Alan J Grodzinsky

List of Publications by Citations

77 papers	5,567 citations	33 h-index	74 g-index
79 ext. papers	6,292 ext. citations	6.2 avg, IF	5.56 L-index

#	Paper	IF	Citations
77	Biosynthetic response of cartilage explants to dynamic compression. *Journal of Orthopaedic Research*, **1989**, 7, 619-36	3.8	693
76	Cartilage tissue remodeling in response to mechanical forces. *Annual Review of Biomedical Engineering*, **2000**, 2, 691-713	12	488
75	Chondrocytes in agarose culture synthesize a mechanically functional extracellular matrix. *Journal of Orthopaedic Research*, **1992**, 10, 745-58	3.8	434
74	Mechanical and physiochemical determinants of the chondrocyte biosynthetic response. *Journal of Orthopaedic Research*, **1988**, 6, 777-92	3.8	341
73	Comparison of biomechanical and biochemical properties of cartilage from human knee and ankle pairs. *Journal of Orthopaedic Research*, **2000**, 18, 739-48	3.8	257
72	Noncontact three-dimensional mapping of intracellular hydromechanical properties by Brillouin microscopy. *Nature Methods*, **2015**, 12, 1132-4	21.6	223
71	Swelling of articular cartilage and other connective tissues: electromechanochemical forces. *Journal of Orthopaedic Research*, **1985**, 3, 148-59	3.8	205
70	Mechanical compression of cartilage explants induces multiple time-dependent gene expression patterns and involves intracellular calcium and cyclic AMP. *Journal of Biological Chemistry*, **2004**, 279, 19502-11	5.4	177
69	The effect of dynamic compression on the response of articular cartilage to insulin-like growth factor-I. *Journal of Orthopaedic Research*, **2001**, 19, 11-7	3.8	177
68	Solid stress and elastic energy as measures of tumour mechanopathology. *Nature Biomedical Engineering*, **2016**, 1,	19	171
67	Biosynthetic response and mechanical properties of articular cartilage after injurious compression. *Journal of Orthopaedic Research*, **2001**, 19, 1140-6	3.8	170
66	Cartilage diseases. *Matrix Biology*, **2018**, 71-72, 51-69	11.4	132
65	Anti-VEGF therapy induces ECM remodeling and mechanical barriers to therapy in colorectal cancer liver metastases. *Science Translational Medicine*, **2016**, 8, 360ra135	17.5	128
64	Streaming potentials: a sensitive index of enzymatic degradation in articular cartilage. *Journal of Orthopaedic Research*, **1987**, 5, 497-508	3.8	124
63	Cartilage-targeting drug delivery: can electrostatic interactions help?. *Nature Reviews Rheumatology*, **2017**, 13, 183-193	8.1	109
62	Down-regulation of chondrocyte aggrecan and type-II collagen gene expression correlates with increases in static compression magnitude and duration. *Journal of Orthopaedic Research*, **1999**, 17, 836-42	3.8	104
61	Cartilage-penetrating nanocarriers improve delivery and efficacy of growth factor treatment of osteoarthritis. *Science Translational Medicine*, **2018**, 10,	17.5	104

60	Effects of injurious compression on matrix turnover around individual cells in calf articular cartilage explants. *Journal of Orthopaedic Research*, **1998**, 16, 490-9	3.8	102
59	Mechanical injury and cytokines cause loss of cartilage integrity and upregulate proteins associated with catabolism, immunity, inflammation, and repair. *Molecular and Cellular Proteomics*, **2009**, 8, 1475-89	7.6	77
58	Differential effects of serum, insulin-like growth factor-I, and fibroblast growth factor-2 on the maintenance of cartilage physical properties during long-term culture. *Journal of Orthopaedic Research*, **1996**, 14, 44-52	3.8	71
57	Effects of short-term glucocorticoid treatment on changes in cartilage matrix degradation and chondrocyte gene expression induced by mechanical injury and inflammatory cytokines. *Arthritis Research and Therapy*, **2011**, 13, R142	5.7	69
56	Solid stress in brain tumours causes neuronal loss and neurological dysfunction and can be reversed by lithium. *Nature Biomedical Engineering*, **2019**, 3, 230-245	19	66
55	Molecular-Level Theoretical Model for Electrostatic Interactions within Polyelectrolyte Brushes: Applications to Charged Glycosaminoglycans. *Langmuir*, **2003**, 19, 5526-5539	4	51
54	Intra-articular dexamethasone to inhibit the development of post-traumatic osteoarthritis. *Journal of Orthopaedic Research*, **2017**, 35, 406-411	3.8	49
53	Aggrecan nanoscale solid-fluid interactions are a primary determinant of cartilage dynamic mechanical properties. *ACS Nano*, **2015**, 9, 2614-25	16.7	48
52	Size- and speed-dependent mechanical behavior in living mammalian cytoplasm. *Proceedings of the National Academy of Sciences of the United States of America*, **2017**, 114, 9529-9534	11.5	47
51	Cartilage degradation and associated changes in biomechanical and electromechanical properties. *Acta Orthopaedica*, **1995**, 66, 38-44		46
50	Induction of DNA synthesis by a single transient mechanical stimulus of human vascular smooth muscle cells. Role of fibroblast growth factor-2. *Circulation*, **1996**, 93, 99-105	16.7	41
49	Physical and biological regulation of proteoglycan turnover around chondrocytes in cartilage explants. Implications for tissue degradation and repair. *Annals of the New York Academy of Sciences*, **1999**, 878, 420-41	6.5	38
48	Effects of Dexamethasone on Mesenchymal Stromal Cell Chondrogenesis and Aggrecanase Activity: Comparison of Agarose and Self-Assembling Peptide Scaffolds. *Cartilage*, **2013**, 4, 63-74	3	36
47	Predicting Knee Osteoarthritis. *Annals of Biomedical Engineering*, **2016**, 44, 222-33	4.7	34
46	Biological connective tissues exhibit viscoelastic and poroelastic behavior at different frequency regimes: Application to tendon and skin biophysics. *Acta Biomaterialia*, **2018**, 70, 249-259	10.8	34
45	Contribution of electrodiffusion to the dynamics of electrically stimulated changes in mechanical properties of collagen membranes. *Biopolymers*, **1980**, 19, 241-62	2.2	34
44	Nanomechanical phenotype of chondroadherin-null murine articular cartilage. *Matrix Biology*, **2014**, 38, 84-90	11.4	33
43	Electromechanical transduction with charged polyelectrolyte membranes. *IEEE Transactions on Biomedical Engineering*, **1976**, 23, 421-33	5	33

