Wouter-Jan Rappel

List of Publications by Year
in descending order

106 papers	7,471 citations	53751 45 h-index	58549 82 g-index
114 all docs	114 docs citations	114 times ranked	5665 citing authors

#	Article	IF	Citations
1	Treatment of Atrial Fibrillation by the Ablation of Localized Sources. Journal of the American College of Cardiology, 2012, 60, 628-636.	1.2	1,033
2	Phase-field method for computationally efficient modeling of solidification with arbitrary interface kinetics. Physical Review E, 1996, 53, R3017-R3020.	0.8	627
3	Clinical Mapping Approach To Diagnose Electrical Rotors and Focal Impulse Sources for Human Atrial Fibrillation. Journal of Cardiovascular Electrophysiology, 2012, 23, 447-454.	0.8	305
4	CO2 Sensing and CO2 Regulation of Stomatal Conductance: Advances and Open Questions. Trends in Plant Science, 2016, 21, 16-30.	4.3	244
5	Coupling actin flow, adhesion, and morphology in a computational cell motility model. Proceedings of the National Academy of Sciences of the United States of America, 2012, 109, 6851-6856.	3.3	230
6	Computational Model for Cell Morphodynamics. Physical Review Letters, 2010, 105, 108104.	2.9	214
7	Phase-field model of dendritic sidebranching with thermal noise. Physical Review E, 1999, 60, 3614-3625.	0.8	197
8	Dictyostelium discoideum chemotaxis: Threshold for directed motion. European Journal of Cell Biology, 2006, 85, 981-989.	1.6	176
9	Panoramic Electrophysiological Mapping but not Electrogram Morphology Identifies Stable Sources for Human Atrial Fibrillation. Circulation: Arrhythmia and Electrophysiology, 2013, 6, 58-67.	2.1	162
10	Incoherent Feedforward Control Governs Adaptation of Activated Ras in a Eukaryotic Chemotaxis Pathway. Science Signaling, 2012, 5, ra2.	1.6	154
11	Physical models of collective cell motility: from cell to tissue. Journal Physics D: Applied Physics, 2017, 50, 113002.	1.3	148
12	Directional sensing in eukaryotic chemotaxis: A balanced inactivation model. Proceedings of the National Academy of Sciences of the United States of America, 2006, 103, 9761-9766.	3.3	145
13	Self-organized Vortex State in Two-DimensionalDictyosteliumDynamics. Physical Review Letters, 1999, 83, 1247-1250.	2.9	136
14	Polarity mechanisms such as contact inhibition of locomotion regulate persistent rotational motion of mammalian cells on micropatterns. Proceedings of the National Academy of Sciences of the United States of America, 2014, 111, 14770-14775.	3.3	131
15	Reconstitution of CO₂ Regulation of SLAC1 Anion Channel and Function of CO₂-Permeable PIP2;1 Aquaporin as CARBONIC ANHYDRASE4 Interactor. Plant Cell, 2016, 28, 568-582.	3.1	130
16	Modeling wave propagation in realistic heart geometries using the phase-field method. Chaos, 2005, 15, 013502.	1.0	125
17	External and internal constraints on eukaryotic chemotaxis. Proceedings of the National Academy of Sciences of the United States of America, 2010, 107, 9656-9659.	3.3	120
18	Cellular memory in eukaryotic chemotaxis. Proceedings of the National Academy of Sciences of the United States of America, 2014, 111, 14448-14453.	3.3	115

