Xavier Trepat

List of Publications by Year
in descending order

111 papers	16,425 citations	23879 60 h-index	33145 104 g-index
133 all docs	133 docs citations	133 times ranked	15825 citing authors

#	Article	IF	Citations
1	Digesting the mechanobiology of the intestinal epithelium. Current Opinion in Genetics and Development, 2022, 72, 82-90.	1.5	19
2	Involvement of Mechanical Cues in the Migration of Cajal-Retzius Cells in the Marginal Zone During Neocortical Development. Frontiers in Cell and Developmental Biology, 2022, 10, .	1.8	6
3	Self-generated gradients steer collective migration on viscoelastic collagen networks. Nature Materials, 2022, 21, 1200-1210.	13.3	29
4	Mechanical force application to the nucleus regulates nucleocytoplasmic transport. Nature Cell Biology, 2022, 24, 896-905.	4.6	61
5	Rethinking organoid technology through bioengineering. Nature Materials, 2021, 20, 145-155.	13.3	150
6	Addendum: Active superelasticity in three-dimensional epithelia of controlled shape. Nature, 2021, 592, E30-E30.	13.7	0
7	Living cells on the move. Physics Today, 2021, 74, 30-36.	0.3	11
8	Mechanical compartmentalization of the intestinal organoid enables crypt folding and collective cell migration. Nature Cell Biology, 2021, 23, 745-757.	4.6	112
9	Extracellular Matrix Remodeling in Chronic Liver Disease. Current Tissue Microenvironment Reports, 2021, 2, 41-52.	1.3	38
10	The force loading rate drives cell mechanosensing through both reinforcement and cytoskeletal softening. Nature Communications, 2021, 12, 4229.	5.8	48
11	Oncogenic <i>RAS</i> instructs morphological transformation of human epithelia via differential tissue mechanics. Science Advances, 2021, 7, eabg6467.	4.7	18
12	CAFs and Cancer Cells Co-Migration in 3D Spheroid Invasion Assay. Methods in Molecular Biology, 2021, 2179, 243-256.	0.4	13
13	Dynamic mechanochemical feedback between curved membranes and BAR protein self-organization. Nature Communications, 2021, 12, 6550.	5.8	9
14	Physical Models of Collective Cell Migration. Annual Review of Condensed Matter Physics, 2020, 11, 77-101.	5.2	214
15	Extracellular matrix anisotropy is determined by TFAP2C-dependent regulation of cell collisions. Nature Materials, 2020, 19, 227-238.	13.3	82
16	Editorial overview: Cell dynamics: Integrating cell dynamics across scales. Current Opinion in Cell Biology, 2020, 66, 130-132.	2.6	1
17	Buckling Up from the Bottom. Developmental Cell, 2020, 54, 569-571.	3.1	1
18	Measuring mechanical stress in living tissues. Nature Reviews Physics, 2020, 2, 300-317.	11.9	79

