Directed Evolution Empowered Redesign of Natural Pro Production of Chemicals and Pharmaceuticals

Angewandte Chemie - International Edition

58, 36-40

DOI: 10.1002/anie.201812717

Citation Report

#	Article	IF	Citations
1	Exploiting Cofactor Versatility to Convert a FADâ€Dependent Baeyerâ€“Villiger Monooxygenase into a Ketoreductase. Angewandte Chemie - International Edition, 2019, 58, 14499-14503.	7.2	26
2	Exploiting Cofactor Versatility to Convert a FADâ€Dependent Baeyerâ€“Villiger Monooxygenase into a Ketoreductase. Angewandte Chemie, 2019, 131, 14641-14645.	1.6	7
3	Dextran Aldehyde in Biocatalysis: More Than a Mere Immobilization System. Catalysts, 2019, 9, 622.	1.6	32
4	Directed Evolution of Plant Processes: Towards aÂGreen (r)Evolution?. Trends in Plant Science, 2019, 24, 999-1007.	4.3	33
5	Chemo-enzymatic cascades to produce cycloalkenes from bio-based resources. Nature Communications, 2019, 10, 5060.	5.8	55
7	A Continuing Career in Biocatalysis: Frances H. Arnold. ACS Catalysis, 2019, 9, 9775-9788.	5.5	26
8	Biocatalysis as Useful Tool in Asymmetric Synthesis: An Assessment of Recently Granted Patents (2014â€“2019). Catalysts, 2019, 9, 802.	1.6	69
9	Biocatalysis and Pharmaceuticals: A Smart Tool for Sustainable Development. Catalysts, 2019, 9, 792.	1.6	22
10	Biocatalytic selective functionalisation of alkenesviasingle-step and one-pot multi-step reactions. Chemical Communications, 2019, 55, 883-896.	2.2	58
11	Lightâ€Driven Kinetic Resolution of Î±â€Functionalized Carboxylic Acids Enabled by an Engineered Fatty Acid Photodecarboxylase. Angewandte Chemie, 2019, 131, 8562-8566.	1.6	21
12	Lightâ€Driven Kinetic Resolution of Î±â€Functionalized Carboxylic Acids Enabled by an Engineered Fatty Acid Photodecarboxylase. Angewandte Chemie - International Edition, 2019, 58, 8474-8478.	7.2	77
13	Immobilization of lipases on hydrophobic supports: immobilization mechanism, advantages, problems, and solutions. Biotechnology Advances, 2019, 37, 746-770.	6.0	409
14	High-Throughput, Lysis-Free Screening for Sulfatase Activity Using Escherichia coli Autodisplay in Microdroplets. ACS Synthetic Biology, 2019, 8, 2690-2700.	1.9	25
15	Genome mining and characterisation of a novel transaminase with remote stereoselectivity. Scientific Reports, 2019, 9, 20285.	1.6	9
16	Auf dem Weg zur Evolution artifizieller Metalloenzyme â€“ aus einem Proteinâ€Engineeringâ€Blickwinkel. Angewandte Chemie, 2019, 131, 4500-4511.	1.6	7
17	B â€factor Guided Proline Substitutions in Chromobacterium violaceum Amine Transaminase: Evaluation of the Proline Rule as a Method for Enzyme Stabilization. ChemBioChem, 2019, 20, 1297-1304.	1.3	22
18	Computerâ€Assisted Recombination (CompassR) Teaches us How to Recombine Beneficial Substitutions from Directed Evolution Campaigns. Chemistry - A European Journal, 2020, 26, 643-649.	1.7	57
20	Magnetic bead-based semi-automated phage display panning strategy for the directed evolution of antibodies. Methods in Enzymology, 2020, 630, 159-178.	0.4	5

