biology, 2006, 2, e151.	3.2	156

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19	Coordination of peptidoglycan synthesis and outer membrane constriction during Escherichia coli cell division. ELife, 2015, 4, .	6.0	154
20	Posttranslational Acetylation of Î±-Tubulin Constrains Protofilament Number in Native Microtubules. Current Biology, 2012, 22, 1066-1074.	3.9	144
21	How to Build a Bacterial Cell: MreB as the Foreman of E.Âcoli Construction. Cell, 2018, 172, 1294-1305.	28.9	144
22	Disruption of lipid homeostasis in the Gram-negative cell envelope activates a novel cell death pathway. Proceedings of the National Academy of Sciences of the United States of America, 2016, 113, E1565-74.	7.1	142
23	FtsZ Protofilaments Use a Hinge-Opening Mechanism for Constrictive Force Generation. Science, 2013, 341, 392-395.	12.6	131
24	Rapid, precise quantification of bacterial cellular dimensions across a genomic-scale knockout library. BMC Biology, 2017, 15, 17.	3.8	123
25	Full color palette of fluorescent<scp>d</scp>-amino acids for in situ labeling of bacterial cell walls. Chemical Science, 2017, 8, 6313-6321.	7.4	111
26	Physical properties of the bacterial outer membrane. Nature Reviews Microbiology, 2022, 20, 236-248.	28.6	111
27	Regulation of microbial growth by turgor pressure. Current Opinion in Microbiology, 2018, 42, 62-70.	5.1	110
28	Cooperative Gating and Spatial Organization of Membrane Proteins through Elastic Interactions. PLoS Computational Biology, 2007, 3, e81.	3.2	105
29	Mechanisms for maintaining cell shape in rodâ€shaped Gramâ€negative bacteria. Molecular Microbiology, 2011, 81, 340-353.	2.5	104
30	Peptidoglycan at its peaks: how chromatographic analyses can reveal bacterial cell wall structure and assembly. Molecular Microbiology, 2013, 89, 1-13.	2.5	104
31	Negative effective permeability in polaritonic photonic crystals. Applied Physics Letters, 2004, 85, 543-545.	3.3	101
32	Lipid Localization in Bacterial Cells through Curvature-Mediated Microphase Separation. Biophysical Journal, 2008, 95, 1034-1049.	0.5	99
33	Mechanical crack propagation drives millisecond daughter cell separation in Staphylococcus aureus. Science, 2015, 348, 574-578.	12.6	98
34	Helical insertion of peptidoglycan produces chiral ordering of the bacterial cell wall. Proceedings of the National Academy of Sciences of the United States of America, 2012, 109, E595-604.	7.1	97
35	Staying in Touch while on the Go. Cell, 2017, 168, 15-17.	28.9	91
36	A dynamically assembled cell wall synthesis machinery buffers cell growth. Proceedings of the National Academy of Sciences of the United States of America, 2014, 111, 4554-4559.	7.1	88

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37	Bilayer-Mediated Clustering and Functional Interaction of MscL Channels. Biophysical Journal, 2011, 100, 1252-1260.	0.5	87
38	Macromolecules that prefer their membranes curvy. Molecular Microbiology, 2010, 76, 822-832.	2.5	83
39	Functional genetics of human gut commensal Bacteroides thetaiotaomicron reveals metabolic requirements for growth across environments. Cell Reports, 2021, 34, 108789.	6.4	82
40	Field Expulsion and Reconfiguration in Polaritonic Photonic Crystals. Physical Review Letters, 2003, 90, 196402.	7.8	80
41	A Periplasmic Polymer Curves Vibrio cholerae and Promotes Pathogenesis. Cell, 2017, 168, 172-185.e15.	28.9	78
42	Deep Phenotypic Mapping of Bacterial Cytoskeletal Mutants Reveals Physiological Robustness to Cell Size. Current Biology, 2017, 27, 3419-3429.e4.	3.9	72
43	De novo morphogenesis in <scp>L</scp>â€forms via geometric control of cell growth. Molecular Microbiology, 2014, 93, 883-896.	2.5	68
