Shyni Varghese

List of Publications by Year
in descending order

101 papers	8,187 citations	47006 47 h-index	48315 88 g-index
103 all docs	103 docs citations	103 times ranked	11354 citing authors

#	Article	IF	Citations
1	Rapid self-healing hydrogels. Proceedings of the National Academy of Sciences of the United States of America, 2012, 109, 4383-4388.	7.1	633
2	Multifunctional chondroitin sulphate for cartilage tissueâ€"biomaterial integration. Nature Materials, 2007, 6, 385-392.	27.5	609
3	Chondroitin sulfate based niches for chondrogenic differentiation of mesenchymal stem cells. Matrix Biology, 2008, 27, 12-21.	3.6	331
4	Calcium phosphate-bearing matrices induce osteogenic differentiation of stem cells through adenosine signaling. Proceedings of the National Academy of Sciences of the United States of America, 2014, 111, 990-995.	7.1	302
5	Controlled differentiation of stem cells. Advanced Drug Delivery Reviews, 2008, 60, 199-214.	13.7	296
6	Engineering the cellâ€"material interface for controlling stem cell adhesion, migration, and differentiation. Biomaterials, 2011, 32, 3700-3711.	11.4	288
7	In vivo commitment and functional tissue regeneration using human embryonic stem cell-derived mesenchymal cells. Proceedings of the National Academy of Sciences of the United States of America, 2008, 105, 20641-20646.	7.1	261
8	Chondrogenic Differentiation of Human Embryonic Stem Cellâ€"Derived Cells in Arginine-Glycine-Aspartateâ€"Modified Hydrogels. Tissue Engineering, 2006, 12, 2695-2706.	4.6	255
9	PEG/clay nanocomposite hydrogel: a mechanically robust tissue engineering scaffold. Soft Matter, 2010, 6, 5157.	2.7	216
10	Smart hydrogels as functional biomimetic systems. Biomaterials Science, 2014, 2, 603-618.	5.4	193
11	Cartilage-like mechanical properties of poly (ethylene glycol)-diacrylate hydrogels. Biomaterials, 2012, 33, 6682-6690.	11.4	181
12	Long-term human pluripotent stem cell self-renewal on synthetic polymer surfaces. Biomaterials, 2010, 31, 9135-9144.	11.4	163
13	Influence of Physical Properties of Biomaterials on Cellular Behavior. Pharmaceutical Research, 2011, 28, 1422-1430.	3.5	145
14	In vivo RNA editing of point mutations via RNA-guided adenosine deaminases. Nature Methods, 2019, 16, 239-242.	19.0	144
15	Stimuliâ€Responsive Supramolecular Hydrogels and Their Applications in Regenerative Medicine. Macromolecular Bioscience, 2019, 19, e1800259.	4.1	133
16	Mesenchymal stem cell differentiation and roles in regenerative medicine. Wiley Interdisciplinary Reviews: Systems Biology and Medicine, 2009, 1, 97-106.	6.6	126
17	Skeletal muscle-on-a-chip: an in vitro model to evaluate tissue formation and injury. Lab on A Chip, 2017, 17, 3447-3461.	6.0	121
18	Morphogenetic signals from chondrocytes promote chondrogenic and osteogenic differentiation of mesenchymal stem cells. Journal of Cellular Physiology, 2007, 212, 281-284.	4.1	115