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19	ERK-Mediated Mechanochemical Waves Direct Collective Cell Polarization. Developmental Cell, 2020, 53, 646-660.e8.	3.1	152
20	When cellular forces became visible. Nature Reviews Molecular Cell Biology, 2020, 21, 253-253.	16.1	3
21	Durotaxis. Current Biology, 2020, 30, R383-R387.	1.8	72
22	Embryonic self-fracking. Science, 2019, 365, 442-443.	6.0	5
23	Large-scale curvature sensing by directional actin flow drives cellular migration mode switching. Nature Physics, 2019, 15, 393-402.	6.5	78
24	Traction forces at the cytokinetic ring regulate cell division and polyploidy in the migrating zebrafish epicardium. Nature Materials, 2019, 18, 1015-1023.	13.3	40
25	Dynamic filopodial forces induce accumulation, damage, and plastic remodeling of 3D extracellular matrices. PLoS Computational Biology, 2019, 15, e1006684.	1.5	74
26	Fine tuning the extracellular environment accelerates the derivation of kidney organoids from human pluripotent stem cells. Nature Materials, 2019, 18, 397-405.	13.3	201
27	Active wetting of epithelial tissues. Nature Physics, 2019, 15, 79-88.	6.5	148
28	A hybrid computational model for collective cell durotaxis. Biomechanics and Modeling in Mechanobiology, 2018, 17, 1037-1052.	1.4	33
29	Epidermal growth factor receptor and integrins control force-dependent vinculin recruitment to E-Cadherin junctions. Journal of Cell Science, 2018, 131, .	1.2	19
30	Control of Mechanotransduction by Molecular Clutch Dynamics. Trends in Cell Biology, 2018, 28, 356-367.	3.6	218
31	TRPM7 controls mesenchymal features of breast cancer cells by tensional regulation of SOX4. Biochimica Et Biophysica Acta - Molecular Basis of Disease, 2018, 1864, 2409-2419.	1.8	29
32	The Role of Mitotic Cell-Substrate Adhesion Re-modeling in Animal Cell Division. Developmental Cell, 2018, 45, 132-145.e3.	3.1	111
33	Piezo2 channel regulates RhoA and actin cytoskeleton to promote cell mechanobiological responses. Proceedings of the National Academy of Sciences of the United States of America, 2018, 115, 1925-1930.	3.3	158
34	Sticking, steering, squeezing and shearing: cell movements driven by heterotypic mechanical forces. Current Opinion in Cell Biology, 2018, 54, 57-65.	2.6	26
35	Cell parts to complex processes, from the bottom up. Nature, 2018, 563, 188-189.	13.7	18
36	Mechanochemical feedback control of dynamin independent endocytosis modulates membrane tension in adherent cells. Nature Communications, 2018, 9, 4217.	5.8	106

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37	Supracellular contraction at the rear of neural crest cell groups drives collective chemotaxis. Science, 2018, 362, 339-343.	6.0	123
38	Active superelasticity in three-dimensional epithelia of controlled shape. Nature, 2018, 563, 203-208.	13.7	223
39	Regulation of cell cycle progression by cellâ€“cell and cellâ€“matrix forces. Nature Cell Biology, 2018, 20, 646-654.	4.6	136
40	Mesoscale physical principles of collective cell organization. Nature Physics, 2018, 14, 671-682.	6.5	128
41	Intermediate filaments control collective migration by restricting traction forces and sustaining cellâ€“cell contacts. Journal of Cell Biology, 2018, 217, 3031-3044.	2.3	126
42	Endocytic reawakening of motility in jammed epithelia. Nature Materials, 2017, 16, 587-596.	13.3	207
43	A mechanically active heterotypic E-cadherin/N-cadherin adhesion enables fibroblasts toÂdrive cancer cell invasion. Nature Cell Biology, 2017, 19, 224-237.	4.6	567
44	Optogenetic control of cellular forces and mechanotransduction. Nature Communications, 2017, 8, 14396.	5.8	183
45	Quantifying forces in cell biology. Nature Cell Biology, 2017, 19, 742-751.	4.6	376
46	Hydraulic fracturing in cells and tissues: fracking meets cell biology. Current Opinion in Cell Biology, 2017, 44, 1-6.	2.6	20
47	Force Triggers YAP Nuclear Entry by Regulating Transport across Nuclear Pores. Cell, 2017, 171, 1397-1410.e14.	13.5	927
48	Long-lived force patterns and deformation waves at repulsive epithelial boundaries. Nature Materials, 2017, 16, 1029-1037.	13.3	65
49	Functionalization of CoCr surfaces with cell adhesive peptides to promote HUVECs adhesion and proliferation. Applied Surface Science, 2017, 393, 82-92.	3.1	42
50	Force loading explains spatial sensing of ligands by cells. Nature, 2017, 552, 219-224.	13.7	244
51	Mechanical regulation of a molecular clutch defines force transmission and transduction in response to matrix rigidity. Nature Cell Biology, 2016, 18, 540-548.	4.6	582
52	Collective cell durotaxis emerges from long-range intercellular force transmission. Science, 2016, 353, 1157-1161.	6.0	484
53	Non-equilibrium cytoquake dynamics in cytoskeletal remodeling and stabilization. Soft Matter, 2016, 12, 8506-8511.	1.2	17
54	Long-term in vivo single-cell lineage tracing of deep structures using three-photon activation. Light: Science and Applications, 2016, 5, e16084-e16084.	7.7	11

