

# Robert L Sah

## List of Publications by Year in descending order

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122  
papers

9,431  
citations

50566

48  
h-index

45040

94  
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123  
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123  
docs citations

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times ranked

9889  
citing authors

#	ARTICLE	IF	CITATIONS
1	Effects of an articular cartilage lubrication with a viscosupplement in vitro and in vivo following osteochondral fractures in horses. <i>American Journal of Veterinary Research</i> , 2021, 82, 611-618.	0.3	2
2	Matrix Rigidity Controls Epithelial-Mesenchymal Plasticity and Tumor Metastasis via a Mechanoresponsive EPHA2/LYN Complex. <i>Developmental Cell</i> , 2020, 54, 302-316.e7.	3.1	128
3	Impact insertion of osteochondral grafts: Interference fit and central graft reduction affect biomechanics and cartilage damage. <i>Journal of Orthopaedic Research</i> , 2018, 36, 377-386.	1.2	8
4	ISSLS PRIZE IN BASIC SCIENCE 2018: Growth differentiation factor-6 attenuated pro-inflammatory molecular changes in the rabbit anular-puncture model and degenerated disc-induced pain generation in the rat xenograft radiculopathy model. <i>European Spine Journal</i> , 2018, 27, 739-751.	1.0	27
5	Biomechanics of osteochondral impact with cushioning and graft Insertion: Cartilage damage is correlated with delivered energy. <i>Journal of Biomechanics</i> , 2018, 73, 127-136.	0.9	10
6	Tailoring hydrogel surface properties to modulate cellular response to shear loading. <i>Acta Biomaterialia</i> , 2017, 52, 105-117.	4.1	14
7	Effect of hyaluronidase on tissue-engineered human septal cartilage. <i>Laryngoscope</i> , 2016, 126, 1984-1989.	1.1	3
8	Hyaluronan concentration and size distribution in human knee synovial fluid: variations with age and cartilage degeneration. <i>Arthritis Research and Therapy</i> , 2016, 18, 18.	1.6	94
9	Ex vivo loading of trussed implants for spine fusion induces heterogeneous strains consistent with homeostatic bone mechanobiology. <i>Journal of Biomechanics</i> , 2016, 49, 4090-4097.	0.9	12
10	Matrix stiffness drives epithelialâ€mesenchymal transition and tumour metastasis through a TWIST1â€G3BP2 mechanotransduction pathway. <i>Nature Cell Biology</i> , 2015, 17, 678-688.	4.6	699
11	Craniofacial Cartilage Tissue Engineering. , 2015, , 541-552.		1
12	Evaluation of Autogenous Engineered Septal Cartilage Grafts in Rabbits: A Minimally Invasive Preclinical Model. <i>Advances in Otolaryngology</i> , 2014, 2014, 1-7.	1.1	6
13	Synovial Fluid Lubricant Properties Are Transiently Deficient After Arthroscopic Articular Cartilage Defect Repair With Platelet-Enriched Fibrin Alone and With Mesenchymal Stem Cells. <i>Orthopaedic Journal of Sports Medicine</i> , 2014, 2, 232596711454258.	0.8	12
14	Integrating qPLM and biomechanical test data with an anisotropic fiber distribution model and predictions of TGF- $\beta$ 1 and IGF-1 regulation of articular cartilage fiber modulus. <i>Biomechanics and Modeling in Mechanobiology</i> , 2013, 12, 1073-1088.	1.4	9
15	Flexural Properties of Native and Tissueâ€Engineered Human Septal Cartilage. <i>Otolaryngology - Head and Neck Surgery</i> , 2013, 148, 576-581.	1.1	8
16	In vivo efficacy of fresh versus frozen osteochondral allografts in the goat at 6 months is associated with PRG4 secretion. <i>Journal of Orthopaedic Research</i> , 2013, 31, 880-886.	1.2	15
17	A compositional analysis of cadaveric human nasal septal cartilage. <i>Laryngoscope</i> , 2013, 123, 2120-2124.	1.1	18
18	In vitro Articular Cartilage Growth with Sequential Application of IGF-1 and TGF- $\beta$ 1 Enhances Volumetric Growth and Maintains Compressive Properties. <i>Journal of Biomechanical Engineering</i> , 2012, 134, 031001.	0.6	9

