Jacob Beal

List of Publications by Year
in descending order

142 papers	3,770 citations	185998 28 h-index	182168 51 g-index
170 all docs	170 docs citations	170 times ranked	3038 citing authors

#	Article	IF	Citations
1	CRISPR transcriptional repression devices and layered circuits in mammalian cells. Nature Methods, 2014, 11, 723-726.	9.0	280
2	Cas9 gRNA engineering for genome editing, activation and repression. Nature Methods, 2015, 12, 1051-1054.	9.0	272
3	The Synthetic Biology Open Language (SBOL) provides a community standard for communicating designs in synthetic biology. Nature Biotechnology, 2014, 32, 545-550.	9.4	247
4	CIDAR MoClo: Improved MoClo Assembly Standard and New *E. coli* Part Library Enable Rapid Combinatorial Design for Synthetic and Traditional Biology. ACS Synthetic Biology, 2016, 5, 99-103.	1.9	156
5	Aggregate Programming for the Internet of Things. Computer, 2015, 48, 22-30.	1.2	138
6	An End-to-End Workflow for Engineering of Biological Networks from High-Level Specifications. ACS Synthetic Biology, 2012, 1, 317-331.	1.9	88
7	Sharing Structure and Function in Biological Design with SBOL 2.0. ACS Synthetic Biology, 2016, 5, 498-506.	1.9	88
8	Automatic Compilation from High-Level Biologically-Oriented Programming Language to Genetic Regulatory Networks. PLoS ONE, 2011, 6, e22490.	1.1	87
9	Robust estimation of bacterial cell count from optical density. Communications Biology, 2020, 3, 512.	2.0	86
10	Protelis. , 2015, , .		76
11	SBOL Visual: A Graphical Language for Genetic Designs. PLoS Biology, 2015, 13, e1002310.	2.6	73
12	Composable continuous-space programs for robotic swarms. Neural Computing and Applications, 2010, 19, 825-847.	3.2	69
13	Engineering Resilient Collective Adaptive Systems by Self-Stabilisation. ACM Transactions on Modeling and Computer Simulation, 2018, 28, 1-28.	0.6	68
14	Quantification of bacterial fluorescence using independent calibrants. PLoS ONE, 2018, 13, e0199432.	1.1	66
15	Biochemical complexity drives log€normal variation in genetic expression. Engineering Biology, 2017, 1, 55-60.	0.8	64
16	Accurate Predictions of Genetic Circuit Behavior from Part Characterization and Modular Composition. ACS Synthetic Biology, 2015, 4, 673-681.	1.9	62
17	Organizing the Aggregate. , 0, , 436-501.		61
18	A Higher-Order Calculus of Computational Fields. ACM Transactions on Computational Logic, 2019, 20, 1-55.	0.7	55

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19	Automated Selection of Synthetic Biology Parts for Genetic Regulatory Networks. ACS Synthetic Biology, 2012, 1, 332-344.	1.9	52
20	Small-molecule-based regulation of RNA-delivered circuits in mammalian cells. Nature Chemical Biology, 2018, 14, 1043-1050.	3.9	52
21	Engineering modular intracellular protein sensor-actuator devices. Nature Communications, 2018, 9, 1881.	5.8	51
22	Technological challenges and milestones for writing genomes. Science, 2019, 366, 310-312.	6.0	50
23	High-performance chemical- and light-inducible recombinases in mammalian cells and mice. Nature Communications, 2019, 10, 4845.	5.8	47
24	The long journey towards standards for engineering biosystems. EMBO Reports, 2020, 21, e50521.	2.0	46
25	From distributed coordination to field calculus and aggregate computing. Journal of Logical and Algebraic Methods in Programming, 2019, 109, 100486.	0.4	44
26	Fast self-healing gradients. , 2008, , .		43
27	The Synthetic Biology Open Language (SBOL) Version 3: Simplified Data Exchange for Bioengineering. Frontiers in Bioengineering and Biotechnology, 2020, 8, 1009.	2.0	40
28	Building Blocks for Aggregate Programming of Self-Organising Applications. , 2014, , .		38
29	A standard-enabled workflow for synthetic biology. Biochemical Society Transactions, 2017, 45, 793-803.	1.6	38
30	Reducing DNA context dependence in bacterial promoters. PLoS ONE, 2017, 12, e0176013.	1.1	37
31	Model-Driven Engineering of Gene Expression from RNA Replicons. ACS Synthetic Biology, 2015, 4, 48-56.	1.9	34
32	Efficient Engineering of Complex Self-Organising Systems by Self-Stabilising Fields. , 2015, , .		33
33	Reproducibility of Fluorescent Expression from Engineered Biological Constructs in E. coli. PLoS ONE, 2016, 11, e0150182.	1.1	33
34	Communicating Structure and Function in Synthetic Biology Diagrams. ACS Synthetic Biology, 2019, 8, 1818-1825.	1.9	30
35	Self-Adaptation to Device Distribution in the Internet of Things. ACM Transactions on Autonomous and Adaptive Systems, 2017, 12, 1-29.	0.4	29
36	Flexible self-healing gradients. , 2009, , .		27

