Steven A Benner

List of Publications by Year
in descending order

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136 papers	10,059 citations	43973 48 h-index	37111 96 g-index
144 all docs	144 docs citations	144 times ranked	6420 citing authors

#	Article	IF	Citations
1	Fluorinated oil-surfactant mixtures with the density of water: Artificial cells for synthetic biology. PLoS ONE, 2022, 17, e0252361.	1.1	0
2	Catalytic Synthesis of Polyribonucleic Acid on Prebiotic Rock Glasses. Astrobiology, 2022, 22, 629-636.	1.5	28
3	Agnostic Life Finder (ALF) for Large-Scale Screening of Martian Life During In Situ Refueling. Astrobiology, 2022, 22, 1255-1263.	1.5	3
4	Ultra-rapid detection of SARS-CoV-2 in public workspace environments. PLoS ONE, 2021, 16, e0240524.	1.1	13
5	Abiotic Synthesis of Nucleoside 5â€²-Triphosphates with Nickel Borate and Cyclic Trimetaphosphate (CTMP). Astrobiology, 2021, 21, 298-306.	1.5	21
6	An Aptamerâ€Nanotrain Assembled from Sixâ€Letter DNA Delivers Doxorubicin Selectively to Liver Cancer Cells. Angewandte Chemie, 2020, 132, 673-678.	1.6	8
7	An Aptamerâ€Nanotrain Assembled from Sixâ€Letter DNA Delivers Doxorubicin Selectively to Liver Cancer Cells. Angewandte Chemie - International Edition, 2020, 59, 663-668.	7.2	61
8	When Did Life Likely Emerge on Earth in an RNAâ€First Process?. ChemSystemsChem, 2020, 2, e1900035.	1.1	71
9	Building better polymerases: Engineering the replication of expanded genetic alphabets. Journal of Biological Chemistry, 2020, 295, 17046-17059.	1.6	16
10	Electrochemical reduction and oxidation of eight unnatural 2â€²-deoxynucleosides at a pyrolytic graphite electrode. Electrochimica Acta, 2020, 362, 137210.	2.6	4
11	Eliminating primer dimers and improving SNP detection using self-avoiding molecular recognition systems. Biology Methods and Protocols, 2020, 5, bpaa004.	1.0	10
12	When Did Life Likely Emerge on Earth in an RNAâ€First Process?. ChemSystemsChem, 2020, 2, e2000009.	1.1	14
13	Tautomeric Equilibria of Nucleobases in the Hachimoji Expanded Genetic Alphabet. Journal of Chemical Theory and Computation, 2020, 16, 2766-2777.	2.3	22
14	Confluence of theory and experiment reveals the catalytic mechanism of the Varkud satellite ribozyme. Nature Chemistry, 2020, 12, 193-201.	6.6	33
15	Hachimoji DNA and RNA: A genetic system with eight building blocks. Science, 2019, 363, 884-887.	6.0	337
16	Prebiotic Chemistry that Could Not Not Have Happened. Life, 2019, 9, 84.	1.1	29
17	Multiplexed Isothermal Amplification Based Diagnostic Platform to Detect Zika, Chikungunya, and Dengue 1. Journal of Visualized Experiments, 2018, , .	0.2	8
18	A Direct Prebiotic Synthesis of Nicotinamide Nucleotide. Chemistry - A European Journal, 2018, 24, 581-584.	1.7	25

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19	Prebiotic plausibility and networks of paradox-resolving independent models. Nature Communications, 2018, 9, 5173.	5.8	7
20	Artificially Expanded Genetic Information Systems for New Aptamer Technologies. Biomedicines, 2018, 6, 53.	1.4	55
21	Molybdenum(VI)-Catalyzed Rearrangement of Prebiotic Carbohydrates in Formamide, a Candidate Prebiotic Solvent. Astrobiology, 2018, 18, 1159-1170.	1.5	11
22	Nucleoside analogs to manage sequence divergence in nucleic acid amplification and SNP detection. Nucleic Acids Research, 2018, 46, 5902-5910.	6.5	4
23	Mineral-Organic Interactions in Prebiotic Synthesis. Nucleic Acids and Molecular Biology, 2018, , 31-83.	0.2	5
