Sanjay Kumar

List of Publications by Year
in descending order

113 papers	8,970 citations	53751 45 h-index	43868 91 g-index
150 all docs	150 docs citations	150 times ranked	11819 citing authors

#	Article	IF	Citations
1	Mechanics, malignancy, and metastasis: The force journey of a tumor cell. Cancer and Metastasis Reviews, 2009, 28, 113-127.	2.7	791
2	The Mechanical Rigidity of the Extracellular Matrix Regulates the Structure, Motility, and Proliferation of Glioma Cells. Cancer Research, 2009, 69, 4167-4174.	0.4	782
3	Viscoelastic Retraction of Single Living Stress Fibers and Its Impact on Cell Shape, Cytoskeletal Organization, and Extracellular Matrix Mechanics. Biophysical Journal, 2006, 90, 3762-3773.	0.2	601
4	Microtubules can bear enhanced compressive loads in living cells because of lateral reinforcement. Journal of Cell Biology, 2006, 173, 733-741.	2.3	585
5	Independent regulation of tumor cell migration by matrix stiffness and confinement. Proceedings of the National Academy of Sciences of the United States of America, 2012, 109, 10334-10339.	3.3	489
6	Nanomagnetic actuation of receptor-mediated signal transduction. Nature Nanotechnology, 2008, 3, 36-40.	15.6	285
7	Elucidating the mechanobiology of malignant brain tumors using a brain matrix-mimetic hyaluronic acid hydrogel platform. Biomaterials, 2011, 32, 7913-7923.	5.7	281
8	Probing cellular mechanobiology in three-dimensional culture with collagenâ€"agarose matrices. Biomaterials, 2010, 31, 1875-1884.	5.7	277
9	Mechanical forces alter zyxin unbinding kinetics within focal adhesions of living cells. Journal of Cellular Physiology, 2006, 207, 187-194.	2.0	201
10	Emergent cellular self-organization and mechanosensation initiate follicle pattern in the avian skin. Science, 2017, 357, 811-815.	6.0	188
11	Biophysical regulation of tumor cell invasion: moving beyond matrix stiffness. Integrative Biology (United Kingdom), 2011, 3, 267.	0.6	179
12	Rho GTPases Mediate the Mechanosensitive Lineage Commitment of Neural Stem Cells. Stem Cells, 2011, 29, 1886-1897.	1.4	176
13	CD44-Mediated Adhesion to Hyaluronic Acid Contributes to Mechanosensing and Invasive Motility. Molecular Cancer Research, 2014, 12, 1416-1429.	1.5	170
14	Platelet mechanosensing of substrate stiffness during clot formation mediates adhesion, spreading, and activation. Proceedings of the National Academy of Sciences of the United States of America, 2014, 111, 14430-14435.	3.3	166
15	Presentation Counts: Microenvironmental Regulation of Stem Cells by Biophysical and Material Cues. Annual Review of Cell and Developmental Biology, 2010, 26, 533-556.	4.0	149
16	A synthetic hydrogel for the high-throughput study of cellâ€"ECM interactions. Nature Communications, 2015, 6, 8129.	5.8	125
17	Dynamics of Mechanosensitive Neural Stem Cell Differentiation. Stem Cells, 2017, 35, 497-506.	1.4	122
18	Engineering strategies to mimic the glioblastoma microenvironment. Advanced Drug Delivery Reviews, 2014, 79-80, 172-183.	6.6	118