#	Article	IF	Citations
21	Machine Learning in Enzyme Engineering. ACS Catalysis, 2020, 10, 1210-1223.	5.5	250
22	The phage display of Bacillus subtilis Lipase A significantly enhances catalytic activity due to altered nanoscale distribution in colloidal solution. Biotechnology and Bioengineering, 2020, 117, 868-872.	1.7	2
23	The rise of continuous flow biocatalysis â€“ fundamentals, very recent developments and future perspectives. Reaction Chemistry and Engineering, 2020, 5, 2155-2184.	1.9	121
24	Raman hyperspectral imaging with multivariate analysis for investigating enzyme immobilization. Analyst, The, 2020, 145, 7571-7581.	1.7	19
25	MicroGelzymes: pH-Independent Immobilization of Cytochrome P450 BM3 in Microgels. Biomacromolecules, 2020, 21, 5128-5138.	2.6	25
26	Enzyme Hydration Determines Resistance in Organic Cosolvents. ACS Catalysis, 2020, 10, 14847-14856.	5.5	53
27	KnowVolution of a GH5 Cellulase from Penicillium verruculosum to Improve Thermal Stability for Biomass Degradation. ACS Sustainable Chemistry and Engineering, 2020, 8, 12388-12399.	3.2	29
28	Computational design of new enzymes for hydrolysis and synthesis of third-generation cephalosporin antibiotics. Enzyme and Microbial Technology, 2020, 140, 109649.	1.6	3
29	Display of functional nucleic acid polymerase on Escherichia coli surface and its application in directed polymerase evolution. Biotechnology and Bioengineering, 2020, 117, 3699-3711.	1.7	4
30	Biocatalytic microgels (Î¼-Gelzymes): synthesis, concepts, and emerging applications. Green Chemistry, 2020, 22, 8183-8209.	4.6	23
31	Application cases of biological transformation in manufacturing technology. CIRP Journal of Manufacturing Science and Technology, 2020, 31, 68-77.	2.3	15
32	Enhancing ade novoenzyme activity by computationally-focused ultra-low-throughput screening. Chemical Science, 2020, 11, 6134-6148.	3.7	24
33	Embracing Natureâ€™s Catalysts: A Viewpoint on the Future of Biocatalysis. ACS Catalysis, 2020, 10, 8418-8427.	5.5	188
34	One Pot Use of Combilipases for Full Modification of Oils and Fats: Multifunctional and Heterogeneous Substrates. Catalysts, 2020, 10, 605.	1.6	55
35	Machine learning-assisted enzyme engineering. Methods in Enzymology, 2020, 643, 281-315.	0.4	59
36	Deletion and Randomization of Structurally Variable Regions in B. subtilis Lipase A (BSLA) Alter Its Stability and Hydrolytic Performance Against Long Chain Fatty Acid Esters. International Journal of Molecular Sciences, 2020, 21, 1990.	1.8	6
37	Recent advances in high-throughput mass spectrometry that accelerates enzyme engineering for biofuel research. BMC Energy, 2020, 2, .	6.3	11
38	Engineering Robust Cellulases for Tailored Lignocellulosic Degradation Cocktails. International Journal of Molecular Sciences, 2020, 21, 1589.	1.8	68

