Joseph A Piccirilli

List of Publications by Year
in descending order

112 papers	5,208 citations	94269 37 h-index	95083 68 g-index
117 all docs	117 docs citations	117 times ranked	3866 citing authors

#	Article	IF	Citations
1	Metal ion catalysis in the Tetrahymena ribozyme reaction. Nature, 1993, 361, 85-88.	13.7	403
2	Hachimoji DNA and RNA: A genetic system with eight building blocks. Science, 2019, 363, 884-887.	6.0	337
3	A G-quadruplexâ€"containing RNA activates fluorescence in a GFP-like fluorophore. Nature Chemical Biology, 2014, 10, 686-691.	3.9	277
4	Ribozyme-catalyzed and nonenzymic reactions of phosphate diesters: rate effects upon substitution of sulfur for a nonbridging phosphoryl oxygen atom. Biochemistry, 1991, 30, 4844-4854.	1.2	276
5	General acid catalysis by the hepatitis delta virus ribozyme. Nature Chemical Biology, 2005, 1, 45-52.	3.9	217
6	Metal ion catalysis during splicing of premessenger RNA. Nature, 1997, 388, 801-805.	13.7	172
7	RNA-Puzzles Round III: 3D RNA structure prediction of five riboswitches and one ribozyme. Rna, 2017, 23, 655-672.	1.6	158
8	Synthesis, Properties, and Applications of Oligonucleotides Containing an RNA Dinucleotide Phosphorothiolate Linkage. Accounts of Chemical Research, 2011, 44, 1257-1269.	7.6	152
9	Defining the Catalytic Metal Ion Interactions in theTetrahymenaRibozyme Reactionâ€. Biochemistry, 2001, 40, 5161-5171.	1.2	145
10	Synthetic antibodies for specific recognition and crystallization of structured RNA. Proceedings of the National Academy of Sciences of the United States of America, 2008, 105, 82-87.	3.3	119
11	Metal ion catalysis during the exon-ligation step of nuclear pre-mRNA splicing: Extending the parallels between the spliceosome and group II introns. Rna, 2000, 6, 199-205.	1.6	106
12	The 2.5ÂÅ Structure of CD1c in Complex with a Mycobacterial Lipid Reveals an Open Groove Ideally Suited for Diverse Antigen Presentation. Immunity, 2010, 33, 853-862.	6.6	103
13	The role of the cleavage site 2â€²-hydroxyl in the Tetrahymena group I ribozyme reaction. Chemistry and Biology, 2000, 7, 85-96.	6.2	99
14	Metal ion coordination by the AGC triad in domain 5 contributes to group II intron catalysis. , 2001, 8, 893-898.		98
15	Evidence for a group II intronâ€"like catalytic triplex in the spliceosome. Nature Structural and Molecular Biology, 2014, 21, 464-471.	3.6	97
16	Crystal structure of the Varkud satellite ribozyme. Nature Chemical Biology, 2015, 11, 840-846.	3.9	96
17	Structures of Normal Single-Stranded DNA and Deoxyribo-3â€˜-S-phosphorothiolates Bound to the 3â€˜-5â€˜ Exonucleolytic Active Site of DNA Polymerase I from Escherichia coli,. Biochemistry, 1999, 38, 696-704.	1.2	77
18	A portable RNA sequence whose recognition by a synthetic antibody facilitates structural determination. Nature Structural and Molecular Biology, 2011, 18, 100-106.	3.6	75