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19	Microenvironmental Stiffness Enhances Glioma Cell Proliferation by Stimulating Epidermal Growth Factor Receptor Signaling. PLoS ONE, 2014, 9, e101771.	1.1	104
20	Dissecting and rebuilding the glioblastoma microenvironment with engineered materials. Nature Reviews Materials, 2019, 4, 651-668.	23.3	103
21	Hyaluronic Acid: Incorporating the Bio into the Material. ACS Biomaterials Science and Engineering, 2019, 5, 3753-3765.	2.6	103
22	Engineered hydrogels increase the post-transplantation survival of encapsulated hESC-derived midbrain dopaminergic neurons. Biomaterials, 2017, 136, 1-11.	5.7	97
23	Extracellular matrix rigidity modulates neuroblastoma cell differentiation and N-myc expression. Molecular Cancer, 2010, 9, 35.	7.9	93
24	Single-Cell Western Blotting after Whole-Cell Imaging to Assess Cancer Chemotherapeutic Response. Analytical Chemistry, 2014, 86, 10429-10436.	3.2	88
25	A biomechanical perspective on stress fiber structure and function. Biochimica Et Biophysica Acta - Molecular Cell Research, 2015, 1853, 3065-3074.	1.9	85
26	Cellâ€"Matrix De-Adhesion Dynamics Reflect Contractile Mechanics. Cellular and Molecular Bioengineering, 2009, 2, 218-230.	1.0	82
27	Dissecting Regional Variations in Stress Fiber Mechanics in Living Cells with Laser Nanosurgery. Biophysical Journal, 2010, 99, 2775-2783.	0.2	80
28	Constitutive Activation of Myosin-Dependent Contractility Sensitizes Glioma Tumor-Initiating Cells to Mechanical Inputs and Reduces Tissue Invasion. Cancer Research, 2015, 75, 1113-1122.	0.4	79
29	Relating Interactions between Neurofilaments to the Structure of Axonal Neurofilament Distributions through Polymer Brush Models. Biophysical Journal, 2002, 82, 2360-2372.	0.2	78
30	Molecular mechanisms for organizing the neuronal cytoskeleton. BioEssays, 2004, 26, 1017-1025.	1.2	77
31	Age-Related Dysfunction in Mechanotransduction Impairs Differentiation of Human Mammary Epithelial Progenitors. Cell Reports, 2014, 7, 1926-1939.	2.9	74
32	Measuring Cell Viscoelastic Properties Using a Microfluidic Extensional Flow Device. Biophysical Journal, 2016, 111, 2039-2050.	0.2	72
33	Isoform-Specific Contributions of Î±-Actinin to Glioma Cell Mechanobiology. PLoS ONE, 2009, 4, e8427.	1.1	72
34	Actomyosin-Mediated Tension Orchestrates Uncoupled Respiration in Adipose Tissues. Cell Metabolism, 2018, 27, 602-615.e4.	7.2	70
35	Direct evidence that tumor cells soften when navigating confined spaces. Molecular Biology of the Cell, 2020, 31, 1726-1734.	0.9	66
36	Actomyosin stress fiber mechanosensing in 2D and 3D. F1000Research, 2016, 5, 2261.	0.8	61