#	Article	IF	Citations
39	Winning the numbers game in enzyme evolution â€“ fast screening methods for improved biotechnology proteins. Current Opinion in Structural Biology, 2020, 63, 123-133.	2.6	26
40	The Hitchhiker's guide to biocatalysis: recent advances in the use of enzymes in organic synthesis. Chemical Science, 2020, 11, 2587-2605.	3.7	188
41	Enzymes revolutionize the bioproduction of value-added compounds: From enzyme discovery to special applications. Biotechnology Advances, 2020, 40, 107520.	6.0	97
42	Loop engineering of aryl sulfotransferase B for improving catalytic performance in regioselective sulfation. Catalysis Science and Technology, 2020, 10, 2369-2377.	2.1	6
43	Enhancement of Î±-ketoisovalerate production by relieving the product inhibition of l-amino acid deaminase from Proteus mirabilis. Chinese Journal of Chemical Engineering, 2020, 28, 2190-2199.	1.7	4
44	How to Engineer Organic Solvent Resistant Enzymes: Insights from Combined Molecular Dynamics and Directed Evolution Study. ChemCatChem, 2020, 12, 4073-4083.	1.8	45
45	Enzyme engineering strategies for catalytic activity in wide pH range. , 2020, , 91-101.		0
46	Biotechnological relevance of the lipase A from Candida antarctica. Catalysis Today, 2021, 362, 141-154.	2.2	78
47	Biocatalysis: Enzymatic Synthesis for Industrial Applications. Angewandte Chemie - International Edition, 2021, 60, 88-119.	7.2	711
48	Biokatalyse: Enzymatische Synthese fÃ¼r industrielle Anwendungen. Angewandte Chemie, 2021, 133, 89-123.	1.6	89
49	A Highâ€Throughput Screening Method for the Directed Evolution of Hydroxynitrile Lyase towards Cyanohydrin Synthesis. ChemBioChem, 2021, 22, 996-1000.	1.3	6
50	Current advances in design and engineering strategies of industrial enzymes. Systems Microbiology and Biomanufacturing, 2021, 1, 15-23.	1.5	32
51	CompassR Yields Highly Organicâ€Solventâ€Tolerant Enzymes through Recombination of Compatible Substitutions. Chemistry - A European Journal, 2021, 27, 2789-2797.	1.7	28
52	Sustainable textile finishing processes and pollution control based on enzyme technology. , 2021, , 385-415.		1
53	Recent advances in (chemo)enzymatic cascades for upgrading bio-based resources. Chemical Communications, 2021, 57, 10661-10674.	2.2	28
55	CompassR-guided recombination unlocks design principles to stabilize lipases in ILs with minimal experimental efforts. Green Chemistry, 2021, 23, 3474-3486.	4.6	26
56	KnowVolution of prodigiosin ligase PigC towards condensation of short-chain prodiginines. Catalysis Science and Technology, 2021, 11, 2805-2815.	2.1	9
57	CRISPR/Cas Genome Editing in Filamentous Fungi. Biochemistry (Moscow), 2021, 86, S120-S139.	0.7	9

#	Article	IF	Citations
58	Applications of Fungal Cellulases. , 2021, , 295-304.		0
59	Controlled mutation in the replication of synthetic oligomers. Chemical Science, 2021, 12, 4063-4068.	3.7	9
60	Replication of Sequence Information in Synthetic Oligomers. Accounts of Chemical Research, 2021, 54, 1298-1306.	7.6	26
61	Computational design of enzymes for biotechnological applications. Biotechnology Advances, 2021, 47, 107696.	6.0	51
63	Less Unfavorable Salt Bridges on the Enzyme Surface Result in More Organic Cosolvent Resistance. Angewandte Chemie, 2021, 133, 11549-11557.	1.6	6
64	Recent Advances in Biocatalysis with Chemical Modification and Expanded Amino Acid Alphabet. Chemical Reviews, 2021, 121, 6173-6245.	23.0	62
65	Less Unfavorable Salt Bridges on the Enzyme Surface Result in More Organic Cosolvent Resistance. Angewandte Chemie - International Edition, 2021, 60, 11448-11456.	7.2	45
67	Reversal and Amplification of the Enantioselectivity of Biocatalytic Desymmetrization toward Meso Heterocyclic Dicarboxamides Enabled by Rational Engineering of Amidase. ACS Catalysis, 2021, 11, 6900-6907.	5.5	16
68	Biomimetic Mineralization of Prussian Blue Analogue-Incorporated Glucose Oxidase Hybrid Catalyst for Glucose Detection. Catalysis Letters, 2022, 152, 689-698.	1.4	6
69	Large-scale production of enzymes for biotechnology uses. Current Opinion in Biotechnology, 2021, 69, 68-76.	3.3	71
71	A System for the Evolution of Proteinâ€“Protein Interaction Inducers. ACS Synthetic Biology, 2021, 10, 2096-2110.	1.9	5
72	Reprint of: Application cases of biological transformation in manufacturing technology. CIRP Journal of Manufacturing Science and Technology, 2021, 34, 95-95.	2.3	2
74	PyPEFâ€”An Integrated Framework for Data-Driven Protein Engineering. Journal of Chemical Information and Modeling, 2021, 61, 3463-3476.	2.5	20
75	Directed Evolution: Methodologies and Applications. Chemical Reviews, 2021, 121, 12384-12444.	23.0	220
77	Modification of the Enantioselectivity of Biocatalytic mesoâ€Desymmetrization for Synthesis of Both Enantiomers of cisâ€1,2â€Disubstituted Cyclohexane by Amidase Engineering. Advanced Synthesis and Catalysis, 2021, 363, 4538-4543.	2.1	7
78	Directed evolution of an amine transaminase for the synthesis of an Apremilast intermediate via kinetic resolution. Bioorganic and Medicinal Chemistry, 2021, 43, 116271.	1.4	6
79	Enantioselective biocatalytic desymmetrization for synthesis of enantiopure cis-3,4-disubstituted pyrrolidines. Green Synthesis and Catalysis, 2021, 2, 324-327.	3.7	10
80	Engineering Fatty Acid Photodecarboxylase to Enable Highly Selective Decarboxylation oftransFatty Acids. Angewandte Chemie, 2021, 133, 20863-20867.	1.6	5

