

Steven A Frank

List of Publications by Year in descending order

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156
papers

11,951
citations

28242

55
h-index

33869

99
g-index

177
all docs

177
docs citations

177
times ranked

7670
citing authors

#	ARTICLE	IF	CITATIONS
1	Models of Parasite Virulence. <i>Quarterly Review of Biology</i> , 1996, 71, 37-78.	0.0	1,191
2	How to Make a Kin Selection Model. <i>Journal of Theoretical Biology</i> , 1996, 180, 27-37.	0.8	514
3	Sex Allocation Theory for Birds and Mammals. <i>Annual Review of Ecology, Evolution, and Systematics</i> , 1990, 21, 13-55.	6.7	374
4	Mutual policing and repression of competition in the evolution of cooperative groups. <i>Nature</i> , 1995, 377, 520-522.	13.7	328
5	The Evolutionary Dynamics of Cytoplasmic Male Sterility. <i>American Naturalist</i> , 1989, 133, 345-376.	1.0	323
6	George Price's contributions to evolutionary genetics. <i>Journal of Theoretical Biology</i> , 1995, 175, 373-388.	0.8	264
7	REPRESSION OF COMPETITION AND THE EVOLUTION OF COOPERATION. <i>Evolution; International Journal of Organic Evolution</i> , 2003, 57, 693-705.	1.1	228
8	THE PRICE EQUATION, FISHER'S FUNDAMENTAL THEOREM, KIN SELECTION, AND CAUSAL ANALYSIS. <i>Evolution; International Journal of Organic Evolution</i> , 1997, 51, 1712-1729.	1.1	223
9	Evolution in a Variable Environment. <i>American Naturalist</i> , 1990, 136, 244-260.	1.0	222
10	DIVERGENCE OF MEIOTIC DRIVE'S SUPPRESSION SYSTEMS AS AN EXPLANATION FOR SEX-BIASED HYBRID STERILITY AND INVIABILITY. <i>Evolution; International Journal of Organic Evolution</i> , 1991, 45, 262-267.	1.1	221
11	Hierarchical selection theory and sex ratios I. General solutions for structured populations. <i>Theoretical Population Biology</i> , 1986, 29, 312-342.	0.5	215
12	Dispersal polymorphisms in subdivided populations. <i>Journal of Theoretical Biology</i> , 1986, 122, 303-309.	0.8	208
13	PERSPECTIVE: REPRESSION OF COMPETITION AND THE EVOLUTION OF COOPERATION. <i>Evolution; International Journal of Organic Evolution</i> , 2003, 57, 693.	1.1	205
14	Fisher's fundamental theorem of natural selection. <i>Trends in Ecology and Evolution</i> , 1992, 7, 92-95.	4.2	199
15	The common patterns of nature. <i>Journal of Evolutionary Biology</i> , 2009, 22, 1563-1585.	0.8	187
16	Coevolutionary genetics of plants and pathogens. <i>Evolutionary Ecology</i> , 1993, 7, 45-75.	0.5	186
17	Pathogenesis, Virulence, and Infective Dose. <i>PLoS Pathogens</i> , 2007, 3, e147.	2.1	180
18	Genetics of Mutualism: The Evolution of Altruism between Species. <i>Journal of Theoretical Biology</i> , 1994, 170, 393-400.	0.8	178