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19	The In Vivo Performance of Osteochondral Allografts in the Goat Is Diminished With Extended Storage and Decreased Cartilage Cellularity. <i>American Journal of Sports Medicine</i> , 2012, 40, 1814-1823.	1.9	75
20	Compaction Enhances Extracellular Matrix Content and Mechanical Properties of Tissue-Engineered Cartilaginous Constructs. <i>Tissue Engineering - Part A</i> , 2012, 18, 1151-1160.	1.6	1
21	The biophysical mechanisms of altered hyaluronan concentration in synovial fluid after anterior cruciate ligament transection. <i>Arthritis and Rheumatism</i> , 2012, 64, 3993-4003.	6.7	13
22	Effect of Tibial Plateau Fracture on Lubrication Function and Composition of Synovial Fluid. <i>Journal of Bone and Joint Surgery - Series A</i> , 2012, 94, e64.	1.4	31
23	Effects of equine joint injury on boundary lubrication of articular cartilage by synovial fluid: Role of hyaluronan. <i>Arthritis and Rheumatism</i> , 2012, 64, 2917-2926.	6.7	52
24	Structural and Functional Maturation of Distal Femoral Cartilage and Bone During Postnatal Development and Growth in Humans and Mice. <i>Orthopedic Clinics of North America</i> , 2012, 43, 173-185.	0.5	18
25	In Vivo Implantation of Tissue-Engineered Human Nasal Septal Neocartilage Constructs. <i>Otolaryngology - Head and Neck Surgery</i> , 2012, 146, 46-52.	1.1	38
26	Tmod1 and CP49 Synergize to Control the Fiber Cell Geometry, Transparency, and Mechanical Stiffness of the Mouse Lens. <i>PLoS ONE</i> , 2012, 7, e48734.	1.1	54
27	A systems biology approach to synovial joint lubrication in health, injury, and disease. <i>Wiley Interdisciplinary Reviews: Systems Biology and Medicine</i> , 2012, 4, 15-37.	6.6	191
28	Cartilage-like mechanical properties of poly (ethylene glycol)-diacrylate hydrogels. <i>Biomaterials</i> , 2012, 33, 6682-6690.	5.7	181
29	Contribution of Proteoglycan Osmotic Swelling Pressure to the Compressive Properties of Articular Cartilage. <i>Biophysical Journal</i> , 2011, 101, 916-924.	0.2	108
30	Preclinical Studies for Cartilage Repair. <i>Cartilage</i> , 2011, 2, 137-152.	1.4	110
31	Fluid movement and joint capsule strains due to flexion in rabbit knees. <i>Journal of Biomechanics</i> , 2011, 44, 2761-2767.	0.9	17
32	Effect of initial cell seeding density on 3D-engineered silk fibroin scaffolds for articular cartilage tissue engineering. <i>Biomaterials</i> , 2011, 32, 8927-8937.	5.7	101
33	Biomechanical properties of mixtures of blood and synovial fluid. <i>Journal of Orthopaedic Research</i> , 2011, 29, 240-246.	1.2	13
34	<i>In Vitro</i> Modulation of Cartilage Shape Plasticity by Biochemical Regulation of Matrix Remodeling. <i>Tissue Engineering - Part A</i> , 2011, 17, 17-23.	1.6	7
35	Modeling the collagen fibril network of biological tissues as a nonlinearly elastic material using a continuous volume fraction distribution function. <i>Mathematics and Mechanics of Solids</i> , 2011, 16, 706-715.	1.5	9
36	Semi-permeable membrane retention of synovial fluid lubricants hyaluronan and proteoglycan 4 for a biomimetic bioreactor. <i>Biotechnology and Bioengineering</i> , 2010, 106, 149-160.	1.7	20