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19	Derivation of Chondrogenically-Committed Cells from Human Embryonic Cells for Cartilage Tissue Regeneration. PLoS ONE, 2008, 3, e2498.	2.5	115
20	In Situ Gene Therapy via AAV-CRISPR-Cas9-Mediated Targeted Gene Regulation. Molecular Therapy, 2018, 26, 1818-1827.	8.2	111
21	Regulation of osteogenic and chondrogenic differentiation of mesenchymal stem cells in PEG-ECM hydrogels. Cell and Tissue Research, 2011, 344, 499-509.	2.9	107
22	Enhanced chondrogenic differentiation of murine embryonic stem cells in hydrogels with glucosamine. Biomaterials, 2006, 27, 6015-6023.	11.4	106
23	Glucosamine modulates chondrocyte proliferation, matrix synthesis, and gene expression. Osteoarthritis and Cartilage, 2007, 15, 59-68.	1.3	99
24	Enhanced Chondrogenesis of Mesenchymal Stem Cells in Collagen Mimetic Peptide-Mediated Microenvironment. Tissue Engineering - Part A, 2008, 14, 1843-1851.	3.1	99
25	Osteoarthritic chondrocyteâ€“secreted morphogens induce chondrogenic differentiation of human mesenchymal stem cells. Arthritis and Rheumatism, 2011, 63, 148-158.	6.7	99
26	Resolution of inflammation in bone regeneration: From understandings to therapeutic applications. Biomaterials, 2021, 277, 121114.	11.4	95
27	Poly(ethylene glycol) cryogels as potential cell scaffolds: effect of polymerization conditions on cryogel microstructure and properties. Journal of Materials Chemistry, 2010, 20, 345-351.	6.7	93
28	Mineralized gelatin methacrylate-based matrices induce osteogenic differentiation of human induced pluripotent stem cells. Acta Biomaterialia, 2014, 10, 4961-4970.	8.3	89
29	An Engineered Tumor-on-a-Chip Device with Breast Cancerâ€“Immune Cell Interactions for Assessing T-cell Recruitment. Cancer Research, 2020, 80, 263-275.	0.9	89
30	Dynamic Electromechanical Hydrogel Matrices for Stem Cell Culture. Advanced Functional Materials, 2011, 21, 55-63.	14.9	84
31	Response of zonal chondrocytes to extracellular matrixâ€hydrogels. FEBS Letters, 2007, 581, 4172-4178.	2.8	82
32	Interconnected Macroporous Poly(Ethylene Glycol) Cryogels as a Cell Scaffold for Cartilage Tissue Engineering. Tissue Engineering - Part A, 2010, 16, 3033-3041.	3.1	78
33	A three-dimensional polymer scaffolding material exhibiting a zero Poisson's ratio. Soft Matter, 2012, 8, 4946.	2.7	77
34	3D Traction Stresses Activate Protease-Dependent Invasion of Cancer Cells. Biophysical Journal, 2014, 107, 2528-2537.	0.5	77
35	Effect of scaffold microarchitecture on osteogenic differentiation of human mesenchymal stem cells. , 2013, 25, 114-129.		76
36	Small moleculeâ€“driven direct conversion of human pluripotent stem cells into functional osteoblasts. Science Advances, 2016, 2, e1600691.	10.3	72

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37	Spatial tuning of negative and positive Poissonâ€™s ratio in a multi-layer scaffold. Acta Biomaterialia, 2012, 8, 2587-2594.	8.3	70
38	Functionally graded multilayer scaffolds for in vivo osteochondral tissue engineering. Acta Biomaterialia, 2018, 78, 365-377.	8.3	70
39	Templated Mineralization of Synthetic Hydrogels for Bone-Like Composite Materials: Role of Matrix Hydrophobicity. Biomacromolecules, 2010, 11, 2060-2068.	5.4	69
40	Biomaterial-assisted local and systemic delivery of bioactive agents for bone repair. Acta Biomaterialia, 2019, 93, 152-168.	8.3	68
41	The matrix protein Fibulin-5 is at the interface of tissue stiffness and inflammation in fibrosis. Nature Communications, 2015, 6, 8574.	12.8	64
42	Hydrogels as Extracellular Matrix Analogs. Gels, 2016, 2, 20.	4.5	64
43	A novel single precursor-based biodegradable hydrogel with enhanced mechanical properties. Soft Matter, 2009, 5, 3831.	2.7	59
44	Poly(ethylene glycol) hydrogels with cell cleavable groups for autonomous cell delivery. Biomaterials, 2016, 77, 186-197.	11.4	57
45	3D cardiac Î¼tissues within a microfluidic device with real-time contractile stress readout. Lab on A Chip, 2016, 16, 153-162.	6.0	55
46	Metal-ion-mediated healing of gels. Journal of Polymer Science Part A, 2006, 44, 666-670.	2.3	53
47	Heparin Mimicking Polymer Promotes Myogenic Differentiation of Muscle Progenitor Cells. Biomacromolecules, 2010, 11, 3294-3300.	5.4	53
48	Molecular tailoring of thermoreversible copolymer gels: Some new mechanistic insights. Journal of Chemical Physics, 1998, 109, 1175-1184.	3.0	49
49	Ex Vivo Tumorâ€onâ€aâ€Chip Platforms to Study Intercellular Interactions within the Tumor Microenvironment. Advanced Healthcare Materials, 2019, 8, e1801198.	7.6	49
50	Biomaterials Directed <i>In Vivo</i> Osteogenic Differentiation of Mesenchymal Cells Derived from Human Embryonic Stem Cells. Tissue Engineering - Part A, 2013, 19, 1723-1732.	3.1	48
51	Dysregulation of ectonucleotidase-mediated extracellular adenosine during postmenopausal bone loss. Science Advances, 2019, 5, eaax1387.	10.3	48
52	Engineering cellâ€“material interfaces for long-term expansion of human pluripotent stem cells. Biomaterials, 2013, 34, 912-921.	11.4	47
53	Extracellular-Matrix-Based and Arg-Gly-Aspâ€“Modified Photopolymerizing Hydrogels for Cartilage Tissue Engineering. Tissue Engineering - Part A, 2015, 21, 757-766.	3.1	46
54	Biomineralized Matrices Dominate Soluble Cues To Direct Osteogenic Differentiation of Human Mesenchymal Stem Cells through Adenosine Signaling. Biomacromolecules, 2015, 16, 1050-1061.	5.4	45