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19	Individual and population sex allocation patterns. <i>Theoretical Population Biology</i> , 1987, 31, 47-74.	0.5	161
20	Somatic evolutionary genomics: Mutations during development cause highly variable genetic mosaicism with risk of cancer and neurodegeneration. <i>Proceedings of the National Academy of Sciences of the United States of America</i> , 2010, 107, 1725-1730.	3.3	154
21	Natural selection. IV. The Price equation. <i>Journal of Evolutionary Biology</i> , 2012, 25, 1002-1019.	0.8	140
22	HIERARCHICAL SELECTION THEORY AND SEX RATIOS. II. ON APPLYING THE THEORY, AND A TEST WITH FIG WASPS. <i>Evolution; International Journal of Organic Evolution</i> , 1985, 39, 949-964.	1.1	136
23	Spatial polymorphism of bacteriocins and other allelopathic traits. <i>Evolutionary Ecology</i> , 1994, 8, 369-386.	0.5	127
24	The Price Equation, Fisher's Fundamental Theorem, Kin Selection, and Causal Analysis. <i>Evolution; International Journal of Organic Evolution</i> , 1997, 51, 1712.	1.1	127
25	Variable sex ratio among colonies of ants. <i>Behavioral Ecology and Sociobiology</i> , 1987, 20, 195-201.	0.6	124
26	Ecological and genetic models of host-pathogen coevolution. <i>Heredity</i> , 1991, 67, 73-83.	1.2	119
27	Divergence of Meiotic Drive-Suppression Systems as an Explanation for Sex-Biased Hybrid Sterility and Inviability. <i>Evolution; International Journal of Organic Evolution</i> , 1991, 45, 262.	1.1	115
28	Somatic Mutation of p53 Leads to Estrogen Receptor \pm -Positive and -Negative Mouse Mammary Tumors with High Frequency of Metastasis. <i>Cancer Research</i> , 2004, 64, 3525-3532.	0.4	114
29	Problems of somatic mutation and cancer. <i>BioEssays</i> , 2004, 26, 291-299.	1.2	107
30	Genetic predisposition to cancer – insights from population genetics. <i>Nature Reviews Genetics</i> , 2004, 5, 764-772.	7.7	106
31	Natural selection maximizes Fisher information. <i>Journal of Evolutionary Biology</i> , 2009, 22, 231-244.	0.8	102
32	Pathogen escape from host immunity by a genome program for antigenic variation. <i>Proceedings of the National Academy of Sciences of the United States of America</i> , 2006, 103, 18290-18295.	3.3	101
33	Natural selection. V. How to read the fundamental equations of evolutionary change in terms of information theory. <i>Journal of Evolutionary Biology</i> , 2012, 25, 2377-2396.	0.8	99
34	Mechanisms of pathogenesis and the evolution of parasite virulence. <i>Journal of Evolutionary Biology</i> , 2008, 21, 396-404.	0.8	92
35	Policing and group cohesion when resources vary. <i>Animal Behaviour</i> , 1996, 52, 1163-1169.	0.8	91
36	Natural selection. VII. History and interpretation of kin selection theory. <i>Journal of Evolutionary Biology</i> , 2013, 26, 1151-1184.	0.8	90

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37	Coevolutionary genetics of hosts and parasites with quantitative inheritance. <i>Evolutionary Ecology</i> , 1994, 8, 74-94.	0.5	81
38	Developmental predisposition to cancer. <i>Nature</i> , 2003, 422, 494-494.	13.7	81
39	Input-output relations in biological systems: measurement, information and the Hill equation. <i>Biology Direct</i> , 2013, 8, 31.	1.9	77
40	EVOLUTION OF HOST-PARASITE DIVERSITY. <i>Evolution; International Journal of Organic Evolution</i> , 1993, 47, 1721-1732.	1.1	74
41	Sex ratio under conditional sex expression. <i>Journal of Theoretical Biology</i> , 1988, 135, 415-418.	0.8	73
42	A general model of the public goods dilemma. <i>Journal of Evolutionary Biology</i> , 2010, 23, 1245-1250.	0.8	73
43	DEMOGRAPHY AND SEX RATIO IN SOCIAL SPIDERS. <i>Evolution; International Journal of Organic Evolution</i> , 1987, 41, 1267-1281.	1.1	72
44	Age-specific incidence of inherited versus sporadic cancers: A test of the multistage theory of carcinogenesis. <i>Proceedings of the National Academy of Sciences of the United States of America</i> , 2005, 102, 1071-1075.	3.3	72
45	The Origin of Synergistic Symbiosis. <i>Journal of Theoretical Biology</i> , 1995, 176, 403-410.	0.8	69
46	All of life is social. <i>Current Biology</i> , 2007, 17, R648-R650.	1.8	68
47	Multivariate Analysis of Correlated Selection and Kin Selection, with an ESS Maximization Method. <i>Journal of Theoretical Biology</i> , 1997, 189, 307-316.	0.8	67
48	Quantifying Interhospital Patient Sharing as a Mechanism for Infectious Disease Spread. <i>Infection Control and Hospital Epidemiology</i> , 2010, 31, 1160-1169.	1.0	65
49	The genetic value of sons and daughters. <i>Heredity</i> , 1986, 56, 351-354.	1.2	63
50	Dynamics of Cytoplasmic Incompatibility with Multiple Wolbachial Infections. <i>Journal of Theoretical Biology</i> , 1998, 192, 213-218.	0.8	63
51	Statistical properties of polymorphism in host-parasite genetics. <i>Evolutionary Ecology</i> , 1996, 10, 307-317.	0.5	62
52	Spatial variation in coevolutionary dynamics. <i>Evolutionary Ecology</i> , 1991, 5, 193-217.	0.5	61
53	Somatic selection for and against cancer. <i>Journal of Theoretical Biology</i> , 2003, 225, 377-382.	0.8	61
54	The Design of Adaptive Systems: Optimal Parameters for Variation and Selection in Learning and Development. <i>Journal of Theoretical Biology</i> , 1997, 184, 31-39.	0.8	59

