Eors Szathmary

List of Publications by Year
in descending order

148 papers	7,055 citations	76326 40 h-index	76900 74 g-index
161 all docs	161 docs citations	161 times ranked	4102 citing authors

#	Article	IF	Citations
1	The major evolutionary transitions. Nature, 1995, 374, 227-232.	27.8	872
2	The Major Transitions in Evolution. , 1997, , .		683
3	Group selection of early replicators and the origin of life. Journal of Theoretical Biology, 1987, 128, 463-486.	1.7	346
4	Toward major evolutionary transitions theory 2.0. Proceedings of the National Academy of Sciences of the United States of America, 2015, 112, 10104-10111.	7.1	283
5	From Replicators to Reproducers: the First Major Transitions Leading to Life. Journal of Theoretical Biology, 1997, 187, 555-571.	1.7	267
6	Evolution before genes. Biology Direct, 2012, 7, 1; discussion 1.	4.6	225
7	How Can Evolution Learn?. Trends in Ecology and Evolution, 2016, 31, 147-157.	8.7	181
8	The origin of the genetic code: amino acids as cofactors in an RNA world. Trends in Genetics, 1999, 15, 223-229.	6.7	180
9	The origin of replicators and reproducers. Philosophical Transactions of the Royal Society B: Biological Sciences, 2006, 361, 1761-1776.	4.0	175
10	Lack of evolvability in self-sustaining autocatalytic networks constraints metabolism-first scenarios for the origin of life. Proceedings of the National Academy of Sciences of the United States of America, 2010, 107, 1470-1475.	7.1	155
11	Sub-exponential growth and coexistence of non-enzymatically replicating templates. Journal of Theoretical Biology, 1989, 138, 55-58.	1.7	147
12	MOLECULAR BIOLOGY AND EVOLUTION: Can Genes Explain Biological Complexity?. Science, 2001, 292, 1315-1316.	12.6	138
13	In silico simulations reveal that replicators with limited dispersal evolve towards higher efficiency and fidelity. Nature, 2002, 420, 340-343.	27.8	129
14	Coding coenzyme handles: a hypothesis for the origin of the genetic code.. Proceedings of the National Academy of Sciences of the United States of America, 1993, 90, 9916-9920.	7.1	122
15	Real ribozymes suggest a relaxed error threshold. Nature Genetics, 2005, 37, 1008-1011.	21.4	119
16	Transient compartmentalization of RNA replicators prevents extinction due to parasites. Science, 2016, 354, 1293-1296.	12.6	116
17	The evolution of replicators. Philosophical Transactions of the Royal Society B: Biological Sciences, 2000, 355, 1669-1676.	4.0	97
18	From self-replication to replicator systems en route to de novo life. Nature Reviews Chemistry, 2020, 4, 386-403.	30.2	91

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19	Selective scenarios for the emergence of natural language. Trends in Ecology and Evolution, 2006, 21, 555-561.	8.7	89
20	On origin of genetic code and tRNA before translation. Biology Direct, 2011, 6, 14.	4.6	85
21	An evolutionary perspective on the systems of adaptive immunity. Biological Reviews, 2018, 93, 505-528.	10.4	76
22	Multicellularity: Evolution and the egg. Nature, 2002, 420, 745-745.	27.8	73
23	Natural selection and dynamical coexistence of defective and complementing virus segments. Journal of Theoretical Biology, 1992, 157, 383-406.	1.7	72
24	â€œSynergistic selectionâ€ A Darwinian frame for the evolution of complexity. Journal of Theoretical Biology, 2015, 371, 45-58.	1.7	68
25	The evolution of information storage and heredity. Trends in Ecology and Evolution, 1995, 10, 206-211.	8.7	67
26	Selectionist and Evolutionary Approaches to Brain Function: A Critical Appraisal. Frontiers in Computational Neuroscience, 2012, 6, 24.	2.1	65
27	Simple growth laws and selection consequences. Trends in Ecology and Evolution, 1991, 6, 366-370.	8.7	64
28	â€œLivingâ€•Under the Challenge of Information Decay: The Stochastic Corrector Model vs. Hypercycles. Journal of Theoretical Biology, 2002, 217, 167-181.	1.7	64
29	Evolutionary Potential and Requirements for Minimal Protocells. , 0, , 167-211.		64
30	In search of the simplest cell. Nature, 2005, 433, 469-470.	27.8	61
31	Computational identification of obligatorily autocatalytic replicators embedded in metabolic networks. Genome Biology, 2008, 9, R51.	9.6	60
32	Why are there four letters in the genetic alphabet?. Nature Reviews Genetics, 2003, 4, 995-1001.	16.3	56
33	Prebiotic replicase evolution in a surface-bound metabolic system: parasites as a source of adaptive evolution. BMC Evolutionary Biology, 2008, 8, 267.	3.2	54
34	The Origin of Life: Chemical Evolution of a Metabolic System in a Mineral Honeycomb?. Journal of Molecular Evolution, 2009, 69, 458-469.	1.8	54
35	A Stochastic Model of Nonenzymatic Nucleic Acid Replication: â€œElongatorsâ€•Sequester Replicators. Journal of Molecular Evolution, 2007, 64, 572-585.	1.8	49
36	What can ecosystems learn? Expanding evolutionary ecology with learning theory. Biology Direct, 2015, 10, 69.	4.6	49