24	â€œSkinnyâ€•and â€œFatâ€•DNA: Two New Double Helices. Journal of the American Chemical Society, 2018, 140, 11655-11660.	6.6	36
25	The challenge of synthetic biology. Synthetic Darwinism and the aperiodic crystal structure. Current Opinion in Chemical Biology, 2018, 46, 188-195.	2.8	18
26	Optimization of cationic (Q)-paper for detection of arboviruses in infected mosquitoes. Journal of Virological Methods, 2018, 261, 71-79.	1.0	7
27	Snapshots of an evolved DNA polymerase pre- and post-incorporation of an unnatural nucleotide. Nucleic Acids Research, 2018, 46, 7977-7988.	6.5	18
28	Biophysics of Artificially Expanded Genetic Information Systems. Thermodynamics of DNA Duplexes Containing Matches and Mismatches Involving 2-Amino-3-nitropyridin-6-one (Z) and Imidazo[1,2-a]-1,3,5-triazin-4(8H)one (P). ACS Synthetic Biology, 2017, 6, 782-792.	1.9	21
29	Detection of chikungunya viral RNA in mosquito bodies on cationic (Q) paper based on innovations in synthetic biology. Journal of Virological Methods, 2017, 246, 104-111.	1.0	9
30	Uniting Natural History with the Molecular Sciences. The Ultimate Multidisciplinarity. Accounts of Chemical Research, 2017, 50, 498-502.	7.6	8
31	A Single Deoxynucleoside Kinase Variant from Drosophila melanogaster Synthesizes Monophosphates of Nucleosides That Are Components of an Expanded Genetic System. ACS Synthetic Biology, 2017, 6, 388-394.	1.9	8
32	Structure and Biophysics for a Six Letter DNA Alphabet that Includes Imidazo[1,2-a]-1,3,5-triazine-2(8H)-4(3H)-dione (X) and 2,4-Diaminopyrimidine (K). ACS Synthetic Biology, 2017, 6, 2118-2129.	1.9	10
33	Detecting Darwinism from Molecules in the Enceladus Plumes, Jupiter's Moons, and Other Planetary Water Lagoons. Astrobiology, 2017, 17, 840-851.	1.5	39
34	Point of sampling detection of Zika virus within a multiplexed kit capable of detecting dengue and chikungunya. BMC Infectious Diseases, 2017, 17, 293.	1.3	130
35	Expanded Genetic Alphabets: Managing Nucleotides That Lack Tautomeric, Protonated, or Deprotonated Versions Complementary to Natural Nucleotides. ACS Synthetic Biology, 2017, 6, 194-200.	1.9	10
36	Biological phosphorylation of an Unnatural Base Pair (UBP) using a Drosophila melanogaster deoxynucleoside kinase (DmdNK) mutant. PLoS ONE, 2017, 12, e0174163.	1.1	7

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37	Polymerase Interactions with Wobble Mismatches in Synthetic Genetic Systems and Their Evolutionary Implications. Biochemistry, 2016, 55, 3847-3850.	1.2	10
38	Aptamers against Cells Overexpressing Glypicanâ€...3 from Expanded Genetic Systems Combined with Cell Engineering and Laboratory Evolution. Angewandte Chemie - International Edition, 2016, 55, 12372-12375.	7.2	78
39	Alternative Watsonâ€“Crick Synthetic Genetic Systems. Cold Spring Harbor Perspectives in Biology, 2016, 8, a023770.	2.3	83
40	Laboratory evolution of artificially expanded DNA gives redesignable aptamers that target the toxic form of anthrax protective antigen. Nucleic Acids Research, 2016, 44, gkw890.	6.5	63
41	A norovirus detection architecture based on isothermal amplification and expanded genetic systems. Journal of Virological Methods, 2016, 237, 64-71.	1.0	12
42	Unusual Hydrogen Bonding Patterns and the Role of the Backbone in Nucleic Acid Information Transfer. ACS Central Science, 2016, 2, 882-884.	5.3	8
43	Standard and AEGIS nicking molecular beacons detect amplicons from the Middle East respiratory syndrome coronavirus. Journal of Virological Methods, 2016, 236, 54-61.	1.0	10
