Ulrich S Schwarz

List of Publications by Citations

154 papers	9,671 citations	47 h-index	97 g-index
171 ext. papers	11,077 ext. citations	6.2 avg, IF	6.34 L-index

#	Paper	IF	Citations
154	Force and focal adhesion assembly: a close relationship studied using elastic micropatterned substrates. *Nature Cell Biology*, **2001**, 3, 466-72	23.4	1695
153	Focal contacts as mechanosensors: externally applied local mechanical force induces growth of focal contacts by an mDia1-dependent and ROCK-independent mechanism. *Journal of Cell Biology*, **2001**, 153, 1175-86	7.3	1197
152	High resolution traction force microscopy based on experimental and computational advances. *Biophysical Journal*, **2008**, 94, 207-20	2.9	398
151	Cell-ECM traction force modulates endogenous tension at cell-cell contacts. *Proceedings of the National Academy of Sciences of the United States of America*, **2011**, 108, 4708-13	11.5	381
150	Traction stress in focal adhesions correlates biphasically with actin retrograde flow speed. *Journal of Cell Biology*, **2008**, 183, 999-1005	7.3	336
149	Calculation of forces at focal adhesions from elastic substrate data: the effect of localized force and the need for regularization. *Biophysical Journal*, **2002**, 83, 1380-94	2.9	285
148	Cell organization in soft media due to active mechanosensing. *Proceedings of the National Academy of Sciences of the United States of America*, **2003**, 100, 9274-9	11.5	256
147	United we stand: integrating the actin cytoskeleton and cell-matrix adhesions in cellular mechanotransduction. *Journal of Cell Science*, **2012**, 125, 3051-60	5.3	233
146	Physics of adherent cells. *Reviews of Modern Physics*, **2013**, 85, 1327-1381	40.5	211
145	Mechanosensing in actin stress fibers revealed by a close correlation between force and protein localization. *Journal of Cell Science*, **2009**, 122, 1665-79	5.3	206
144	Cell adhesion strength is controlled by intermolecular spacing of adhesion receptors. *Biophysical Journal*, **2010**, 98, 543-51	2.9	155
143	Stability of adhesion clusters under constant force. *Physical Review Letters*, **2004**, 92, 108102	7.4	145
142	Focal adhesions as mechanosensors: the two-spring model. *BioSystems*, **2006**, 83, 225-32	1.9	134
141	High-resolution traction force microscopy. *Methods in Cell Biology*, **2014**, 123, 367-94	1.8	129
140	Plasmodium sporozoite motility is modulated by the turnover of discrete adhesion sites. *Cell Host and Microbe*, **2009**, 6, 551-62	23.4	124
139	Physical determinants of cell organization in soft media. *Medical Engineering and Physics*, **2005**, 27, 763-72	2.4	116
138	Filamentous network mechanics and active contractility determine cell and tissue shape. *Biophysical Journal*, **2008**, 95, 3488-96	2.9	115