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37	The Neuronal Replicator Hypothesis. Neural Computation, 2010, 22, 2809-2857.	2.2	48
38	The dynamics of the RNA world: insights and challenges. Annals of the New York Academy of Sciences, 2015, 1341, 75-95.	3.8	47
39	The integration of the earliest genetic information. Trends in Ecology and Evolution, 1989, 4, 200-204.	8.7	46
40	Confrontational scavenging as a possible source for language and cooperation. BMC Evolutionary Biology, 2011, 11, 261.	3.2	46
41	Copying and Evolution of Neuronal Topology. PLoS ONE, 2008, 3, e3775.	2.5	43
42	Breath-giving cooperation: critical review of origin of mitochondria hypotheses. Biology Direct, 2017, 12, 19.	4.6	42
43	Coexistence and error propagation in pre-biotic vesicle models: A group selection approach. Journal of Theoretical Biology, 2006, 239, 247-256.	1.7	41
44	Coevolution of metabolic networks and membranes: the scenario of progressive sequestration. Philosophical Transactions of the Royal Society B: Biological Sciences, 2007, 362, 1781-1787.	4.0	40
45	Developmental circuits rewired. Nature, 2001, 411, 143-145.	27.8	38
46	Coexistence of Replicators in Prebiotic Evolution. , 2000, , 116-134.		36
47	Survival of Replicators with Parabolic Growth Tendency and Exponential Decay. Journal of Theoretical Biology, 2001, 212, 99-105.	1.7	36
48	Grand Views of Evolution. Trends in Ecology and Evolution, 2017, 32, 324-334.	8.7	34
49	Viral sex, levels of selection, and the origin of life. Journal of Theoretical Biology, 1992, 159, 99-109.	1.7	32
50	Recombination in Primeval Genomes: A Step Forward but Still a Long Leap from Maintaining a Sizable Genome. Journal of Molecular Evolution, 2004, 59, 507-519.	1.8	31
51	A New Replicator: A theoretical framework for analysing replication. BMC Biology, 2010, 8, 21.	3.8	31
52	Farming the mitochondrial ancestor as a model of endosymbiotic establishment by natural selection. Proceedings of the National Academy of Sciences of the United States of America, 2018, 115, E1504-E1510.	7.1	29
53	Co-operation and Defection: Playing the Field in Virus Dynamics. Journal of Theoretical Biology, 1993, 165, 341-356.	1.7	28
54	Metabolically Coupled Replicator Systems: Overview of an RNA-world model concept of prebiotic evolution on mineral surfaces. Journal of Theoretical Biology, 2015, 381, 39-54.	1.7	28