42	Tendon exhibits complex poroelastic behavior at the nanoscale as revealed by high-frequency AFM-based rheology. *Journal of Biomechanics*, **2017**, 54, 11-18	2.9	32
41	High-bandwidth AFM-based rheology is a sensitive indicator of early cartilage aggrecan degradation relevant to mouse models of osteoarthritis. *Journal of Biomechanics*, **2015**, 48, 162-5	2.9	32
40	Transport of tissue inhibitor of metalloproteinases-1 through cartilage: contributions of fluid flow and electrical migration. *Journal of Orthopaedic Research*, **1998**, 16, 734-42	3.8	31
39	A comparative study of the inhibitory effects of interleukin-1 receptor antagonist following administration as a recombinant protein or by gene transfer. *Arthritis Research*, **2003**, 5, R301-9		31
38	Quantitative proteomics analysis of cartilage response to mechanical injury and cytokine treatment. *Matrix Biology*, **2017**, 63, 11-22	11.4	29
37	Green fluorescent proteins engineered for cartilage-targeted drug delivery: Insights for transport into highly charged avascular tissues. *Biomaterials*, **2018**, 183, 218-233	15.6	28
36	A novel mechanobiological model can predict how physiologically relevant dynamic loading causes proteoglycan loss in mechanically injured articular cartilage. *Scientific Reports*, **2018**, 8, 15599	4.9	27
35	Biomechanical properties of murine meniscus surface via AFM-based nanoindentation. *Journal of Biomechanics*, **2015**, 48, 1364-70	2.9	26
34	AFM-Nanomechanical Test: An Interdisciplinary Tool That Links the Understanding of Cartilage and Meniscus Biomechanics, Osteoarthritis Degeneration, and Tissue Engineering. *ACS Biomaterials Science and Engineering*, **2017**, 3, 2033-2049	5.5	26
33	Laser Speckle Rheology for evaluating the viscoelastic properties of hydrogel scaffolds. *Scientific Reports*, **2016**, 6, 37949	4.9	25
32	Nondestructive detection of cartilage degeneration using electromechanical surface spectroscopy. *Journal of Biomechanical Engineering*, **1994**, 116, 384-92	2.1	24
31	In-situ removal of ammonium and lactate through electrical means for hybridoma cultures. *Biotechnology and Bioengineering*, **1995**, 47, 308-18	4.9	23
30	Articular cartilage of the knee 3 years after ACL reconstruction. A quantitative T2 relaxometry analysis of 10 knees. *Monthly Notices of the Royal Astronomical Society: Letters*, **2015**, 86, 605-10	4.3	21
29	Modeling IL-1 induced degradation of articular cartilage. *Archives of Biochemistry and Biophysics*, **2016**, 594, 37-53	4.1	20
28	Growth Factor-Mediated Migration of Bone Marrow Progenitor Cells for Accelerated Scaffold Recruitment. *Tissue Engineering - Part A*, **2016**, 22, 917-27	3.9	18
27	Nutrient enrichment and in-situ waste removal through electrical means for hybridoma cultures. *Biotechnology and Bioengineering*, **1995**, 47, 319-26	4.9	17
26	Augmentation of mass transfer through electrical means for hydrogel-entrapped Escherichia coli cultivation. *Biotechnology and Bioengineering*, **1995**, 48, 149-57	4.9	17
25	Enzyme Pretreatment plus Locally Delivered HB-IGF-1 Stimulate Integrative Cartilage Repair. *Tissue Engineering - Part A*, **2019**, 25, 1191-1201	3.9	16