44	The bacterial tubulin FtsZ requires its intrinsically disordered linker to direct robust cell wall construction. Nature Communications, 2015, 6, 7281.	12.8	67
45	Klebsiella michiganensis transmission enhances resistance to Enterobacteriaceae gut invasion by nutrition competition. Nature Microbiology, 2020, 5, 630-641.	13.3	67
46	Biological Consequences and Advantages of Asymmetric Bacterial Growth. Annual Review of Microbiology, 2013, 67, 417-435.	7.3	64
47	Structural basis for the geometry-driven localization of a small protein. Proceedings of the National Academy of Sciences of the United States of America, 2015, 112, E1908-15.	7.1	63
48	How and why cells grow as rods. BMC Biology, 2014, 12, 54.	3.8	62
49	Systematic Perturbation of Cytoskeletal Function Reveals a Linear Scaling Relationship between Cell Geometry and Fitness. Cell Reports, 2014, 9, 1528-1537.	6.4	61
50	Dynamic SpoIIIE assembly mediates septal membrane fission during Bacillus subtilis sporulation. Genes and Development, 2010, 24, 1160-1172.	5.9	60
51	Mechanical Consequences of Cell-Wall Turnover in the Elongation of a Gram-Positive Bacterium. Biophysical Journal, 2013, 104, 2342-2352.	0.5	60
52	The contractile ring coordinates curvature-dependent septum assembly during fission yeast cytokinesis. Molecular Biology of the Cell, 2015, 26, 78-90.	2.1	58
53	Establishment and characterization of stable, diverse, fecal-derived inÂvitro microbial communities that model the intestinal microbiota. Cell Host and Microbe, 2022, 30, 260-272.e5.	11.0	58
54	RodZ modulates geometric localization of the bacterial actin MreB to regulate cell shape. Nature Communications, 2018, 9, 1280.	12.8	56

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55	Decoupling of Rates of Protein Synthesis from Cell Expansion Leads to Supergrowth. Cell Systems, 2019, 9, 434-445.e6.	6.2	56
56	Bacterial interspecies interactions modulate pH-mediated antibiotic tolerance. ELife, 2020, 9, .	6.0	56
57	The role of hydrolases in bacterial cell-wall growth. Current Opinion in Microbiology, 2013, 16, 760-766.	5.1	55
58	Analysis of Surface Protein Expression Reveals the Growth Pattern of the Gram-Negative Outer Membrane. PLoS Computational Biology, 2012, 8, e1002680.	3.2	54
59	Optimal Dynamics for Quality Control in Spatially Distributed Mitochondrial Networks. PLoS Computational Biology, 2013, 9, e1003108.	3.2	54
60	Long-term microfluidic tracking of coccoid cyanobacterial cells reveals robust control of division timing. BMC Biology, 2017, 15, 11.	3.8	50
61	Cytoskeletal Network Morphology Regulates Intracellular Transport Dynamics. Biophysical Journal, 2015, 109, 1574-1582.	0.5	48
62	Mechanical Genomics Identifies Diverse Modulators of Bacterial Cell Stiffness. Cell Systems, 2016, 2, 402-411.	6.2	48
63	The Min System as a General Cell Geometry Detection Mechanism: Branch Lengths in Y-ShapedEscherichia coliCells Affect Min Oscillation Patterns and Division Dynamics. Journal of Bacteriology, 2008, 190, 2106-2117.	2.2	47
64	Homeostatic Cell Growth Is Accomplished Mechanically through Membrane Tension Inhibition of Cell-Wall Synthesis. Cell Systems, 2017, 5, 578-590.e6.	6.2	47
65	Single-molecule imaging reveals modulation of cell wall synthesis dynamics in live bacterial cells. Nature Communications, 2016, 7, 13170.	12.8	44
66	Min-protein oscillations in round bacteria. Physical Biology, 2004, 1, 229-235.	1.8	43
67	Principles of Bacterial Cell-Size Determination Revealed by Cell-Wall Synthesis Perturbations. Cell Reports, 2014, 9, 1520-1527.	6.4	43