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19	Kinetic Characterization of the Second Step of Group II Intron Splicing:â€‰ Role of Metal Ions and the Cleavage Site 2â€˜-OH in Catalysis. Biochemistry, 2000, 39, 12939-12952.	1.2	74
20	A new metal ion interaction in the Tetrahymena ribozyme reaction revealed by double sulfur substitution. Nature Structural Biology, 1999, 6, 318-321.	9.7	72
21	General Acidâ€"Base Catalysis Mediated by Nucleobases in the Hairpin Ribozyme. Journal of the American Chemical Society, 2012, 134, 16717-16724.	6.6	72
22	Molecular Analysis of Lipid-Reactive VÎ´1 Î³Î´ T Cells Identified by CD1c Tetramers. Journal of Immunology, 2016, 196, 1933-1942.	0.4	72
23	Nucleobase-mediated general acid-base catalysis in the Varkud satellite ribozyme. Proceedings of the National Academy of Sciences of the United States of America, 2010, 107, 11751-11756.	3.3	69
24	Functional Identification of Catalytic Metal Ion Binding Sites within RNA. PLoS Biology, 2005, 3, e277.	2.6	67
25	Identification of catalytic metal ion ligands in ribozymes. Methods, 2009, 49, 148-166.	1.9	66
26	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
27	Experimental and computational analysis of the transition state for ribonuclease A-catalyzed RNA 2â€²-<i>O</i> -transphosphorylation. Proceedings of the National Academy of Sciences of the United States of America, 2013, 110, 13002-13007.	3.3	62
28	Spinach RNA aptamer detects lead(<scp>ii</scp>) with high selectivity. Chemical Communications, 2015, 51, 9034-9037.	2.2	62
29	A Second Divalent Metal Ion in the Group II Intron Reaction Center. Chemistry and Biology, 2007, 14, 607-612.	6.2	61
30	Characterization of the Reaction Path and Transition States for RNA Transphosphorylation Models from Theory and Experiment. Angewandte Chemie - International Edition, 2012, 51, 647-651.	7.2	49
31	Branched kissing loops for the construction of diverse RNA homooligomeric nanostructures. Nature Chemistry, 2020, 12, 249-259.	6.6	49
32	Identification of an Active Site Ligand for a Group I Ribozyme Catalytic Metal Ionâ€. Biochemistry, 2002, 41, 2516-2525.	1.2	46
33	Kinetic Isotope Effects for RNA Cleavage by 2â€²-O- Transphosphorylation: Nucleophilic Activation by Specific Base. Journal of the American Chemical Society, 2010, 132, 11613-11621.	6.6	46
34	An Ontology for Facilitating Discussion of Catalytic Strategies of RNA-Cleaving Enzymes. ACS Chemical Biology, 2019, 14, 1068-1076.	1.6	45
35	The SARS-CoV-2 Programmed â^'1 Ribosomal Frameshifting Element Crystal Structure Solved to 2.09 Ã… Using Chaperone-Assisted RNA Crystallography. ACS Chemical Biology, 2021, 16, 1469-1481.	1.6	44
36	Functional Evidence That the 3â€˜-5â€˜ Exonuclease Domain ofEscherichia coliDNA Polymerase I Employs a Divalent Metal Ion in Leaving Group Stabilization. Journal of the American Chemical Society, 1997, 119, 12691-12692.	6.6	41

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37	Comparison of the Structures and Mechanisms of the Pistol and Hammerhead Ribozymes. Journal of the American Chemical Society, 2019, 141, 7865-7875.	6.6	41
38	Functional Identification of Ligands for a Catalytic Metal Ion in Group I Introns. Biochemistry, 2008, 47, 6883-6894.	1.2	40
39	Nucleotide analogues to investigate RNA structure and function. Current Opinion in Chemical Biology, 2005, 9, 585-593.	2.8	38
40	Separation of RNA Phosphorothioate Oligonucleotides by HPLC. Methods in Enzymology, 2009, 468, 289-309.	0.4	38
41	Structural basis for activation of fluorogenic dyes by an RNA aptamer lacking a G-quadruplex motif. Nature Communications, 2018, 9, 4542.	5.8	37
42	Metal-ion rescue revisited: Biochemical detection of site-bound metal ions important for RNA folding. Rna, 2012, 18, 1123-1141.	1.6	36
43	Altered (transition) states: mechanisms of solution and enzyme catalyzed RNA 2â€²-O-transphosphorylation. Current Opinion in Chemical Biology, 2014, 21, 96-102.	2.8	34
44	Confluence of theory and experiment reveals the catalytic mechanism of the Varkud satellite ribozyme. Nature Chemistry, 2020, 12, 193-201.	6.6	33
45	New Strategies for Exploring RNA's 2â€²-OH Expose the Importance of Solvent during Group II Intron Catalysis. Chemistry and Biology, 2004, 11, 237-246.	6.2	32
46	Highly Stereocontrolled Total Synthesis of Î²-<scp>d</scp>-Mannosyl Phosphomycoketide: A Natural Product from <i>Mycobacterium tuberculosis</i>. Journal of Organic Chemistry, 2013, 78, 5970-5986.	1.7	30
47	2â€˜-Mercaptonucleotide Interference Reveals Regions of Close Packing within Folded RNA Molecules. Journal of the American Chemical Society, 2003, 125, 10012-10018.	6.6	29
48	Arginine as a General Acid Catalyst in Serine Recombinase-mediated DNA Cleavage. Journal of Biological Chemistry, 2013, 288, 29206-29214.	1.6	28
49	Synthesizing topological structures containing RNA. Nature Communications, 2017, 8, 14936.	5.8	26
50	Affinity maturation of a portable Fabâ€"RNA module for chaperone-assisted RNA crystallography. Nucleic Acids Research, 2018, 46, 2624-2635.	6.5	25
51	The L-platform/L-scaffold framework: a blueprint for RNA-cleaving nucleic acid enzyme design. Rna, 2020, 26, 111-125.	1.6	25
52	The Mechanism of RNA Strand Scission: An Experimental Measure of the BrÃ¸nsted Coefficient,Î²nuc. Angewandte Chemie - International Edition, 2007, 46, 3714-3717.	7.2	24
53	Reactions of phosphate and phosphorothiolate diesters with nucleophiles: comparison of transition state structures. Organic and Biomolecular Chemistry, 2007, 5, 2491.	1.5	23
54	Evidence for a Catalytic Strategy to Promote Nucleophile Activation in Metal-Dependent RNA-Cleaving Ribozymes and 8-17 DNAzyme. ACS Catalysis, 2019, 9, 10612-10617.	5.5	22