#	Article	IF	Citations
81	Engineering Fatty Acid Photodecarboxylase to Enable Highly Selective Decarboxylation oftransFatty Acids. Angewandte Chemie - International Edition, 2021, 60, 20695-20699.	7.2	40
82	Encapsulation of <scp>CALB</scp> by nucleotide/metal ions coordination nanoparticles: highly selective catalysis of esterification while poor performance in glycerolysis reaction. Journal of the Science of Food and Agriculture, 2022, 102, 1812-1822.	1.7	7
83	Bioproduction process of natural products and biopharmaceuticals: Biotechnological aspects. Biotechnology Advances, 2021, 50, 107768.	6.0	17
84	Recent trends in synthetic enzymatic cascades promoted by alcohol dehydrogenases. Current Opinion in Green and Sustainable Chemistry, 2021, 32, 100548.	3.2	20
85	Quantitation and speciation of residual protein within active pharmaceutical ingredients using image analysis with SDS-PAGE. Journal of Pharmaceutical and Biomedical Analysis, 2022, 207, 114393.	1.4	5
86	Loops around the Heme Pocket Have a Critical Role in the Function and Stability of BsDyP from Bacillus subtilis. International Journal of Molecular Sciences, 2021, 22, 10862.	1.8	9
87	Match_Motif: A rapid computational tool to assist in proteinâ€“protein interaction design. Protein Science, 2022, 31, 147-157.	3.1	1
88	Reconstruction of evolving gene variants and fitness from short sequencing reads. Nature Chemical Biology, 2021, 17, 1188-1198.	3.9	8
89	Engineering and emerging applications of artificial metalloenzymes with whole cells. Nature Catalysis, 2021, 4, 814-827.	16.1	38
90	Rational Design of Biocatalytic Deuteration Platform of Aldehydes. ACS Catalysis, 2021, 11, 13348-13354.	5.5	9
91	Whole-cell screening of oxidative enzymes using genetically encoded sensors. Chemical Science, 2021, 12, 14766-14772.	3.7	6
92	A chemoenzymatic cascade with the potential to feed the world and allow humans to live in space. Engineering Microbiology, 2022, 2, 100006.	2.2	2
94	Using Molecular Simulation to Guide Protein Engineering for Biocatalysis in Organic Solvents. Methods in Molecular Biology, 2022, 2397, 179-202.	0.4	3
95	Recombination of Compatible Substitutions by 2GenReP and InSiReP. Methods in Molecular Biology, 2022, 2397, 71-81.	0.4	6
96	Chemical modification of enzymes to improve biocatalytic performance. Biotechnology Advances, 2021, 53, 107868.	6.0	32
97	Prediction of Residue-specific Contributions to Binding and Thermal Stability Using Yeast Surface Display. Frontiers in Molecular Biosciences, 2021, 8, 800819.	1.6	17
98	Structure and Cooperativity in Substrateâ€“Enzyme Interactions: Perspectives on Enzyme Engineering and Inhibitor Design. ACS Chemical Biology, 2022, 17, 266-280.	1.6	8
99	Switching promotor recognition of phage RNA polymerase in silico along lab-directed evolution path. Biophysical Journal, 2022, 121, 582-595.	0.2	0