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37	A type-sound calculus of computational fields. Science of Computer Programming, 2016, 117, 17-44.	1.5	27
38	Code Mobility Meets Self-organisation: A Higher-Order Calculus of Computational Fields. Lecture Notes in Computer Science, 2015, , 113-128.	1.0	27
39	Cognitive security for personal devices. , 2008, , .		24
40	libSBOLj 2.0: A Java Library to Support SBOL 2.0. IEEE Life Sciences Letters, 2015, 1, 34-37.	1.2	24
41	Linda in Space-Time: An Adaptive Coordination Model for Mobile Ad-Hoc Environments. Lecture Notes in Computer Science, 2012, , 212-229.	1.0	24
42	A Calculus of Computational Fields. Communications in Computer and Information Science, 2013, , 114-128.	0.4	24
43	Synthetic Biology Open Language (SBOL) Version 2.0.0. Journal of Integrative Bioinformatics, 2015, 12, 902-991.	1.0	22
44	Improving Synthetic Biology Communication: Recommended Practices for Visual Depiction and Digital Submission of Genetic Designs. ACS Synthetic Biology, 2016, 5, 449-451.	1.9	22
45	Time to Get Serious about Measurement in Synthetic Biology. Trends in Biotechnology, 2018, 36, 869-871.	4.9	22
46	Precise Mass-Market Energy Demand Management Through Stochastic Distributed Computing. IEEE Transactions on Smart Grid, 2013, 4, 2017-2027.	6.2	21
47	Signal-to-Noise Ratio Measures Efficacy of Biological Computing Devices and Circuits. Frontiers in Bioengineering and Biotechnology, 2015, 3, 93.	2.0	21
48	Synthetic Biology Open Language Visual (SBOL Visual) Version 2.0. Journal of Integrative Bioinformatics, 2018, 15, .	1.0	21
49	TASBE Flow Analytics: A Package for Calibrated Flow Cytometry Analysis. ACS Synthetic Biology, 2019, 8, 1524-1529.	1.9	21
50	Bridging the Gap: A Roadmap to Breaking the Biological Design Barrier. Frontiers in Bioengineering and Biotechnology, 2015, 2, 87.	2.0	20
51	Synthetic Biology Open Language (SBOL) Version 2.2.0. Journal of Integrative Bioinformatics, 2018, 15, .	1.0	20
52	Robustness of the Adaptive Bellman â€"Ford Algorithm: Global Stability and Ultimate Bounds. IEEE Transactions on Automatic Control, 2019, 64, 4121-4136.	3.6	20
53	Proposed Data Model for the Next Version of the Synthetic Biology Open Language. ACS Synthetic Biology, 2015, 4, 57-71.	1.9	19
54	Distributed Control for Small Customer Energy Demand Management. , 2010, , .		18

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55	Space–time programming. Philosophical Transactions Series A, Mathematical, Physical, and Engineering Sciences, 2015, 373, 20140220.	1.6	18
56	Continuous Space-Time Semantics Allow Adaptive Program Execution. , 2007, , .		17
57	Reaction Factoring and Bipartite Update Graphs Accelerate the Gillespie Algorithm for Large-Scale Biochemical Systems. PLoS ONE, 2010, 5, e8125.	1.1	17
58	Synthetic Biology Open Language (SBOL) Version 2.3. Journal of Integrative Bioinformatics, 2019, 16, .	1.0	16
59	Space-Time Universality of Field Calculus. Lecture Notes in Computer Science, 2018, , 1-20.	1.0	16
60	Cells Are Plausible Targets for High-Level Spatial Languages. , 2008, , .		15
61	Fast Precise Distributed Control for Energy Demand Management. , 2012, , .		15
62	Self-Adaptation to Device Distribution Changes. , 2016, , .		15
63	Improving Gossip Dynamics Through Overlapping Replicates. Lecture Notes in Computer Science, 2016, , 192-207.	1.0	15
64	From Field-Based Coordination to Aggregate Computing. Lecture Notes in Computer Science, 2018, , 252-279.	1.0	15
65	A Basis Set of Operators for Space-Time Computations. , 2010, , .		14
66	Organizing genome engineering for the gigabase scale. Nature Communications, 2020, 11, 689.	5.8	14
67	Synthetic biology open language (SBOL) version 3.0.0. Journal of Integrative Bioinformatics, 2020, 17, .	1.0	13
68	Levels of autonomy in synthetic biology engineering. Molecular Systems Biology, 2020, 16, e10019.	3.2	13
69	Spatial Computing. ACM Transactions on Autonomous and Adaptive Systems, 2011, 6, 1-3.	0.4	12
70	Adaptive Opportunistic Airborne Sensor Sharing. ACM Transactions on Autonomous and Adaptive Systems, 2018, 13, 1-29.	0.4	12
71	High-Level Programming Languages for Biomolecular Systems. , 2011, , 225-252.		11
72	Functional blueprints: an approach to modularity in grown systems. Swarm Intelligence, 2011, 5, 257-281.	1.3	11

