Terence Hwa

List of Publications by Year in descending order

138 papers	17,824 citations	15504 65 h-index	16650 123 g-index
151 all docs	151 docs citations	151 times ranked	11936 citing authors

#	Article	IF	Citations
1	Direct-coupling analysis of residue coevolution captures native contacts across many protein families. Proceedings of the National Academy of Sciences of the United States of America, 2011, 108, E1293-301.	7.1	1,231
2	Interdependence of Cell Growth and Gene Expression: Origins and Consequences. Science, 2010, 330, 1099-1102.	12.6	1,183
3	Identification of direct residue contacts in proteinâ€“protein interaction by message passing. Proceedings of the National Academy of Sciences of the United States of America, 2009, 106, 67-72.	7.1	902
4	Transcriptional regulation by the numbers: models. Current Opinion in Genetics and Development, 2005, 15, 116-124.	3.3	660
5	Burgers equation with correlated noise: Renormalization-group analysis and applications to directed polymers and interface growth. Physical Review A, 1989, 39, 3053-3075.	2.5	616
6	Growth Rate-Dependent Global Effects on Gene Expression in Bacteria. Cell, 2009, 139, 1366-1375.	28.9	614
7	On schemes of combinatorial transcription logic. Proceedings of the National Academy of Sciences of the United States of America, 2003, 100, 5136-5141.	7.1	586
8	Overflow metabolism in Escherichia coli results from efficient proteome allocation. Nature, 2015, 528, 99-104.	27.8	566
9	Coordination of bacterial proteome with metabolism by cyclic AMP signalling. Nature, 2013, 500, 301-306.	27.8	375
10	Emergence of robust growth laws from optimal regulation of ribosome synthesis. Molecular Systems Biology, 2014, 10, 747.	7.2	374
11	Quantitative Characteristics of Gene Regulation by Small RNA. PLoS Biology, 2007, 5, e229.	5.6	346
12	Sequential Establishment of Stripe Patterns in an Expanding Cell Population. Science, 2011, 334, 238-241.	12.6	346
13	Transcriptional regulation by the numbers: applications. Current Opinion in Genetics and Development, 2005, 15, 125-135.	3.3	343
14	Quantitative proteomic analysis reveals a simple strategy of global resource allocation in bacteria. Molecular Systems Biology, 2015, 11, 784.	7.2	291
15	Avalanches, hydrodynamics, and discharge events in models of sandpiles. Physical Review A, 1992, 45, 7002-7023.	2.5	290
16	Dissipative transport in open systems: An investigation of self-organized criticality. Physical Review Letters, 1989, 62, 1813-1816.	7.8	273
17	Reduction of translating ribosomes enables Escherichia coli to maintain elongation rates during slow growth. Nature Microbiology, 2017, 2, 16231.	13.3	251
18	Molecular crowding limits translation and cell growth. Proceedings of the National Academy of Sciences of the United States of America, 2013, 110, 16754-16759.	7.1	241

