Paul G Higgs

List of Publications by Year
in descending order

81 papers	5,060 citations	81900 39 h-index	91884 69 g-index
88 all docs	88 docs citations	88 times ranked	4381 citing authors

#	Article	IF	Citations
1	The RNA World: molecular cooperation at the origins of life. Nature Reviews Genetics, 2015, 16, 7-17.	16.3	373
2	Theory of polyampholyte solutions. Journal of Chemical Physics, 1991, 94, 1543-1554.	3.0	345
3	RNA secondary structure: physical and computational aspects. Quarterly Reviews of Biophysics, 2000, 33, 199-253.	5.7	247
4	The Influence of Predatorâ€"Prey Population Dynamics on the Long-term Evolution of Food Web Structure. Journal of Theoretical Biology, 2001, 208, 91-107.	1.7	219
5	Modelling Coevolution in Multispecies Communities. Journal of Theoretical Biology, 1998, 193, 345-358.	1.7	208
6	A Thermodynamic Basis for Prebiotic Amino Acid Synthesis and the Nature of the First Genetic Code. Astrobiology, 2009, 9, 483-490.	3.0	176
7	A Comprehensive Analysis of Mammalian Mitochondrial Genome Base Composition and Improved Phylogenetic Methods. Molecular Biology and Evolution, 2005, 22, 251-264.	8.9	172
8	RNA Sequence Evolution With Secondary Structure Constraints: Comparison of Substitution Rate Models Using Maximum-Likelihood Methods. Genetics, 2001, 157, 399-411.	2.9	145
9	RNA-based phylogenetic methods: application to mammalian mitochondrial RNA sequences. Molecular Phylogenetics and Evolution, 2003, 28, 241-252.	2.7	143
10	Population Evolution on a Multiplicative Single-Peak Fitness Landscape. Journal of Theoretical Biology, 1996, 179, 61-73.	1.7	135
11	Coevolution of Codon Usage and tRNA Genes Leads to Alternative Stable States of Biased Codon Usage. Molecular Biology and Evolution, 2008, 25, 2279-2291.	8.9	134
12	Codon Usage in Mitochondrial Genomes: Distinguishing Context-Dependent Mutation from Translational Selection. Molecular Biology and Evolution, 2008, 25, 339-351.	8.9	125
13	A four-column theory for the origin of the genetic code: tracing the evolutionary pathways that gave rise to an optimized code. Biology Direct, 2009, 4, 16.	4.6	118
14	The Relationship Between the Rate of Molecular Evolution and the Rate of Genome Rearrangement in Animal Mitochondrial Genomes. Journal of Molecular Evolution, 2006, 63, 375-392.	1.8	108
15	The Mechanisms of Codon Reassignments in Mitochondrial Genetic Codes. Journal of Molecular Evolution, 2007, 64, 662-688.	1.8	108
16	Testing the Infinitely Many Genes Model for the Evolution of the Bacterial Core Genome and Pangenome. Molecular Biology and Evolution, 2012, 29, 3413-3425.	8.9	98
17	The advantages and disadvantages of horizontal gene transfer and the emergence of the first species. Biology Direct, 2011, 6, 1.	4.6	92
18	OGRe: a relational database for comparative analysis of mitochondrial genomes. Nucleic Acids Research, 2003, 31, 202-206.	14.5	87