68	Mechanically resolved imaging of bacteria using expansion microscopy. PLoS Biology, 2019, 17, e3000268.	5.6	43
69	Isolation and Preparation of Bacterial Cell Walls for Compositional Analysis by Ultra Performance Liquid Chromatography. Journal of Visualized Experiments, 2014, , e51183.	0.3	42
70	Effects of polymerization and nucleotide identity on the conformational dynamics of the bacterial actin homolog MreB. Proceedings of the National Academy of Sciences of the United States of America, 2014, 111, 3585-3590.	7.1	41
71	tRNA Methylation Is a Global Determinant of Bacterial Multi-drug Resistance. Cell Systems, 2019, 8, 302-314.e8.	6.2	41
72	Biosurfactant-Mediated Membrane Depolarization Maintains Viability during Oxygen Depletion in Bacillus subtilis. Current Biology, 2020, 30, 1011-1022.e6.	3.9	41

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73	Coupling between Protein Stability and Catalytic Activity Determines Pathogenicity of G6PD Variants. Cell Reports, 2017, 18, 2592-2599.	6.4	39
74	Morphological and Transcriptional Responses to CRISPRi Knockdown of Essential Genes in Escherichia coli. MBio, 2021, 12, e0256121.	4.1	38
75	Thinking big: the tunability of bacterial cell size. FEMS Microbiology Reviews, 2017, 41, 672-678.	8.6	37
76	Competition for fluctuating resources reproduces statistics of species abundance over time across wide-ranging microbiotas. ELife, 2022, 11, .	6.0	37
77	The inner membrane protein YhdP modulates the rate of anterograde phospholipid flow in Escherichia coli. Proceedings of the National Academy of Sciences of the United States of America, 2020, 117, 26907-26914.	7.1	36
78	Strain Library Imaging Protocol for high-throughput, automated single-cell microscopy of large bacterial collections arrayed on multiwell plates. Nature Protocols, 2017, 12, 429-438.	12.0	35
79	Variations of intracellular density during the cell cycle arise from tip-growth regulation in fission yeast. ELife, 2021, 10, .	6.0	35
80	Lateral interactions between protofilaments of the bacterial tubulin homolog FtsZ are essential for cell division. ELife, 2018, 7, .	6.0	34
81	Environmental and Physiological Factors Affecting High-Throughput Measurements of Bacterial Growth. MBio, 2020, 11, .	4.1	34
82	Motility Enhancement through Surface Modification Is Sufficient for Cyanobacterial Community Organization during Phototaxis. PLoS Computational Biology, 2013, 9, e1003205.	3.2	33
83	High-throughput, Highly Sensitive Analyses of Bacterial Morphogenesis Using Ultra Performance Liquid Chromatography. Journal of Biological Chemistry, 2015, 290, 31090-31100.	3.4	33
84	Precise regulation of the relative rates of surface area and volume synthesis in bacterial cells growing in dynamic environments. Nature Communications, 2021, 12, 1975.	12.8	32
85	Dash-and-Recruit Mechanism Drives Membrane Curvature Recognition by the Small Bacterial Protein SpoVM. Cell Systems, 2017, 5, 518-526.e3.	6.2	30
86	The effect of microbial colonization on the host proteome varies by gastrointestinal location. ISME Journal, 2016, 10, 1170-1181.	9.8	29
87	The Effects of Temperature on Cellular Physiology. Annual Review of Biophysics, 2022, 51, 499-526.	10.0	29
88	Mechanics of membrane bulging during cell-wall disruption in Gram-negative bacteria. Physical Review E, 2011, 83, 041922.	2.1	28
89	Starvation induces shrinkage of the bacterial cytoplasm. Proceedings of the National Academy of Sciences of the United States of America, 2021, 118, .	7.1	28
90	Quantifying rapid bacterial evolution and transmission within the mouse intestine. Cell Host and Microbe, 2021, 29, 1454-1468.e4.	11.0	27