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55	P-cadherin promotes collective cell migration via a Cdc42-mediated increase in mechanical forces. Journal of Cell Biology, 2016, 212, 199-217.	2.3	89
56	Frontâ€"Rear Polarization by Mechanical Cues: From Single Cells to Tissues. Trends in Cell Biology, 2016, 26, 420-433.	3.6	127
57	Active Tensile Modulus of an Epithelial Monolayer. Physical Review Letters, 2015, 115, 248103.	2.9	53
58	Hydraulic Fracture and Toughening of a Brittle Layer Bonded to a Hydrogel. Physical Review Letters, 2015, 115, 188105.	2.9	24
59	Seeds of Locally Aligned Motion and Stress Coordinate a Collective Cell Migration. Biophysical Journal, 2015, 109, 2492-2500.	0.2	46
60	Hydraulic fracture during epithelial stretching. Nature Materials, 2015, 14, 343-351.	13.3	122
61	Mapping forces and kinematics during collective cell migration. Methods in Cell Biology, 2015, 125, 309-330.	0.5	39
62	Mechanics of epithelial closure over non-adherent environments. Nature Communications, 2015, 6, 6111.	5.8	113
63	TRPV4 participates in the establishment of trailing adhesions and directional persistence of migrating cells. Pflugers Archiv European Journal of Physiology, 2015, 467, 2107-2119.	1.3	31
64	Increased migration of olfactory ensheathing cells secreting the Nogo receptor ectodomain over inhibitory substrates and lesioned spinal cord. Cellular and Molecular Life Sciences, 2015, 72, 2719-2737.	2.4	29
65	Physical principles of membrane remodelling during cell mechanoadaptation. Nature Communications, 2015, 6, 7292.	5.8	91
66	Generation of stable orthogonal gradients of chemical concentration and substrate stiffness in a microfluidic device. Lab on A Chip, 2015, 15, 2606-2614.	3.1	55
67	Control of cellâ€"cell forces and collective cell dynamics by the intercellular adhesome. Nature Cell Biology, 2015, 17, 409-420.	4.6	275
68	Traction Forces of Endothelial Cells under Slow Shear Flow. Biophysical Journal, 2015, 109, 1533-1536.	0.2	30
69	Gap geometry dictates epithelial closure efficiency. Nature Communications, 2015, 6, 7683.	5.8	118
70	Aberrant DNA methylation in non-small cell lung cancer-associated fibroblasts. Carcinogenesis, 2015, 36, bgv146.	1.3	84
71	Compressed sensing traction force microscopy. Acta Biomaterialia, 2015, 26, 286-294.	4.1	12
72	Epithelial bridges maintain tissue integrity during collective cell migration. Nature Materials, 2014, 13, 87-96.	13.3	162

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73	Rigidity sensing and adaptation through regulation of integrin types. Nature Materials, 2014, 13, 631-637.	13.3	304
74	Forces driving epithelial wound healing. Nature Physics, 2014, 10, 683-690.	6.5	326
75	Discussion of â€œCytoskeletal Mechanics Regulating Amoeboid Cell Locomotionâ€•(Ã lvarez-GonzÃ¡lez, B.,) Tj ETQq1 1 0.784314 rgBT /	4.5	0
76	Mechanical guidance of cell migration: lessons from chemotaxis. Current Opinion in Cell Biology, 2013, 25, 543-549.	2.6	136
77	Chase-and-run between adjacent cell populations promotes directional collective migration. Nature Cell Biology, 2013, 15, 763-772.	4.6	260
78	Propulsion and navigation within the advancing monolayer sheet. Nature Materials, 2013, 12, 856-863.	13.3	161
79	Monolayer Stress Microscopy: Limitations, Artifacts, and Accuracy of Recovered Intercellular Stresses. PLoS ONE, 2013, 8, e55172.	1.1	156
80	Gleevec, an Abl Family Inhibitor, Produces a Profound Change in Cell Shape and Migration. PLoS ONE, 2013, 8, e52233.	1.1	15
81	Navigation within the cellular monolayer. FASEB Journal, 2013, 27, 1217.18.	0.2	0
82	Cell crawling mediates collective cell migration to close undamaged epithelial gaps. Proceedings of the National Academy of Sciences of the United States of America, 2012, 109, 10891-10896.	3.3	175
83	Cell Migration. , 2012, 2, 2369-2392.		324
84	Mechanical waves during tissue expansion. Nature Physics, 2012, 8, 628-634.	6.5	418
85	Myelin-associated proteins block the migration of olfactory ensheathing cells: an in vitro study using single-cell tracking and traction force microscopy. Cellular and Molecular Life Sciences, 2012, 69, 1689-1703.	2.4	18
86	Collective cell guidance by cooperative intercellular forces. Nature Materials, 2011, 10, 469-475.	13.3	781
87	Plithotaxis and emergent dynamics in collective cellular migration. Trends in Cell Biology, 2011, 21, 638-646.	3.6	211
88	Glass-like dynamics of collective cell migration. Proceedings of the National Academy of Sciences of the United States of America, 2011, 108, 4714-4719.	3.3	593
89	Substrate stiffening promotes endothelial monolayer disruption through enhanced physical forces. American Journal of Physiology - Cell Physiology, 2011, 300, C146-C154.	2.1	205
90	Pulling it together in three dimensions. Nature Methods, 2010, 7, 963-965.	9.0	5