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55	A Rearrangement of the Guanosine-Binding Site Establishes an Extended Network of Functional Interactions in the <i>Tetrahymena</i> Group I Ribozyme Active Site. Biochemistry, 2010, 49, 2753-2762.	1.2	21
56	Structural Basis for Substrate Helix Remodeling and Cleavage Loop Activation in the Varkud Satellite Ribozyme. Journal of the American Chemical Society, 2017, 139, 9591-9597.	6.6	21
57	Sub-3-Ã… cryo-EM structure of RNA enabled by engineered homomeric self-assembly. Nature Methods, 2022, 19, 576-585.	9.0	21
58	Integration of kinetic isotope effect analyses to elucidate ribonuclease mechanism. Biochimica Et Biophysica Acta - Proteins and Proteomics, 2015, 1854, 1801-1808.	1.1	20
59	Leaving group stabilization by metal ion coordination and hydrogen bond donation is an evolutionarily conserved feature of group I introns. Biochimica Et Biophysica Acta Gene Regulatory Mechanisms, 2001, 1522, 158-166.	2.4	19
60	The 2â€²-Hydroxyl Group of the Guanosine Nucleophile Donates a Functionally Important Hydrogen Bond in the <i>Tetrahymena</i> Ribozyme Reaction. Biochemistry, 2008, 47, 7684-7694.	1.2	19
61	Synthesis of 2â€˜-C-Î²-Fluoromethyluridine. Organic Letters, 2003, 5, 807-810.	2.4	18
62	A Crystal Structure of a Functional RNA Molecule Containing an Artificial Nucleobase Pair. Angewandte Chemie - International Edition, 2015, 54, 9853-9856.	7.2	18
63	Reverse transcriptases lend a hand in splicing catalysis. Nature Structural and Molecular Biology, 2016, 23, 507-509.	3.6	18
64	Drug conjugated nanoparticles activated by cancer cell specific mRNA. Oncotarget, 2016, 7, 38243-38256.	0.8	17
65	A general and efficient approach for the construction of RNA oligonucleotides containing a 5â€²-phosphorothiolate linkage. Nucleic Acids Research, 2011, 39, e31-e31.	6.5	16
66	Effect of Zn2+ binding and enzyme active site on the transition state for RNA 2â€²-O-transphosphorylation interpreted through kinetic isotope effects. Biochimica Et Biophysica Acta - Proteins and Proteomics, 2015, 1854, 1795-1800.	1.1	16
67	Prolactin Receptorâ€"Mediated Internalization of Imaging Agents Detects Epithelial Ovarian Cancer with Enhanced Sensitivity and Specificity. Cancer Research, 2017, 77, 1684-1696.	0.4	16
68	An Atomic Mutation Cycle for Exploring RNA's 2â€˜-Hydroxyl Group. Journal of the American Chemical Society, 2004, 126, 13578-13579.	6.6	15
69	A conserved RNA structural motif for organizing topology within picornaviral internal ribosome entry sites. Nature Communications, 2019, 10, 3629.	5.8	15
70	Modulation of individual steps in group I intron catalysis by a peripheral metal ion. Rna, 2007, 13, 1656-1667.	1.6	14
71	Structure and Function Converge To Identify a Hydrogen Bond in a Groupâ€…I Ribozyme Active Site. Angewandte Chemie - International Edition, 2009, 48, 7171-7175.	7.2	14
72	Synthetic Antibody Binding to a Preorganized RNA Domain of Hepatitis C Virus Internal Ribosome Entry Site Inhibits Translation. ACS Chemical Biology, 2020, 15, 205-216.	1.6	14

