Toshiyuki Nakagaki

List of Publications by Year
in descending order

97	5,187	159585 30	85541 71
papers	citations	h-index	g-index

103	103	103	2318
all docs	docs citations	times ranked	citing authors

#	Article	IF	Citations
1	Maze-solving by an amoeboid organism. Nature, 2000, 407, 470-470.	27.8	795
2	Rules for Biologically Inspired Adaptive Network Design. Science, 2010, 327, 439-442.	12.6	685
3	A mathematical model for adaptive transport network in path finding by true slime mold. Journal of Theoretical Biology, 2007, 244, 553-564.	1.7	323
4	Amoebae Anticipate Periodic Events. Physical Review Letters, 2008, 100, 018101.	7.8	268
5	Path finding by tube morphogenesis in an amoeboid organism. Biophysical Chemistry, 2001, 92, 47-52.	2.8	257
6	Physarum solver: A biologically inspired method of road-network navigation. Physica A: Statistical Mechanics and Its Applications, 2006, 363, 115-119.	2.6	190
7	Obtaining multiple separate food sources: behavioural intelligence in the Physarum plasmodium. Proceedings of the Royal Society B: Biological Sciences, 2004, 271, 2305-2310.	2.6	183
8	Interaction between cell shape and contraction pattern in the Physarum plasmodium. Biophysical Chemistry, 2000, 84, 195-204.	2.8	168
9	Minimum-Risk Path Finding by an Adaptive Amoebal Network. Physical Review Letters, 2007, 99, 068104.	7.8	157
10	Smart network solutions in an amoeboid organism. Biophysical Chemistry, 2004, 107, 1-5.	2.8	146
11	Smart behavior of true slime mold in a labyrinth. Research in Microbiology, 2001, 152, 767-770.	2.1	142
12	Spatiotemporal Symmetry in Rings of Coupled Biological Oscillators ofPhysarumPlasmodial Slime Mold. Physical Review Letters, 2001, 87, 078102.	7.8	138
13	Collective Movement of Epithelial Cells on a Collagen Gel Substrate. Biophysical Journal, 2005, 88, 2250-2256.	0.5	126
14	Analysis of fungal networks. Fungal Biology Reviews, 2012, 26, 12-29.	4.7	103
15	Flow-network adaptation in Physarum amoebae. Theory in Biosciences, 2008, 127, 89-94.	1.4	89
16	Mechanics of peristaltic locomotion and role of anchoring. Journal of the Royal Society Interface, 2012, 9, 222-233.	3.4	88
17	Mathematical Model for Rhythmic Protoplasmic Movement in the True Slime Mold. Journal of Mathematical Biology, 2006, 53, 273-286.	1.9	86
18	Fully decentralized control of a soft-bodied robot inspired by true slime mold. Biological Cybernetics, 2010, 102, 261-269.	1.3	71