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55	One ancestor for two codes viewed from the perspective of two complementary modes of tRNA aminoacylation. Biology Direct, 2009, 4, 4.	4.6	27
56	On the propagation of a conceptual error concerning hypercycles and cooperation. Journal of Systems Chemistry, 2013, 4, .	1.7	27
57	Problem solving stages in the five square problem. Frontiers in Psychology, 2015, 6, 1050.	2.1	25
58	Selection versus Coexistence of Parabolic Replicators Spreading on Surfaces. Selection, 2001, 1, 173-180.	0.8	23
59	Codon swapping as a possible evolutionary mechanism. Journal of Molecular Evolution, 1991, 32, 178-182.	1.8	22
60	Analysis of Dark Albedo Features on a Southern Polar Dune Field of Mars. Astrobiology, 2009, 9, 90-103.	3.0	22
61	To Group or Not to Group?. Science, 2011, 334, 1648-1649.	12.6	22
62	Origin of sex revisited. Origins of Life and Evolution of Biospheres, 2003, 33, 405-432.	1.9	21
63	Primordial evolvability: Impasses and challenges. Journal of Theoretical Biology, 2015, 381, 29-38.	1.7	21
64	Dark Dune Spots: possible biomarkers on Mars?. Origins of Life and Evolution of Biospheres, 2003, 33, 515-557.	1.9	20
65	Comment on â€œA Bacterium That Can Grow by Using Arsenic Instead of Phosphorusâ€• Science, 2011, 332, 1149-1149.	12.6	20
66	In silico detection of tRNA sequence features characteristic to aminoacyl-tRNA synthetase class membership. Nucleic Acids Research, 2007, 35, 5593-5609.	14.5	19
67	Cognitive Architecture with Evolutionary Dynamics Solves Insight Problem. Frontiers in Psychology, 2017, 8, 427.	2.1	19
68	The evolutionary dynamics of language. BioSystems, 2018, 164, 128-137.	2.0	19
69	Early evolution of efficient enzymes and genome organization. Biology Direct, 2012, 7, 38; discussion 38.	4.6	18
70	Evolvable Neuronal Paths: A Novel Basis for Information and Search in the Brain. PLoS ONE, 2011, 6, e23534.	2.5	18
71	An extremum principle for parabolic competition. Bulletin of Mathematical Biology, 1997, 59, 1145-1154.	1.9	17
72	Selfishness versus functional cooperation in a stochastic protocell model. Journal of Theoretical Biology, 2010, 267, 605-613.	1.7	17

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73	Phenotypic plasticity, the Baldwin effect, and the speeding up of evolution: The computational roots of an illusion. Journal of Theoretical Biology, 2015, 371, 127-136.	1.7	17
74	Language: a social history of words. Nature, 2008, 456, 40-41.	27.8	16
75	Toy Models for Simple Forms of Multicellularity, Soma and Germ. Journal of Theoretical Biology, 1994, 169, 125-132.	1.7	15
76	The first two billion years. Nature, 1997, 387, 662-663.	27.8	15
77	Semantics boosts syntax in artificial grammar learning tasks with recursion.. Journal of Experimental Psychology: Learning Memory and Cognition, 2012, 38, 776-782.	0.9	15
78	Evolution of the Division of Labor between Genes and Enzymes in the RNA World. PLoS Computational Biology, 2014, 10, e1003936.	3.2	15
79	Evolution of linkage and genome expansion in protocells: The origin of chromosomes. PLoS Genetics, 2020, 16, e1009155.	3.5	15
80	Towards the evolution of ribozymes. Nature, 1990, 344, 115-115.	27.8	14
81	Evolvability of Natural and Artificial Systems. Procedia Computer Science, 2011, 7, 73-76.	2.0	14
82	Multilevel selection as Bayesian inference, major transitions in individuality as structure learning. Royal Society Open Science, 2019, 6, 190202.	2.4	13
83	Local Neutral Networks Help Maintain Inaccurately Replicating Ribozymes. PLoS ONE, 2014, 9, e109987.	2.5	12
84	Early evolution of microtubules and undulipodia. BioSystems, 1987, 20, 115-131.	2.0	11
85	Gause's Principle and the Effect of Resource Partitioning on the Dynamical Coexistence of Replicating Templates. PLoS Computational Biology, 2013, 9, e1003193.	3.2	11
86	Fitness Landscapes of Functional RNAs. Life, 2015, 5, 1497-1517.	2.4	11
87	Insight into the ten-penny problem: guiding search by constraints and maximization. Psychological Research, 2017, 81, 925-938.	1.7	11
88	Chemical, Neuronal, and Linguistic Replicators. , 2010, , 209-250.		11
89	Phenotypes to remember: Evolutionary developmental memory capacity and robustness. PLoS Computational Biology, 2020, 16, e1008425.	3.2	11
90	Ecological and evolutionary dynamics of interconnectedness and modularity. Proceedings of the National Academy of Sciences of the United States of America, 2018, 115, 750-755.	7.1	10

