Yi-Heng Percival Zhang

List of Publications by Year
in descending order

127 papers	12,241 citations	26630 56 h-index	25787 108 g-index
133 all docs	133 docs citations	133 times ranked	9524 citing authors

#	Article	IF	Citations
1	Toward an aggregated understanding of enzymatic hydrolysis of cellulose: Noncomplexed cellulase systems. Biotechnology and Bioengineering, 2004, 88, 797-824.	3.3	1,537
2	Outlook for cellulase improvement: Screening and selection strategies. Biotechnology Advances, 2006, 24, 452-481.	11.7	1,126
3	Fractionating recalcitrant lignocellulose at modest reaction conditions. Biotechnology and Bioengineering, 2007, 97, 214-223.	3.3	519
4	Reviving the carbohydrate economy via multi-product lignocellulose biorefineries. Journal of Industrial Microbiology and Biotechnology, 2008, 35, 367-375.	3.0	494
5	A Transition from Cellulose Swelling to Cellulose Dissolution byo-Phosphoric Acid:Â Evidence from Enzymatic Hydrolysis and Supramolecular Structure. Biomacromolecules, 2006, 7, 644-648.	5.4	478
6	Increasing cellulose accessibility is more important than removing lignin: A comparison of cellulose solventâ€based lignocellulose fractionation and soaking in aqueous ammonia. Biotechnology and Bioengineering, 2011, 108, 22-30.	3.3	292
7	Substrate channeling and enzyme complexes for biotechnological applications. Biotechnology Advances, 2011, 29, 715-725.	11.7	264
8	Determination of the Number-Average Degree of Polymerization of Cellodextrins and Cellulose with Application to Enzymatic Hydrolysis. Biomacromolecules, 2005, 6, 1510-1515.	5.4	245
9	A high-energy-density sugar biobattery based on a synthetic enzymatic pathway. Nature Communications, 2014, 5, 3026.	12.8	232
10	High-Yield Hydrogen Production from Starch and Water by a Synthetic Enzymatic Pathway. PLoS ONE, 2007, 2, e456.	2.5	224
11	Cellulose utilization by Clostridium thermocellum: Bioenergetics and hydrolysis product assimilation. Proceedings of the National Academy of Sciences of the United States of America, 2005, 102, 7321-7325.	7.1	212
12	A functionally based model for hydrolysis of cellulose by fungal cellulase. Biotechnology and Bioengineering, 2006, 94, 888-898.	3.3	201
13	High-yield hydrogen production from biomass by in vitro metabolic engineering: Mixed sugars coutilization and kinetic modeling. Proceedings of the National Academy of Sciences of the United States of America, 2015, 112, 4964-4969.	7.1	200
14	Comparative study of corn stover pretreated by dilute acid and cellulose solventâ€based lignocellulose fractionation: Enzymatic hydrolysis, supramolecular structure, and substrate accessibility. Biotechnology and Bioengineering, 2009, 103, 715-724.	3.3	191
15	Facilitated Substrate Channeling in a Selfâ€Assembled Trifunctional Enzyme Complex. Angewandte Chemie - International Edition, 2012, 51, 8787-8790.	13.8	171
16	Spontaneous Highâ€Yield Production of Hydrogen from Cellulosic Materials and Water Catalyzed by Enzyme Cocktails. ChemSusChem, 2009, 2, 149-152.	6.8	153
17	Simple Cloning via Direct Transformation of PCR Product (DNA Multimer) to Escherichia coli and Bacillus subtilis. Applied and Environmental Microbiology, 2012, 78, 1593-1595.	3.1	152
18	Production of biofuels and biochemicals by in vitro synthetic biosystems: Opportunities and challenges. Biotechnology Advances, 2015, 33, 1467-1483.	11.7	152

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19	Production of biocommodities and bioelectricity by cellâ€free synthetic enzymatic pathway biotransformations: Challenges and opportunities. Biotechnology and Bioengineering, 2010, 105, 663-677.	3.3	148
20	New biotechnology paradigm: cell-free biosystems for biomanufacturing. Green Chemistry, 2013, 15, 1708.	9.0	148