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19	Structure and formation of ant transportation networks. Journal of the Royal Society Interface, 2011, 8, 1298-1306.	3.4	64
20	Intelligent behaviors of amoeboid movement based on complex dynamics of soft matter. Soft Matter, 2008, 4, 57-67.	2.7	58
21	Locomotive Mechanism of Physarum Plasmodia Based on Spatiotemporal Analysis of Protoplasmic Streaming. Biophysical Journal, 2008, 94, 2492-2504.	0.5	57
22	Nonâ€specific activity of (Â±)â€CPâ€96,345 in models of pain and inflammation. British Journal of Pharmacology, 1992, 107, 273-275.	5.4	54
23	A coupled-oscillator model with a conservation law for the rhythmic amoeboid movements of plasmodial slime molds. Physica D: Nonlinear Phenomena, 2005, 205, 125-135.	2.8	53
24	Traffic optimization in railroad networks using an algorithm mimicking an amoeba-like organism, Physarum plasmodium. BioSystems, 2011, 105, 225-232.	2.0	52
25	Modulation of cellular rhythm and photoavoidance by oscillatory irradiation in the Physarum plasmodium. Biophysical Chemistry, 1999, 82, 23-28.	2.8	50
26	Does being multi-headed make you better at solving problems? A survey of Physarum-based models and computations. Physics of Life Reviews, 2019, 29, 1-26.	2.8	48
27	Action Spectrum for Sporulation and Photoavoidance in the Plasmodium of Physarum polycephalum, as Modified Differentially by Temperature and Starvation. Photochemistry and Photobiology, 1996, 64, 859-862.	2.5	47
28	Reactionâ€“Diffusionâ€“Advection Model for Pattern Formation of Rhythmic Contraction in a Giant Amoeboid Cell of thePhysarumPlasmodium. Journal of Theoretical Biology, 1999, 197, 497-506.	1.7	42
29	ACTION SPECTRA FOR SUPEROXIDE GENERATION AND UV AND VISIBLE LIGHT PHOTOAVOIDANCE IN PLASMODIA OF Physarum polycephalum. Photochemistry and Photobiology, 1988, 48, 705-709.	2.5	35
30	Common mechanics of mode switching in locomotion of limbless and legged animals. Journal of the Royal Society Interface, 2014, 11, 20140205.	3.4	35
31	Computational Ability of Cells based on Cell Dynamics and Adaptability. New Generation Computing, 2008, 27, 57-81.	3.3	31
32	Flow-induced channel formation in the cytoplasm of motile cells. Physical Review E, 2011, 84, 016310.	2.1	31
33	Periodic traction in migrating large amoeba ofPhysarum polycephalum. Journal of the Royal Society Interface, 2015, 12, 20150099.	3.4	31
34	Current-reinforced random walks for constructing transport networks. Journal of the Royal Society Interface, 2013, 10, 20120864.	3.4	30
35	Dispersion relation in oscillatory reaction-diffusion systems with self-consistent flow in true slime mold. Journal of Mathematical Biology, 2007, 54, 745-760.	1.9	26
36	Dynamic organization of ATP and birefringent fibrils during free locomotion and galvanotaxis in the plasmodium of Physarum polycephalum.. Journal of Cell Biology, 1990, 110, 1097-1102.	5.2	25

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37	Mathematical model for contemplative amoeboid locomotion. Physical Review E, 2011, 83, 021916.	2.1	23
38	Attempts to retreat from a dead-ended long capillary by backward swimming in Paramecium. Frontiers in Microbiology, 2014, 5, 270.	3.5	23
39	A ciliate memorizes the geometry of a swimming arena. Journal of the Royal Society Interface, 2016, 13, 20160155.	3.4	23
40	The role of noise in self-organized decision making by the true slime mold Physarum polycephalum. PLoS ONE, 2017, 12, e0172933.	2.5	23
41	Phase Switching of Oscillatory Contraction in Relation to the Regulation of Amoeboid Behavior by the Plasmodium ofPhysarum polycephalum. Journal of Theoretical Biology, 1996, 179, 261-267.	1.7	21
42	Adaptive Biological Networks. Understanding Complex Systems, 2009, , 51-70.	0.6	21
43	Allometry in Physarum plasmodium during free locomotion: size versus shape, speed and rhythm. Journal of Experimental Biology, 2015, 218, 3729-38.	1.7	20
44	CHANGES IN cAMP AND cGMP CONCENTRATION, BIREFRINGENT FIBRILS AND CONTRACTILE ACTIVITY ACCOMPANYING UV AND BLUE LIGHT PHOTOAVOIDANCE IN PLASMODIA OF AN ALBINO STRAIN OF Physarum polycephalum. Photochemistry and Photobiology, 1988, 47, 271-275.	2.5	19
45	Super water-repellent surfaces with fractal structures and their potential application to biological studies. Colloids and Surfaces A: Physicochemical and Engineering Aspects, 2006, 284-285, 490-494.	4.7	19
46	Shear Banding in an F-Actin Solution. Physical Review Letters, 2012, 109, 248303.	7.8	19
47	Automated analysis ofPhysarumnetwork structure and dynamics. Journal Physics D: Applied Physics, 2017, 50, 254005.	2.8	19
48	Experimental models for Murrayâ€™s law. Journal Physics D: Applied Physics, 2017, 50, 024001.	2.8	18
49	Ultraviolet action spectrum for intracellular free Ca2+ increase in human epidermal keratinocytes.. Cell Structure and Function, 1990, 15, 175-179.	1.1	14
50	Risk management in spatio-temporally varying field by true slime mold. Nonlinear Theory and Its Applications IEICE, 2010, 1, 26-36.	0.6	12
51	Peristaltic transport and mixing of cytosol through the whole body of Physarum plasmodium. Mathematical Medicine and Biology, 2012, 29, 263-281.	1.2	11
52	Pattern formation of a reaction-diffusion system with self-consistent flow in the amoeboid organismPhysarumplasmodium. Physical Review E, 1999, 59, 1009-1014.	2.1	10
53	Fluid-Filled Soft-Bodied Amoeboid Robot Inspired by Plasmodium of True Slime Mold. Advanced Robotics, 2012, 26, 693-707.	1.8	9
54	A mathematical model for adaptive vein formation during exploratory migration ofPhysarum polycephalum: routing while scouting. Journal Physics D: Applied Physics, 2017, 50, 434001.	2.8	9