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37	Effect of a focal articular defect on cartilage deformation during patellofemoral articulation. <i>Journal of Orthopaedic Research</i> , 2010, 28, 1554-1561.	1.2	35
38	Shape, loading, and motion in the bioengineering design, fabrication, and testing of personalized synovial joints. <i>Journal of Biomechanics</i> , 2010, 43, 156-165.	0.9	39
39	Macroscopic assessment of cartilage shear: Effects of counter-surface roughness, synovial fluid lubricant, and compression offset. <i>Journal of Biomechanics</i> , 2010, 43, 1787-1793.	0.9	10
40	Mechanical asymmetry during articulation of tibial and femoral cartilages: Local and overall compressive and shear deformation and properties. <i>Journal of Biomechanics</i> , 2010, 43, 1689-1695.	0.9	40
41	Differential regulation of immature articular cartilage compressive moduli and Poisson's ratios by in vitro stimulation with IGF-1 and TGF- $\beta$ 1. <i>Journal of Biomechanics</i> , 2010, 43, 2501-2507.	0.9	18
42	Interactive Cytokine Regulation of Synoviocyte Lubricant Secretion. <i>Tissue Engineering - Part A</i> , 2010, 16, 1329-1337.	1.6	34
43	Tissue Engineering by Molecular Disassembly and Reassembly: Biomimetic Retention of Mechanically Functional Aggrecan in Hydrogel. <i>Tissue Engineering - Part C: Methods</i> , 2010, 16, 1471-1479.	1.1	7
44	The Proteoglycan Metabolism of Articular Cartilage in Joint-Scale Culture. <i>Tissue Engineering - Part A</i> , 2010, 16, 1717-1727.	1.6	9
45	Insulin-like Growth Factor-I and Growth Differentiation Factor-5 Promote the Formation of Tissue-Engineered Human Nasal Septal Cartilage. <i>Tissue Engineering - Part C: Methods</i> , 2010, 16, 1213-1221.	1.1	32
46	A Nonlinear Constituent Based Viscoelastic Model for Articular Cartilage and Analysis of Tissue Remodeling Due to Altered Glycosaminoglycan-Collagen Interactions. <i>Journal of Biomechanical Engineering</i> , 2009, 131, 101002.	0.6	26
47	Expansion and Redifferentiation of Chondrocytes from Osteoarthritic Cartilage: Cells for Human Cartilage Tissue Engineering. <i>Tissue Engineering - Part A</i> , 2009, 15, 3513-3523.	1.6	53
48	Chondrocyte Viability is Higher after Prolonged Storage at 37°C than at 4 C for Osteochondral Grafts. <i>American Journal of Sports Medicine</i> , 2009, 37, 24-32.	1.9	105
49	The effects of focal articular defects on cartilage contact mechanics. <i>Journal of Orthopaedic Research</i> , 2009, 27, 584-592.	1.2	73
50	Effect of risedronate in a minipig cartilage defect model with allograft. <i>Journal of Orthopaedic Research</i> , 2009, 27, 360-365.	1.2	15
51	Asymmetrical strain distributions and neutral axis location of cartilage in flexure. <i>Journal of Biomechanics</i> , 2009, 42, 325-330.	0.9	9
52	Tissue Engineering of Articular Cartilage with Biomimetic Zones. <i>Tissue Engineering - Part B: Reviews</i> , 2009, 15, 143-157.	2.5	273
53	Regulation of immature cartilage growth by IGF-I, TGF- $\beta$ 1, BMP-7, and PDGF-AB: role of metabolic balance between fixed charge and collagen network. <i>Biomechanics and Modeling in Mechanobiology</i> , 2008, 7, 263-276.	1.4	29
54	Biomechanics of cartilage articulation: Effects of lubrication and degeneration on shear deformation. <i>Arthritis and Rheumatism</i> , 2008, 58, 2065-2074.	6.7	86