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55	Age-Specific Acceleration of Cancer. <i>Current Biology</i> , 2004, 14, 242-246.	1.8	59
56	Host Control of Symbiont Transmission: The Separation of Symbionts Into Germ and Soma. <i>American Naturalist</i> , 1996, 148, 1113-1124.	1.0	59
57	Natural selection. I. Variable environments and uncertain returns on investment*. <i>Journal of Evolutionary Biology</i> , 2011, 24, 2299-2309.	0.8	56
58	Patterns of Cell Division and the Risk of Cancer. <i>Genetics</i> , 2003, 163, 1527-1532.	1.2	56
59	Nonheritable Cellular Variability Accelerates the Evolutionary Processes of Cancer. <i>PLoS Biology</i> , 2012, 10, e1001296.	2.6	55
60	Within-host Spatial Dynamics of Viruses and Defective Interfering Particles. <i>Journal of Theoretical Biology</i> , 2000, 206, 279-290.	0.8	54
61	Specific and Non-specific Defense against Parasitic Attack. <i>Journal of Theoretical Biology</i> , 2000, 202, 283-304.	0.8	53
62	Natural selection. II. Developmental variability and evolutionary rate*. <i>Journal of Evolutionary Biology</i> , 2011, 24, 2310-2320.	0.8	52
63	Natural selection. III. Selection versus transmission and the levels of selection*. <i>Journal of Evolutionary Biology</i> , 2012, 25, 227-243.	0.8	51
64	Polymorphism of attack and defense. <i>Trends in Ecology and Evolution</i> , 2000, 15, 167-171.	4.2	50
65	Somatic Mosaicism and Disease. <i>Current Biology</i> , 2014, 24, R577-R581.	1.8	50
66	Stochastic elimination of cancer cells. <i>Proceedings of the Royal Society B: Biological Sciences</i> , 2003, 270, 2017-2024.	1.2	49
67	The trade-off between rate and yield in the design of microbial metabolism. <i>Journal of Evolutionary Biology</i> , 2010, 23, 609-613.	0.8	49
68	Population and Quantitative Genetics of Regulatory Networks. <i>Journal of Theoretical Biology</i> , 1999, 197, 281-294.	0.8	46
69	Pathology from evolutionary conflict, with a theory of X chromosome versus autosome conflict over sexually antagonistic traits. <i>Proceedings of the National Academy of Sciences of the United States of America</i> , 2011, 108, 10886-10893.	3.3	42
70	Cytoplasmic Incompatibility and Population Structure. <i>Journal of Theoretical Biology</i> , 1997, 184, 327-330.	0.8	41
71	Maladaptation and the Paradox of Robustness in Evolution. <i>PLoS ONE</i> , 2007, 2, e1021.	1.1	41
72	A MODEL OF INDUCIBLE DEFENSE. <i>Evolution; International Journal of Organic Evolution</i> , 1993, 47, 325-327.	1.1	40