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73	Improved synthesis of 2â€²-amino-2â€²-deoxyguanosine and its phosphoramidite. Bioorganic and Medicinal Chemistry, 2006, 14, 705-713.	1.4	13
74	2â€²-Fluoro Substituents Can Mimic Native 2â€²-Hydroxyls within Structured RNA. Chemistry and Biology, 2011, 18, 949-954.	6.2	13
75	RNA seeks its maker. Nature, 1995, 376, 548-549.	13.7	12
76	Synthesis of stereopure acyclic 1,5-dimethylalkane chirons: building blocks of highly methyl-branched natural products. Tetrahedron, 2013, 69, 9633-9641.	1.0	12
77	A Packing-Density Metric for Exploring the Interior of Folded RNA Molecules. Angewandte Chemie - International Edition, 2004, 43, 3033-3037.	7.2	11
78	Transition State Features in the Hepatitis Delta Virus Ribozyme Reaction Revealed by Atomic Perturbations. Journal of the American Chemical Society, 2015, 137, 8973-8982.	6.6	11
79	Specific Recognition of a Single-Stranded RNA Sequence by a Synthetic Antibody Fragment. Journal of Molecular Biology, 2016, 428, 4100-4114.	2.0	11
80	RNA made in its own mirror image. Nature, 2014, 515, 347-348.	13.7	10
81	Heavy atom labeled nucleotides for measurement of kinetic isotope effects. Biochimica Et Biophysica Acta - Proteins and Proteomics, 2015, 1854, 1737-1745.	1.1	10
82	Structural basis for substrate binding and catalysis by a self-alkylating ribozyme. Nature Chemical Biology, 2022, 18, 376-384.	3.9	10
83	Syntheses of (2â€˜)3â€˜-15N-Amino-(2â€˜)3â€˜-deoxyguanosine and Determination of Their pKa Values by 15N NMR Spectroscopy. Organic Letters, 2007, 9, 3057-3060.	2.4	8
84	Crystal structure of an RNA polymerase ribozyme in complex with an antibody fragment. Philosophical Transactions of the Royal Society B: Biological Sciences, 2011, 366, 2918-2928.	1.8	8
85	Efficient Synthetic Approach to Linear Dasatinibâ€“DNA Conjugates by Click Chemistry. Bioconjugate Chemistry, 2016, 27, 2575-2579.	1.8	8
86	Isotope effect analyses provide evidence for an altered transition state for RNA 2â€²-O-transphosphorylation catalyzed by Zn2+. Chemical Communications, 2016, 52, 4462-4465.	2.2	8
87	Synthesis and biochemical application of 2â€²-O-methyl-3â€²-thioguanosine as a probe to explore group I intron catalysis. Bioorganic and Medicinal Chemistry, 2008, 16, 5754-5760.	1.4	7
88	Synthesis of 2â€²-C-Branched Nucleosides. Organic Preparations and Procedures International, 2010, 42, 191-283.	0.6	7
89	Synthesis and Incorporation of the Phosphoramidite Derivative of 2â€²-<i>O</i>-Photocaged 3â€²-<i>S</i>-Thioguanosine into Oligoribonucleotides: Substrate for Probing the Mechanism of RNA Catalysis. Journal of Organic Chemistry, 2014, 79, 3647-3652.	1.7	7
90	Synthesis of 2â€²-<i>O</i>-Photocaged Ribonucleoside Phosphoramidites. Nucleosides, Nucleotides and Nucleic Acids, 2015, 34, 114-129.	0.4	7