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73	QuaFL. , 2013, , .		11
74	Synthetic Biology Open Language (SBOL) Version 2.1.0. Journal of Integrative Bioinformatics, 2016, 13, .	1.0	11
75	A Lyapunov analysis for the robust stability of an adaptive Bellman-Ford algorithm. , 2016, , .		11
76	Comparative analysis of three studies measuring fluorescence from engineered bacterial genetic constructs. PLoS ONE, 2021, 16, e0252263.	1.1	11
77	Core operational semantics of Proto. , 2011, , .		10
78	Operational semantics of proto. Science of Computer Programming, 2013, 78, 633-656.	1.5	10
79	Superdiffusive Dispersion and Mixing of Swarms. ACM Transactions on Autonomous and Adaptive Systems, 2015, 10, 1-24.	0.4	9
80	Quantitative characterization of recombinase-based digitizer circuits enables predictable amplification of biological signals. Communications Biology, 2021, 4, 875.	2.0	9
81	Superdiffusive Dispersion and Mixing of Swarms with Reactive Levy Walks. , 2013, , .		8
82	On the Evaluation of Space-Time Functions. Computer Journal, 2013, 56, 1500-1517.	1.5	8
83	Towards a Foundational API for Resilient Distributed Systems Design. , 2017, , .		8
84	An Aggregate Computing Approach to Self-Stabilizing Leader Election. , 2018, , .		8
85	Synthetic Biology Open Language Visual (SBOL Visual) Version 2.1. Journal of Integrative Bioinformatics, 2019, 16, .	1.0	8
86	Round Trip: An Automated Pipeline for Experimental Design, Execution, and Analysis. ACS Synthetic Biology, 2022, 11, 608-622.	1.9	8
87	Meeting Measurement Precision Requirements for Effective Engineering of Genetic Regulatory Networks. ACS Synthetic Biology, 2022, 11, 1196-1207.	1.9	8
88	Using Morphogenetic Models to Develop Spatial Structures. , 2011, , .		7
89	Distributed Recovery for Enterprise Services. , 2015, , .		7
90	Combining Self-Organisation and Autonomic Computing in CASs with Aggregate-MAPE. , 2016, , .		7

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91	Error in Self-Stabilizing Spanning-Tree Estimation of Collective State. , 2017, , .		7
92	ShortBOL: A Language for Scripting Designs for Engineered Biological Systems Using Synthetic Biology Open Language (SBOL). ACS Synthetic Biology, 2020, 9, 962-966.	1.9	7
93	Functional Blueprints: An Approach to Modularity in Grown Systems. Lecture Notes in Computer Science, 2010, , 179-190.	1.0	7
94	A Resilient Leader Election Algorithm Using Aggregate Computing Blocks. IFAC-PapersOnLine, 2020, 53, 3336-3341.	0.5	7
95	Synthetic biology open language visual (SBOL visual) version 2.2. Journal of Integrative Bioinformatics, 2020, 17, .	1.0	7
96	Empirical Characterization of Discretization Error in Gradient-Based Algorithms. , 2008, , .		6
97	Toward Predicting Distributed Systems Dynamics. , 2015, , .		6
98	Synthetic biology open language visual (SBOL Visual) version 2.3. Journal of Integrative Bioinformatics, 2021, 18, .	1.0	6
99	Analyzing composability in a sparse encoding model of memorization and association. , 2008, , .		5
100	Dynamically Defined Processes for Spatial Computers. , 2010, , .		5
101	Managing bioengineering complexity with AI techniques. BioSystems, 2016, 148, 40-46.	0.9	5
102	Incomplete Cell Sorting Creates Engineerable Structures with Long-Term Stability. Cell Reports Physical Science, 2021, 2, 100305.	2.8	5
103	Aggregate Programming: From Foundations to Applications. Lecture Notes in Computer Science, 2016, , 233-260.	1.0	5
104	Fast Self-stabilization for Gradients. Lecture Notes in Computer Science, 2009, , 15-27.	1.0	5
105	Intent Parser: A Tool for Codification and Sharing of Experimental Design. ACS Synthetic Biology, 2022, 11, 502-507.	1.9	5
106	A manifold operator representation for adaptive design. , 2012, , .		4
107	Robust Stability of Spreading Blocks in Aggregate Computing. , 2018, , .		3
108	Improving Collection Dynamics by Monotonic Filtering. , 2020, , .		3