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73	Within-host dynamics of antigenic variation. <i>Infection, Genetics and Evolution</i> , 2006, 6, 141-146.	1.0	37
74	A model for the sequential dominance of antigenic variants in African trypanosome infections. <i>Proceedings of the Royal Society B: Biological Sciences</i> , 1999, 266, 1397-1401.	1.2	36
75	Problems inferring the specificity of plant-pathogen genetics. <i>Evolutionary Ecology</i> , 1996, 10, 323-325.	0.5	35
76	Multiplicity of infection and the evolution of hybrid incompatibility in segmented viruses. <i>Heredity</i> , 2001, 87, 522-529.	1.2	34
77	Genetic variation in cancer predisposition: Mutational decay of a robust genetic control network. <i>Proceedings of the National Academy of Sciences of the United States of America</i> , 2004, 101, 8061-8065.	3.3	34
78	Generative models versus underlying symmetries to explain biological pattern. <i>Journal of Evolutionary Biology</i> , 2014, 27, 1172-1178.	0.8	34
79	The distribution of allelic effects under mutation and selection. <i>Genetical Research</i> , 1990, 55, 111-117.	0.3	32
80	Genetic variation of polygenic characters and the evolution of genetic degeneracy. <i>Journal of Evolutionary Biology</i> , 2003, 16, 138-142.	0.8	32
81	Measurement Invariance, Entropy, and Probability. <i>Entropy</i> , 2010, 12, 289-303.	1.1	32
82	HALDANE'S RULE: A DEFENSE OF THE MEIOTIC DRIVE THEORY. <i>Evolution; International Journal of Organic Evolution</i> , 1991, 45, 1714-1717.	1.1	30
83	Somatic mosaicism and cancer: inference based on a conditional Luria-Delbrück distribution. <i>Journal of Theoretical Biology</i> , 2003, 223, 405-412.	0.8	28
84	A simple derivation and classification of common probability distributions based on information symmetry and measurement scale. <i>Journal of Evolutionary Biology</i> , 2011, 24, 469-484.	0.8	28
85	Sex Allocation in Solitary Bees and Wasps. <i>American Naturalist</i> , 1995, 146, 316-323.	1.0	27
86	Immune Response to Parasitic Attack: Evolution of a Pulsed Character. <i>Journal of Theoretical Biology</i> , 2002, 219, 281-290.	0.8	27
87	Wright's Adaptive Landscape Versus Fisher's Fundamental Theorem. , 2013, , 41-57.		24
88	Barriers to antigenic escape by pathogens: trade-off between reproductive rate and antigenic mutability. <i>BMC Evolutionary Biology</i> , 2007, 7, 229.	3.2	23
89	Demography and the tragedy of the commons. <i>Journal of Evolutionary Biology</i> , 2010, 23, 32-39.	0.8	23
90	Microbial secretor-cheater dynamics. <i>Philosophical Transactions of the Royal Society B: Biological Sciences</i> , 2010, 365, 2515-2522.	1.8	23