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55	Experimental measurement and quantification of frictional contact between biological surfaces experiencing large deformation and slip. <i>Journal of Biomechanics</i> , 2008, 41, 1333-1340.	0.9	8
56	Shaped, Stratified, Scaffold-free Grafts for Articular Cartilage Defects. <i>Clinical Orthopaedics and Related Research</i> , 2008, 466, 1912-1920.	0.7	28
57	Articular cartilage tensile integrity: Modulation by matrix depletion is maturation-dependent. <i>Archives of Biochemistry and Biophysics</i> , 2008, 474, 175-182.	1.4	39
58	<i>In Vivo</i> Maturation of Scaffold-free Engineered Articular Cartilage on Hydroxyapatite. <i>Tissue Engineering - Part A</i> , 2008, 14, 1905-1913.	1.6	26
59	A Cartilage Growth Mixture Model With Collagen Remodeling: Validation Protocols. <i>Journal of Biomechanical Engineering</i> , 2008, 130, 031006.	0.6	27
60	Bioengineering Cartilage Growth, Maturation, and Form. <i>Pediatric Research</i> , 2008, 63, 527-534.	1.1	49
61	The effects of focal articular defects on intra-tissue strains in the surrounding and opposing cartilage. <i>Biorheology</i> , 2008, 45, 193-207.	1.2	30
62	Shear deformation kinematics during cartilage articulation: effect of lubrication, degeneration, and stress relaxation. <i>MCB Molecular and Cellular Biomechanics</i> , 2008, 5, 197-206.	0.3	23
63	Fabrication of 3D hepatic tissues by additive photopatterning of cellular hydrogels. <i>FASEB Journal</i> , 2007, 21, 790-801.	0.2	422
64	Short-Term Retention of Labeled Chondrocyte Subpopulations in Stratified Tissue-Engineered Cartilaginous Constructs Implanted <i>In Vivo</i> in Mini-Pigs. <i>Tissue Engineering</i> , 2007, 13, 1525-1537.	4.9	35
65	Mechanisms of cartilage growth: Modulation of balance between proteoglycan and collagen <i>in vitro</i> using chondroitinase ABC. <i>Arthritis and Rheumatism</i> , 2007, 56, 188-198.	6.7	80
66	Boundary lubrication of articular cartilage: Role of synovial fluid constituents. <i>Arthritis and Rheumatism</i> , 2007, 56, 882-891.	6.7	447
67	Microenvironment regulation of PRG4 phenotype of chondrocytes. <i>Journal of Orthopaedic Research</i> , 2007, 25, 685-695.	1.2	18
68	Depth-dependent biomechanical and biochemical properties of fetal, newborn, and tissue-engineered articular cartilage. <i>Journal of Biomechanics</i> , 2007, 40, 182-190.	0.9	129
69	Articular cartilage mechanical and biochemical property relations before and after <i>in vitro</i> growth. <i>Journal of Biomechanics</i> , 2007, 40, 3607-3614.	0.9	50
70	Three-dimensional (3-D) imaging of chondrocytes in articular cartilage: Growth-associated changes in cell organization. <i>Biomaterials</i> , 2007, 28, 230-239.	5.7	37
71	Tissue Engineering of Articular Cartilage. , 2006, , 157-189.		4
72	Probing the role of multicellular organization in three-dimensional microenvironments. <i>Nature Methods</i> , 2006, 3, 369-375.	9.0	523