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91	Natural Selection in the Brain. On Thinking, 2010, , 291-322.	0.5	10
92	Breeding novel solutions in the brain: a model of Darwinian neurodynamics. F1000Research, 2016, 5, 2416.	1.6	10
93	Two Different Template Replicators Coexisting in the Same Protocell: Stochastic Simulation of an Extended Chemoton Model. PLoS ONE, 2011, 6, e21380.	2.5	10
94	A hypercyclic illusion. Journal of Theoretical Biology, 1988, 134, 561-563.	1.7	8
95	On the likelihood of habitable worlds. Nature, 1996, 384, 107-107.	27.8	8
96	Genetic hitchhiking can promote the initial spread of strong altruism. BMC Evolutionary Biology, 2008, 8, 281.	3.2	8
97	Beyond Hamilton's rule. Science, 2017, 356, 485-486.	12.6	8
98	Playing evolution in the laboratory: From the first major evolutionary transition to global warming. Europhysics Letters, 2018, 122, 38001.	2.0	8
99	Path Dependence and Historical Contingency in Biology. , 2006, , 140-157.		8
100	Neuronal boost to evolutionary dynamics. Interface Focus, 2015, 5, 20150074.	3.0	7
101	Encoding Temporal Regularities and Information Copying in Hippocampal Circuits. Scientific Reports, 2019, 9, 19036.	3.3	7
102	Moderate sex between protocells can balance between a decrease in assortment load and an increase in parasite spread. Journal of Theoretical Biology, 2019, 462, 304-310.	1.7	7
103	In silico Evolutionary Developmental Neurobiology and the Origin of Natural Language. , 2007, , 151-187.		7
104	A theoretical test of the DNA repair hypothesis for the maintenance of sex in eukaryotes. Genetical Research, 1991, 58, 157-165.	0.9	6
105	Biological Information, Kin Selection, and Evolutionary Transitions. Theoretical Population Biology, 2001, 59, 11-14.	1.1	6
106	From biological analysis to synthetic biology. Current Biology, 2004, 14, R145-R146.	3.9	6
107	Fluid construction grammar as a biological system. Linguistics Vanguard: Multimodal Online Journal, 2016, 2, .	2.0	6
108	Caring for parents: an evolutionary rationale. BMC Biology, 2018, 16, 53.	3.8	6

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109	The biological significance of GÃ¡ntiâ€™s work in 1971 and today. , 2003, , 157-168.		6
110	Bayes and Darwin: How replicator populations implement Bayesian computations. BioEssays, 2022, 44, e2100255.	2.5	6
111	Merging lines and emerging levels. Nature, 1998, 392, 439-441.	27.8	5
112	Concepts and dynamics: a theoretical issue of OLEB. Origins of Life and Evolution of Biospheres, 2003, 33, 313-317.	1.9	5
113	EVOLUTION: Darwin for All Seasons. Science, 2006, 313, 306-307.	12.6	5
114	Founder of systems chemistry and foundational theoretical biologist: Tibor GÃ¡nti (1933â€"2009). Journal of Theoretical Biology, 2015, 381, 2-5.	1.7	5
115	Catalytic Propensity of Amino Acids and the Origins of the Genetic Code and Proteins. Biosemiotics Bookseries, 2008, , 39-58.	0.3	5
116	Breeding novel solutions in the brain: A model of Darwinian neurodynamics. F1000Research, 2016, 5, 2416.	1.6	5
117	An extremum principle for parabolic competition. Bulletin of Mathematical Biology, 1997, 59, 1145-1154.	1.9	4
118	3. The First Replicators. , 2000, , 31-52.		4
119	Evolution of Language as One of the Major Evolutionary Transitions. , 2010, , 37-53.		4
120	Common interest and novel evolutionary units. Trends in Ecology and Evolution, 1991, 6, 407-408.	8.7	3
121	John Maynard Smith (1920â€"2004). Nature, 2004, 429, 258-259.	27.8	3
122	Fitness Landscapes, Error Thresholds, and Cofactors in Aptamer Evolution. , 2006, , 54-92.		3
123	An Attractor Network-Based Model with Darwinian Dynamics. , 2016, , .		3
124	Editorial: Insight and Intuition â€" Two Sides of the Same Coin?. Frontiers in Psychology, 2018, 9, 689.	2.1	3
125	Novelty and imitation within the brain: a Darwinian neurodynamic approach to combinatorial problems. Scientific Reports, 2021, 11, 12513.	3.3	3
126	Towards an Understanding of Language Origins. Biosemiotics Bookseries, 2008, , 287-317.	0.3	3

