Kevin Kit Parker

List of Publications by Year
in descending order

136 papers	16,385 citations	15466 65 h-index	16127 124 g-index
140 all docs	140 docs citations	140 times ranked	18143 citing authors

#	Article	IF	Citations
1	Modeling the mitochondrial cardiomyopathy of Barth syndrome with induced pluripotent stem cell and heart-on-chip technologies. Nature Medicine, 2014, 20, 616-623.	15.2	733
2	Muscular Thin Films for Building Actuators and Powering Devices. Science, 2007, 317, 1366-1370.	6.0	662
3	Instrumented cardiac microphysiological devices via multimaterial three-dimensional printing. Nature Materials, 2017, 16, 303-308.	13.3	652
4	Nanowired three-dimensional cardiac patches. Nature Nanotechnology, 2011, 6, 720-725.	15.6	638
5	Microtubules can bear enhanced compressive loads in living cells because of lateral reinforcement. Journal of Cell Biology, 2006, 173, 733-741.	2.3	585
6	A tissue-engineered jellyfish with biomimetic propulsion. Nature Biotechnology, 2012, 30, 792-797.	9.4	536
7	Phototactic guidance of a tissue-engineered soft-robotic ray. Science, 2016, 353, 158-162.	6.0	534
8	Ensembles of engineered cardiac tissues for physiological and pharmacological study: Heart on a chip. Lab on A Chip, 2011, 11, 4165.	3.1	452
9	Engineered In Vitro Disease Models. Annual Review of Pathology: Mechanisms of Disease, 2015, 10, 195-262.	9.6	442
10	Nanofiber Assembly by Rotary Jet-Spinning. Nano Letters, 2010, 10, 2257-2261.	4.5	437
11	Directional control of lamellipodia extension by constraining cell shape and orienting cell tractional forces. FASEB Journal, 2002, 16, 1195-1204.	0.2	431
12	Microfluidic heart on a chip for higher throughput pharmacological studies. Lab on A Chip, 2013, 13, 3599.	3.1	415
13	Biohybrid actuators for robotics: A review of devices actuated by living cells. Science Robotics, 2017, 2, .	9.9	334
14	A linked organ-on-chip model of the human neurovascular unit reveals the metabolic coupling of endothelial and neuronal cells. Nature Biotechnology, 2018, 36, 865-874.	9.4	310
15	Quantitative prediction of human pharmacokinetic responses to drugs via fluidically coupled vascularized organ chips. Nature Biomedical Engineering, 2020, 4, 421-436.	11.6	280
16	Photosynthetic artificial organelles sustain and control ATP-dependent reactions in a protocellular system. Nature Biotechnology, 2018, 36, 530-535.	9.4	271
17	Robotic fluidic coupling and interrogation of multiple vascularized organ chips. Nature Biomedical Engineering, 2020, 4, 407-420.	11.6	256
18	Cardiogenesis and the Complex Biology of Regenerative Cardiovascular Medicine. Science, 2008, 322, 1494-1497.	6.0	237

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19	Matched-Comparative Modeling of Normal and Diseased Human Airway Responses Using a Microengineered Breathing Lung Chip. Cell Systems, 2016, 3, 456-466.e4.	2.9	227
20	Generation of human muscle fibers and satellite-like cells from human pluripotent stem cells in vitro. Nature Protocols, 2016, 11, 1833-1850.	5.5	215
21	Generation of Functional Ventricular Heart Muscle from Mouse Ventricular Progenitor Cells. Science, 2009, 326, 426-429.	6.0	202
22	Controlling the contractile strength of engineered cardiac muscle by hierarchal tissue architecture. Biomaterials, 2012, 33, 5732-5741.	5.7	195
23	A multiscale model for eccentric and concentric cardiac growth through sarcomerogenesis. Journal of Theoretical Biology, 2010, 265, 433-442.	0.8	192
24	Organs-on-Chips with combined multi-electrode array and transepithelial electrical resistance measurement capabilities. Lab on A Chip, 2017, 17, 2294-2302.	3.1	188
25	Sarcomere alignment is regulated by myocyte shape. Cytoskeleton, 2008, 65, 641-651.	4.4	187
26	Ultragentle manipulation of delicate structures using a soft robotic gripper. Science Robotics, 2019, 4, .	9.9	186
27	Micromolded gelatin hydrogels for extended culture of engineered cardiac tissues. Biomaterials, 2014, 35, 5462-5471.	5.7	182
28	A tissue-engineered scale model of the heart ventricle. Nature Biomedical Engineering, 2018, 2, 930-941.	11.6	162
29	Extracellular matrix, mechanotransduction and structural hierarchies in heart tissue engineering. Philosophical Transactions of the Royal Society B: Biological Sciences, 2007, 362, 1267-1279.	1.8	161
30	Muscle on a chip: In vitro contractility assays for smooth and striated muscle. Journal of Pharmacological and Toxicological Methods, 2012, 65, 126-135.	0.3	147
31	Cyclic strain induces dual-mode endothelial-mesenchymal transformation of the cardiac valve. Proceedings of the National Academy of Sciences of the United States of America, 2011, 108, 19943-19948.	3.3	145
32	Biohybrid thin films for measuring contractility in engineered cardiovascular muscle. Biomaterials, 2010, 31, 3613-3621.	5.7	144
33	Cooperative coupling of cell-matrix and cellâ€“cell adhesions in cardiac muscle. Proceedings of the National Academy of Sciences of the United States of America, 2012, 109, 9881-9886.	3.3	143
34	Traumatic Brain Injury and the Neuronal Microenvironment: A Potential Role for Neuropathological Mechanotransduction. Neuron, 2015, 85, 1177-1192.	3.8	142
35	Soy Protein/Cellulose Nanofiber Scaffolds Mimicking Skin Extracellular Matrix for Enhanced Wound Healing. Advanced Healthcare Materials, 2018, 7, e1701175.	3.9	142
36	Engineering hybrid polymer-protein super-aligned nanofibers via rotary jet spinning. Biomaterials, 2014, 35, 3188-3197.	5.7	134