24	Stress-vs-time signals allow the prediction of structurally catastrophic events during fracturing of immature cartilage and predetermine the biomechanical, biochemical, and structural impairment. *Journal of Structural Biology*, **2013**, 183, 501-511	3.4	15
23	Synthetic nanoscale electrostatic particles as growth factor carriers for cartilage repair. *Bioengineering and Translational Medicine*, **2016**, 1, 347-356	14.8	15
22	Wide bandwidth nanomechanical assessment of murine cartilage reveals protection of aggrecan knock-in mice from joint-overuse. *Journal of Biomechanics*, **2016**, 49, 1634-1640	2.9	14
21	Human osteoarthritic chondrons outnumber patient- and joint-matched chondrocytes in hydrogel culture-Future application in autologous cell-based OA cartilage repair?. *Journal of Tissue Engineering and Regenerative Medicine*, **2018**, 12, e1206-e1220	4.4	13
20	Coculture of bovine cartilage with synovium and fibrous joint capsule increases aggrecanase and matrix metalloproteinase activity. *Arthritis Research and Therapy*, **2017**, 19, 157	5.7	12
19	Tissue-Engineered Versus Native Cartilage: Linkage between Cellular Mechano-Transduction and Biomechanical Properties. *Novartis Foundation Symposium*, **2008**, 52-69		12
18	Computational model for the analysis of cartilage and cartilage tissue constructs. *Journal of Tissue Engineering and Regenerative Medicine*, **2016**, 10, 334-47	4.4	11
17	Mechanobiological model for simulation of injured cartilage degradation via pro-inflammatory cytokines and mechanical stimulus. *PLoS Computational Biology*, **2020**, 16, e1007998	5	10
16	Release of pro-inflammatory cytokines from muscle and bone causes tenocyte death in a novel rotator cuff in vitro explant culture model. *Connective Tissue Research*, **2018**, 59, 423-436	3.3	10
15	Chemoproteomics of matrix metalloproteases in a model of cartilage degeneration suggests functional biomarkers associated with posttraumatic osteoarthritis. *Journal of Biological Chemistry*, **2018**, 293, 11459-11469	5.4	10
14	Dynamic nanomechanics of individual bone marrow stromal cells and cell-matrix composites during chondrogenic differentiation. *Journal of Biomechanics*, **2015**, 48, 171-5	2.9	9
13	Systems Based Study of the Therapeutic Potential of Small Charged Molecules for the Inhibition of IL-1 Mediated Cartilage Degradation. *PLoS ONE*, **2016**, 11, e0168047	3.7	8
12	Multiscale Poroviscoelastic Compressive Properties of Mouse Supraspinatus Tendons Are Altered in Young and Aged Mice. *Journal of Biomechanical Engineering*, **2018**, 140,	2.1	6
11	Persistence Length of Cartilage Aggrecan Macromolecules Measured via Atomic Force Microscopy. *Macromolecular Symposia*, **2004**, 214, 1-4	0.8	6
10	Proteomic analysis reveals dexamethasone rescues matrix breakdown but not anabolic dysregulation in a cartilage injury model. *Osteoarthritis and Cartilage Open*, **2020**, 2, 100099-100099	1.5	5
9	Creb5 establishes the competence for Prg4 expression in articular cartilage. *Communications Biology*, **2021**, 4, 332	6.7	4
8	Microfracture Augmentation With Trypsin Pretreatment and Growth Factor-Functionalized Self-assembling Peptide Hydrogel Scaffold in an Equine Model. *American Journal of Sports Medicine*, **2021**, 49, 2498-2508	6.8	4
7	Nanoscale Poroelasticity of the Tectorial Membrane Determines Hair Bundle Deflections. *Physical Review Letters*, **2019**, 122, 028101	7.4	4

6	Age-associated changes in the response of tendon explants to stress deprivation is sex-dependent. *Connective Tissue Research*, **2020**, 61, 48-62	3.3	4
5	Lose-Dose Administration of Dexamethasone Is Beneficial in Preventing Secondary Tendon Damage in a Stress-Deprived Joint Injury Explant Model. *Journal of Orthopaedic Research*, **2020**, 38, 139-149	3.8	3
4	Shear strain and inflammation-induced fixed charge density loss in the knee joint cartilage following ACL injury and reconstruction: A computational study. *Journal of Orthopaedic Research*, **2021**,	3.8	1
3	Mechanobiological model for simulation of injured cartilage degradation via pro-inflammatory cytokines and mechanical stimulus **2020**, 16, e1007998		
2	Mechanobiological model for simulation of injured cartilage degradation via pro-inflammatory cytokines and mechanical stimulus **2020**, 16, e1007998		
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