21	Enzymatic transformation of nonfood biomass to starch. Proceedings of the National Academy of Sciences of the United States of America, 2013, 110, 7182-7187.	7.1	144
22	Simple, fast and highâ€efficiency transformation system for directed evolution of cellulase in <i>Bacillus subtilis</i>. Microbial Biotechnology, 2011, 4, 98-105.	4.2	130
23	An in vitro synthetic biology platform for the industrial biomanufacturing of myoâ€inositol from starch. Biotechnology and Bioengineering, 2017, 114, 1855-1864.	3.3	121
24	Regulation of Cellulase Synthesis in Batch and Continuous Cultures of Clostridium thermocellum. Journal of Bacteriology, 2005, 187, 99-106.	2.2	115
25	Cellulose solventâ€based biomass pretreatment breaks highly ordered hydrogen bonds in cellulose fibers of switchgrass. Biotechnology and Bioengineering, 2011, 108, 521-529.	3.3	114
26	Highâ€Yield Production of Dihydrogen from Xylose by Using a Synthetic Enzyme Cascade in a Cellâ€Free System. Angewandte Chemie - International Edition, 2013, 52, 4587-4590.	13.8	111
27	A sweet out-of-the-box solution to the hydrogen economy: is the sugar-powered car science fiction?. Energy and Environmental Science, 2009, 2, 272.	30.8	109
28	Biomanufacturing: history and perspective. Journal of Industrial Microbiology and Biotechnology, 2017, 44, 773-784.	3.0	104
29	More Accurate Determination of Acid-Labile Carbohydrates in Lignocellulose by Modified Quantitative Saccharification. Energy & Fuels, 2007, 21, 3684-3688.	5.1	102
30	What is vital (and not vital) to advance economically-competitive biofuels production. Process Biochemistry, 2011, 46, 2091-2110.	3.7	99
31	Analysis of biofuels production from sugar based on three criteria: Thermodynamics, bioenergetics, and product separation. Energy and Environmental Science, 2011, 4, 784-792.	30.8	97
32	Biohydrogenation from Biomass Sugar Mediated by InÂVitro Synthetic Enzymatic Pathways. Chemistry and Biology, 2011, 18, 372-380.	6.0	97
33	New lignocellulose pretreatments using cellulose solvents: a review. Journal of Chemical Technology and Biotechnology, 2013, 88, 169-180.	3.2	97
34	New biorefineries and sustainable agriculture: Increased food, biofuels, and ecosystem security. Renewable and Sustainable Energy Reviews, 2015, 47, 117-132.	16.4	93
35	Bioseparation of recombinant cellulose-binding module-proteins by affinity adsorption on an ultra-high-capacity cellulosic adsorbent. Analytica Chimica Acta, 2008, 621, 193-199.	5.4	92
36	Next generation biorefineries will solve the food, biofuels, and environmental trilemma in the energyâ€“foodâ€“water nexus. Energy Science and Engineering, 2013, 1, 27-41.	4.0	90

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37	Kinetics and Relative Importance of Phosphorolytic and Hydrolytic Cleavage of Cellodextrins and Cellobiose in Cell Extracts of Clostridium thermocellum. Applied and Environmental Microbiology, 2004, 70, 1563-1569.	3.1	89
38	In vitro metabolic engineering of hydrogen production at theoretical yield from sucrose. Metabolic Engineering, 2014, 24, 70-77.	7.0	87
39	Insights into Cell-Free Conversion of CO₂ to Chemicals by a Multienzyme Cascade Reaction. ACS Catalysis, 2018, 8, 11085-11093.	11.2	87
40	Cellodextrin preparation by mixed-acid hydrolysis and chromatographic separation. Analytical Biochemistry, 2003, 322, 225-232.	2.4	85
41	One-step production of lactate from cellulose as the sole carbon source without any other organic nutrient by recombinant cellulolytic Bacillus subtilis. Metabolic Engineering, 2011, 13, 364-372.	7.0	84
42	Simple protein purification through affinity adsorption on regenerated amorphous cellulose followed by intein self-cleavage. Journal of Chromatography A, 2008, 1194, 150-154.	3.7	77