137	Traction force microscopy on soft elastic substrates: A guide to recent computational advances. *Biochimica Et Biophysica Acta - Molecular Cell Research*, **2015**, 1853, 3095-104	4.9	108
136	Elastic interactions of cells. *Physical Review Letters*, **2002**, 88, 048102	7.4	95
135	Elastic interactions of active cells with soft materials. *Physical Review E*, **2004**, 69, 021911	2.4	94
134	Propagation of mechanical stress through the actin cytoskeleton toward focal adhesions: model and experiment. *Biophysical Journal*, **2008**, 94, 1470-82	2.9	85
133	Stochastic dynamics of adhesion clusters under shared constant force and with rebinding. *Journal of Chemical Physics*, **2004**, 121, 8997-9017	3.9	85
132	Mechanical interactions among followers determine the emergence of leaders in migrating epithelial cell collectives. *Nature Communications*, **2018**, 9, 3469	17.4	80
131	Coupling biochemistry and mechanics in cell adhesion: a model for inhomogeneous stress fiber contraction. *New Journal of Physics*, **2007**, 9, 425-425	2.9	79
130	Clathrin-adaptor ratio and membrane tension regulate the flat-to-curved transition of the clathrin coat during endocytosis. *Nature Communications*, **2018**, 9, 1109	17.4	75
129	Micropatterned silicone elastomer substrates for high resolution analysis of cellular force patterns. *Review of Scientific Instruments*, **2007**, 78, 034301	1.7	73
128	Probing cellular microenvironments and tissue remodeling by atomic force microscopy. *Pflugers Archiv European Journal of Physiology*, **2008**, 456, 29-49	4.6	72
127	Optogenetic control of RhoA reveals zyxin-mediated elasticity of stress fibres. *Nature Communications*, **2017**, 8, 15817	17.4	71
126	Bending Frustration of Lipid□Water Mesophases Based on Cubic Minimal Surfaces1. *Langmuir*, **2001**, 17, 2084-2096	4	70
125	Effect of adhesion geometry and rigidity on cellular force distributions. *Physical Review Letters*, **2009**, 103, 048101	7.4	69
124	Model-based traction force microscopy reveals differential tension in cellular actin bundles. *PLoS Computational Biology*, **2015**, 11, e1004076	5	68
123	Stability of inverse bicontinuous cubic phases in lipid-water mixtures. *Physical Review Letters*, **2000**, 85, 1472-5	7.4	67
122	Soft matters in cell adhesion: rigidity sensing on soft elastic substrates. *Soft Matter*, **2007**, 3, 263-266	3.6	63
121	The 2018 correlative microscopy techniques roadmap. *Journal Physics D: Applied Physics*, **2018**, 51, 443001	3	63
120	Dynamics of cell shape and forces on micropatterned substrates predicted by a cellular Potts model. *Biophysical Journal*, **2014**, 106, 2340-52	2.9	61

119	Dynamic states of cells adhering in shear flow: from slipping to rolling. *Physical Review E*, **2008**, 77, 041904	2.4	59
118	Physics of cell elasticity, shape and adhesion. *Physica A: Statistical Mechanics and Its Applications*, **2005**, 352, 171-201	3.3	56
117	Systematic approach to bicontinuous cubic phases in ternary amphiphilic systems. *Physical Review E* , **1999**, 59, 5528-41	2.4	56
116	Force localization in contracting cell layers. *Physical Review Letters*, **2011**, 107, 128101	7.4	54
115	Bistability of cell-matrix adhesions resulting from nonlinear receptor-ligand dynamics. *Biophysical Journal*, **2006**, 91, L60-2	2.9	54
114	Polarizing cytoskeletal tension to induce leader cell formation during collective cell migration. *Biointerphases*, **2013**, 8, 32	1.8	53
113	Impact of receptor-ligand distance on adhesion cluster stability. *European Physical Journal E*, **2007**, 22, 123-37	1.5	52
112	Dynamics of Cell Ensembles on Adhesive Micropatterns: Bridging the Gap between Single Cell Spreading and Collective Cell Migration. *PLoS Computational Biology*, **2016**, 12, e1004863	5	52
111	Deformation and tribology of multi-walled hollow nanoparticles. *Europhysics Letters*, **2000**, 50, 762-768	1.6	51
110	Two competing orientation patterns explain experimentally observed anomalies in growing actin networks. *Proceedings of the National Academy of Sciences of the United States of America*, **2010**, 107, 6304-9	11.5	50
109	Environmental constraints guide migration of malaria parasites during transmission. *PLoS Pathogens*, **2011**, 7, e1002080	7.6	48
108	Stochastic force generation by small ensembles of myosin II motors. *Physical Review Letters*, **2012**, 108, 188101	7.4	45
107	Avidity enhancement of L-selectin bonds by flow: shear-promoted rotation of leukocytes turn labile bonds into functional tethers. *Journal of Cell Biology*, **2003**, 163, 649-59	7.3	45
106	Stochastic simulations of cargo transport by processive molecular motors. *Journal of Chemical Physics*, **2009**, 131, 245107	3.9	43
105	Optimization of traction force microscopy for micron-sized focal adhesions. *Journal of Physics Condensed Matter*, **2010**, 22, 194104	1.8	42
104	Modeling cytoskeletal flow over adhesion sites: competition between stochastic bond dynamics and intracellular relaxation. *Journal of Physics Condensed Matter*, **2010**, 22, 194112	1.8	41
103	The Actin Cytoskeleton as an Active Adaptive Material. *Annual Review of Condensed Matter Physics*, **2020**, 11, 421-439	19.7	39
102	Geometry and network connectivity govern the mechanics of stress fibers. *Proceedings of the National Academy of Sciences of the United States of America*, **2017**, 114, 2622-2627	11.5	37