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37	Stimuli-sensitive intrinsically disordered protein brushes. Nature Communications, 2014, 5, 5145.	5.8	60
38	Activation of ROCK and MLCK tunes regional stress fiber formation and mechanics via preferential myosin light chain phosphorylation. Molecular Biology of the Cell, 2017, 28, 3832-3843.	0.9	58
39	Vinculin tension distributions of individual stress fibers within cell-matrix adhesions. Journal of Cell Science, 2013, 126, 3021-30.	1.2	57
40	A mode of cell adhesion and migration facilitated by CD44-dependent microtentacles. Proceedings of the National Academy of Sciences of the United States of America, 2020, 117, 11432-11443.	3.3	56
41	Biophysics and dynamics of natural and engineered stem cell microenvironments. Wiley Interdisciplinary Reviews: Systems Biology and Medicine, 2010, 2, 49-64.	6.6	55
42	Transforming potential and matrix stiffness co-regulate confinement sensitivity of tumor cell migration. Integrative Biology (United Kingdom), 2013, 5, 1067.	0.6	54
43	Microscale mechanisms of agarose-induced disruption of collagen remodeling. Biomaterials, 2011, 32, 5633-5642.	5.7	53
44	Stiffness does matter. Nature Materials, 2014, 13, 918-920.	13.3	52
45	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.	3.3	50
46	Modulation of repulsive forces between neurofilaments by sidearm phosphorylation. Biochemical and Biophysical Research Communications, 2004, 324, 489-496.	1.0	49
47	Contractilityâ€Dependent Modulation of Cell Proliferation and Adhesion by Microscale Topographical Cues. Small, 2008, 4, 1416-1424.	5.2	49
48	Measuring the Elastic Properties of Living Cells with Atomic Force Microscopy Indentation. Methods in Molecular Biology, 2012, 931, 313-329.	0.4	46
49	N-terminal specific conjugation of extracellular matrix proteins to 2-pyridinecarboxaldehyde functionalized polyacrylamide hydrogels. Biomaterials, 2016, 102, 268-276.	5.7	46
50	Tools to Study Cell Mechanics and Mechanotransduction. Methods in Cell Biology, 2007, 83, 441-472.	0.5	44
51	Cyclic Mechanical Loading Is Essential for Rac1-Mediated Elongation and Remodeling of the Embryonic Mitral Valve. Current Biology, 2016, 26, 27-37.	1.8	40
52	Contributions of talin-1 to glioma cellâ€"matrix tensional homeostasis. Journal of the Royal Society Interface, 2012, 9, 1311-1317.	1.5	39
53	A composite hydrogel platform for the dissection of tumor cell migration at tissue interfaces. Biomaterials, 2014, 35, 8846-8853.	5.7	39
54	Direct Visualization of Vesicleâ^'Bilayer Complexes by Atomic Force Microscopy. Langmuir, 2000, 16, 9936-9940.	1.6	36

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55	Combining mechanical and optical approaches to dissect cellular mechanobiology. Journal of Biomechanics, 2010, 43, 45-54.	0.9	36
56	Role of long-range repulsive forces in organizing axonal neurofilament distributions: Evidence from mice deficient in myelin-associated glycoprotein. Journal of Neuroscience Research, 2002, 68, 681-690.	1.3	35
57	Extracellular Matrix Geometry and Initial Adhesive Position Determine Stress Fiber Network Organization during Cell Spreading. Cell Reports, 2019, 27, 1897-1909.e4.	2.9	35
58	Clonal ZEB1-Driven Mesenchymal Transition Promotes Targetable Oncologic Antiangiogenic Therapy Resistance. Cancer Research, 2020, 80, 1498-1511.	0.4	35
59	Microfluidic Strategies for Understanding the Mechanics of Cells and Cell-Mimetic Systems. Annual Review of Chemical and Biomolecular Engineering, 2015, 6, 293-317.	3.3	33
60	Experimental observation of the asymmetric instability of intermediate-reduced-volume vesicles in extensional flow. Soft Matter, 2016, 12, 3787-3796.	1.2	32
61	A Genetic Strategy for the Dynamic and Graded Control of Cell Mechanics, Motility, and Matrix Remodeling. Biophysical Journal, 2012, 102, 434-442.	0.2	31
62	Self-Assembling Micelles Based on an Intrinsically Disordered Protein Domain. Journal of the American Chemical Society, 2019, 141, 4291-4299.	6.6	31
63	Biophysical principles of choanoflagellate self-organization. Proceedings of the National Academy of Sciences of the United States of America, 2020, 117, 1303-1311.	3.3	31
64	Probing the Machinery of Intracellular Trafficking with the Atomic Force Microscope. Traffic, 2001, 2, 746-756.	1.3	30
65	Actomyosin stress fiber subtypes have unique viscoelastic properties and roles in tension generation. Molecular Biology of the Cell, 2018, 29, 1992-2004.	0.9	30
66	A 3D topographical model of parenchymal infiltration and perivascular invasion in glioblastoma. APL Bioengineering, 2018, 2, .	3.3	27
67	From Molecular Signal Activation to Locomotion: An Integrated, Multiscale Analysis of Cell Motility on Defined Matrices. PLoS ONE, 2011, 6, e18423.	1.1	26
68	Angiomotin links ROCK and YAP signaling in mechanosensitive differentiation of neural stem cells. Molecular Biology of the Cell, 2020, 31, 386-396.	0.9	26
69	Pan-neuronal maturation but not neuronal subtype differentiation of adult neural stem cells is mechanosensitive. Scientific Reports, 2013, 3, 1817.	1.6	25
70	Microelastic mapping of the rat dentate gyrus. Royal Society Open Science, 2016, 3, 150702.	1.1	25
71	Biophysical mechanisms of single-cell interactions with microtopographical cues. Biomedical Microdevices, 2010, 12, 287-296.	1.4	24
72	Ordered and disordered proteins as nanomaterial building blocks. Wiley Interdisciplinary Reviews: Nanomedicine and Nanobiotechnology, 2012, 4, 204-218.	3.3	24