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91	Sexual antagonism leads to a mosaic of X-chromosome conflict. <i>Evolution; International Journal of Organic Evolution</i> , 2020, 74, 495-498.	1.1	23
92	A Hierarchical View of Sex-Ratio Patterns. <i>Florida Entomologist</i> , 1983, 66, 42.	0.2	22
93	Measurement scale in maximum entropy models of species abundance. <i>Journal of Evolutionary Biology</i> , 2011, 24, 485-496.	0.8	22
94	Evolution: Mitochondrial Burden on Male Health. <i>Current Biology</i> , 2012, 22, R797-R799.	1.8	21
95	Evolution of Robustness and Cellular Stochasticity of Gene Expression. <i>PLoS Biology</i> , 2013, 11, e1001578.	2.6	21
96	Somatic Mutation: Early Cancer Steps Depend on Tissue Architecture. <i>Current Biology</i> , 2003, 13, R261-R263.	1.8	20
97	How to Read Probability Distributions as Statements about Process. <i>Entropy</i> , 2014, 16, 6059-6098.	1.1	20
98	The Price Equation Program: Simple Invariances Unify Population Dynamics, Thermodynamics, Probability, Information and Inference. <i>Entropy</i> , 2018, 20, 978.	1.1	20
99	A Model of Inducible Defense. <i>Evolution; International Journal of Organic Evolution</i> , 1993, 47, 325.	1.1	19
100	Natural selection. VI. Partitioning the information in fitness and characters by path analysis. <i>Journal of Evolutionary Biology</i> , 2013, 26, 457-471.	0.8	18
101	A multistage theory of age-specific acceleration in human mortality. <i>BMC Biology</i> , 2004, 2, 16.	1.7	17
102	Are Mating and Mate Competition by the Fig Wasp <i>Pegoscapus assuetus</i> (Agaonidae) Random within a Fig?. <i>Biotropica</i> , 1985, 17, 170.	0.8	16
103	Developmental selection and self-organization. <i>BioSystems</i> , 1997, 40, 237-243.	0.9	16
104	Universal expressions of population change by the Price equation: Natural selection, information, and maximum entropy production. <i>Ecology and Evolution</i> , 2017, 7, 3381-3396.	0.8	16
105	POLYMORPHISM OF BACTERIAL RESTRICTION-MODIFICATION SYSTEMS: THE ADVANTAGE OF DIVERSITY. <i>Evolution; International Journal of Organic Evolution</i> , 1994, 48, 1470-1477.	1.1	15
106	The probability of severe disease in zoonotic and commensal infections. <i>Proceedings of the Royal Society B: Biological Sciences</i> , 2001, 268, 53-60.	1.2	15
107	Weapons and fighting in fig wasps. <i>Trends in Ecology and Evolution</i> , 1987, 2, 259-260.	4.2	14
108	Programmed Cell Death and Hybrid Incompatibility. , 2003, 94, 181-183.		13

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109	Microbial Evolution: Regulatory Design Prevents Cancer-like Overgrowths. <i>Current Biology</i> , 2013, 23, R343-R346.	1.8	13
110	Measurement invariance explains the universal law of generalization for psychological perception. <i>Proceedings of the National Academy of Sciences of the United States of America</i> , 2018, 115, 9803-9806.	3.3	12
111	Evolution of negative immune regulators. <i>PLoS Pathogens</i> , 2019, 15, e1007913.	2.1	10
112	When to copy or avoid an opponent's strategy. <i>Journal of Theoretical Biology</i> , 1990, 145, 41-46.	0.8	9
113	Evolutionary design of regulatory control. II. Robust error-correcting feedback increases genetic and phenotypic variability. <i>Journal of Theoretical Biology</i> , 2019, 468, 72-81.	0.8	9
114	The Generalized Price Equation: Forces That Change Population Statistics. <i>Frontiers in Ecology and Evolution</i> , 2020, 8, .	1.1	9
115	A TOUCHSTONE IN THE STUDY OF ADAPTATION. <i>Evolution; International Journal of Organic Evolution</i> , 2002, 56, 2561-2564.	1.1	8
116	Evolutionary Foundations of Cooperation and Group Cohesion. <i>Springer Series in Game Theory</i> , 2009, , 3-40.	0.2	8
117	Commentary: Mathematical models of cancer progression and epidemiology in the age of high throughput genomics. <i>International Journal of Epidemiology</i> , 2004, 33, 1179-1181.	0.9	7
118	Evolutionary dynamics of redundant regulatory control. <i>Journal of Theoretical Biology</i> , 2008, 255, 64-68.	0.8	7
119	Increasing resource specialization among competitors shifts control of diversity from local to spatial processes. <i>Ecology Letters</i> , 1998, 1, 3-5.	3.0	7
120	The invariances of power law size distributions. <i>F1000Research</i> , 2016, 5, 2074.	0.8	7
121	The invariances of power law size distributions. <i>F1000Research</i> , 2016, 5, 2074.	0.8	7
122	The Fundamental Equations of Change in Statistical Ensembles and Biological Populations. <i>Entropy</i> , 2020, 22, 1395.	1.1	6
123	Increasing resource specialization among competitors shifts control of diversity from local to spatial processes. <i>Ecology Letters</i> , 1998, 1, 3-5.	3.0	6
124	Microbial metabolism: optimal control of uptake versus synthesis. <i>PeerJ</i> , 2014, 2, e267.	0.9	6
125	Receptor uptake arrays for vitamin B ₁₂ , siderophores, and glycans shape bacterial communities. <i>Ecology and Evolution</i> , 2017, 7, 10175-10195.	0.8	5
126	Evolutionary design of regulatory control. I. A robust control theory analysis of tradeoffs. <i>Journal of Theoretical Biology</i> , 2019, 463, 121-137.	0.8	5