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91	An active site rearrangement within the <i>Tetrahymena</i> group I ribozyme releases nonproductive interactions and allows formation of catalytic interactions. Rna, 2016, 22, 32-48.	1.6	7
92	The Varkud Satellite Ribozyme: A Thirty-Year Journey through Biochemistry, Crystallography, and Computation. Accounts of Chemical Research, 2021, 54, 2591-2602.	7.6	7
93	Synthesis of 3â€²-Thioribouridine, 3â€²-Thioribocytidine, and Their Phosphoramidites. Nucleosides & Nucleotides, 1997, 16, 1543-1545.	0.5	6
94	Determination of hepatitis delta virus ribozyme N(â€“1) nucleobase and functional group specificity using internal competition kinetics. Analytical Biochemistry, 2015, 483, 12-20.	1.1	6
95	Tightening of Active Site Interactions En Route to the Transition State Revealed by Single-Atom Substitution in the Guanosine-Binding Site of the <i>Tetrahymena</i> Group I Ribozyme. Journal of the American Chemical Society, 2011, 133, 7791-7800.	6.6	5
96	Enzyme transition states from theory and experiment. Biochimica Et Biophysica Acta - Proteins and Proteomics, 2015, 1854, 1727-1728.	1.1	5
97	Reinvestigating the synthesis and efficacy of small benzimidazole derivatives as presequence protease enhancers. European Journal of Medicinal Chemistry, 2019, 184, 111746.	2.6	5
98	Structures of artificially designed discrete RNA nanoarchitectures at near-atomic resolution. Science Advances, 2021, 7, eabf4459.	4.7	5
99	Structural Basis for Fluorescence Activation by Pepper RNA. ACS Chemical Biology, 2022, 17, 1866-1875.	1.6	5
100	2â€²-Amino-Modified Ribonucleotides as Probes for Local Interactions Within RNA. Methods in Enzymology, 2009, 468, 107-125.	0.4	4
101	Efficient synthesis of 2â€²-C-Î±-aminomethyl-2â€²-deoxynucleosides. Chemical Communications, 2012, 48, 8754.	2.2	4
102	Evidence That Nucleophile Deprotonation Exceeds Bond Formation in the HDV Ribozyme Transition State. Biochemistry, 2018, 57, 3465-3472.	1.2	4
103	The Positively Charged Active Site of the Bacterial Toxin RelE Causes a Large Shift in the General Base p<i>K</i>_a. Biochemistry, 2020, 59, 1665-1671.	1.2	4
104	The hammerhead self-cleaving motif as a precursor to complex endonucleolytic ribozymes. Rna, 2021, 27, 1017-1024.	1.6	4
105	Synthesis of 5â€²-Thio-3â€²-<i>O</i>-ribonucleoside Phosphoramidites. Journal of Organic Chemistry, 2017, 82, 12003-12013.	1.7	3
106	Kinetic Isotope Effect Analysis of RNA 2â€²- O -Transphosphorylation. Methods in Enzymology, 2017, 596, 433-457.	0.4	3
107	Synthesis of Oligoribonucleotides Containing a 2â€²-Amino-5â€²-<i>S</i>-phosphorothiolate Linkage. Journal of Organic Chemistry, 2021, 86, 13231-13244.	1.7	2
108	Toward Understanding Self-Splicing. Science, 2008, 320, 56-57.	6.0	1

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109	Synthesis of 2â€²-N-Methylamino-2â€²-deoxyguanosine and 2â€²-N,N-Dimethylamino-2â€²-deoxyguanosine and Their Incorporation into RNA by Phosphoramidite Chemistry. Journal of Organic Chemistry, 2011, 76, 8718-8725.	1.7	1
110	InnenrÃ¼cktitelbild: Characterization of the Reaction Path and Transition States for RNA Transphosphorylation Models from Theory and Experiment (Angew. Chem. 3/2012). Angewandte Chemie, 2012, 124, 847-847.	1.6	0
111	Inside Back Cover: Characterization of the Reaction Path and Transition States for RNA Transphosphorylation Models from Theory and Experiment (Angew. Chem. Int. Ed. 3/2012). Angewandte Chemie - International Edition, 2012, 51, 823-823.	7.2	0
112	Constraining errors in splice site choice. FASEB Journal, 2010, 24, 305.3.	0.2	0