44	Aptamers against Cells Overexpressing Glypicanâ€...3 from Expanded Genetic Systems Combined with Cell Engineering and Laboratory Evolution. Angewandte Chemie, 2016, 128, 12560-12563.	1.6	9
45	Evaporite Borateâ€Containing Mineral Ensembles Make Phosphate Available and Regiospecifically Phosphorylate Ribonucleosides: Borate as a Multifaceted Problem Solver in Prebiotic Chemistry. Angewandte Chemie - International Edition, 2016, 55, 15816-15820.	7.2	76
46	Assays To Detect the Formation of Triphosphates of Unnatural Nucleotides: Application to Escherichia coli Nucleoside Diphosphate Kinase. ACS Synthetic Biology, 2016, 5, 234-240.	1.9	15
47	A Crystal Structure of a Functional RNA Molecule Containing an Artificial Nucleobase Pair. Angewandte Chemie - International Edition, 2015, 54, 9853-9856.	7.2	18
48	Structural Basis for a Six Nucleotide Genetic Alphabet. Journal of the American Chemical Society, 2015, 137, 6947-6955.	6.6	102
49	High-throughput multiplexed xMAP Luminex array panel for detection of twenty two medically important mosquito-borne arboviruses based on innovations in synthetic biology. Journal of Virological Methods, 2015, 214, 60-74.	1.0	50
50	Evolution of Functional Six-Nucleotide DNA. Journal of the American Chemical Society, 2015, 137, 6734-6737.	6.6	185
51	Helicaseâ€Dependent Isothermal Amplification of DNA and RNA by Using Selfâ€Avoiding Molecular Recognition Systems. ChemBioChem, 2015, 16, 1365-1370.	1.3	20
52	Next-generation DNA in pathogen detection, surveillance, and CLIA-waivable diagnostics. , 2015, , .		2
53	Detecting respiratory viral RNA using expanded genetic alphabets and self-avoiding DNA. Analytical Biochemistry, 2015, 489, 62-72.	1.1	20
54	Hominids adapted to metabolize ethanol long before human-directed fermentation. Proceedings of the National Academy of Sciences of the United States of America, 2015, 112, 458-463.	3.3	96

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55	Transcription, Reverse Transcription, and Analysis of RNA Containing Artificial Genetic Components. ACS Synthetic Biology, 2015, 4, 407-413.	1.9	46
56	OligArch: A software tool to allow artificially expanded genetic information systems (AEGIS) to guide the autonomous self-assembly of long DNA constructs from multiple DNA single strands. Beilstein Journal of Organic Chemistry, 2014, 10, 1826-1833.	1.3	6
57	Autonomous assembly of synthetic oligonucleotides built from an expanded DNA alphabet. Total synthesis of a gene encoding kanamycin resistance. Beilstein Journal of Organic Chemistry, 2014, 10, 2348-2360.	1.3	23
58	In vitro selection with artificial expanded genetic information systems. Proceedings of the National Academy of Sciences of the United States of America, 2014, 111, 1449-1454.	3.3	279
59	Paradoxes in the Origin of Life. Origins of Life and Evolution of Biospheres, 2014, 44, 339-343.	0.8	44
60	DNA polymerases engineered by directed evolution to incorporate non-standard nucleotides. Frontiers in Microbiology, 2014, 5, 565.	1.5	51
61	Recombinaseâ€Based Isothermal Amplification of Nucleic Acids with Selfâ€Avoiding Molecular Recognition Systems (SAMRS). ChemBioChem, 2014, 15, 2268-2274.	1.3	29
62	Ribonucleosides for an Artificially Expanded Genetic Information System. Journal of Organic Chemistry, 2014, 79, 3194-3199.	1.7	25
63	Engineered DNA Polymerases. Nucleic Acids and Molecular Biology, 2014, , 163-187.	0.2	3