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127	Puzzles in modern biology. V. Why are genomes overwired?. F1000Research, 2017, 6, 924.	0.8	5
128	A biochemical logarithmic sensor with broad dynamic range. F1000Research, 2018, 7, 200.	0.8	5
129	The common patterns of abundance: the log series and Zipf's law. F1000Research, 2019, 8, 334.	0.8	5
130	Puzzles in modern biology. V. Why are genomes overwired?. F1000Research, 2017, 6, 924.	0.8	5
131	The Male-Female Pay Gap Driven by Coupling between Labor Markets and Mating Markets. Journal of Bioeconomics, 2006, 8, 269-274.	1.5	4
132	Commentary: The nature of cancer research. International Journal of Epidemiology, 2016, 45, 638-645.	0.9	4
133	Developmental Mutators and Early Onset Cancer. Frontiers in Pediatrics, 2020, 8, 189.	0.9	4
134	Invariance in ecological pattern. F1000Research, 2019, 8, 2093.	0.8	4
135	Invariant death. F1000Research, 2016, 5, 2076.	0.8	4
136	Age-specific acceleration in malignant melanoma. F1000Research, 2017, 6, 27.	0.8	4
137	Kinetics of cancer: a method to test hypotheses of genetic causation. BMC Cancer, 2005, 5, 163.	1.1	3
138	Metabolic Heat in Microbial Conflict and Cooperation. Frontiers in Ecology and Evolution, 2020, 8, .	1.1	3
139	Simple unity among the fundamental equations of science. Philosophical Transactions of the Royal Society B: Biological Sciences, 2020, 375, 20190351.	1.8	3
140	Recognition and polymorphism in host-parasite genetics. , 1997, , 13-23.		3
141	Age-specific acceleration in malignant melanoma. F1000Research, 2017, 6, 27.	0.8	3
142	Puzzles in modern biology. IV. Neurodegeneration, localized origin and widespread decay. F1000Research, 2016, 5, 2537.	0.8	3
143	A biochemical logarithmic sensor with broad dynamic range. F1000Research, 2018, 7, 200.	0.8	3
144	Evolution and immunology of infectious diseases: what's new?. Infection, Genetics and Evolution, 2004, 4, 69-75.	1.0	2

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145	The Inductive Theory of Natural Selection. SSRN Electronic Journal, 2014, , .	0.4	2
146	How to Understand Behavioral Patterns in Big Data: The Case of Human Collective Memory. Behavioral Sciences (Basel, Switzerland), 2019, 9, 40.	1.0	2
147	How to Read Probability Distributions as Statements About Process. SSRN Electronic Journal, 0, , .	0.4	2
148	Puzzles in modern biology. II. Language, cancer and the recursive processes of evolutionary innovation. F1000Research, 2016, 5, 2289.	0.8	2
149	Inheritance of cancer. Discovery Medicine, 2004, 4, 396-400.	0.5	2
150	Puzzles in modern biology. III. Two kinds of causality in age-related disease. F1000Research, 2016, 5, 2533.	0.8	1
151	Puzzles in modern biology. III. Two kinds of causality in age-related disease. F1000Research, 2016, 5, 2533.	0.8	1
152	Evolution of Antigenic Variation. , 0, , 225-242.		0
153	Universal Expressions of Population Change by the Price Equation: Natural Selection, Information, and Maximum Entropy Production. SSRN Electronic Journal, 0, , .	0.4	0
154	Puzzles in modern biology. I. Male sterility, failure reveals design. F1000Research, 2016, 5, 2288.	0.8	0
155	Occupational Immunity and Natural Vaccination. SSRN Electronic Journal, 0, , .	0.4	0
156	How to Understand Common Patterns in Big Data: The Case of Human Collective Memory. SSRN Electronic Journal, 0, , .	0.4	0