101	A cdk1 gradient guides surface contraction waves in oocytes. *Nature Communications*, **2017**, 8, 849	17.4	37
100	Adhesion clusters under shared linear loading: A stochastic analysis. *Europhysics Letters*, **2004**, 66, 603-609	1.6	35
99	A quantitative measure for alterations in the actin cytoskeleton investigated with automated high-throughput microscopy. *Cytometry Part A: the Journal of the International Society for Analytical Cytology*, **2010**, 77, 52-63	4.6	34
98	Efficiency of initiating cell adhesion in hydrodynamic flow. *Physical Review Letters*, **2006**, 97, 138103	7.4	34
97	Stochastic dynamics of small ensembles of non-processive molecular motors: the parallel cluster model. *Journal of Chemical Physics*, **2013**, 139, 175104	3.9	33
96	Dynamics of protein-protein encounter: a Langevin equation approach with reaction patches. *Journal of Chemical Physics*, **2008**, 129, 155106	3.9	33
95	Dynamic force spectroscopy on multiple bonds: Experiments and model. *Europhysics Letters*, **2008**, 81, 48001	1.6	30
94	L-selectin-mediated leukocyte tethering in shear flow is controlled by multiple contacts and cytoskeletal anchorage facilitating fast rebinding events. *Proceedings of the National Academy of Sciences of the United States of America*, **2004**, 101, 6940-5	11.5	29
93	Measurement of cellular forces at focal adhesions using elastic micro-patterned substrates. *Materials Science and Engineering C*, **2003**, 23, 387-394	8.3	29
92	Stochastic dynamics of virus capsid formation: direct versus hierarchical self-assembly. *BMC Biophysics*, **2012**, 5, 22	0	28
91	Contractile network models for adherent cells. *Physical Review E*, **2012**, 85, 011913	2.4	28
90	Reconstructing the orientation distribution of actin filaments in the lamellipodium of migrating keratocytes from electron microscopy tomography data. *Cytometry Part A: the Journal of the International Society for Analytical Cytology*, **2012**, 81, 496-507	4.6	27
89	L-selectin dimerization enhances tether formation to properly spaced ligand. *Journal of Biological Chemistry*, **2002**, 277, 21130-9	5.4	27
88	Experimental and computational analyses reveal that environmental restrictions shape HIV-1 spread in 3D cultures. *Nature Communications*, **2019**, 10, 2144	17.4	26
87	Modeling cell shape and dynamics on micropatterns. *Cell Adhesion and Migration*, **2016**, 10, 516-528	3.2	26
86	Dynamic ordering of nuclei in syncytial embryos: a quantitative analysis of the role of cytoskeletal networks. *Integrative Biology (United Kingdom)*, **2011**, 3, 1112-9	3.7	26
85	Mean first passage times for bond formation for a Brownian particle in linear shear flow above a wall. *Journal of Chemical Physics*, **2007**, 126, 095103	3.9	26
84	Effect of poisson ratio on cellular structure formation. *Physical Review Letters*, **2005**, 95, 068102	7.4	26