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19	Monte-Carlo simulations of polymer crystallization in dilute solution. Journal of Chemical Physics, 1998, 108, 4305-4314.	3.0	81
20	Constraining the Time Interval for the Origin of Life on Earth. Astrobiology, 2018, 18, 343-364.	3.0	71
21	The Influence of Anticodon-Codon Interactions and Modified Bases on Codon Usage Bias in Bacteria. Molecular Biology and Evolution, 2010, 27, 2129-2140.	8.9	70
22	Scaling behavior of polyelectrolytes and polyampholytes: Simulation by an ensemble growth method. Journal of Chemical Physics, 1991, 95, 4506-4518.	3.0	66
23	The Evolution of tRNA-Leu Genes in Animal Mitochondrial Genomes. Journal of Molecular Evolution, 2003, 57, 435-445.	1.8	66
24	Pathways of Genetic Code Evolution in Ancient and Modern Organisms. Journal of Molecular Evolution, 2015, 80, 229-243.	1.8	65
25	Deleting species from model food webs. Oikos, 2005, 110, 283-296.	2.7	63
26	Barrier heights between ground states in a model of RNA secondary structure. Journal of Physics A, 1998, 31, 3153-3170.	1.6	62
27	The accumulation of mutations in asexual populations and the structure of genealogical trees in the presence of selection. Journal of Mathematical Biology, 1995, 33, 677.	1.9	59
28	Overlaps between RNA Secondary Structures. Physical Review Letters, 1996, 76, 704-707.	7.8	58
29	Evidence for kinetic effects in the folding of large RNA molecules. Journal of Chemical Physics, 1996, 105, 7152-7157.	3.0	58
30	RNA secondary structure: a comparison of real and random sequences. Journal De Physique, I, 1993, 3, 43-59.	1.2	55
31	Compensatory neutral mutations and the evolution of RNA. Genetica, 1998, 102/103, 91-101.	1.1	54
32	Theory of Fission for Two-Component Lipid Vesicles. Physical Review Letters, 1997, 79, 1579-1582.	7.8	53
33	Error thresholds and stationary mutant distributions in multi-locus diploid genetics models. Genetical Research, 1994, 63, 63-78.	0.9	52
34	Contributions of Speed and Accuracy to Translational Selection in Bacteria. PLoS ONE, 2012, 7, e51652.	2.5	49
35	Estimating the Frequency of Horizontal Gene Transfer Using Phylogenetic Models of Gene Gain and Loss. Molecular Biology and Evolution, 2016, 33, 1843-1857.	8.9	48
36	The Effect of Limited Diffusion and Wetâ€“Dry Cycling on Reversible Polymerization Reactions: Implications for Prebiotic Synthesis of Nucleic Acids. Life, 2016, 6, 24.	2.4	46

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37	A Unified Model of Codon Reassignment in Alternative Genetic Codes. Genetics, 2005, 170, 831-840.	2.9	45
38	Origin of Self-Replicating Biopolymers: Autocatalytic Feedback Can Jump-Start the RNA World. Journal of Molecular Evolution, 2009, 69, 541-554.	1.8	45
39	Slip-links, hoops and tubes: tests of entanglement models of rubber elasticity. Polymer, 1990, 31, 70-74.	3.8	43
40	Thermodynamic properties of transfer RNA: a computational study. Journal of the Chemical Society, Faraday Transactions, 1995, 91, 2531.	1.7	42
41	Autocatalytic Replication and Homochirality in Biopolymers: Is Homochirality a Requirement of Life or a Result of It?. Astrobiology, 2012, 12, 818-829.	3.0	41
42	The growth of polymer crystals at the transition from extended chains to folded chains. Journal of Chemical Physics, 1994, 100, 640-648.	3.0	40
43	Population Genetics Without Intraspecific Data. Molecular Biology and Evolution, 2007, 24, 1667-1677.	8.9	40
44	Chemical Evolution and the Evolutionary Definition of Life. Journal of Molecular Evolution, 2017, 84, 225-235.	1.8	39
45	Some ideas concerning the elasticity of biopolymer networks. Macromolecules, 1989, 22, 2432-2437.	4.8	38
46	Creep measurements on gelatin gels. International Journal of Biological Macromolecules, 1990, 12, 233-240.	7.5	38
47	Topological structure and interaction strengths in model food webs. Ecological Modelling, 2005, 187, 389-412.	2.5	35
48	A theoretical study of random segregation of minicircles in trypanosomatids. Proceedings of the Royal Society B: Biological Sciences, 1999, 266, 611-620.	2.6	33
49	Frequency distributions in population genetics parallel those in statistical physics. Physical Review E, 1995, 51, 95-101.	2.1	29
50	Trapped Entanglements in Rubbers. A Unification of Models. Europhysics Letters, 1989, 8, 357-361.	2.0	28
51	The origin and spread of a cooperative replicase in a prebiotic chemical system. Journal of Theoretical Biology, 2015, 364, 249-259.	1.7	28
52	The origin of life is a spatially localized stochastic transition. Biology Direct, 2012, 7, 42.	4.6	27
53	Co-operation between Polymerases and Nucleotide Synthetases in the RNA World. PLoS Computational Biology, 2016, 12, e1005161.	3.2	27
54	Conformation changes of a polyelectrolyte chain in a poor solvent. Journal De Physique, I, 1991, 1, 1-7.	1.2	24