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127	How Can Evolution Learn? â€“ A Reply to Responses. Trends in Ecology and Evolution, 2016, 31, 896-898.	8.7	2
128	Modelling Reaction Times in Non-linear Classification Tasks. Lecture Notes in Computer Science, 2014, , 53-64.	1.3	2
129	Molecular variation and evolution of viruses. Trends in Ecology and Evolution, 1993, 8, 8-9.	8.7	1
130	Useful stuff. Trends in Ecology and Evolution, 1998, 13, 251-252.	8.7	1
131	Reply: certain uncertainties about the origin of the genetic code. Trends in Genetics, 2000, 16, 18-19.	6.7	1
132	Summary: The Budapest meeting 2005 intensified networking on ethics of science. Science and Engineering Ethics, 2006, 12, 415-420.	2.9	1
133	The cost of splicing and the late origin of introns. Trends in Ecology and Evolution, 1989, 4, 109-110.	8.7	0
134	Variational principles, behavioural adaptations and selection hierarchies. Behavioral and Brain Sciences, 1991, 14, 107-108.	0.7	0
135	Beginnings of cellular life: Metabolism recapitulates biogenesis. Trends in Ecology and Evolution, 1993, 8, 304-305.	8.7	0
136	Language and life. , 1995, , 67-78.		0
137	The concept of fitness and individuality revisited. Darwinian Dynamics: Evolutionary Transitions in Fitness and Individuality. By Richard E. Michod. Princeton University Press, New Jersey. 1999. $45.00/f27.50. ISBN 0-691-02699-8.. Journal of Evolutionary Biology, 2000, 13, 352-355.	1.7	0
138	In Humboldtâ€™s footsteps. Trends in Ecology and Evolution, 2000, 15, 178-179.	8.7	0
139	Birds as Aeroplanes: Remembering John Maynard Smith. Biological Theory, 2006, 1, 84-86.	1.5	0
140	Natural Selection of Paths in Networks. Nature Precedings, 2011, , .	0.1	0
141	Parsing recursive sentences with a connectionist model including a neural stack and synaptic gating. Journal of Theoretical Biology, 2011, 271, 100-105.	1.7	0
142	Rethinking Life. The Frontiers Collection, 2018, , 475-488.	0.2	0
143	Reply to Garg and Martin: The mechanism works. Proceedings of the National Academy of Sciences of the United States of America, 2018, 115, E4545-E4546.	7.1	0
144	Ecosystem Memory Is Emergent from Local-Level Natural Selection. , 0, , .		0

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145	Phenotypes to remember: Evolutionary developmental memory capacity and robustness. , 2020, 16, e1008425.		0
146	Phenotypes to remember: Evolutionary developmental memory capacity and robustness. , 2020, 16, e1008425.		0
147	Phenotypes to remember: Evolutionary developmental memory capacity and robustness. , 2020, 16, e1008425.		0
148	Phenotypes to remember: Evolutionary developmental memory capacity and robustness. , 2020, 16, e1008425.		0