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37	Recapitulating maladaptive, multiscale remodeling of failing myocardium on a chip. Proceedings of the National Academy of Sciences of the United States of America, 2013, 110, 9770-9775.	3.3	133
38	Next-generation tissue-engineered heart valves with repair, remodelling and regeneration capacity. Nature Reviews Cardiology, 2021, 18, 92-116.	6.1	128
39	Blast-induced phenotypic switching in cerebral vasospasm. Proceedings of the National Academy of Sciences of the United States of America, 2011, 108, 12705-12710.	3.3	115
40	Muscle tissue engineering in fibrous gelatin: implications for meat analogs. Npj Science of Food, 2019, 3, 20.	2.5	115
41	Threeâ€Dimensional Paperâ€Based Model for Cardiac Ischemia. Advanced Healthcare Materials, 2014, 3, 1036-1043.	3.9	114
42	Cardiac microphysiological devices with flexible thin-film sensors for higher-throughput drug screening. Lab on A Chip, 2017, 17, 3692-3703.	3.1	114
43	Vascular smooth muscle contractility depends on cell shape. Integrative Biology (United Kingdom), 2011, 3, 1063-1070.	0.6	110
44	Hierarchical wrinkling patterns. Soft Matter, 2010, 6, 5751.	1.2	105
45	Insights Into the Pathogenesis of Catecholaminergic Polymorphic Ventricular Tachycardia From Engineered Human Heart Tissue. Circulation, 2019, 140, 390-404.	1.6	105
46	Micropatterning Alginate Substrates for In Vitro Cardiovascular Muscle on a Chip. Advanced Functional Materials, 2013, 23, 3738-3746.	7.8	103
47	Self-Organization of Muscle Cell Structure and Function. PLoS Computational Biology, 2011, 7, e1001088.	1.5	102
48	A simple model for nanofiber formation by rotary jet-spinning. Applied Physics Letters, 2011, 99, .	1.5	101
49	Extracellular matrix protein expression is brain region dependent. Journal of Comparative Neurology, 2016, 524, 1309-1336.	0.9	100
50	Myocyte Shape Regulates Lateral Registry of Sarcomeres and Contractility. American Journal of Pathology, 2012, 181, 2030-2037.	1.9	99
51	A Possible Role for Integrin Signaling in Diffuse Axonal Injury. PLoS ONE, 2011, 6, e22899.	1.1	97
52	A bioinspired and hierarchically structured shape-memory material. Nature Materials, 2021, 20, 242-249.	13.3	96
53	Neurons derived from different brain regions are inherently different in vitro: a novel multiregional brain-on-a-chip. Journal of Neurophysiology, 2017, 117, 1320-1341.	0.9	95
54	JetValve: Rapid manufacturing of biohybrid scaffolds for biomimetic heart valve replacement. Biomaterials, 2017, 133, 229-241.	5.7	95