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55	Uni-cellular integration of complex spatial information in slime moulds and ciliates. Current Opinion in Genetics and Development, 2019, 57, 78-83.	3.3	8
56	A Modular Robot Driven by Protoplasmic Streaming. , 2009, , 193-202.		8
57	Adaptive Path-Finding and Transport Network Formation by the Amoeba-Like Organism Physarum. Proceedings in Information and Communications Technology, 2013, , 14-29.	0.2	8
58	Kinetic study of anti-viral ribavirin uptake mediated by hCNT3 and hENT1 in Xenopus laevis oocytes. Biophysical Chemistry, 2010, 147, 59-65.	2.8	7
59	Slime mold on the rise: the physics of Physarum polycephalum. Journal Physics D: Applied Physics, 2020, 53, 310201.	2.8	7
60	Sequences of symmetry-breaking in phyllotactic transitions. Bulletin of Mathematical Biology, 2004, 66, 779-789.	1.9	6
61	Taming large degrees of freedom. , 2010, , .		5
62	Cellular Computation Realizing Intelligence of Slime Mold <I>Physarum Polycephalum</I>. Journal of Computational and Theoretical Nanoscience, 2011, 8, 383-390.	0.4	5
63	Non-specific activity of in models of pain and inflammation. Regulatory Peptides, 1993, 46, 433-436.	1.9	4
64	Failure to the shortest path decision of an adaptive transport network with double edges in Plasmodium system. International Journal of Dynamical Systems and Differential Equations, 2008, 1, 210.	0.0	4
65	Direct observation of orientation distributions of actin filaments in a solution undergoing shear banding. Soft Matter, 2017, 13, 2708-2716.	2.7	4
66	Gait switching with phase reversal of locomotory waves in the centipede Scolopocryptops rubiginosus. Bioinspiration and Biomimetics, 2022, 17, 026005.	2.9	4
67	Response to various periods of mechanical stimuli in Physarum plasmodium. Journal Physics D: Applied Physics, 2017, 50, 254002.	2.8	3
68	Studies of the phase gradient at the boundary of the phase diffusion equation, motivated by peculiar wave patterns of rhythmic contraction in the amoeboid movement of Physarum polycephalum. Journal Physics D: Applied Physics, 2017, 50, 154004.	2.8	3
69	Current reinforcement model reproduces centerâ€inâ€center vein trajectory of Physarum polycephalum. Development Growth and Differentiation, 2017, 59, 465-470.	1.5	3
70	Physarum inspires research beyond biomimetic algorithms. Physics of Life Reviews, 2019, 29, 51-54.	2.8	3
71	Behavioural differentiation induced by environmental variation when crossing a toxic zone in an amoeba. Journal Physics D: Applied Physics, 2017, 50, 354002.	2.8	2
72	Binocular stereo-microscopy for deforming intact amoeba. Optics Express, 2022, 30, 2424.	3.4	2