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73	Differential Contributions of Nonmuscle Myosin II Isoforms and Functional Domains to Stress Fiber Mechanics. Scientific Reports, 2015, 5, 13736.	1.6	23
74	Linking invasive motility to protein expression in single tumor cells. Lab on A Chip, 2018, 18, 371-384.	3.1	23
75	<i>Egr1</i> is a 3D matrixâ€“specific mediator of mechanosensitive stem cell lineage commitment. Science Advances, 2022, 8, eabm4646.	4.7	20
76	Brushes, cables, and anchors: Recent insights into multiscale assembly and mechanics of cellular structural networks. Cell Biochemistry and Biophysics, 2007, 47, 348-360.	0.9	19
77	Novel biomaterials to study neural stem cell mechanobiology and improve cell-replacement therapies. Current Opinion in Biomedical Engineering, 2017, 4, 13-20.	1.8	19
78	Dopaminergic Neurons Transplanted Using Cellâ€Instructive Biomaterials Alleviate Parkinsonism in Rodents. Advanced Functional Materials, 2018, 28, 1804144.	7.8	19
79	Incorporating Tumor-Associated Macrophages into Engineered Models of Glioma. IScience, 2020, 23, 101770.	1.9	18
80	Suppression of LIM Kinase 1 and LIM Kinase 2 Limits Glioblastoma Invasion. Cancer Research, 2020, 80, 69-78.	0.4	17
81	Biophysical regulation of cancer stem/initiating cells: Implications for disease mechanisms and translation. Current Opinion in Biomedical Engineering, 2017, 1, 87-95.	1.8	15
82	Simultaneous and independent tuning of RhoA and Rac1 activity with orthogonally inducible promoters. Integrative Biology (United Kingdom), 2014, 6, 885-894.	0.6	14
83	Synthetic mechanobiology: engineering cellular force generation and signaling. Current Opinion in Biotechnology, 2016, 40, 82-89.	3.3	13
84	Structural Regulation of a Neurofilament-Inspired Intrinsically Disordered Protein Brush by Multisite Phosphorylation. Biochemistry, 2018, 57, 4019-4028.	1.2	12
85	Cofilin is required for polarization of tension in stress fiber networks during migration. Journal of Cell Science, 2020, 133, .	1.2	12
86	Transduction of cell and matrix geometric cues by the actin cytoskeleton. Current Opinion in Cell Biology, 2021, 68, 64-71.	2.6	12
87	Microtopographical assembly of cardiomyocytes. Integrative Biology (United Kingdom), 2011, 3, 1011-1019.	0.6	11
88	Contractility Dominates Adhesive Ligand Density in Regulating Cellular De-adhesion and Retraction Kinetics. Annals of Biomedical Engineering, 2011, 39, 1163-1173.	1.3	11
89	Three-dimensional patterning of multiple cell populations through orthogonal genetic control of cell motility. Soft Matter, 2014, 10, 2372-2380.	1.2	11
90	Transcriptomic analysis reveals that BMP4 sensitizes glioblastoma tumor-initiating cells to mechanical cues. Matrix Biology, 2020, 85-86, 112-127.	1.5	11