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19	Bacterial growth laws and their applications. Current Opinion in Biotechnology, 2011, 22, 559-565.	6.6	237
20	Physical constraints and functional characteristics of transcription factor-DNA interaction. Proceedings of the National Academy of Sciences of the United States of America, 2002, 99, 12015-12020.	7.1	230
21	Combinatorial transcriptional control of the lactose operon of Escherichia coli. Proceedings of the National Academy of Sciences of the United States of America, 2007, 104, 6043-6048.	7.1	222
22	Genomics-aided structure prediction. Proceedings of the National Academy of Sciences of the United States of America, 2012, 109, 10340-10345.	7.1	210
23	Flux pinning and forced vortex entanglement by splayed columnar defects. Physical Review Letters, 1993, 71, 3545-3548.	7.8	202
24	Growth-rate-dependent partitioning of RNA polymerases in bacteria. Proceedings of the National Academy of Sciences of the United States of America, 2008, 105, 20245-20250.	7.1	189
25	A global resource allocation strategy governs growth transition kinetics of Escherichia coli. Nature, 2017, 551, 119-123.	27.8	184
26	Bacterial growth: global effects on gene expression, growth feedback and proteome partition. Current Opinion in Biotechnology, 2014, 28, 96-102.	6.6	182
27	High-resolution protein complexes from integrating genomic information with molecular simulation. Proceedings of the National Academy of Sciences of the United States of America, 2009, 106, 22124-22129.	7.1	174
28	The Innate Growth Bistability and Fitness Landscapes of Antibiotic-Resistant Bacteria. Science, 2013, 342, 1237435.	12.6	168
29	Inflating bacterial cells by increased protein synthesis. Molecular Systems Biology, 2015, 11, 836.	7.2	164
30	Coevolutionary signals across protein lineages help capture multiple protein conformations. Proceedings of the National Academy of Sciences of the United States of America, 2013, 110, 20533-20538.	7.1	163
31	On the rapidity of antibiotic resistance evolution facilitated by a concentration gradient. Proceedings of the National Academy of Sciences of the United States of America, 2012, 109, 10775-10780.	7.1	162
32	Crumpled and collapsed conformation in graphite oxide membranes. Nature, 1992, 355, 426-428.	27.8	160
33	Denaturation of Heterogeneous DNA. Physical Review Letters, 1997, 79, 2375-2378.	7.8	160
34	Nonlinear protein degradation and the function of genetic circuits. Proceedings of the National Academy of Sciences of the United States of America, 2005, 102, 9559-9564.	7.1	157
35	The estimation of statistical parameters for local alignment score distributions. Nucleic Acids Research, 2001, 29, 351-361.	14.5	150
36	A universal trade-off between growth and lag in fluctuating environments. Nature, 2020, 584, 470-474.	27.8	139

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37	Constrained Allocation Flux Balance Analysis. PLoS Computational Biology, 2016, 12, e1004913.	3.2	136
38	Stochastic fluctuations in metabolic pathways. Proceedings of the National Academy of Sciences of the United States of America, 2007, 104, 9224-9229.	7.1	127
39	Stripe Formation in Bacterial Systems with Density-Suppressed Motility. Physical Review Letters, 2012, 108, 198102.	7.8	127
40	Stochasticity and traffic jams in the transcription of ribosomal RNA: Intriguing role of termination and antitermination. Proceedings of the National Academy of Sciences of the United States of America, 2008, 105, 18159-18164.	7.1	126
41	Effect of water flow and chemical environment on microbiota growth and composition in the human colon. Proceedings of the National Academy of Sciences of the United States of America, 2017, 114, 6438-6443.	7.1	125
42	Effect of flow and peristaltic mixing on bacterial growth in a gut-like channel. Proceedings of the National Academy of Sciences of the United States of America, 2016, 113, 11414-11419.	7.1	120
43	Small RNAs establish gene expression thresholds. Current Opinion in Microbiology, 2008, 11, 574-579.	5.1	119
44	Topological order in the vortex-glass phase of high-temperature superconductors. Physical Review B, 1997, 55, 626-629.	3.2	113
45	Quantifying the benefit of a proteome reserve in fluctuating environments. Nature Communications, 2017, 8, 1225.	12.8	108
46	Chemotaxis as a navigation strategy to boost range expansion. Nature, 2019, 575, 658-663.	27.8	108
47	Flux-line pinning by competing disorders. Physical Review B, 1993, 48, 1167-1174.	3.2	103
48	On the Selection and Evolution of Regulatory DNA Motifs. Journal of Molecular Evolution, 2002, 55, 386-400.	1.8	102
49	Distinct Changes of Genomic Biases in Nucleotide Substitution at the Time of Mammalian Radiation. Molecular Biology and Evolution, 2003, 20, 1887-1896.	8.9	95
50	Conformation of graphite oxide membranes in solution. Physical Review A, 1991, 44, R2235-R2238.	2.5	93
51	Translocation of structured polynucleotides through nanopores. Physical Biology, 2004, 1, 19-26.	1.8	93
52	Dissecting the Specificity of Protein-Protein Interaction in Bacterial Two-Component Signaling: Orphans and Crosstalks. PLoS ONE, 2011, 6, e19729.	2.5	91
53	Anomalous fluctuations of directed polymers in random media. Physical Review B, 1994, 49, 3136-3154.	3.2	89
54	DNA Sequence Evolution with Neighbor-Dependent Mutation. Journal of Computational Biology, 2003, 10, 313-322.	1.6	89