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73	Tactic direction determined by the interaction between oscillatory chemical waves and rheological deformation in an amoeba. Physical Review E, 2012, 86, 011927.	2.1	1
74	Dynamic control of microbial movement by photoswitchable ATP antagonists. Chemistry - A European Journal, 2022, , .	3.3	1
75	1P495 Solving the shortest path problem by Physarum solver - Modeling of the Adaptive Network of True Slime Mold(24. Mathematical biology,Poster Session,Abstract,Meeting Program of EABS & BSJ) Tj ETQq1 1 0.784314 rgBT /Ov	0.0	0
76	1P451 The true slime mold shows the response to periodic environmental change(19. Behavior) Tj ETQq0 0 0 rgBT /Overlock 10 Tf 50 62	0.1	0
77	Anticipation of periodic environmental changes in an amoeba. AIP Conference Proceedings, 2007, , .	0.4	0
78	Flow Rate Driven by Peristaltic Movement in Plasmodial Tube of Physarum Polycephalum. AIP Conference Proceedings, 2008, , .	0.4	0
79	3P-245 Ability of memorizing time period in the unicellulate(The 46th Annual Meeting of the) Tj ETQq1 1 0.784314 rgBT /Overlock 10 Tf	0.1	0
80	Time recoder system of protozoa. Biophysical Journal, 2009, 96, 308a.	0.5	0
81	1SF-06 Towards understanding the locomotion of animals by limbless crawling(1SF Theoretical) Tj ETQq1 1 0.784314 rgBT /Overlock 10	0.1	0
82	A design principle of the decentralized control and its applications. , 2013, , .		0
83	1P277 The effect of a chemical bump on a migrating amoeba(24. Mathematical biology,Poster,The 52nd) Tj ETQq1 1 0.784314 rgBT /Ov	0.1	0
84	2P231 The analyses based on a membrane excitation model for Longterm Backward Swimming in a protozoa Paramecium(17. Behavior,Poster). Seibutsu Butsuri, 2014, 54, S233.	0.1	0
85	1P178 Coiling of catenaries made from Physarum tube(12. Cell biology,Poster,The 52nd Annual Meeting) Tj ETQq1 1 0.784314 rgBT /Ov	0.1	0
86	BIO-MIMETIC DESIGN FOR OPTIMAL SHAPE AND STRUCTURE BASED ON THE ADAPTABILITY OF USE-AND-GROWTH RULE IN A PRIMITIVE ORGANISM OF PHYSARUM. Journal of Japan Society of Civil Engineers Ser A2 (Applied Mechanics (AM)), 2016, 72, I_3-I_11.	0.1	0
87	Protoplasmic Computing to Memorize and Recall Periodic Environmental Events. Proceedings in Information and Communications Technology, 2009, , 213-221.	0.2	0
88	2A2-F22 Experimental Verification of a Soft-bodied Robot with Large D. O. F. Inspired by True Slime Mold. The Proceedings of JSME Annual Conference on Robotics and Mechatronics (Robomec), 2009, 2009, _2A2-F22_1-_2A2-F22_4.	0.0	0
89	1A1-E20 A Fluid-driven Amoeboid Robot That Exploits Law of Conservation of Protoplasmic Mass. The Proceedings of JSME Annual Conference on Robotics and Mechatronics (Robomec), 2010, 2010, _1A1-E20_1-_1A1-E20_4.	0.0	0
90	Experimental Verification of Fully Decentralized Control Inspired by Plasmodium of True Slime Mold. Transactions of the Society of Instrument and Control Engineers, 2010, 46, 706-712.	0.2	0

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91	Smart Network of True Slime Mold. Seibutsu Butsuri, 2011, 51, 178-181.	0.1	0
92	The Interconnected Network of Tubes Constructed by a Mass of Amoebae Provides Clues Regarding the Natural Design of Structures for Optimal Transportation. JPSJ News and Comments, 2011, 8, 10.	0.1	0
93	Honor speech. Japanese Journal of Physiological Psychology and Psychophysiology, 2012, 30, 103-104.	0.1	0
94	Ethological Response to Periodic Stimulation in Chara and Blepharisma. Proceedings in Information and Communications Technology, 2013, , 3-13.	0.2	0
95	Adaptive dynamics for shape optimization inspired by the use-and-growth rule in a simple organism of slime mold. , 2016, , .		0
96	Automated analysis of Physarum network structure and dynamics. , 2016, , .		0
97	A model for simulating emergent patterns of cities and roads on real-world landscapes. Scientific Reports, 2022, 12, .	3.3	0