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55	An autonomously swimming biohybrid fish designed with human cardiac biophysics. Science, 2022, 375, 639-647.	6.0	95
56	Matrix elasticity regulates the optimal cardiac myocyte shape for contractility. American Journal of Physiology - Heart and Circulatory Physiology, 2014, 306, H1525-H1539.	1.5	93
57	Myofibrillar Architecture in Engineered Cardiac Myocytes. Circulation Research, 2008, 103, 340-342.	2.0	91
58	Microenvironmental Control of Adipocyte Fate and Function. Trends in Cell Biology, 2016, 26, 745-755.	3.6	87
59	Nuclear morphology and deformation in engineered cardiac myocytes and tissues. Biomaterials, 2010, 31, 5143-5150.	5.7	86
60	Effect of Solvent Evaporation on Fiber Morphology in Rotary Jet Spinning. Langmuir, 2014, 30, 13369-13374.	1.6	84
61	Quality Metrics for Stem Cell-Derived Cardiac Myocytes. Stem Cell Reports, 2014, 2, 282-294.	2.3	84
62	Structural Phenotyping of Stem Cell-Derived Cardiomyocytes. Stem Cell Reports, 2015, 4, 340-347.	2.3	82
63	Opposite rheological properties of neuronal microcompartments predict axonal vulnerability in brain injury. Scientific Reports, 2015, 5, 9475.	1.6	76
64	Synchronized stimulation and continuous insulin sensing in a microfluidic human Islet on a Chip designed for scalable manufacturing. Lab on A Chip, 2019, 19, 2993-3010.	3.1	74
65	The contribution of cellular mechanotransduction to cardiomyocyte form and function. Biomechanics and Modeling in Mechanobiology, 2012, 11, 1227-1239.	1.4	73
66	Production-scale fibronectin nanofibers promote wound closure and tissue repair in a dermal mouse model. Biomaterials, 2018, 166, 96-108.	5.7	72
67	Inhibition of mTOR Signaling Enhances Maturation of Cardiomyocytes Derived From Human-Induced Pluripotent Stem Cells via p53-Induced Quiescence. Circulation, 2020, 141, 285-300.	1.6	72
68	Human airway musculature on a chip: an in vitro model of allergic asthmatic bronchoconstriction and bronchodilation. Lab on A Chip, 2014, 14, 3925-3936.	3.1	71
69	Optimization of Electroactive Hydrogel Actuators. ACS Applied Materials & Interfaces, 2010, 2, 343-346.	4.0	70
70	Surface-Initiated Assembly of Protein Nanofabrics. Nano Letters, 2010, 10, 2184-2191.	4.5	69
71	Mussel-inspired 3D fiber scaffolds for heart-on-a-chip toxicity studies of engineered nanomaterials. Analytical and Bioanalytical Chemistry, 2018, 410, 6141-6154.	1.9	66
72	Endothelial extracellular vesicles contain protective proteins and rescue ischemia-reperfusion injury in a human heart-on-chip. Science Translational Medicine, 2020, 12, .	5.8	66

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73	Connexin43 ablation in foetal atrial myocytes decreases electrical coupling, partner connexins, and sodium current. Cardiovascular Research, 2012, 94, 58-65.	1.8	64
74	Development of Biodegradable and Antimicrobial Electrospun Zein Fibers for Food Packaging. ACS Sustainable Chemistry and Engineering, 2020, 8, 15354-15365.	3.2	63
75	A human in vitro model of Duchenne muscular dystrophy muscle formation and contractility. Journal of Cell Biology, 2016, 215, 47-56.	2.3	61
76	Laminar ventricular myocardium on a microelectrode array-based chip. Journal of Materials Chemistry B, 2016, 4, 3534-3543.	2.9	60
77	The structureâ€“function relationships of a natural nanoscale photonic device in cuttlefish chromatophores. Journal of the Royal Society Interface, 2014, 11, 20130942.	1.5	59
78	Hierarchical architecture influences calcium dynamics in engineered cardiac muscle. Experimental Biology and Medicine, 2011, 236, 366-373.	1.1	58
79	Cell-to-cell coupling in engineered pairs of rat ventricular cardiomyocytes: relation between Cx43 immunofluorescence and intercellular electrical conductance. American Journal of Physiology - Heart and Circulatory Physiology, 2012, 302, H443-H450.	1.5	58
80	Porous Biomimetic Hyaluronic Acid and Extracellular Matrix Protein Nanofiber Scaffolds for Accelerated Cutaneous Tissue Repair. ACS Applied Materials & Interfaces, 2019, 11, 45498-45510.	4.0	54
81	Modeling of cardiac muscle thin films: Pre-stretch, passive and active behavior. Journal of Biomechanics, 2012, 45, 832-841.	0.9	52
82	Traction force microscopy of engineered cardiac tissues. PLoS ONE, 2018, 13, e0194706.	1.1	52
83	Automated fabrication of photopatterned gelatin hydrogels for organ-on-chips applications. Biofabrication, 2018, 10, 025004.	3.7	48
84	Recreating the heartâ€™s helical structure-function relationship with focused rotary jet spinning. Science, 2022, 377, 180-185.	6.0	47
85	Electrical Coupling and Propagation in Engineered Ventricular Myocardium With Heterogeneous Expression of Connexin43. Circulation Research, 2012, 110, 1445-1453.	2.0	46
86	Coupling primary and stem cellâ€“derived cardiomyocytes in an in vitro model of cardiac cell therapy. Journal of Cell Biology, 2016, 212, 389-397.	2.3	45
87	A potential role for integrin signaling in mechanoelectrical feedback. Progress in Biophysics and Molecular Biology, 2012, 110, 196-203.	1.4	43
88	Functional Differences in Engineered Myocardium from Embryonic Stem Cell-Derived versus Neonatal Cardiomyocytes. Stem Cell Reports, 2013, 1, 387-396.	2.3	43
89	Alfalfa Nanofibers for Dermal Wound Healing. ACS Applied Materials & Interfaces, 2019, 11, 33535-33547.	4.0	43
90	Design and Fabrication of Fibrous Nanomaterials Using Pull Spinning. Macromolecular Materials and Engineering, 2017, 302, 1600404.	1.7	41