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19	Contact inhibition of locomotion determines cellâ€“cell and cellâ€“substrate forces in tissues. Proceedings of the National Academy of Sciences of the United States of America, 2016, 113, 2660-2665.	3.3	109
20	Physical Limits on Cellular Sensing of Spatial Gradients. Physical Review Letters, 2010, 105, 048104.	2.9	104
21	Mechanisms of cell polarization. Current Opinion in Systems Biology, 2017, 3, 43-53.	1.3	102
22	Computational Mapping Identifies Localized Mechanisms for Ablation of Atrial Fibrillation. PLoS ONE, 2012, 7, e46034.	1.1	100
23	Emergent Collective Chemotaxis without Single-Cell Gradient Sensing. Physical Review Letters, 2016, 116, 098101.	2.9	96
24	Membrane-bound Turing patterns. Physical Review E, 2005, 72, 061912.	0.8	92
25	Insights into the Molecular Mechanisms ofÂCO2-Mediated Regulation of Stomatal Movements. Current Biology, 2018, 28, R1356-R1363.	1.8	85
26	Establishing Direction during Chemotaxis in Eukaryotic Cells. Biophysical Journal, 2002, 83, 1361-1367.	0.2	84
27	Theoretical considerations for mapping activation in human cardiac fibrillation. Chaos, 2013, 23, 023113.	1.0	79
28	Distinct Cellular Locations of Carbonic Anhydrases Mediate Carbon Dioxide Control of Stomatal Movements. Plant Physiology, 2015, 169, 1168-1178.	2.3	78
29	Structural contributions to fibrillatory rotors in a patient-derived computational model of the atria. Europace, 2014, 16, iv3-iv10.	0.7	70
30	Crawling and turning in a minimal reaction-diffusion cell motility model: Coupling cell shape and biochemistry. Physical Review E, 2017, 95, 012401.	0.8	69
31	Periodic Migration in a Physical Model of Cells on Micropatterns. Physical Review Letters, 2013, 111, 158102.	2.9	68
32	Computational approach for modeling intra- and extracellular dynamics. Physical Review E, 2003, 68, 037702.	0.8	66
33	Activated Membrane Patches Guide Chemotactic Cell Motility. PLoS Computational Biology, 2011, 7, e1002044.	1.5	64
34	The physics of eukaryotic chemotaxis. Physics Today, 2013, 66, 24-30.	0.3	61
35	Receptor Noise and Directional Sensing in Eukaryotic Chemotaxis. Physical Review Letters, 2008, 100, 228101.	2.9	59
36	The Role of Cell Contraction and Adhesion in Dictyostelium Motility. Biophysical Journal, 2010, 99, 50-58.	0.2	58

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37	Identification of SLAC1 anion channel residues required for CO ₂ /bicarbonate sensing and regulation of stomatal movements. Proceedings of the National Academy of Sciences of the United States of America, 2018, 115, 11129-11137.	3.3	58
38	Flow Photolysis for Spatiotemporal Stimulation of Single Cells. Analytical Chemistry, 2007, 79, 3940-3944.	3.2	57
39	Mechanisms for the Termination of Atrial Fibrillation by Localized Ablation. Circulation: Arrhythmia and Electrophysiology, 2015, 8, 1325-1333.	2.1	57
40	Two Independent Mapping Techniques Identify Rotational Activity Patterns at Sites of Local Termination During Persistent Atrial Fibrillation. Journal of Cardiovascular Electrophysiology, 2017, 28, 615-622.	0.8	57
41	Rotor Stability Separates Sustained Ventricular Fibrillation From Self-Terminating Episodes in Humans. Journal of the American College of Cardiology, 2014, 63, 2712-2721.	1.2	56
42	Filament instability and rotational tissue anisotropy: A numerical study using detailed cardiac models. Chaos, 2001, 11, 71.	1.0	54
43	Quantifying noise levels of intercellular signals. Physical Review E, 2007, 75, 061905.	0.8	54
44	Collective Signal Processing in Cluster Chemotaxis: Roles of Adaptation, Amplification, and Co-attraction in Collective Guidance. PLoS Computational Biology, 2016, 12, e1005008.	1.5	52
45	Innate Non-Specific Cell Substratum Adhesion. PLoS ONE, 2012, 7, e42033.	1.1	49
46	Tissue topography steers migrating <i>Drosophila</i> border cells. Science, 2020, 370, 987-990.	6.0	49
47	Flower-like patterns in multi-species bacterial colonies. ELife, 2020, 9, .	2.8	49
48	Receptor noise limitations on chemotactic sensing. Proceedings of the National Academy of Sciences of the United States of America, 2008, 105, 19270-19275.	3.3	45
49	Human Atrial Fibrillation Initiates via Organized Rather Than Disorganized Mechanisms. Circulation: Arrhythmia and Electrophysiology, 2014, 7, 816-824.	2.1	45
50	Adaptation in Living Systems. Annual Review of Condensed Matter Physics, 2018, 9, 183-205.	5.2	45
51	Comparison of Detailed and Simplified Models of Human Atrial Myocytes to Recapitulate Patient Specific Properties. PLoS Computational Biology, 2016, 12, e1005060.	1.5	42
52	Gradient sensing in defined chemotactic fields. Integrative Biology (United Kingdom), 2010, 2, 659-668.	0.6	35
53	Modifying Ventricular Fibrillation by Targeted Rotor Substrate Ablation: Proofâ€ofâ€Concept from Experimental Studies to Clinical VF. Journal of Cardiovascular Electrophysiology, 2015, 26, 1117-1126.	0.8	35
54	Modeling Contact Inhibition of Locomotion of Colliding Cells Migrating on Micropatterned Substrates. PLoS Computational Biology, 2016, 12, e1005239.	1.5	35