83	Modeling cytoadhesion of Plasmodium falciparum-infected erythrocytes and leukocytes-common principles and distinctive features. *FEBS Letters*, **2016**, 590, 1955-71	3.8	25
82	Differential time-dependent volumetric and surface area changes and delayed induction of new permeation pathways in P. falciparum-infected hemoglobinopathic erythrocytes. *Cellular Microbiology*, **2017**, 19, e12650	3.9	25
81	Viscoelastic response of contractile filament bundles. *Physical Review E*, **2011**, 83, 051902	2.4	22
80	Microtubule number and length determine cellular shape and function in Plasmodium. *EMBO Journal*, **2019**, 38, e100984	13	22
79	Single-molecule imaging and quantification of the immune-variant adhesin VAR2CSA on knobs of -infected erythrocytes. *Communications Biology*, **2019**, 2, 172	6.7	21
78	Oscillations of Min-proteins in micropatterned environments: a three-dimensional particle-based stochastic simulation approach. *Soft Matter*, **2014**, 10, 2388-96	3.6	21
77	Cell-substrate interactions. *Journal of Physics Condensed Matter*, **2010**, 22, 190301	1.8	21
76	Phase behavior and material properties of hollow nanoparticles. *Physical Review E*, **2000**, 62, 6957-67	2.4	21
75	Studying protein assembly with reversible Brownian dynamics of patchy particles. *Journal of Chemical Physics*, **2014**, 140, 184112	3.9	20
74	Membrane and actin reorganization in electropulse-induced cell fusion. *Journal of Cell Science*, **2013** , 126, 2069-78	5.3	20
73	Stability of bicontinuous cubic phases in ternary amphiphilic systems with spontaneous curvature. *Journal of Chemical Physics*, **2000**, 112, 3792-3802	3.9	20
72	Cytoplasmic flows in starfish oocytes are fully determined by cortical contractions. *PLoS Computational Biology*, **2018**, 14, e1006588	5	19
71	Collective effects in cellular structure formation mediated by compliant environments: a Monte Carlo study. *Acta Biomaterialia*, **2006**, 2, 253-65	10.8	18
70	Multiscale modeling of virus replication and spread. *FEBS Letters*, **2016**, 590, 1972-86	3.8	16
69	Dynamics of force generation by spreading platelets. *Soft Matter*, **2018**, 14, 6571-6581	3.6	16
68	Geometrical model for malaria parasite migration in structured environments. *Physical Review E*, **2014**, 90, 042720	2.4	16
67	Mechanobiology by the numbers: a close relationship between biology and physics. *Nature Reviews Molecular Cell Biology*, **2017**, 18, 711-712	48.7	16
66	Investigating the role of F-actin in human immunodeficiency virus assembly by live-cell microscopy. *Journal of Virology*, **2014**, 88, 7904-14	6.6	16

65	Rolling Adhesion of Schizont Stage Malaria-Infected Red Blood Cells in Shear Flow. *Biophysical Journal*, **2017**, 112, 1908-1919	2.9	15
64	Hysteresis in the cell response to time-dependent substrate stiffness. *Biophysical Journal*, **2010**, 99, L10-2	2.9	15
63	Mechanosensing in actin stress fibers revealed by a close correlation between force and protein localization. *Journal of Cell Science*, **2009**, 122, 1928-1928	5.3	15
62	Forces during cellular uptake of viruses and nanoparticles at the ventral side. *Nature Communications*, **2020**, 11, 32	17.4	15
61	Stochastic Dynamics of Nanoparticle and Virus Uptake. *Physical Review Letters*, **2019**, 122, 088102	7.4	14
60	Measuring cellular traction forces on non-planar substrates. *Interface Focus*, **2016**, 6, 20160024	3.9	14
59	A kinetic model for RNA-interference of focal adhesions. *BMC Systems Biology*, **2013**, 7, 2	3.5	13
58	The sickle cell trait affects contact dynamics and endothelial cell activation in -infected erythrocytes. *Communications Biology*, **2018**, 1, 211	6.7	13
57	A computational model of nuclear self-organisation in syncytial embryos. *Journal of Theoretical Biology*, **2014**, 359, 92-100	2.3	12
56	Microstructured Blood Vessel Surrogates Reveal Structural Tropism of Motile Malaria Parasites. *Advanced Healthcare Materials*, **2017**, 6, 1601178	10.1	11
55	Tension and Elasticity Contribute to Fibroblast Cell Shape in Three Dimensions. *Biophysical Journal*, **2017**, 113, 770-774	2.9	11
54	Computational support for a scaffolding mechanism of centriole assembly. *Scientific Reports*, **2016**, 6, 27075	4.9	10
53	Role of anisotropy for protein-protein encounter. *Physical Review E*, **2010**, 81, 030902	2.4	10
52	Role of dynamic capsomere supply for viral capsid self-assembly. *Physical Biology*, **2015**, 12, 016014	3	9
51	Sensitivity of small myosin II ensembles from different isoforms to mechanical load and ATP concentration. *Physical Review E*, **2016**, 94, 052403	2.4	9
50	Stochastic dynamics and mechanosensitivity of myosin II minifilaments. *New Journal of Physics*, **2014**, 16, 093019	2.9	9
49	The lamellar-to-isotropic transition in ternary amphiphilic systems. *Europhysics Letters*, **1996**, 36, 117-122	1.6	9
48	Eden growth models for flat clathrin lattices with vacancies. *New Journal of Physics*, **2020**, 22, 073043	2.9	9