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91	Computational modeling of muscular thin films for cardiac repair. Computational Mechanics, 2009, 43, 535-544.	2.2	39
92	Toward improved myocardial maturity in an organ-on-chip platform with immature cardiac myocytes. Experimental Biology and Medicine, 2017, 242, 1643-1656.	1.1	38
93	High-throughput coating with biodegradable antimicrobial pullulan fibres extends shelf life and reduces weight loss in an avocado model. Nature Food, 2022, 3, 428-436.	6.2	38
94	The role of extracellular matrix in normal and pathological pregnancy: Future applications of microphysiological systems in reproductive medicine. Experimental Biology and Medicine, 2020, 245, 1163-1174.	1.1	37
95	Production of Synthetic, Para-Aramid and Biopolymer Nanofibers by Immersion Rotary Jet-Spinning. Macromolecular Materials and Engineering, 2017, 302, 1600365.	1.7	35
96	The contractile strength of vascular smooth muscle myocytes is shape dependent. Integrative Biology (United Kingdom), 2014, 6, 152-163.	0.6	34
97	Cytoskeletal prestress regulates nuclear shape and stiffness in cardiac myocytes. Experimental Biology and Medicine, 2015, 240, 1543-1554.	1.1	33
98	Symmetry breaking in cultured mammalian cells. In Vitro Cellular and Developmental Biology - Animal, 2000, 36, 563-565.	0.7	31
99	Mechanotransduction and Metabolism in Cardiomyocyte Microdomains. BioMed Research International, 2016, 2016, 1-17.	0.9	30
100	Time-Warped Comparison of Gene Expression in Adaptive and Maladaptive Cardiac Hypertrophy. Circulation: Cardiovascular Genetics, 2009, 2, 116-124.	5.1	28
101	Safety and efficacy of cardiopoietic stem cells in the treatment of post-infarction left-ventricular dysfunction â€“ From cardioprotection to functional repair in a translational pig infarction model. Biomaterials, 2017, 122, 48-62.	5.7	28
102	Metrics for Assessing Cytoskeletal Orientational Correlations and Consistency. PLoS Computational Biology, 2015, 11, e1004190.	1.5	27
103	Nanofiber-reinforced soft fluidic micro-actuators. Journal of Micromechanics and Microengineering, 2018, 28, 084002.	1.5	27
104	Cellular and Engineered Organoids for Cardiovascular Models. Circulation Research, 2022, 130, 1780-1802.	2.0	27
105	Selfâ€Organizing Largeâ€Scale Extracellularâ€Matrix Protein Networks. Advanced Materials, 2015, 27, 2838-2845.	11.1	26
106	Multidimensional Detection and Analysis of Ca2+ Sparks in Cardiac Myocytes. Biophysical Journal, 2007, 92, 4433-4443.	0.2	25
107	Differential Contributions of Conformation Extension and Domain Unfolding to Properties of Fibronectin Nanotextiles. Nano Letters, 2012, 12, 5587-5592.	4.5	25
108	Angiotensin II Induced Cardiac Dysfunction on a Chip. PLoS ONE, 2016, 11, e0146415.	1.1	24