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55	A growthâ€rate composition formula for the growth of E.Âcoli on coâ€utilized carbon substrates. Molecular Systems Biology, 2015, 11, 801.	7.2	89
56	Substantial Regional Variation in Substitution Rates in the Human Genome: Importance of GC Content, Gene Density, and Telomere-Specific Effects. Journal of Molecular Evolution, 2005, 60, 748-763.	1.8	85
57	From coarse to fine: the absolute Escherichia coli proteome under diverse growth conditions. Molecular Systems Biology, 2021, 17, e9536.	7.2	82
58	Force-Induced Denaturation of RNA. Biophysical Journal, 2001, 81, 1324-1332.	0.5	77
59	Needâ€based activation of ammonium uptake in Escherichia coli. Molecular Systems Biology, 2012, 8, 616.	7.2	76
60	Mode-coupling and renormalization group results for the noisy Burgers equation. Physical Review E, 1996, 53, 4424-4438.	2.1	73
61	Localization of denaturation bubbles in random DNA sequences. Proceedings of the National Academy of Sciences of the United States of America, 2003, 100, 4411-4416.	7.1	73
62	Spatiotemporal establishment of dense bacterial colonies growing on hard agar. ELife, 2019, 8, .	6.0	73
63	Exact scaling function of interface growth dynamics. Physical Review A, 1991, 44, R7873-R7876.	2.5	72
64	Deterministic characterization of stochastic genetic circuits. Proceedings of the National Academy of Sciences of the United States of America, 2007, 104, 7402-7407.	7.1	71
65	Growth-induced roughening of crystalline facets. Physical Review Letters, 1991, 66, 441-444.	7.8	70
66	Identification and measurement of neighbor-dependent nucleotide substitution processes. Bioinformatics, 2005, 21, 2322-2328.	4.1	70
67	Disruption of transcriptionâ€“translation coordination in Escherichia coli leads to premature transcriptional termination. Nature Microbiology, 2019, 4, 2347-2356.	13.3	70
68	Similarity Detection and Localization. Physical Review Letters, 1996, 76, 2591-2594.	7.8	68
69	RNA Secondary Structure Formation: A Solvable Model of Heteropolymer Folding. Physical Review Letters, 1999, 83, 1479-1482.	7.8	68
70	General quantitative relations linking cell growth and the cell cycle in Escherichia coli. Nature Microbiology, 2020, 5, 995-1001.	13.3	68
71	Vortex glass phase and universal susceptibility variations in planar arrays of flux lines. Physical Review Letters, 1994, 72, 2466-2469.	7.8	67
72	Evolution of Surface Patterns on Swelling Gels. Physical Review Letters, 1988, 61, 106-109.	7.8	60

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73	Tribology of Sliding Elastic Media. Physical Review Letters, 1996, 77, 278-281.	7.8	60
74	Nonequilibrium dynamics of driven line liquids. Physical Review Letters, 1992, 69, 1552-1555.	7.8	58
75	Sources and Sinks: A Stochastic Model of Evolution in Heterogeneous Environments. Physical Review Letters, 2010, 105, 248104.	7.8	58
76	Statistical Significance of Probabilistic Sequence Alignment and Related Local Hidden Markov Models. Journal of Computational Biology, 2001, 8, 249-282.	1.6	55
77	Slowdown of Translational Elongation in Escherichia coli under Hyperosmotic Stress. MBio, 2018, 9, .	4.1	53
78	Expression Patterns of Cell-typeâ€“specific Genes inDictyostelium. Molecular Biology of the Cell, 2001, 12, 2590-2600.	2.1	52
79	Direct Coupling Analysis for Protein Contact Prediction. Methods in Molecular Biology, 2014, 1137, 55-70.	0.9	52
80	Speed, Sensitivity, and Bistability in Auto-activating Signaling Circuits. PLoS Computational Biology, 2011, 7, e1002265.	3.2	51
81	An evolutionarily stable strategy to colonize spatially extended habitats. Nature, 2019, 575, 664-668.	27.8	48
82	Dynamic and Static Properties of the Randomly Pinned Planar Flux Array. Physical Review Letters, 1994, 72, 4133-4136.	7.8	47
83	Mechanically Probing the Folding Pathway of Single RNA Molecules. Biophysical Journal, 2003, 84, 2831-2840.	0.5	44
84	Features of Proteinâ€“Protein Interactions in Twoâ€Component Signaling Deduced from Genomic Libraries. Methods in Enzymology, 2007, 422, 75-101.	1.0	44
85	Evolutionary selection between alternative modes of gene regulation. Proceedings of the National Academy of Sciences of the United States of America, 2009, 106, 8841-8846.	7.1	44
86	Quantifying the sequenceâ€“function relation in gene silencing by bacterial small RNAs. Proceedings of the National Academy of Sciences of the United States of America, 2011, 108, 12473-12478.	7.1	44
87	Regulation underlying hierarchical and simultaneous utilization of carbon substrates by flux sensors in Escherichia coli. Nature Microbiology, 2020, 5, 206-215.	13.3	44
88	On nonlinear diffusion with multiplicative noise. Europhysics Letters, 1998, 41, 147-152.	2.0	41
89	Inference of Direct Residue Contacts in Two-Component Signaling. Methods in Enzymology, 2010, 471, 17-41.	1.0	40
90	Bacterial growth, flow, and mixing shape human gut microbiota density and composition. Gut Microbes, 2018, 9, 1-8.	9.8	39