#	Article	IF	Citations
101	Stereodivergent atom-transfer radical cyclization by engineered cytochromes P450. Science, 2021, 374, 1612-1616.	6.0	73
103	Pionierentwicklungen in der Gentechnik. , 2022, , 135-175.		0
104	How Does Surface Charge Engineering of Bacillus subtilis Lipase A Improve Ionic Liquid Resistance? Lessons Learned from Molecular Dynamics Simulations. ACS Sustainable Chemistry and Engineering, 2022, 10, 2689-2698.	3.2	15
105	Stereoselective Synthesis of the IDO Inhibitor Navoximod. Journal of Organic Chemistry, 2022, 87, 4955-4960.	1.7	8
106	Oxygenating Biocatalysts for Hydroxyl Functionalisation in Drug Discovery and Development. ChemMedChem, 2022, 17, .	1.6	15
107	Fungal cellulases: protein engineering and post-translational modifications. Applied Microbiology and Biotechnology, 2022, 106, 1-24.	1.7	15
108	Enabling biocatalysis in highâ€concentration organic cosolvent by enzyme gate engineering. Biotechnology and Bioengineering, 2022, 119, 845-856.	1.7	11
109	Smart Solarâ€“Metalâ€“Air Batteries Based on BiOCl Photocorrosion for Monolithic Solar Energy Conversion and Storage. Small, 2022, 18, e2105668.	5.2	5
110	Distal Mutations Shape Substrate-Binding Sites during Evolution of a Metallo-Oxidase into a Laccase. ACS Catalysis, 2022, 12, 5022-5035.	5.5	9
111	Enzyme Kits to Facilitate the Integration of Biocatalysis into Organic Chemistry â€“ First Aid for Synthetic Chemists. ChemCatChem, 2022, 14, .	1.8	6
112	Combinatorial InVitroFlowâ€assisted mutagenesis (CombIMut) yields a 41â€fold improved CelA2 cellulase. Biotechnology and Bioengineering, 2022, , .	1.7	5
113	A review on the immobilization of pepsin: A Lys-poor enzyme that is unstable at alkaline pH values. International Journal of Biological Macromolecules, 2022, 210, 682-702.	3.6	26
114	Learning Strategies in Protein Directed Evolution. Methods in Molecular Biology, 2022, , 225-275.	0.4	5
117	Insertions and deletions in protein evolution and engineering. Biotechnology Advances, 2022, 60, 108010.	6.0	17
118	Engineered P450 Atom-Transfer Radical Cyclases are Bifunctional Biocatalysts: Reaction Mechanism and Origin of Enantioselectivity. Journal of the American Chemical Society, 2022, 144, 13344-13355.	6.6	12
119	A preorganization oriented computational method for de novo design of Kemp elimination enzymes. Enzyme and Microbial Technology, 2022, 160, 110093.	1.6	3
120	Reaction-kinetic model-guided biocatalyst engineering for dual-enzyme catalyzed bioreaction system. Chemical Engineering Journal, 2023, 452, 138997.	6.6	3
121	Replication of a synthetic oligomer using chameleon base-pairs. Chemical Communications, 2022, 58, 11005-11008.	2.2	7