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55	Machine Learning to Classify Intracardiac Electrical Patterns During Atrial Fibrillation. Circulation: Arrhythmia and Electrophysiology, 2020, 13, e008160.	2.1	35
56	Machine Learned Cellular Phenotypes in Cardiomyopathy Predict Sudden Death. Circulation Research, 2021, 128, 172-184.	2.0	35
57	A comparison of deterministic and stochastic simulations of neuronal vesicle release models. Physical Biology, 2010, 7, 026008.	0.8	32
58	Systematic reduction of a detailed atrial myocyte model. Chaos, 2017, 27, 093914.	1.0	31
59	Eukaryotic chemotaxis. Wiley Interdisciplinary Reviews: Systems Biology and Medicine, 2009, 1, 141-149.	6.6	30
60	Deep dive into CO2-dependent molecular mechanisms driving stomatal responses in plants. Plant Physiology, 2021, 187, 2032-2042.	2.3	30
61	Intercellular Stress Reconstitution from Traction Force Data. Biophysical Journal, 2014, 107, 548-554.	0.2	28
62	Plasticity of cell migration resulting from mechanochemical coupling. ELife, 2019, 8, .	2.8	27
63	Cell-to-cell variation sets a tissue-rheologyâ€"dependent bound on collective gradient sensing. Proceedings of the National Academy of Sciences of the United States of America, 2017, 114, E10074-E10082.	3.3	26
64	Cell motility dependence on adhesive wetting. Soft Matter, 2019, 15, 2043-2050.	1.2	26
65	How geometry and internal bias affect the accuracy of eukaryotic gradient sensing. Physical Review E, 2011, 83, 021917.	0.8	24
66	Velocity alignment leads to high persistence in confined cells. Physical Review E, 2014, 89, 062705.	0.8	24
67	Cell Substratum Adhesion during Early Development of Dictyostelium discoideum. PLoS ONE, 2014, 9, e106574.	1.1	23
68	Modeling self-organized spatio-temporal patterns of PIP₃and PTEN during spontaneous cell polarization. Physical Biology, 2014, 11, 046002.	0.8	23
69	A minimal computational model for three-dimensional cell migration. Journal of the Royal Society Interface, 2019, 16, 20190619.	1.5	23
70	Quantifying Information Transmission in Eukaryotic Gradient Sensing and Chemotactic Response. Journal of Statistical Physics, 2011, 142, 1167-1186.	0.5	21
71	Cellâ€"cell communication during collective migration. Proceedings of the National Academy of Sciences of the United States of America, 2016, 113, 1471-1473.	3.3	20
72	Phenomenological approach to eukaryotic chemotactic efficiency. Physical Review E, 2010, 81, 031906.	0.8	18