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91	Mapping the cytoskeletal prestress. American Journal of Physiology - Cell Physiology, 2010, 298, C1245-C1252.	2.1	66
92	Mechanosensing of substrate thickness. Physical Review E, 2010, 82, 041918.	0.8	58
93	Cell Migration Driven by Cooperative Substrate Deformation Patterns. Physical Review Letters, 2010, 104, 168104.	2.9	247
94	Reinforcement versus Fluidization in Cytoskeletal Mechanoresponsiveness. PLoS ONE, 2009, 4, e5486.	1.1	232
95	Physical forces during collective cell migration. Nature Physics, 2009, 5, 426-430.	6.5	989
96	Cell stiffness, contractile stress and the role of extracellular matrix. Biochemical and Biophysical Research Communications, 2009, 382, 697-703.	1.0	67
97	Airway smooth muscle and bronchospasm: Fluctuating, fluidizing, freezing. Respiratory Physiology and Neurobiology, 2008, 163, 17-24.	0.7	49
98	Universality in cell mechanics. Soft Matter, 2008, 4, 1750.	1.2	116
99	The Cytoskeleton of the Living Cell as an Out-of-Equilibrium System. , 2008, , 111-141.		3
100	Cytoskeleton dynamics: Fluctuations within the network. Biochemical and Biophysical Research Communications, 2007, 355, 324-330.	1.0	90
101	Universal physical responses to stretch in the living cell. Nature, 2007, 447, 592-595.	13.7	626
102	Fast and slow dynamics of the cytoskeleton. Nature Materials, 2006, 5, 636-640.	13.3	279
103	Do Biophysical Properties of the Airway Smooth Muscle in Culture Predict Airway Hyperresponsiveness?. American Journal of Respiratory Cell and Molecular Biology, 2006, 35, 55-64.	1.4	115
104	Effect of stretch on structural integrity and micromechanics of human alveolar epithelial cell monolayers exposed to thrombin. American Journal of Physiology - Lung Cellular and Molecular Physiology, 2006, 290, L1104-L1110.	1.3	27
105	Thrombin and histamine induce stiffening of alveolar epithelial cells. Journal of Applied Physiology, 2005, 98, 1567-1574.	1.2	59
106	Viscoelasticity of human alveolar epithelial cells subjected to stretch. American Journal of Physiology - Lung Cellular and Molecular Physiology, 2004, 287, L1025-L1034.	1.3	132
107	Oscillometric assessment of airway obstruction in a mechanical model of vocal cord dysfunction. Journal of Biomechanics, 2004, 37, 37-43.	0.9	21
108	Microrheology of Human Lung Epithelial Cells Measured by Atomic Force Microscopy. Biophysical Journal, 2003, 84, 2071-2079.	0.2	630

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109	Oscillatory magnetic tweezers based on ferromagnetic beads and simple coaxial coils. Review of Scientific Instruments, 2003, 74, 4012-4020.	0.6	28
110	Response of Automatic Continuous Positive Airway Pressure Devices to Different Sleep Breathing Patterns. American Journal of Respiratory and Critical Care Medicine, 2002, 166, 469-473.	2.5	106
111	Forcing Tumor Arrest. Physics Magazine, 0, 4, .	0.1	8