64	Synthesis as a Route to Knowledge. Biological Theory, 2013, 8, 357-367.	0.8	14
65	Directed Evolution of Polymerases To Accept Nucleotides with Nonstandard Hydrogen Bond Patterns. Biochemistry, 2013, 52, 5288-5294.	1.2	56
66	The â€œStrongâ€•RNA World Hypothesis: Fifty Years Old. Astrobiology, 2013, 13, 391-403.	1.5	170
67	Setting the Stage: The History, Chemistry, and Geobiology behind RNA. Cold Spring Harbor Perspectives in Biology, 2012, 4, a003541-a003541.	2.3	47
68	Asphalt, Water, and the Prebiotic Synthesis of Ribose, Ribonucleosides, and RNA. Accounts of Chemical Research, 2012, 45, 2025-2034.	7.6	210
69	Synthesis of Carbohydrates in Mineral-Guided Prebiotic Cycles. Journal of the American Chemical Society, 2011, 133, 9457-9468.	6.6	202
70	Amplification, Mutation, and Sequencing of a Six-Letter Synthetic Genetic System. Journal of the American Chemical Society, 2011, 133, 15105-15112.	6.6	243
71	Synthetic biology, tinkering biology, and artificial biology. What are we learning?. Comptes Rendus Chimie, 2011, 14, 372-387.	0.2	53
72	Comment on â€œA Bacterium That Can Grow by Using Arsenic Instead of Phosphorusâ€• Science, 2011, 332, 1149-1149.	6.0	35

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73	Recognition of an expanded genetic alphabet by type-II restriction endonucleases and their application to analyze polymerase fidelity. Nucleic Acids Research, 2011, 39, 3949-3961.	6.5	27
74	Expanded Genetic Alphabets in the Polymerase Chain Reaction. Angewandte Chemie - International Edition, 2010, 49, 177-180.	7.2	107
75	Artificial Genetic Systems: Selfâ€Avoiding DNA in PCR and Multiplexed PCR. Angewandte Chemie - International Edition, 2010, 49, 5554-5557.	7.2	38
76	Q&A: Life, synthetic biology and risk. BMC Biology, 2010, 8, 77.	1.7	4
77	Labeled Nucleoside Triphosphates with Reversibly Terminating Aminoalkoxyl Groups. Nucleosides, Nucleotides and Nucleic Acids, 2010, 29, 879-895.	0.4	31
78	Comment on â€œThe Silicate-Mediated Formose Reaction: Bottom-Up Synthesis of Sugar Silicatesâ€• Science, 2010, 329, 902-902.	6.0	29
79	Defining Life. Astrobiology, 2010, 10, 1021-1030.	1.5	229
80	2â€²-Deoxy-1-methylpseudocytidine, a stable analog of 2â€²-deoxy-5-methylisocytidine. Bioorganic and Medicinal Chemistry, 2009, 17, 3728-3732.	1.4	24
81	Design of a novel molecular beacon: modification of the stem with artificially genetic alphabet. Chemical Communications, 2008, , 5128.	2.2	35
82	Synthetic Biology for Improved Personalized Medicine. Nucleic Acids Symposium Series, 2008, 52, 243-244.	0.3	5
83	Enzymatic incorporation of a third nucleobase pair. Nucleic Acids Research, 2007, 35, 4238-4249.	6.5	155
84	Stereospecificity in Enzymology: Its Place in Evolution. Topics in Stereochemistry, 2007, , 127-207.	2.0	15
85	2-Hydroxymethylboronate as a Reagent To Detect Carbohydrates:â€‰ Application to the Analysis of the Formose Reaction. Journal of Organic Chemistry, 2006, 71, 9503-9505.	1.7	40
86	Artificially expanded genetic information system: a new base pair with an alternative hydrogen bonding pattern. Nucleic Acids Research, 2006, 34, 6095-6101.	6.5	172
87	Synthetic biology. Nature Reviews Genetics, 2005, 6, 533-543.	7.7	736
88	Locked Nucleic Acid Molecular Beacons. Journal of the American Chemical Society, 2005, 127, 15664-15665.	6.6	198
89	Planetary Systems Biology. Molecular Cell, 2005, 17, 471-472.	4.5	7
90	PCR amplification of DNA containing non-standard base pairs by variants of reverse transcriptase from Human Immunodeficiency Virus-1. Nucleic Acids Research, 2004, 32, 728-735.	6.5	81