#	Article	IF	Citations
122	Enhancing Acetophenone Tolerance of Anti-Prelog Short-Chain Dehydrogenase/Reductase EbSDR8 Using a Whole-Cell Catalyst by Directed Evolution. Catalysts, 2022, 12, 1071.	1.6	2
123	H-Bond Templated Oligomer Synthesis Using a Covalent Primer. Journal of the American Chemical Society, 2022, 144, 17307-17316.	6.6	8
124	Effect of backbone flexibility on covalent template-directed synthesis of linear oligomers. Organic and Biomolecular Chemistry, 2022, 20, 8285-8292.	1.5	4
125	Microbial cell factories for bio-based biodegradable plastics production. IScience, 2022, 25, 105462.	1.9	5
126	Creation of a (R)-Î²-Transaminase by Directed Evolution of <scp>d</scp>-Amino Acid Aminotransferase. ACS Catalysis, 2022, 12, 13207-13214.	5.5	4
128	Engineering Rieske oxygenase activity one piece at a time. Current Opinion in Chemical Biology, 2023, 72, 102227.	2.8	7
129	Hijacking Chemical Reactions of P450 Enzymes for Altered Chemical Reactions and Asymmetric Synthesis. International Journal of Molecular Sciences, 2023, 24, 214.	1.8	2
130	A growth selection system for the directed evolution of amine-forming or converting enzymes. Nature Communications, 2022, 13, .	5.8	14
131	Solvent tolerant enzymes in extremophiles: Adaptations and applications. International Journal of Biological Macromolecules, 2023, 238, 124051.	3.6	8
132	Evolving Robust and Interpretable Enzymes for the Bioethanol Industry. Angewandte Chemie - International Edition, 2023, 62, .	7.2	5
133	Evolving Robust and Interpretable Enzymes for the Bioethanol Industry. Angewandte Chemie, 2023, 135, .	1.6	0
134	A Flow Cytometryâ€Based Ultrahighâ€Throughput Screening Method for Directed Evolution of Oxidases. Angewandte Chemie, 0, , .	1.6	0
135	A Flow Cytometryâ€Based Ultrahighâ€Throughput Screening Method for Directed Evolution of Oxidases. Angewandte Chemie - International Edition, 2023, 62, .	7.2	2
136	Engineering cellulases for conversion of lignocellulosic biomass. Protein Engineering, Design and Selection, 2023, 36, .	1.0	5
137	Laccase-catalyzed lignin depolymerization in deep eutectic solvents: challenges and prospects. Bioresources and Bioprocessing, 2023, 10, .	2.0	10
138	Significance of glycans in cellulolytic enzymes for lignocellulosic biorefinery â€“ A review. Bioresource Technology, 2023, 379, 128992.	4.8	5
139	Clonal Amplification-Enhanced Gene Expression in Synthetic Vesicles. ACS Synthetic Biology, 2023, 12, 1187-1203.	1.9	1
140	Advances in One-Pot Chiral Amine Synthesis Enabled by Amine Transaminase Cascades: Pushing the Boundaries of Complexity. ACS Catalysis, 2023, 13, 5584-5598.	5.5	5

#	Article	IF	Citations
141	Advances in ultrahigh-throughput screening technologies for protein evolution. Trends in Biotechnology, 2023, 41, 1168-1181.	4.9	4
142	Cellobiohydrolases. , 2023, , 77-95.		1
144	Microbial enzyme bioprocesses in biobleaching of pulp and paper: technological updates. , 2023, , 319-337.		0
145	Recent approaches and innovations for enzyme engineering used in industrial biotechnology. , 2023, , 161-175.		0
155	Protein Stability: Enhancement and Measurement. Methods in Molecular Biology, 2023, , 369-419.	0.4	0