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55	Mineralized Synthetic Matrices as an Instructive Microenvironment for Osteogenic Differentiation of Human Mesenchymal Stem Cells. Macromolecular Bioscience, 2012, 12, 1022-1032.	4.1	44
56	Tissue engineered bone mimetics to study bone disorders exÂvivo: Role of bioinspired materials. Biomaterials, 2019, 198, 107-121.	11.4	44
57	Engineering Musculoskeletal Tissues with Human Embryonic Germ Cell Derivatives. Stem Cells, 2010, 28, 765-774.	3.2	42
58	Oligo(trimethylene carbonate)â€“poly(ethylene glycol)â€“oligo(trimethylene carbonate) triblock-based hydrogels for cartilage tissue engineering. Acta Biomaterialia, 2011, 7, 3362-3369.	8.3	42
59	Role of Hydrophobicity on Structure of Polymerâ^'Metal Complexes. Journal of Physical Chemistry B, 2001, 105, 5368-5373.	2.6	39
60	Chemotaxis-driven assembly of endothelial barrier in a tumor-on-a-chip platform. Lab on A Chip, 2016, 16, 1886-1898.	6.0	39
61	Designing new thermoreversible gels by molecular tailoring of hydrophilic-hydrophobic interactions. Journal of Chemical Physics, 2000, 112, 3063-3070.	3.0	38
62	Nanotube surface triggers increased chondrocyte extracellular matrix production. Materials Science and Engineering C, 2010, 30, 518-525.	7.3	38
63	Novel Macroscopic Self-Organization in Polymer Gels. Advanced Materials, 2001, 13, 1544.	21.0	37
64	Directed In Vitro Myogenesis of Human Embryonic Stem Cells and Their In Vivo Engraftment. PLoS ONE, 2013, 8, e72023.	2.5	37
65	In vivo engineering of bone tissues with hematopoietic functions and mixed chimerism. Proceedings of the National Academy of Sciences of the United States of America, 2017, 114, 5419-5424.	7.1	36
66	WNT3A promotes myogenesis of human embryonic stem cells and enhances in vivo engraftment. Scientific Reports, 2014, 4, 5916.	3.3	34
67	Thermoreversible hydrogel based on radiation induced copolymerisation of poly(N-isopropyl) Tj ETQq1 1 0.784314 rgBT /Overlock 10 Tf	3.8	31
68	Engineered microenvironments for self-renewal and musculoskeletal differentiation of stem cells. Regenerative Medicine, 2011, 6, 505-524.	1.7	31
69	Mineralized Biomaterials Mediated Repair of Bone Defects Through Endogenous Cells. Tissue Engineering - Part A, 2018, 24, 1148-1156.	3.1	30
70	Effect of age on biomaterial-mediated in situ bone tissue regeneration. Acta Biomaterialia, 2018, 78, 329-340.	8.3	30
71	Three-Dimensional Monolayer Stress Microscopy. Biophysical Journal, 2019, 117, 111-128.	0.5	30
72	Phenylboronic Acid-polymers for Biomedical Applications. Current Medicinal Chemistry, 2019, 26, 6797-6816.	2.4	29