43	Biofuel production by in vitro synthetic enzymatic pathway biotransformation. Current Opinion in Biotechnology, 2010, 21, 663-669.	6.6	76
44	Production of Succinate from Acetate by Metabolically Engineered <i>Escherichia coli</i>. ACS Synthetic Biology, 2016, 5, 1299-1307.	3.8	76
45	Cell-free protein synthesis energized by slowly-metabolized maltodextrin. BMC Biotechnology, 2009, 9, 58.	3.3	74
46	Simpler Is Better: High-Yield and Potential Low-Cost Biofuels Production through Cell-Free Synthetic Pathway Biotransformation (SyPaB). ACS Catalysis, 2011, 1, 998-1009.	11.2	74
47	In vitro metabolic engineering of bioelectricity generation by the complete oxidation of glucose. Metabolic Engineering, 2017, 39, 110-116.	7.0	69
48	Fast identification of thermostable betaâ€glucosidase mutants on cellobiose by a novel combinatorial selection/screening approach. Biotechnology and Bioengineering, 2009, 103, 1087-1094.	3.3	68
49	Overexpression and simple purification of the Thermotoga maritima 6-phosphogluconate dehydrogenase in Escherichia coli and its application for NADPH regeneration. Microbial Cell Factories, 2009, 8, 30.	4.0	65
50	Fructose-1,6-bisphosphatase from a hyper-thermophilic bacterium Thermotoga maritima: Characterization, metabolite stability, and its implications. Process Biochemistry, 2010, 45, 1882-1887.	3.7	65
51	Engineering of <i>Clostridium phytofermentans</i> Endoglucanase Cel5A for Improved Thermostability. Applied and Environmental Microbiology, 2010, 76, 4914-4917.	3.1	65
52	Toward low-cost biomanufacturing through in vitro synthetic biology: bottom-up design. Journal of Materials Chemistry, 2011, 21, 18877.	6.7	65
53	Deep oxidation of glucose in enzymatic fuel cells through a synthetic enzymatic pathway containing a cascade of two thermostable dehydrogenases. Biosensors and Bioelectronics, 2012, 36, 110-115.	10.1	64
54	Renewable carbohydrates are a potential high-density hydrogen carrier. International Journal of Hydrogen Energy, 2010, 35, 10334-10342.	7.1	63

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55	ATP-free biosynthesis of a high-energy phosphate metabolite fructose 1,6-diphosphate by in vitro metabolic engineering. Metabolic Engineering, 2017, 42, 168-174.	7.0	63
56	Ultraâ€stable phosphoglucose isomerase through immobilization of celluloseâ€binding moduleâ€tagged thermophilic enzyme on lowâ€cost highâ€capacity cellulosic adsorbent. Biotechnology Progress, 2011, 27, 969-975.	2.6	59
57	Cellulose solvent- and organic solvent-based lignocellulose fractionation enabled efficient sugar release from a variety of lignocellulosic feedstocks. Bioresource Technology, 2012, 117, 228-233.	9.6	59
58	Cellulose solvent-based pretreatment for corn stover and avicel: concentrated phosphoric acid versus ionic liquid [BMIM]Cl. Cellulose, 2012, 19, 1161-1172.	4.9	56
59	Energy Efficiency Analysis: Biomass-to-Wheel Efficiency Related with Biofuels Production, Fuel Distribution, and Powertrain Systems. PLoS ONE, 2011, 6, e22113.	2.5	55
60	One-step purification and immobilization of thermophilic polyphosphate glucokinase from Thermobifida fusca YX: glucose-6-phosphate generation without ATP. Applied Microbiology and Biotechnology, 2012, 93, 1109-1117.	3.6	51
61	Stoichiometric Conversion of Cellulosic Biomass by in Vitro Synthetic Enzymatic Biosystems for Biomanufacturing. ACS Catalysis, 2018, 8, 9550-9559.	11.2	51
62	Constructing the electricityâ€“carbohydrateâ€“hydrogen cycle for a sustainability revolution. Trends in Biotechnology, 2012, 30, 301-306.	9.3	49
63	One-Pot Enzymatic Conversion of Sucrose to Synthetic Amylose by using Enzyme Cascades. ACS Catalysis, 2014, 4, 1311-1317.	11.2	49
64	Annexation of a High-Activity Enzyme in a Synthetic Three-Enzyme Complex Greatly Decreases the Degree of Substrate Channeling. ACS Synthetic Biology, 2014, 3, 380-386.	3.8	47