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109	SBOL Visual 2 Ontology. ACS Synthetic Biology, 2020, 9, 972-977.	1.9	3
110	Curation Principles Derived from the Analysis of the SBOL iGEM Data Set. ACS Synthetic Biology, 2021, 10, 2592-2606.	1.9	3
111	Synthetic biology open language visual (SBOL visual) version 3.0. Journal of Integrative Bioinformatics, 2021, 18, .	1.0	3
112	The share Operator for Field-Based Coordination. Lecture Notes in Computer Science, 2019, , 54-71.	1.0	3
113	pySBOL3: SBOL3 for Python Programmers. ACS Synthetic Biology, 2022, 11, 2523-2526.	1.9	3
114	Adjustable autonomy for cross-domain entitlement decisions. , 2010, , .		2
115	A Visual Language for Protein Design. ACS Synthetic Biology, 2017, 6, 1120-1123.	1.9	2
116	Practical Aggregate Programming with Protelis. , 2017, , .		2
117	Specifying Combinatorial Designs with the Synthetic Biology Open Language (SBOL). ACS Synthetic Biology, 2019, 8, 1519-1523.	1.9	2
118	Synthetic Biology Curation Tools (SYNBICT). ACS Synthetic Biology, 2021, 10, 3200-3204.	1.9	2
119	On the Evaluation of Space-Time Functions. , 2011, , .		1
120	An agent framework for agent societies. , 2011, , .		1
121	Self-Stabilizing Robot Team Formation with Proto: IEEE Self-Adaptive and Self-Organizing Systems 2012 Demo Entry. , 2012, , .		1
122	A Dimensionless Graceful Degradation Metric for Quantifying Resilience. , 2012, , .		1
123	Web Proto: Aggregate Programming for Everyone. , 2013, , .		1
124	Mixed geometric-topological representation for electromechanical design. , 2013, , .		1
125	Formal foundations of sensor network applications. SIGSPATIAL Special, 2015, 7, 36-42.	2.5	1
126	Global Uniform Asymptotic Stability of a Generalized Adaptive Bellman-Ford Algorithm. , 2019, , .		1

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127	Capturing Multicellular System Designs Using Synthetic Biology Open Language (SBOL). ACS Synthetic Biology, 2020, 9, 2410-2417.	1.9	1
128	: A Processing Pipeline for Quantifying Cell Organization from Fluorescent Microscopy. Methods in Molecular Biology, 2021, 2258, 3-15.	0.4	1
129	Functional Blueprints: An Approach to Modularity in Grown Systems. Understanding Complex Systems, 2012, , 313-329.	0.3	1
130	Resiliency with Aggregate Computing: State of the Art and Roadmap. Electronic Proceedings in Theoretical Computer Science, EPTCS, 0, 217, 5-18.	0.8	1
131	Bridging Biology and Engineering Together with Spatial Computing. Lecture Notes in Computer Science, 2012, , 14-18.	1.0	1
132	Effect of Monotonic Filtering on Graph Collection Dynamics. , 2021, , .		1
133	Functional synthesis of genetic regulatory networks. , 2013, , .		0
134	Spatial Computing Meets Realistic Mobile Wireless Problems. , 2013, , .		0
135	Predictable Self-Organization with Computational Fields. , 2014, , .		0
136	libSBOLj 2.0: A Java Library to Support SBOL 2.0. IEEE Life Sciences Letters, 2016, , 1-1.	1.2	0
137	Opportunities and Challenges in Applying Artificial Intelligence to Bioengineering. Computational Biology, 2019, , 425-452.	0.1	0
138	A Lyapunov Analysis of a Most Probable Path Finding Algorithm. , 2022, 6, 1052-1057.		0
139	AmorphousAmorphous computing ComputingComputing amorphous. , 2012, , 147-160.		0
140	Amorphous Computing. , 2017, , 1-18.		0
141	Amorphous Computing. , 2018, , 601-617.		0
142	Simulation-Based Engineering of Time-Delayed Safety Switches for Safer Gene Therapies. ACS Synthetic Biology, 2022, 11, 1782-1789.	1.9	0