47	Optimizing micropattern geometries for cell shape and migration with genetic algorithms. *Integrative Biology (United Kingdom)*, **2016**, 8, 741-50	3.7	7
46	Competing pathways for the invagination of clathrin-coated membranes. *Soft Matter*, **2020**, 16, 10723-10733	3.6	7
45	Stochastic switching between multistable oscillation patterns of the Min-system. *New Journal of Physics*, **2016**, 18, 093049	2.9	7
44	Mesoscopic model for filament orientation in growing actin networks: the role of obstacle geometry. *New Journal of Physics*, **2013**, 15, 035006	2.9	6
43	Physical constraints for pathogen movement. *Seminars in Cell and Developmental Biology*, **2015**, 46, 82-90	7.5	5
42	Mechanosensitive self-assembly of myosin II minifilaments. *Physical Review E*, **2020**, 101, 022402	2.4	5
41	Phase diagram and scattering intensity of binary amphiphilic systems. *European Physical Journal B*, **1995**, 97, 233-238	1.2	5
40	Surface-catalyzed SAS-6 self-assembly directs centriole formation through kinetic and structural mechanisms		5
39	Electrostatic and bending energies predict staggering and splaying in nonmuscle myosin II minifilaments. *PLoS Computational Biology*, **2020**, 16, e1007801	5	4
38	Hemoglobin S and C affect biomechanical membrane properties of -infected erythrocytes. *Communications Biology*, **2019**, 2, 311	6.7	4
37	Developmental biology: a growing role for computer simulations. *Current Biology*, **2012**, 22, R441-3	6.3	4
36	Catch me because you can: a mathematical model for mechanosensing. *Biophysical Journal*, **2013**, 105, 1289-91	2.9	4
35	Adhesion-based sorting of blood cells: an adhesive dynamics simulation study. *Soft Matter*, **2018**, 14, 9061-9070	3.6	4
34	The power of a single trajectory. *New Journal of Physics*, **2018**, 20, 031001	2.9	3
33	Unifying autocatalytic and zeroth-order branching models for growing actin networks. *Physical Review E*, **2013**, 87, 040701	2.4	3
32	Kinetic and structural roles for the surface in guiding SAS-6 self-assembly to direct centriole architecture. *Nature Communications*, **2021**, 12, 6180	17.4	3
31	Asynchronous nuclear cycles in multinucleated Plasmodium falciparum enable rapid proliferation		3
30	State diagram for wall adhesion of red blood cells in shear flow: from crawling to flipping. *Soft Matter*, **2019**, 15, 5511-5520	3.6	2