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91	Multiplexed Genetic Analysis Using an Expanded Genetic Alphabet. Clinical Chemistry, 2004, 50, 2019-2027.	1.5	53
92	Probing minor groove recognition contacts by DNA polymerases and reverse transcriptases using 3-deaza-2'-deoxyadenosine. Nucleic Acids Research, 2004, 32, 2241-2250.	6.5	30
93	Is there a common chemical model for life in the universe?. Current Opinion in Chemical Biology, 2004, 8, 672-689.	2.8	330
94	Quantitative Analysis of a RNA-Cleaving DNA Catalyst Obtained via in Vitro Selectionâ€. Biochemistry, 2004, 43, 11446-11459.	1.2	41
95	Artificial Genetic Systems:â€‰ Exploiting the â€œAromaticityâ€•Formalism To Improve the Tautomeric Ratio for Isoguanosine Derivatives. Journal of Organic Chemistry, 2004, 69, 3972-3975.	1.7	42
96	Understanding Nucleic Acids Using Synthetic Chemistry. Accounts of Chemical Research, 2004, 37, 784-797.	7.6	366
97	CHEMISTRY: Enhanced: Redesigning Genetics. Science, 2004, 306, 625-626.	6.0	38
98	EVOLUTION-BASED GENOME ANALYSIS: AN ALTERNATIVE TO ANALYZE FOLDING AND FUNCTION IN PROTEINS. , 2004, , .		0
99	Nucleobase Pairing in Expanded Watson-Crick-like Genetic Information Systems. Structure, 2003, 11, 1485-1498.	1.6	146
100	Interpretive proteomicsâ€”finding biological meaning in genome and proteome databases. Advances in Enzyme Regulation, 2003, 43, 271-359.	2.9	19
101	Inferring the palaeoenvironment of ancient bacteria on the basis of resurrected proteins. Nature, 2003, 425, 285-288.	13.7	227
102	Synthetic biology: Act natural. Nature, 2003, 421, 118-118.	13.7	77
103	Expanding the Genetic Alphabet:Â Non-Epimerizing Nucleoside with thepyDDA Hydrogen-Bonding Pattern. Journal of Organic Chemistry, 2003, 68, 9839-9842.	1.7	63
104	Synthetic biology with artificially expanded genetic information systems. From personalized medicine to extraterrestrial life. Nucleic Acids Symposium Series, 2003, 3, 125-126.	0.3	8
105	Planetary Biology--Paleontological, Geological, and Molecular Histories of Life. Science, 2002, 296, 864-868.	6.0	105
106	The past as the key to the present: Resurrection of ancient proteins from eosinophils. Proceedings of the National Academy of Sciences of the United States of America, 2002, 99, 4760-4761.	3.3	51
107	Phosphates, DNA, and the Search for Nonterrean Life: A Second Generation Model for Genetic Molecules. Bioorganic Chemistry, 2002, 30, 62-80.	2.0	110
108	Fluorescent Charge-Neutral Analogue of Xanthosine:Â Synthesis of a 2â€˜-Deoxyribonucleoside Bearing a 5-Aza-7-deazaxanthine Base. Journal of Organic Chemistry, 2001, 66, 5012-5015.	1.7	31

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109	Evolutionary history of the uterine serpins. The Journal of Experimental Zoology, 2000, 288, 165-174.	1.4	22
110	Functional inferences from reconstructed evolutionary biology involving rectified databases â€“ an evolutionarily grounded approach to functional genomics. Research in Microbiology, 2000, 151, 97-106.	1.0	58
111	Crystal structure of a hybrid between ribonuclease A and bovine seminal ribonuclease - the basic surface, at 2.0 A resolution. FEBS Journal, 1999, 260, 176-182.	0.2	8
112	Quantitative Analysis of Receptors for Adenosine Nucleotides Obtained via In Vitro Selection from a Library Incorporating a Cationic Nucleotide Analog. Journal of the American Chemical Society, 1999, 121, 9781-9789.	6.6	115