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73	Biomechanical assessment of tissue retrieved after in vivo cartilage defect repair: tensile modulus of repair tissue and integration with host cartilage. <i>Journal of Biomechanics</i> , 2006, 39, 138-146.	0.9	44
74	Indentation testing of human articular cartilage: Effects of probe tip geometry and indentation depth on intra-tissue strain. <i>Journal of Biomechanics</i> , 2006, 39, 1039-1047.	0.9	70
75	Dynamic shear stimulation of bovine cartilage biosynthesis of proteoglycan 4. <i>Arthritis and Rheumatism</i> , 2006, 54, 1888-1896.	6.7	107
76	Interleukin-1 $\beta$ induction of tensile weakening associated with collagen degradation in bovine articular cartilage. <i>Arthritis and Rheumatism</i> , 2006, 54, 3267-3276.	6.7	18
77	Compressive Biomechanical Properties of Human Nasal Septal Cartilage. <i>American Journal of Rhinology &amp; Allergy</i> , 2006, 20, 496-501.	2.3	49
78	Tailoring Secretion of Proteoglycan 4 (PRG4) in Tissue-Engineered Cartilage. <i>Tissue Engineering</i> , 2006, 12, 1429-1439.	4.9	26
79	Tailoring Secretion of Proteoglycan 4 (PRG4) in Tissue-Engineered Cartilage. <i>Tissue Engineering</i> , 2006, .	4.9	0
80	Exposure to Pulsed Low Intensity Ultrasound Stimulates Extracellular Matrix Metabolism of Bovine Intervertebral Disc Cells Cultured in Alginate Beads. <i>Spine</i> , 2005, 30, 2398-2405.	1.0	31
81	Evaluation of subchondral bone mineral density associated with articular cartilage structure and integrity in healthy equine joints with different functional demands. <i>American Journal of Veterinary Research</i> , 2005, 66, 1823-1829.	0.3	10
82	Treatment of cartilage with $\beta$ -aminopropionitrile accelerates subsequent collagen maturation and modulates integrative repair. <i>Journal of Orthopaedic Research</i> , 2005, 23, 594-601.	1.2	22
83	Proteoglycan 4 (PRG4) synthesis and immunolocalization in bovine meniscus. <i>Journal of Orthopaedic Research</i> , 2005, 23, 562-568.	1.2	92
84	A cartilage growth mixture model for infinitesimal strains: solutions of boundary-value problems related to in vitro growth experiments. <i>Biomechanics and Modeling in Mechanobiology</i> , 2005, 3, 209-223.	1.4	23
85	Cell density alters matrix accumulation in two distinct fractions and the mechanical integrity of alginate $\beta$ -chondrocyte constructs. <i>Acta Biomaterialia</i> , 2005, 1, 625-633.	4.1	72
86	Tensile Biomechanical Properties of Human Nasal Septal Cartilage. <i>American Journal of Rhinology &amp; Allergy</i> , 2005, 19, 617-622.	2.3	47
87	Depth-varying Density and Organization of Chondrocytes in Immature and Mature Bovine Articular Cartilage Assessed by 3D Imaging and Analysis. <i>Journal of Histochemistry and Cytochemistry</i> , 2005, 53, 1109-1119.	1.3	102
88	Photo- and electropatterning of hydrogel-encapsulated living cell arrays. <i>Lab on A Chip</i> , 2005, 5, 111.	3.1	257
89	Mechanical Characterization of Native and Tissue-Engineered Cartilage. , 2004, 101, 157-190.		18
90	In Vitro Physical Stimulation of Tissue-Engineered and Native Cartilage. , 2004, 100, 325-352.		12

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91	Tissue-Engineered Human Nasal Septal Cartilage Using the Alginate-Recovered-Chondrocyte Method. Laryngoscope, 2004, 114, 38-45.	1.1	62
92	Synthesis of proteoglycan 4 by chondrocyte subpopulations in cartilage explants, monolayer cultures, and resurfaced cartilage cultures. Arthritis and Rheumatism, 2004, 50, 2849-2857.	6.7	79
93	Geometric and Material Determinants of Patterning Efficiency by Dielectrophoresis. Biophysical Journal, 2004, 87, 2131-2147.	0.2	75
94	Dependence of Cartilage Matrix Composition on Biosynthesis, Diffusion, and Reaction. Transport in Porous Media, 2003, 50, 57-73.	1.2	51
95	Microenvironment regulation of extracellular signal-regulated kinase activity in chondrocytes: Effects of culture configuration, interleukin-1, and compressive stress. Arthritis and Rheumatism, 2003, 48, 689-699.	6.7	49
96	Indentation testing of human cartilage: Sensitivity to articular surface degeneration. Arthritis and Rheumatism, 2003, 48, 3382-3394.	6.7	98
97	Tensile mechanical properties of bovine articular cartilage: Variations with growth and relationships to collagen network components. Journal of Orthopaedic Research, 2003, 21, 872-880.	1.2	244
98	A novel two-step method for the formation of tissue-engineered cartilage by mature bovine chondrocytes: The alginate-recovered-chondrocyte (ARC) method. Journal of Orthopaedic Research, 2003, 21, 139-148.	1.2	238
99	Growth of Immature Articular Cartilage in Vitro: Correlated Variation in Tensile Biomechanical and Collagen Network Properties. Tissue Engineering, 2003, 9, 625-634.	4.9	64
100	A Growth Mixture Theory for Cartilage With Application to Growth-Related Experiments on Cartilage Explants. Journal of Biomechanical Engineering, 2003, 125, 169-179.	0.6	79
101	Bioengineering the Growth of Articular Cartilage. , 2003, , 194-210.		0
102	PROLONGED STORAGE EFFECTS ON THE ARTICULAR CARTILAGE OF FRESH HUMAN OSTEOCHONDRAL ALLOGRAFTS. Journal of Bone and Joint Surgery - Series A, 2003, 85, 2111-2120.	1.4	282
103	Perfusion Increases Cell Content and Matrix Synthesis in Chondrocyte Three-Dimensional Cultures. Tissue Engineering, 2002, 8, 807-816.	4.9	190
104	Induction of advanced glycation end products and alterations of the tensile properties of articular cartilage. Arthritis and Rheumatism, 2002, 46, 3212-3217.	6.7	115
105	Development-associated differences in integrative cartilage repair: Roles of biosynthesis and matrix. Journal of Orthopaedic Research, 2002, 20, 1274-1281.	1.2	33
106	The biomechanical faces of articular cartilage in growth, aging, and osteoarthritis. , 2002, , 409-422.		3
107	Growth Responses of Cartilage to Static and Dynamic Compression. Clinical Orthopaedics and Related Research, 2001, 391, S34-S48.	0.7	52
108	Integrative cartilage repair: adhesive strength is correlated with collagen deposition. Journal of Orthopaedic Research, 2001, 19, 1105-1112.	1.2	83