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73	â€œSelf-Assistedâ€•Amoeboid Navigation in Complex Environments. PLoS ONE, 2011, 6, e21955.	1.1	18
74	Excitable waves and direction-sensing in<i>Dictyostelium discoideum</i>: steps towards a chemotaxis model. Physical Biology, 2016, 13, 016002.	0.8	17
75	The mechanics and dynamics of cancer cells sensing noisy 3D contact guidance. Proceedings of the National Academy of Sciences of the United States of America, 2021, 118, .	3.3	17
76	Boolink: a graphical interface for open access Boolean network simulations and use in guard cell CO2 signaling. Plant Physiology, 2021, 187, 2311-2322.	2.3	17
77	Cellular memory in eukaryotic chemotaxis depends on the background chemoattractant concentration. Physical Review E, 2021, 103, 012402.	0.8	17
78	Termination of persistent atrial fibrillation by ablating sites that control large atrial areas. Europace, 2020, 22, 897-905.	0.7	15
79	The physics of heart rhythm disorders. Physics Reports, 2022, 978, 1-45.	10.3	14
80	How input fluctuations reshape the dynamics of a biological switching system. Physical Review E, 2012, 86, 061910.	0.8	12
81	Phase synchrony reveals organization in human atrial fibrillation. American Journal of Physiology - Heart and Circulatory Physiology, 2015, 309, H2118-H2126.	1.5	12
82	Inferring single-cell behaviour from large-scale epithelial sheet migration patterns. Journal of the Royal Society Interface, 2017, 14, 20170147.	1.5	11
83	Extinction dynamics of spiral defect chaos. Physical Review E, 2019, 99, 012407.	0.8	11
84	Noise effects in nonlinear biochemical signaling. Physical Review E, 2012, 85, 011901.	0.8	10
85	Rotors exhibit greater surface ECG variation during ventricular fibrillation than focal sources due to wavebreak, secondary rotors, and meander. Journal of Cardiovascular Electrophysiology, 2017, 28, 1158-1166.	0.8	10
86	Electrical Substrate Ablation for Refractory Ventricular Fibrillation. Circulation: Arrhythmia and Electrophysiology, 2021, 14, e008868.	2.1	10
87	Coupling traction force patterns and actomyosin wave dynamics reveals mechanics of cell motion. Molecular Systems Biology, 2021, 17, e10505.	3.2	10
88	Minimal Network Topologies for Signal Processing during Collective Cell Chemotaxis. Biophysical Journal, 2018, 114, 2986-2999.	0.2	8
89	Wavefront Field Mapping Reveals a Physiologic Network Between Drivers Where Ablation Terminates Atrial Fibrillation. Circulation: Arrhythmia and Electrophysiology, 2019, 12, e006835.	2.1	8
90	Spatiotemporal Progression of EarlyÂHuman Ventricular Fibrillation. JACC: Clinical Electrophysiology, 2017, 3, 1437-1446.	1.3	7

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91	Intermittent trapping of spiral waves in a cardiac model. Physical Review E, 2022, 105, 014404.	0.8	7
92	Swarming patterns in Microorganisms: Some new modeling results. , 2006, , .		6
93	Determining conduction patterns on a sparse electrode grid: Implications for the analysis of clinical arrhythmias. Physical Review E, 2016, 94, 050401.	0.8	6
94	Stochastic Termination of Spiral Wave Dynamics in Cardiac Tissue. Frontiers in Network Physiology, 2022, 2, .	0.8	6
95	The cAMP-induced G protein subunits dissociation monitored in live Dictyostelium cells by BRET reveals two activation rates, a positive effect of caffeine and potential role of microtubules. Cellular Signalling, 2018, 48, 25-37.	1.7	4
96	To the Editorâ€" On the deformation and interpolation of phase maps. Heart Rhythm, 2018, 15, e3.	0.3	4
97	Chaotic tip trajectories of a single spiral wave in the presence of heterogeneities. Physical Review E, 2019, 99, 062409.	0.8	4
98	Novel micropatterning technique reveals dependence of cell-substrate adhesion and migration of social amoebas on parental strain, development, and fluorescent markers. PLoS ONE, 2020, 15, e0236171.	1.1	4
99	Cell dispersal by localized degradation of a chemoattractant. Proceedings of the National Academy of Sciences of the United States of America, 2021, 118, e2008126118.	3.3	4
100	Adaptation in a eukaryotic pathway. Cell Cycle, 2012, 11, 1051-1052.	1.3	3
101	How input noise limits biochemical sensing in ultrasensitive systems. Physical Review E, 2014, 90, 032702.	0.8	3
102	Three dimensional reconstruction to visualize atrial fibrillation activation patterns on curved atrial geometry. PLoS ONE, 2021, 16, e0249873.	1.1	3
103	Characterizing Electrogram Signal Fidelity and the Effects of Signal Contamination on Mapping Human Persistent Atrial Fibrillation. Frontiers in Physiology, 2018, 9, 1232.	1.3	2
104	Successful ventricular fibrillation functional substrate ablation via a single vascular access site. HeartRhythm Case Reports, 2018, 4, 173-176.	0.2	2
105	Rotors in Human Atrial Fibrillation. , 2018, , 426-436.		1
106	Response by Bhatia et al to Letter Regarding Article, â€œWavefront Field Mapping Reveals a Physiologic Network Between Drivers Where Ablation Terminates Atrial Fibrillationâ€• Circulation: Arrhythmia and Electrophysiology, 2019, 12, e008022.	2.1	0