113	Synthesis of Oligonucleotides Containing 2?-Deoxyisoguanosine and 2?-Deoxy-5-methylisocytidine Using Phosphoramidite Chemistry. Helvetica Chimica Acta, 1998, 81, 793-811.	1.0	30
114	Recognition of a non-standard base pair by thermostable DNA polymerases. Bioorganic and Medicinal Chemistry Letters, 1998, 8, 1149-1152.	1.0	34
115	Bona Fide Predictions of Protein Secondary Structure Using Transparent Analyses of Multiple Sequence Alignments. Chemical Reviews, 1997, 97, 2725-2844.	23.0	47
116	A predicted consensus structure for the C terminus of the beta and gamma chains of fibrinogen. , 1997, 27, 279-289.		4
117	A predicted consensus structure for the N-Terminal fragment of the heat shock protein HSP90 family. , 1997, 27, 450-458.		21
118	Assessing enzyme substrate specificity using combinatorial libraries and electrospray ionization-Fourier transform ion cyclotron resonance mass spectrometry. Rapid Communications in Mass Spectrometry, 1997, 11, 1749-1752.	0.7	50
119	Synthesis and Characterization of Non-standard Nucleosides and Nucleotides Bearing the Acceptor-Donor-Donor Pyrimidine Analog 6-Amino-3-methylpyrazin-2(1H)-one. Helvetica Chimica Acta, 1996, 79, 1863-1880.	1.0	22
120	Protein Structure Prediction. Science, 1996, 274, 1448-1449.	6.0	0
121	Reconstructing the evolutionary history of the artiodactyl ribonuclease superfamily. Nature, 1995, 374, 57-59.	13.7	265
122	pH-Independent Triple Helix Formation by an Oligonucleotide Containing a Pyrazine Donor-Donor-Acceptor Base. Journal of the American Chemical Society, 1995, 117, 5361-5362.	6.6	57
123	Nonstandard Hydrogen Bonding in Duplex Oligonucleotides. The Base Pair between an Acceptor-Donor-Donor Pyrimidine Analog and a Donor-Acceptor-Acceptor Purine Analog. Journal of the American Chemical Society, 1994, 116, 6929-6930.	6.6	50
124	Determination of the Absolute Configuration of Dimethyl (2S,3S)-2-Allyl-3-hydroxyglutarate: A Chiral Building Block for Preparing Branched-Chain Nucleoside Analogues. Helvetica Chimica Acta, 1993, 76, 2969-2975.	1.0	4
125	Synthesis, structure and activity of artificial, rationally designed catalytic polypeptides. Nature, 1993, 365, 530-532.	13.7	242
126	The nitrogenase MoFe protein. FEBS Letters, 1993, 318, 118-124.	1.3	30

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127	Predicting the conformation of proteins man versus machine. FEBS Letters, 1993, 325, 29-33.	1.3	23
128	Enzymic recognition of the base pair between isocytidine and isoguanosine. Biochemistry, 1993, 32, 10489-10496.	1.2	251
129	Ribosome-mediated incorporation of a non-standard amino acid into a peptide through expansion of the genetic code. Nature, 1992, 356, 537-539.	13.7	283
130	Correct structure prediction?. Nature, 1992, 359, 781-781.	13.7	32
131	Site-directed mutagenesis of bovine pancreatic ribonuclease: Lysine-41 and aspartate-121. FEBS Letters, 1991, 281, 275-277.	1.3	43
132	A Direct Route to 3-(D-Ribofuranosyl)pyridine Nucleosides. Helvetica Chimica Acta, 1991, 74, 397-406.	1.0	57
133	Enzymatic incorporation of a new base pair into DNA and RNA extends the genetic alphabet. Nature, 1990, 343, 33-37.	13.7	645
134	The ribonuclease from an extinct bovid ruminant. FEBS Letters, 1990, 262, 104-106.	1.3	115
135	Interferon-Î³ activates the cleavage of double-stranded RNA by bovine seminal ribonuclease. FEBS Letters, 1990, 270, 229-232.	1.3	20
136	Enzymatic incorporation of a new base pair into DNA and RNA. Journal of the American Chemical Society, 1989, 111, 8322-8323.	6.6	341