65	Systematic comparison of co-expression of multiple recombinant thermophilic enzymes in Escherichia coli BL21(DE3). Applied Microbiology and Biotechnology, 2017, 101, 4481-4493.	3.6	47
66	Sessions 3 and 8: Pretreatment and Biomass Recalcitrance: Fundamentals and Progress. Applied Biochemistry and Biotechnology, 2009, 153, 80-83.	2.9	46
67	New insights into enzymatic hydrolysis of heterogeneous cellulose by using carbohydrate-binding module 3 containing GFP and carbohydrate-binding module 17 containing CFP. Biotechnology for Biofuels, 2014, 7, 24.	6.2	46
68	Maltodextrin-powered enzymatic fuel cell through a non-natural enzymatic pathway. Journal of Power Sources, 2011, 196, 7505-7509.	7.8	42
69	An inÂvitro synthetic biology platform for emerging industrial biomanufacturing: Bottom-up pathway design. Synthetic and Systems Biotechnology, 2018, 3, 186-195.	3.7	42
70	Enzymatic regeneration and conservation of ATP: challenges and opportunities. Critical Reviews in Biotechnology, 2021, 41, 16-33.	9.0	40
71	The noncellulosomal family 48 cellobiohydrolase from Clostridium phytofermentans ISDg: heterologous expression, characterization, and processivity. Applied Microbiology and Biotechnology, 2010, 86, 525-533.	3.6	39
72	Thermal Cycling Cascade Biocatalysis of <i>myo</i>-Inositol Synthesis from Sucrose. ACS Catalysis, 2017, 7, 5992-5999.	11.2	39

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73	A shriveled rectangular carbon tube with the concave surface for high-performance enzymatic glucose/O2 biofuel cells. Biosensors and Bioelectronics, 2019, 132, 76-83.	10.1	39
74	One-Pot Biosynthesis of High-Concentration Î±-Glucose 1-Phosphate from Starch by Sequential Addition of Three Hyperthermophilic Enzymes. Journal of Agricultural and Food Chemistry, 2016, 64, 1777-1783.	5.2	38
75	Advanced water splitting for green hydrogen gas production through complete oxidation of starch by in vitro metabolic engineering. Metabolic Engineering, 2017, 44, 246-252.	7.0	36
76	Ultra-rapid rates of water splitting for biohydrogen gas production through<i>in vitro</i>artificial enzymatic pathways. Energy and Environmental Science, 2018, 11, 2064-2072.	30.8	36
77	Protein engineering of oxidoreductases utilizing nicotinamide-based coenzymes, with applications in synthetic biology. Synthetic and Systems Biotechnology, 2017, 2, 208-218.	3.7	35
78	A minimal set of bacterial cellulases for consolidated bioprocessing of lignocellulose. Biotechnology Journal, 2011, 6, 1409-1418.	3.5	34
79	Upgrade of wood sugar d-xylose to a value-added nutraceutical by in vitro metabolic engineering. Metabolic Engineering, 2019, 52, 1-8.	7.0	34
80	Fusion of a family 9 cellulose-binding module improves catalytic potential of Clostridium thermocellum cellodextrin phosphorylase on insoluble cellulose. Applied Microbiology and Biotechnology, 2011, 92, 551-560.	3.6	32
81	Biomanufacturing by in vitro biosystems containing complex enzyme mixtures. Process Biochemistry, 2017, 52, 106-114.	3.7	32
82	Enhancing functional expression of codonâ€optimized heterologous enzymes in <i>Escherichia coli</i> BL21(DE3) by selective introduction of synonymous rare codons. Biotechnology and Bioengineering, 2017, 114, 1054-1064.	3.3	31
83	Thermophilic Thermotoga maritima ribose-5-phosphate isomerase RpiB: Optimized heat treatment purification and basic characterization. Protein Expression and Purification, 2012, 82, 302-307.	1.3	30
84	Engineering a large protein by combined rational and random approaches: stabilizing the Clostridium thermocellum cellobiose phosphorylase. Molecular BioSystems, 2012, 8, 1815.	2.9	30