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91	Physics of Intracellular Organization in Bacteria. Annual Review of Microbiology, 2015, 69, 361-379.	7.3	24
92	Emergent Phototactic Responses of Cyanobacteria under Complex Light Regimes. MBio, 2017, 8, .	4.1	24
93	Chiral twisting in a bacterial cytoskeletal polymer affects filament size and orientation. Nature Communications, 2020, 11, 1408.	12.8	24
94	Toward Point-of-Care Detection of Mycobacterium tuberculosis: A Brighter Solvatochromic Probe Detects Mycobacteria within Minutes. Jacs Au, 2021, 1, 1368-1379.	7.9	24
95	Pattern Formation withinEscherichia coli: Diffusion, Membrane Attachment, and Self-Interaction of MinD Molecules. Physical Review Letters, 2004, 93, 228103.	7.8	23
96	Maintenance of Motility Bias during Cyanobacterial Phototaxis. Biophysical Journal, 2015, 108, 1623-1632.	0.5	23
97	Bellymount enables longitudinal, intravital imaging of abdominal organs and the gut microbiota in adult Drosophila. PLoS Biology, 2020, 18, e3000567.	5.6	23
98	Rapid ordering of barcoded transposon insertion libraries of anaerobic bacteria. Nature Protocols, 2021, 16, 3049-3071.	12.0	23
99	Marine Mammal Microbiota Yields Novel Antibiotic with Potent Activity Against Clostridium difficile. ACS Infectious Diseases, 2018, 4, 59-67.	3.8	22
100	Variations in the Binding Pocket of an Inhibitor of the Bacterial Division Protein FtsZ across Genotypes and Species. PLoS Computational Biology, 2015, 11, e1004117.	3.2	21
101	FtsZ-Dependent Elongation of a Coccoid Bacterium. MBio, 2016, 7, .	4.1	21
102	Differential modes of crosslinking establish spatially distinct regions of peptidoglycan in Caulobacter crescentus. Molecular Microbiology, 2019, 111, 995-1008.	2.5	19
103	How Does the Xenopus laevis Embryonic Cell Cycle Avoid Spatial Chaos?. Cell Reports, 2015, 12, 892-900.	6.4	18
104	Effects of fixation on bacterial cellular dimensions and integrity. IScience, 2021, 24, 102348.	4.1	18
105	Does the Potential for Chaos Constrain the Embryonic Cell-Cycle Oscillator?. PLoS Computational Biology, 2011, 7, e1002109.	3.2	14
106	Applications of imaging for bacterial systems biology. Current Opinion in Microbiology, 2015, 27, 114-120.	5.1	14
107	Three-dimensional biofilm colony growth supports a mutualism involving matrix and nutrient sharing. ELife, 2021, 10, .	6.0	14
108	Interplay between the Localization and Kinetics of Phosphorylation in Flagellar Pole Development of the Bacterium Caulobacter crescentus. PLoS Computational Biology, 2012, 8, e1002602.	3.2	13

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109	Entropy-driven translocation of disordered proteins through the Gram-positive bacterial cell wall. Nature Microbiology, 2021, 6, 1055-1065.	13.3	13
110	The molecular origins of chiral growth in walled cells. Current Opinion in Microbiology, 2012, 15, 707-714.	5.1	12
111	Bacterial Evolution in High-Osmolarity Environments. MBio, 2020, 11, .	4.1	12
112	Extracting phylogenetic dimensions of coevolution reveals hidden functional signals. Scientific Reports, 2022, 12, 820.	3.3	12
113	The CIAMIB: a Large and Metabolically Diverse Collection of Inflammation-Associated Bacteria from the Murine Gut. MBio, 2022, , e0294921.	4.1	11
114	Plasmon-actuated nano-assembled microshells. Scientific Reports, 2017, 7, 17788.	3.3	10
115	Chemical-genetic interrogation of RNA polymerase mutants reveals structure-function relationships and physiological tradeoffs. Molecular Cell, 2021, 81, 2201-2215.e9.	9.7	10
116	Superheating and Induced Melting at Semiconductor Interfaces. Physical Review Letters, 2005, 94, 175702.	7.8	9