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91	Regulation of Tumor Invasion by the Physical Microenvironment: Lessons from Breast and Brain Cancer. Annual Review of Biomedical Engineering, 2022, 24, 29-59.	5.7	11
92	Site-Specific Modulation of Charge Controls the Structure and Stimulus Responsiveness of Intrinsically Disordered Peptide Brushes. Langmuir, 2016, 32, 5990-5996.	1.6	10
93	Lose the stress: Viscoelastic materials for cell engineering. Acta Biomaterialia, 2023, 163, 146-157.	4.1	10
94	Thiophene bridged aldehydes (TBAs) image ALDH activity in cells via modulation of intramolecular charge transfer. Chemical Science, 2017, 8, 7143-7151.	3.7	9
95	High-throughput indentational elasticity measurements of hydrogel extracellular matrix substrates. Applied Physics Letters, 2009, 95, 063701.	1.5	8
96	Multi-scale cellular engineering: From molecules to organ-on-a-chip. APL Bioengineering, 2020, 4, 010906.	3.3	8
97	Mastering their own fates through the matrix. Nature Materials, 2019, 18, 779-780.	13.3	6
98	Multiwell Combinatorial Hydrogel Array for High-Throughput Analysis of Cellâ€“ECM Interactions. ACS Biomaterials Science and Engineering, 2021, 7, 2453-2465.	2.6	6
99	Matrix Regulation of Tumor-Initiating Cells. Progress in Molecular Biology and Translational Science, 2014, 126, 243-256.	0.9	5
100	Modulating malignant epithelial tumor cell adhesion, migration and mechanics with nanorod surfaces. Biomedical Microdevices, 2011, 13, 89-95.	1.4	4
101	Fifteen years of <i>Servitude et Grandeur</i> to the application of a biophysical technique in medicine: The tale of AFMBioMed. Journal of Molecular Recognition, 2019, 32, e2773.	1.1	4
102	The Role of Hyaluronic Acid and Its Receptors in the Growth and Invasion of Brain Tumors. Tumors of the Central Nervous System, 2014, , 253-266.	0.1	4
103	Cell-matrix mechanobiology: Applications to brain tumors and design of tissue engineering scaffolds. , 2009, 2009, 3350-2.		3
104	Cellular and Molecular Bioengineering: A Tipping Point. Cellular and Molecular Bioengineering, 2012, 5, 239-253.	1.0	3
105	Biofunctionalization of Hydrogels for Engineering the Cellular Microenvironment. , 2014, , 315-348.		3
106	Imaging and manipulating the structural machinery of living cells on the micro- and nanoscale. International Journal of Nanomedicine, 2007, 2, 333-44.	3.3	3
107	Making way for neural stemness. Nature Materials, 2017, 16, 1174-1176.	13.3	2
108	Getting the big picture of cell-matrix interactions: High-throughput biomaterial platforms and systems-level measurements. Current Opinion in Solid State and Materials Science, 2020, 24, 100871.	5.6	2

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109	Preface. Progress in Molecular Biology and Translational Science, 2014, 126, xiii-xiv.	0.9	0
110	Engineering Advanced Models of the Glioblastoma Microenvironment Using Biomaterials. Biology of Extracellular Matrix, 2017, , 75-89.	0.3	0
111	OTME-12. Role of the transsulfuration pathway in glioblastoma invasion. Neuro-Oncology Advances, 2021, 3, ii15-ii16.	0.4	0
112	The 2021 Young Innovators of Cellular and Molecular Bioengineering. Cellular and Molecular Bioengineering, 2021, 14, 379-380.	1.0	0
113	Cell Mechanobiology in Regenerative Medicine. , 2012, , 1-16.		0