85	Coenzyme Engineering of a Hyperthermophilic 6-Phosphogluconate Dehydrogenase from NADP+ to NAD+ with Its Application to Biobatteries. Scientific Reports, 2016, 6, 36311.	3.3	30
86	A High-Throughput Method for Directed Evolution of NAD(P)+-Dependent Dehydrogenases for the Reduction of Biomimetic Nicotinamide Analogues. ACS Catalysis, 2019, 9, 11709-11719.	11.2	30
87	Biosynthesis of Dâ€xylulose 5â€phosphate from Dâ€xylose and polyphosphate through a minimized twoâ€enzyme cascade. Biotechnology and Bioengineering, 2016, 113, 275-282.	3.3	29
88	A kinetic model of one-pot rapid biotransformation of cellobiose from sucrose catalyzed by three thermophilic enzymes. Chemical Engineering Science, 2017, 161, 159-166.	3.8	29
89	Co-utilization of mixed sugars in an enzymatic fuel cell based on an inÂvitro enzymatic pathway. Electrochimica Acta, 2018, 263, 184-191.	5.2	29
90	Coevolution of both Thermostability and Activity of Polyphosphate Glucokinase from Thermobifida fusca YX. Applied and Environmental Microbiology, 2018, 84, .	3.1	29

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91	Renewable Hydrogen Carrier â€" Carbohydrate: Constructing the Carbon-Neutral Carbohydrate Economy. Energies, 2011, 4, 254-275.	3.1	28
92	Doubling Power Output of Starch Biobattery Treated by the Most Thermostable Isoamylase from an Archaeon Sulfolobus tokodaii. Scientific Reports, 2015, 5, 13184.	3.3	28
93	High-Throughput Screening of Coenzyme Preference Change of Thermophilic 6-Phosphogluconate Dehydrogenase from NADP+ to NAD+. Scientific Reports, 2016, 6, 32644.	3.3	28
94	Engineering a thermostable highly active glucose 6-phosphate dehydrogenase and its application to hydrogen production in vitro. Applied Microbiology and Biotechnology, 2018, 102, 3203-3215.	3.6	28
95	Methodological analysis for determination of enzymatic digestibility of cellulosic materials. Biotechnology and Bioengineering, 2007, 96, 188-194.	3.3	27
96	Non-Complexed Four Cascade Enzyme Mixture: Simple Purification and Synergetic Co-stabilization. PLoS ONE, 2013, 8, e61500.	2.5	27
97	Exceptionally High Rates of Biological Hydrogen Production by Biomimetic In Vitro Synthetic Enzymatic Pathways. Chemistry - A European Journal, 2016, 22, 16047-16051.	3.3	25
98	CO2 fixation for malate synthesis energized by starch via in vitro metabolic engineering. Metabolic Engineering, 2019, 55, 152-160.	7.0	25
99	Water Splitting for Highâ€Yield Hydrogen Production Energized by Biomass Xylooligosaccharides Catalyzed by an Enzyme Cocktail. ChemCatChem, 2016, 8, 2898-2902.	3.7	23
100	Cell-Free Biosystems for Biomanufacturing. Advances in Biochemical Engineering/Biotechnology, 2012, 131, 89-119.	1.1	22
101	Biochemical properties of GH94 cellodextrin phosphorylase THA_1941 from a thermophilic eubacterium Thermosipho africanus TCF52B with cellobiose phosphorylase activity. Scientific Reports, 2017, 7, 4849.	3.3	22
102	Conversion of d-glucose to l-lactate via pyruvate by an optimized cell-free enzymatic biosystem containing minimized reactions. Synthetic and Systems Biotechnology, 2018, 3, 204-210.	3.7	21
103	Simple Cloning and DNA Assembly in Escherichia coli by Prolonged Overlap Extension PCR. Methods in Molecular Biology, 2014, 1116, 183-192.	0.9	20
104	Recyclable cellulose-containing magnetic nanoparticles: immobilization of cellulose-binding module-tagged proteins and a synthetic metabolon featuring substrate channeling. Journal of Materials Chemistry B, 2013, 1, 4419-4427.	5.8	19
105	Complete Oxidation of Xylose for Bioelectricity Generation by Reconstructing a Bacterial Xylose Utilization Pathway inâ€...vitro. ChemCatChem, 2018, 10, 2030-2035.	3.7	18
106	Mini-scaffoldin enhanced mini-cellulosome hydrolysis performance on low-accessibility cellulose (Avicel) more than on high-accessibility amorphous cellulose. Biochemical Engineering Journal, 2012, 63, 57-65.	3.6	17