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109	Diagnostic tools for evaluating the impact of Focal Axonal Swellings arising in neurodegenerative diseases and/or traumatic brain injury. Journal of Neuroscience Methods, 2015, 253, 233-243.	1.3	23
110	Continuous Formation of Ultrathin, Strong Collagen Sheets with Tunable Anisotropy and Compaction. ACS Biomaterials Science and Engineering, 2020, 6, 4236-4246.	2.6	23
111	Inkjet-Printed Carbon Nanotubes for Fabricating a Spoof Fingerprint on Paper. ACS Omega, 2019, 4, 8626-8631.	1.6	21
112	Comparative analysis of poly-glycolic acid-based hybrid polymer starter matrices for in vitro tissue engineering. Colloids and Surfaces B: Biointerfaces, 2017, 158, 203-212.	2.5	20
113	Myofibrils in Cardiomyocytes Tend to Assemble Along the Maximal Principle Stress Directions. Journal of Biomechanical Engineering, 2017, 139, .	0.6	19
114	Scatter Enhanced Phase Contrast Microscopy for Discriminating Mechanisms of Active Nanoparticle Transport in Living Cells. Nano Letters, 2019, 19, 793-804.	4.5	17
115	Biomimetic and estrogenic fibers promote tissue repair in mice and human skin via estrogen receptor Î². Biomaterials, 2020, 255, 120149.	5.7	15
116	Protein-Based Textiles: Bio-Inspired and Bio-Derived Materials for Medical and Non-Medical Applications. Journal of Chemical and Biological Interfaces, 2013, 1, 25-34.	0.3	14
117	Formation of Multi-Component Extracellular Matrix Protein Fibers. Scientific Reports, 2018, 8, 1913.	1.6	14
118	Engineering biomimetic and instructive materials for wound healing and regeneration. Current Opinion in Biomedical Engineering, 2019, 10, 97-106.	1.8	14
119	Quantifying the effects of engineered nanomaterials on endothelial cell architecture and vascular barrier integrity using a cell pair model. Nanoscale, 2019, 11, 17878-17893.	2.8	14
120	Mapping 2D- and 3D-distributions of metal/metal oxide nanoparticles within cleared human ex vivo skin tissues. NanoImpact, 2020, 17, 100208.	2.4	11
121	Fattening chips: hypertrophy, feeding, and fasting of human white adipocytes<i>in vitro</i>. Lab on A Chip, 2020, 20, 4152-4165.	3.1	10
122	Building Biomimetic Potency Tests for Islet Transplantation. Diabetes, 2021, 70, 347-363.	0.3	9
123	Human brain microvascular endothelial cell pairs model tissue-level bloodâ€"brain barrier function. Integrative Biology (United Kingdom), 2020, 12, 64-79.	0.6	8
124	Acute pergolide exposure stiffens engineered valve interstitial cell tissues and reduces contractility in vitro. Cardiovascular Pathology, 2016, 25, 316-324.	0.7	7
125	Fabrication of Millimeter-Long Carbon Tubular Nanostructures Using the Self-Rolling Process Inherent in Elastic Protein Layers. Advanced Materials, 2017, 29, 1701732.	11.1	5
126	Designer Assays for Your Sick, Subdivided Heart. Cell, 2019, 176, 684-685.	13.5	3

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127	Differential modulation of endothelial cytoplasmic protrusions after exposure to graphene-family nanomaterials. NanoImpact, 2022, 26, 100401.	2.4	3
128	Extracellular matrix protein expression is brain region dependent. Journal of Comparative Neurology, 2016, 524, Spc1.	0.9	2
129	Fabricating multi-material nanofabrics using rotary jet spinning. , 2017, , .		2
130	Addendum: A tissue-engineered scale model of the heart ventricle. Nature Biomedical Engineering, 2022, 6, 1318-1318.	11.6	2
131	Building Creatives in an Anti-da Vinci Age. Biophysics Reviews, 2021, 2, .	1.0	1
132	An Extracellular Matrixâ€Liposome Composite, a Novel Extracellular Matrix Delivery System for Accelerated Tissue Regeneration. Advanced Healthcare Materials, 2021, , 2101599.	3.9	1
133	Charge-selective membrane protein patterning with proteoliposomes. RSC Advances, 2015, 5, 5183-5191.	1.7	0
134	Abstract 308: An in vitro Model of Cardiac Stem Cell Therapy to Study the Coupling of Primary and Stem Cell-derived Cardiomyocytes. Circulation Research, 2015, 117, .	2.0	0
135	Abstract 307: Quantitative Characterization of the Contractile Architecture of Human Stem Cell Derived Cardiomyocytes. Circulation Research, 2015, 117, .	2.0	0
136	Cell Motility in Microfabricated Models of the Tissue Microenvironment. , 2001, , .		0