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73	Biomineralized matrix-assisted osteogenic differentiation of human embryonic stem cells. Journal of Materials Chemistry B, 2014, 2, 5676.	5.8	28
74	Embedded 3D Photopatterning of Hydrogels with Diverse and Complex Architectures for Tissue Engineering and Disease Models. Tissue Engineering - Part C: Methods, 2015, 21, 1188-1196.	2.1	28
75	Magnetically-responsive silicaâ€“gold nanobowls for targeted delivery and SERS-based sensing. Nanoscale, 2016, 8, 11840-11850.	5.6	27
76	Bone targeting nanocarrier-assisted delivery of adenosine to combat osteoporotic bone loss. Biomaterials, 2021, 273, 120819.	11.4	27
77	Synthetic bone mimetic matrix-mediated in situ bone tissue formation through host cell recruitment. Acta Biomaterialia, 2015, 19, 1-9.	8.3	21
78	Adenosine Signaling Mediates Osteogenic Differentiation of Human Embryonic Stem Cells on Mineralized Matrices. Frontiers in Bioengineering and Biotechnology, 2015, 3, 185.	4.1	20
79	In Vivo Sequestration of Innate Small Molecules to Promote Bone Healing. Advanced Materials, 2020, 32, e1906022.	21.0	20
80	Embryonic Germ Cells Are Capable of Adipogenic Differentiation<i>In Vitro</i>and<i>In Vivo</i>. Tissue Engineering - Part A, 2009, 15, 479-486.	3.1	18
81	Biomaterials for pluripotent stem cell engineering: from fate determination to vascularization. Journal of Materials Chemistry B, 2016, 4, 3454-3463.	5.8	18
82	In vivo comparison of biomineralized scaffold-directed osteogenic differentiation of human embryonic and mesenchymal stem cells. Drug Delivery and Translational Research, 2016, 6, 121-131.	5.8	18
83	Matrix Topographical Cue-Mediated Myogenic Differentiation of Human Embryonic Stem Cell Derivatives. Polymers, 2017, 9, 580.	4.5	18
84	Biomimetic Material-Assisted Delivery of Human Embryonic Stem Cell Derivatives for Enhanced In Vivo Survival and Engraftment. ACS Biomaterials Science and Engineering, 2015, 1, 7-12.	5.2	16
85	Fusarisetins: structureâ€“function studies on a novel class of cell migration inhibitors. Organic Chemistry Frontiers, 2014, 1, 135.	4.5	14
86	Progress in orthopedic biomaterials and drug delivery. Drug Delivery and Translational Research, 2016, 6, 75-76.	5.8	14
87	Microengineered Materials with Selfâ€Healing Features for Soft Robotics. Advanced Intelligent Systems, 2021, 3, 2100005.	6.1	14
88	Selfâ€Healing of Hyaluronic Acid to Improve In Vivo Retention and Function. Advanced Healthcare Materials, 2021, 10, e2100777.	7.6	11
89	An In Vitro Microfluidic Alveolus Model to Study Lung Biomechanics. Frontiers in Bioengineering and Biotechnology, 2022, 10, 848699.	4.1	11
90	Direct Conversion of Human Pluripotent Stem Cells to Osteoblasts With a Small Molecule. Current Protocols in Stem Cell Biology, 2018, 44, 1F.21.1-1F.21.6.	3.0	9

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91	Meniscus cell regional phenotypes: Dedifferentiation and reversal by biomaterial embedding. Journal of Orthopaedic Research, 2021, 39, 2177-2186.	2.3	8
92	Effect of Polymerâ’Metal Complexation on the Phase Transition of Thermoreversible Copolymer Gels. Journal of Physical Chemistry B, 1999, 103, 9530-9532.	2.6	7
93	Macroporous Dual-compartment Hydrogels for Minimally Invasive Transplantation of Primary Human Hepatocytes. Transplantation, 2018, 102, e373-e381.	1.0	6
94	Hydrogels: a versatile tool with a myriad of biomedical and research applications for the skin. Expert Review of Dermatology, 2012, 7, 315-317.	0.3	4
95	Temporal mechanisms of myogenic specification in human induced pluripotent stem cells. Science Advances, 2021, 7, .	10.3	3
96	Molecularly Tailored Interface for Longâ€Term Xenogeneic Cell Transplantation. Advanced Functional Materials, 2022, 32, 2108221.	14.9	1
97	Bone Healing: In Vivo Sequestration of Innate Small Molecules to Promote Bone Healing (Adv. Mater.) Tj ETQq1 1 0.784314 rgBT /Overl	21.0	0
98	Cellular Respiratory Toxicity of Novel Flavor-Solvent Adducts in Electronic Cigarettes. , 2021, , .		0
99	Morphogenetic Signals from Chondrocytes Promote Osteochondrogenic Potential of Mesenchymal Stem Cells in vitro and in vivo. FASEB Journal, 2007, 21, A1233.	0.5	0
100	Biomaterialsâ€Directed In Vivo Commitment of Mesenchymal Cells Derived from Human Embryonic Stem Cells. FASEB Journal, 2007, 21, A145.	0.5	0
101	Biomineralized matrices promote osteogenic differentiation of human mesenchymal stem cells: A mechanistic study. FASEB Journal, 2012, 26, lb65.	0.5	0