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55	A Model of Directed Walks with Random Self-Interactions. Europhysics Letters, 1992, 18, 361-366.	2.0	23
56	The Response of Amino Acid Frequencies to Directional Mutation Pressure in Mitochondrial Genome Sequences Is Related to the Physical Properties of the Amino Acids and to the Structure of the Genetic Code. Journal of Molecular Evolution, 2006, 62, 340-361.	1.8	21
57	The Role of Templating in the Emergence of RNA from the Prebiotic Chemical Mixture. Life, 2017, 7, 41.	2.4	21
58	Monte Carlo Simulations of the Orientational Order in a Strained Polymer Network: Effect of Density. Macromolecules, 1995, 28, 7208-7214.	4.8	20
59	A Population Genetics Model for Multiple Quantitative Traits Exhibiting Pleiotropy and Epistasis. Journal of Theoretical Biology, 2000, 203, 419-437.	1.7	20
60	Rolling-circle and strand-displacement mechanisms for non-enzymatic RNA replication at the time of the origin of life. Journal of Theoretical Biology, 2021, 527, 110822.	1.7	20
61	Chain Orientation in Polymer Networks:Â Computer Simulations Using the Bond Fluctuation Model. Macromolecules, 1999, 32, 5062-5071.	4.8	19
62	Comparison of the Roles of Nucleotide Synthesis, Polymerization, and Recombination in the Origin of Autocatalytic Sets of RNAs. Astrobiology, 2011, 11, 895-906.	3.0	18
63	Survival of RNA Replicators is much Easier in Protocells than in Surface-Based, Spatial Systems. Life, 2019, 9, 65.	2.4	18
64	Error thresholds for RNA replication in the presence of both point mutations and premature termination errors. Journal of Theoretical Biology, 2017, 428, 34-42.	1.7	17
65	The Importance of Stochastic Transitions for the Origin of Life. Origins of Life and Evolution of Biospheres, 2012, 42, 453-457.	1.9	13
66	Compositional Inheritance: Comparison of Self-assembly and Catalysis. Origins of Life and Evolution of Biospheres, 2008, 38, 399-418.	1.9	12
67	The evolution of antibiotic production rate in a spatial model of bacterial competition. PLoS ONE, 2018, 13, e0205202.	2.5	11
68	When Is a Reaction Network a Metabolism? Criteria for Simple Metabolisms That Support Growth and Division of Protocells. Life, 2021, 11, 966.	2.4	11
69	Redundant and non-functional guide RNA genes in Trypanosoma brucei are a consequence of multiple genes per minicircle. Gene, 2000, 256, 245-252.	2.2	8
70	The dilution wave in polymer crystallization is described by Fisherâ€™s reaction-diffusion equation. Journal of Chemical Physics, 2001, 114, 6958-6959.	3.0	8
71	Origin and evolution of gene families in Bacteria and Archaea. BMC Bioinformatics, 2011, 12, S14.	2.6	8
72	Food web structure and the evolution of ecological communities. , 2002, , 281-298.		7

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73	Identification of conflicting selective effects on highly expressed genes. Evolutionary Bioinformatics, 2007, 3, 1-13.	1.2	4
74	Identification of Conflicting Selective Effects on Highly Expressed Genes. Evolutionary Bioinformatics, 2007, 3, 117693430700300.	1.2	2
75	Population evolution in a single peak fitness landscape how high are the clouds?. Lecture Notes in Computer Science, 1995, , 148-157.	1.3	2
76	Comments on â€œEvolutionary dynamics of RNA-like replicator systemsâ€• Physics of Life Reviews, 2012, 9, 270-271.	2.8	1
77	Evolution of protein interfaces in multimers and fibrils. Journal of Chemical Physics, 2019, 150, 225102.	3.0	1
78	Can the RNA World Still Function without Cytidine?. Molecular Biology and Evolution, 2020, 37, 71-83.	8.9	1
79	Compensatory neutral mutations and the evolution of RNA. Contemporary Issues in Genetics and Evolution, 1998, , 91-101.	0.9	1
80	Using stochastic dynamics to model multispecies communities. AIP Conference Proceedings, 2000, , .	0.4	0
81	RNA-Based Phylogenetic Methods. , 2005, , 191-210.		0