29	Multiscale Modeling of Malaria-Infected Red Blood Cells **2018**, 1-24		2
28	Dynamics of particle uptake at cell membranes. *Physical Review E*, **2019**, 100, 052403	2.4	2
27	Functionalized supported membranes for quantifying adhesion of P. falciparum-infected erythrocytes. *Biophysical Journal*, **2021**, 120, 3315-3328	2.9	2
26	Distinct roles of nonmuscle myosin II isoforms for establishing tension and elasticity during cell morphodynamics. *ELife*, **2021**, 10,	8.9	2
25	Cell mechanics: When tissues collide. *Nature Materials*, **2017**, 16, 972-973	27	1
24	Pattern Formation and Force Generation by Cell Ensembles in a Filamentous Matrix. *IUTAM Symposium on Cellular, Molecular and Tissue Mechanics*, **2010**, 203-213	0.3	1
23	Electrostatic and bending energies predict staggering and splaying in nonmuscle myosin II minifilaments		1
22	Reversible elastic phase field approach and application to cell monolayers. *European Physical Journal E*, **2020**, 43, 63	1.5	1
21	KAHRP dynamically relocalizes to remodeled actin junctions and associates with knob spirals in Plasmodium falciparum-infected erythrocytes. *Molecular Microbiology*, **2021**,	4.1	1
20	Optimal ligand discrimination by asymmetric dimerization and turnover of interferon receptors. *Proceedings of the National Academy of Sciences of the United States of America*, **2021**, 118,	11.5	1
19	Asynchronous nuclear cycles in multinucleated facilitate rapid proliferation.. *Science Advances*, **2022**, 8, eabj5362	14.3	1
18	A particle-based computational model to analyse remodelling of the red blood cell cytoskeleton during malaria infections.. *PLoS Computational Biology*, **2022**, 18, e1009509	5	1
17	Comparison of direct and inverse methods for 2.5D traction force microscopy.. *PLoS ONE*, **2022**, 17, e0262773	3.7	0
16	Quantifying force transmission through fibroblasts: changes of traction forces under external shearing. *European Biophysics Journal*, **2021**, 1	1.9	0
15	Optogenetic control of intracellular flows and cell migration: A comprehensive mathematical analysis with a minimal active gel model. *Physical Review E*, **2021**, 104, 024406	2.4	0
14	Nonmuscle myosin IIA dynamically guides regulatory light chain phosphorylation and assembly of nonmuscle myosin IIB.. *European Journal of Cell Biology*, **2022**, 101, 151213	6.1	0
13	Collective migration reveals mechanical flexibility of malaria parasites. *Nature Physics*, **2022**, 18, 586-594	16.2	0
12	Systems perspective on mechanobiology: producing the right proteins in the right place at the right time. *Biophysical Journal*, **2014**, 107, 2490-1	2.9	

11	Imaging Motile Pathogens by Light microscopy and Cryo-electron Tomography. *Microscopy and Microanalysis*, **2009**, 15, 80-81	0.5
10	Mean encounter times for cell adhesion in hydrodynamic flow: Analytical progress by dimensional reduction. *Europhysics Letters*, **2008**, 83, 28007	1.6
9	Measurement of Cellular Contractile Forces Using Patterned Elastomer **2006**, 419-424	
8	Multiscale Modeling of Malaria-Infected Red Blood Cells **2020**, 2625-2648	
7	To buckle or not to buckle. *Nature Materials*, **2020**, 19, 8-9	27
6	Cell biology: Centrosomes in inner space. *Current Biology*, **2021**, 31, R301-R303	6.3
5	The soft cell. *Organic and Biomolecular Chemistry*, **2007**, 5, B23	3.9
4	Electrostatic and bending energies predict staggering and splaying in nonmuscle myosin II minifilaments **2020**, 16, e1007801	
3	Electrostatic and bending energies predict staggering and splaying in nonmuscle myosin II minifilaments **2020**, 16, e1007801	
2	Electrostatic and bending energies predict staggering and splaying in nonmuscle myosin II minifilaments **2020**, 16, e1007801	
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