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91	Cellular perception of growth rate and the mechanistic origin of bacterial growth law. Proceedings of the National Academy of Sciences of the United States of America, 2022, 119, e2201585119.	7.1	38
92	Overcoming Fluctuation and Leakage Problems in the Quantification of Intracellular 2-Oxoglutarate Levels in Escherichia coli. Applied and Environmental Microbiology, 2011, 77, 6763-6771.	3.1	36
93	Suboptimal resource allocation in changing environments constrains response and growth in bacteria. Molecular Systems Biology, 2021, 17, e10597.	7.2	35
94	Disorder-induced depinning transition. Physical Review B, 1995, 51, 455-469.	3.2	34
95	Defect-mediated stability: an effective hydrodynamic theory of spatiotemporal chaos. Physica D: Nonlinear Phenomena, 1995, 84, 494-512.	2.8	33
96	Static and dynamic properties of inhomogeneous elastic media on disordered substrate. Physical Review B, 1998, 57, 8235-8253.	3.2	33
97	Global coordination of metabolic pathways in Escherichia coli by active and passive regulation. Molecular Systems Biology, 2021, 17, e10064.	7.2	33
98	On Ribosome Load, Codon Bias and Protein Abundance. PLoS ONE, 2012, 7, e48542.	2.5	33
99	Predicting the spatiotemporal dynamics of hair follicle patterns in the developing mouse. Proceedings of the National Academy of Sciences of the United States of America, 2014, 111, 2596-2601.	7.1	31
100	1/fÎ±noise in dissipative transport. Physical Review A, 1992, 45, R559-R562.	2.5	30
101	Designing sequential transcription logic: a simple genetic circuit for conditional memory. Systems and Synthetic Biology, 2007, 1, 89-98.	1.0	30
102	Microbes contribute to setting the ocean carbon flux by altering the fate of sinking particulates. Nature Communications, 2022, 13, 1657.	12.8	30
103	On the optimality of the enzymeâ€“substrate relationship in bacteria. PLoS Biology, 2021, 19, e3001416.	5.6	29
104	GeneralizedÎµexpansion for self-avoiding tethered manifolds. Physical Review A, 1990, 41, 1751-1756.	2.5	26
105	An analytic study of the phase transition line in local sequence alignment with gaps. Discrete Applied Mathematics, 2000, 104, 113-142.	0.9	26
106	Hybrid alignment: high-performance with universal statistics. Bioinformatics, 2002, 18, 864-872.	4.1	24
107	Dynamics of Competitive Evolution on a Smooth Landscape. Physical Review Letters, 2003, 90, 088103.	7.8	24
108	Thermodynamics of Mesoscopic Vortex Systems in1+1Dimensions. Physical Review Letters, 1999, 83, 4860-4863.	7.8	23