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109	Mechanisms of chondrocyte adhesion to cartilage: role of $\beta$ 1-integrins, CD44, and annexin V. <i>Journal of Orthopaedic Research</i> , 2001, 19, 1122-1130.	1.2	48
110	Compressive properties and functionâ€™composition relationships of developing bovine articular cartilage. <i>Journal of Orthopaedic Research</i> , 2001, 19, 1113-1121.	1.2	288
111	Formulation of PEG-based hydrogels affects tissue-engineered cartilage construct characteristics. <i>Journal of Materials Science: Materials in Medicine</i> , 2001, 12, 983-990.	1.7	50
112	Cartilage Repair With Autogenic Perichondrium Cell and Polylactic Acid Grafts. <i>Clinical Orthopaedics and Related Research</i> , 2000, 377, 248-264.	0.7	49
113	Mechanical compression modulates proliferation of transplanted chondrocytes. <i>Journal of Orthopaedic Research</i> , 2000, 18, 374-382.	1.2	22
114	Biomechanical regulation of matrix metalloproteinase-9 in cultured chondrocytes. <i>Journal of Orthopaedic Research</i> , 2000, 18, 899-908.	1.2	66
115	Effect of seeding duration on the strength of chondrocyte adhesion to articular cartilage. <i>Journal of Orthopaedic Research</i> , 1999, 17, 121-129.	1.2	42
116	Effect of static compression on proteoglycan biosynthesis by chondrocytes transplanted to articular cartilage in vitro. <i>Journal of Orthopaedic Research</i> , 1998, 16, 542-550.	1.2	23
117	Physical properties of rabbit articular cartilage after transection of the anterior cruciate ligament. <i>Journal of Orthopaedic Research</i> , 1997, 15, 197-203.	1.2	117
118	Depth-dependent confined compression modulus of full-thickness bovine articular cartilage. <i>Journal of Orthopaedic Research</i> , 1997, 15, 499-506.	1.2	552
119	Chondrocyte transplantation to articular cartilage explants in vitro. <i>Journal of Orthopaedic Research</i> , 1997, 15, 791-802.	1.2	61
120	Video microscopy to quantitate the inhomogeneous equilibrium strain within articular cartilage during confined compression. <i>Annals of Biomedical Engineering</i> , 1996, 24, 500-512.	1.3	150
121	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. <i>Journal of Orthopaedic Research</i> , 1996, 14, 44-52.	1.2	77
122	Integrative repair of articular cartilage in vitro: Adhesive strength of the interface region. <i>Journal of Orthopaedic Research</i> , 1995, 13, 751-760.	1.2	106