107	Building a Thermostable Metabolon for Facilitating Coenzyme Transport and Inâ€...Vitro Hydrogen Production at Elevated Temperature. ChemSusChem, 2018, 11, 3120-3130.	6.8	17
108	Easy preparation of a large-size random gene mutagenesis library in Escherichia coli. Analytical Biochemistry, 2012, 428, 7-12.	2.4	16

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109	A new high-energy density hydrogen carrier-carbohydrate-might be better than methanol. International Journal of Energy Research, 2013, 37, 769-779.	4.5	16
110	Use of nonimmobilized enzymes and mediators achieved high power densities in closed biobatteries. Energy Science and Engineering, 2015, 3, 490-497.	4.0	14
111	Hydrogen Production from Carbohydrates: A Mini-Review. ACS Symposium Series, 2011, , 203-216.	0.5	12
112	A Hidden Transhydrogen Activity of a FMN-Bound Diaphorase under Anaerobic Conditions. PLoS ONE, 2016, 11, e0154865.	2.5	10
113	A Recombinant 12â€His Tagged <i>Pyrococcus furiosus</i> Soluble [NiFe]â€Hydrogenase I Overexpressed in <i>Thermococcus kodakarensis</i> KOD1 Facilitates Hydrogenâ€Powered in vitro NADH Regeneration. Biotechnology Journal, 2019, 14, e1800301.	3.5	10
114	Directed Evolution of Clostridium phytofermentans Glycoside Hydrolase Family 9 Endoglucanase for Enhanced Specific Activity on Solid Cellulosic Substrate. Bioenergy Research, 2014, 7, 381-388.	3.9	9
115	The Family 1 Glycoside Hydrolase from Clostridium cellulolyticum H10 is a Cellodextrin Glucohydrolase. Applied Biochemistry and Biotechnology, 2010, 161, 264-273.	2.9	8
116	A facile and robust T7-promoter-based high-expression of heterologous proteins in Bacillus subtilis. Bioresources and Bioprocessing, 2022, 9, .	4.2	8
117	Construction of Enzyme-Cofactor/Mediator Conjugates for Enhanced in Vitro Bioelectricity Generation. Bioconjugate Chemistry, 2018, 29, 3993-3998.	3.6	7
118	Efficient secretory production of largeâ€size heterologous enzymes in <i>Bacillus subtilis</i>: A secretory partner and directed evolution. Biotechnology and Bioengineering, 2020, 117, 2957-2968.	3.3	7
119	Facile Construction of Random Gene Mutagenesis Library for Directed Evolution Without the Use of Restriction Enzyme in Escherichia coli. Biotechnology Journal, 2016, 11, 1142-1150.	3.5	5
120	Simple Cloning by Prolonged Overlap Extension-PCR with Application to the Preparation of Large-Size Random Gene Mutagenesis Library in Escherichia coli. Methods in Molecular Biology, 2017, 1472, 49-61.	0.9	5
121	Composition and distribution of internal resistance in an enzymatic fuel cell and its dependence on cell design and operating conditions. RSC Advances, 2019, 9, 7292-7300.	3.6	5
122	Highâ€efficiency transformation of archaea by direct PCR products with its application to directed evolution of a thermostable enzyme. Microbial Biotechnology, 2021, 14, 453-464.	4.2	5
123	A simple assay for determining activities of phosphopentomutase from a hyperthermophilic bacterium Thermotoga maritima. Analytical Biochemistry, 2016, 501, 75-81.	2.4	4
124	Novel Hydrogen Bioreactor and Detection Apparatus. Advances in Biochemical Engineering/Biotechnology, 2014, 152, 35-51.	1.1	3
125	In vitro synthetic enzymatic biosystems at the interface of the food-energy-water nexus: A conceptual framework and recent advances. Process Biochemistry, 2018, 74, 43-49.	3.7	2
126	Toward an aggregated understanding of enzymatic hydrolysis of cellulose: Noncomplexed cellulase systems. , 2004, 88, 797.		1

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127	Engineering of a thermophilic dihydroxy-acid dehydratase toward glycerate dehydration for in vitro biosystems. Applied Microbiology and Biotechnology, 2022, 106, 3625-3637.	3.6	1