117	Optimization of the 16S rRNA sequencing analysis pipeline for studying inÂvitro communities of gut commensals. IScience, 2022, 25, 103907.	4.1	9
118	Physical constraints on the establishment of intracellular spatial gradients in bacteria. BMC Biophysics, 2012, 5, 17.	4.4	8
119	Dimer Dynamics and Filament Organization of the Bacterial Cell Division Protein FtsA. Journal of Molecular Biology, 2013, 425, 4415-4426.	4.2	8
120	Limits and Constraints on Mechanisms of Cell-Cycle Regulation Imposed by Cell Size-Homeostasis Measurements. Cell Reports, 2020, 32, 107992.	6.4	7
121	Cell Size: Fat Makes Cells Fat. Current Biology, 2017, 27, R592-R594.	3.9	6
122	FtsZâ€Independent Mechanism of Division Inhibition by the Small Molecule PC190723 in Escherichia coli. Advanced Biology, 2019, 3, 1900021.	3.0	6
123	Bacterial respiration during stationary phase induces intracellular damage that leads to delayed regrowth. IScience, 2022, 25, 103765.	4.1	6
124	Conformational changes, diffusion and collective behavior in monomeric kinesin-based motility. Journal of Physics Condensed Matter, 2011, 23, 374106.	1.8	5
125	Hyperosmotic Shock Transiently Accelerates Constriction Rate in Escherichia coli. Frontiers in Microbiology, 2021, 12, 718600.	3.5	5
126	Conservation of conformational dynamics across prokaryotic actins. PLoS Computational Biology, 2019, 15, e1006683.	3.2	4

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127	SiCTeC: An inexpensive, easily assembled Peltier device for rapid temperature shifting during single-cell imaging. PLoS Biology, 2020, 18, e3000786.	5.6	4
128	Recovery of the Gut Microbiota after Antibiotics Depends on Host Diet and Environmental Reservoirs. SSRN Electronic Journal, 0, , .	0.4	4
129	Who's Your DadA? d -Alanine Levels Regulate Bacterial Stiffness. MBio, 2018, 9, .	4.1	3
130	AimB Is a Small Protein Regulator of Cell Size and MreB Assembly. Biophysical Journal, 2020, 119, 593-604.	0.5	3
131	Design of High-Specificity Nanocarriers by Exploiting Non-Equilibrium Effects in Cancer Cell Targeting. PLoS ONE, 2013, 8, e65623.	2.5	2
132	Translating the Physical Code of Life. Cell, 2018, 174, 253-255.	28.9	2
133	Colons or semi-colons: punctuating the regional variation of intestinal microbialâ€“immune interactions. Nature Reviews Gastroenterology and Hepatology, 2020, 17, 319-320.	17.8	2
134	Membrane Tension Inhibits Wall Synthesis via Electrical Depolarization to Balance Bacterial Cell Envelope Expansion. Biophysical Journal, 2018, 114, 28a.	0.5	1
135	Cutting the Gordian Knot of the Microbiota. Molecular Cell, 2018, 70, 765-767.	9.7	1
136	Chromosome Organization: Making Room in a Crowd. Current Biology, 2019, 29, R630-R632.	3.9	1
137	Pictures of Tongues Sticking Out. Trends in Endocrinology and Metabolism, 2020, 31, 805-807.	7.1	1
138	Bacterial Filamentation Drives Colony Chirality. MBio, 2021, 12, e0154221.	4.1	1
139	Super symmetry in cell division. Nature Nanotechnology, 2015, 10, 655-656.	31.5	0
140	When a physicist wanders into biologyâ€¦: an interview with KC Huang. BMC Biology, 2018, 16, 130.	3.8	0
141	Cell geometry and leaflet bilayer asymmetry regulate domain formation in plasma membranes. Physical Review E, 2019, 99, 012401.	2.1	0
142	Straightening up for life in a biofilm. Proceedings of the National Academy of Sciences of the United States of America, 2020, 117, 31573-31574.	7.1	0
143	tRNA Methylation Controls Bacterial Multiâ€Ðrug Resistance. FASEB Journal, 2018, 32, 105.1.	0.5	0
144	Decoupling of Rates of Protein Synthesis from Cell Expansion Leads to Supergrowth. SSRN Electronic Journal, 0, , .	0.4	0