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109	Self-avoiding crumpled manifolds: Perturbative analysis and renormalizability. Physical Review Letters, 1990, 64, 2022-2025.	7.8	22
110	Hydrodynamics of the Kuramoto-Sivashinsky Equation in Two Dimensions. Physical Review Letters, 1999, 83, 5262-5265.	7.8	22
111	Co-Evolving Motions at Proteinâ^'Protein Interfaces of Two-Component Signaling Systems Identified by Covariance Analysis. Biochemistry, 2008, 47, 7782-7784.	2.5	22
112	A traveling-wave solution for bacterial chemotaxis with growth. Proceedings of the National Academy of Sciences of the United States of America, 2021, 118, .	7.1	22
113	Polymer Reptation in Disordered Media. Physical Review Letters, 1998, 80, 3145-3148.	7.8	18
114	An integrated mechanobiochemical feedback mechanism describes chromosome motility from prometaphase to anaphase in mitosis. Proceedings of the National Academy of Sciences of the United States of America, 2008, 105, 13752-13757.	7.1	18
115	Computational Modeling of Phosphotransfer Complexes in Two-Component Signaling. Methods in Enzymology, 2010, 471, 43-58.	1.0	18
116	Gene length may contribute to graded transcriptional responses in the Drosophila embryo. Developmental Biology, 2011, 360, 230-240.	2.0	17
117	From vortices to genomics. Nature, 1999, 399, 17-18.	27.8	16
118	Scaling Laws and Similarity Detection in Sequence Alignment with Gaps. Journal of Computational Biology, 2000, 7, 115-141.	1.6	16
119	Regional and time-resolved mutation patterns of the human genome. Bioinformatics, 2004, 20, 1482-1485.	4.1	16
120	Traffic patrol in the transcription of ribosomal RNA. RNA Biology, 2009, 6, 392-394.	3.1	15
121	Reversible Adenylylation of Glutamine Synthetase Is Dynamically Counterbalanced during Steady-State Growth of Escherichia coli. Journal of Molecular Biology, 2010, 404, 522-536.	4.2	15
122	Fractals and self-organized criticality in dissipative dynamics. Physica D: Nonlinear Phenomena, 1989, 38, 198-202.	2.8	14
123	A mechanobiochemical mechanism for monooriented chromosome oscillation in mitosis. Proceedings of the National Academy of Sciences of the United States of America, 2007, 104, 16104-16109.	7.1	14
124	Hierarchical and simultaneous utilization of carbon substrates: mechanistic insights, physiological roles, and ecological consequences. Current Opinion in Microbiology, 2021, 63, 172-178.	5.1	13
125	DNA sequence evolution with neighbor-dependent mutation. , 2002, , .		10
126	A Novel Method Distinguishes Between Mutation Rates and Fixation Biases in Patterns of Single-Nucleotide Substitution. Journal of Molecular Evolution, 2006, 62, 168-175.	1.8	10

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127	Optimal detection of sequence similarity by local alignment. , 1998, , .		9
128	Analytical study of the effect of recombination on evolution via DNA shuffling. Physical Review E, 2004, 69, 051911.	2.1	7
129	OPTIMIZING SMITH-WATERMAN ALIGNMENTS. , 1998, , 302-13.		7
130	Interacting Arrays of Lines and Steps in Random Media. Physical Review Letters, 1996, 77, 4233-4236.	7.8	5
131	Polymer Adsorption on Disordered Substrates. Physical Review Letters, 1997, 79, 4930-4930.	7.8	5
132	Comment on â€˜â€˜Random disorder in a model vortex liquidâ€™â€™. Physical Review Letters, 1993, 71, 2349-2349.	7.8	4
133	Hwa, Kardar, and Paczuski reply. Physical Review Letters, 1994, 72, 785-785.	7.8	3
134	Statistical significance and extremal ensemble of gapped local hybrid alignment. , 2002, , 3-21.		3
135	DNA Sequence Alignment and Critical Phenomena. Materials Research Society Symposia Proceedings, 1996, 463, 75.	0.1	1
136	Universal susceptibility variations in 1+1 dimensional vortex glass. Physica C: Superconductivity and Its Applications, 2000, 332, 232-236.	1.2	0
137	Editorial overview: Current Opinion in Microbiology 2018 Special issue â€˜Microbial systems biology, vol. 45â€™. Current Opinion in Microbiology, 2018, 45, vi-viii.	5.1	0
138	QUANTITATIVE ASPECTS OF GENE REGULATION IN BACTERIA: AMPLIFICATION, THRESHOLD, AND COMBINATORIAL CONTROL. , 2007, , .		0