

# Jonathan T Butcher

## List of Publications by Year in Descending Order

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The third column is the impact factor (IF) of the journal, and the fourth column is the number of citations of the article.

124  
papers

6,164  
citations

39  
h-index

77  
g-index

138  
ext. papers

7,165  
ext. citations

6.8  
avg, IF

6.08  
L-index

#	Paper	IF	Citations
124	Rac1 mediates Cadherin-11 induced cellular pathogenic processes in aortic valve calcification.. <i>Cardiovascular Pathology</i> , <b>2022</b> , 58, 107414	3.8	0
123	Incorporating nanocrystalline cellulose into a multifunctional hydrogel for heart valve tissue engineering applications. <i>Journal of Biomedical Materials Research - Part A</i> , <b>2022</b> , 110, 76-91	5.4	4
122	Tri-layered and gel-like nanofibrous scaffolds with anisotropic features for engineering heart valve leaflets.. <i>Advanced Healthcare Materials</i> , <b>2022</b> , e2200053	10.1	4
121	OCT4-mediated inflammation induces cell reprogramming at the origin of cardiac valve development and calcification. <i>Science Advances</i> , <b>2021</b> , 7, eabf7910	14.3	1
120	Interfacing DNA hydrogels with ceramics for biofunctional architectural materials. <i>Materials Today</i> , <b>2021</b> ,	21.8	2
119	Spatiotemporal single-cell RNA sequencing of developing chicken hearts identifies interplay between cellular differentiation and morphogenesis. <i>Nature Communications</i> , <b>2021</b> , 12, 1771	17.4	22
118	The Cell-specific Engagement of Notch and Wnt Pathways in Calcific Aortic Valve Disease. <i>Structural Heart</i> , <b>2021</b> , 5, 25-25	0.6	1
117	Uncovering transcriptional dark matter via gene annotation independent single-cell RNA sequencing analysis. <i>Nature Communications</i> , <b>2021</b> , 12, 2158	17.4	0
116	Inflammatory and Biomechanical Drivers of Endothelial-Interstitial Interactions in Calcific Aortic Valve Disease. <i>Circulation Research</i> , <b>2021</b> , 128, 1344-1370	15.7	6
115	Assessing Early Cardiac Outflow Tract Adaptive Responses Through Combined Experimental-Computational Manipulations. <i>Annals of Biomedical Engineering</i> , <b>2021</b> , 1	4.7	0
114	Hydrostatic mechanical stress regulates growth and maturation of the atrioventricular valve. <i>Development (Cambridge)</i> , <b>2021</b> , 148,	6.6	1
113	Valve endothelial-interstitial interactions drive emergent complex calcific lesion formation in vitro. <i>Biomaterials</i> , <b>2021</b> , 269, 120669	15.6	4
112	Local fluid shear stress operates a molecular switch to drive fetal semilunar valve extension. <i>Developmental Dynamics</i> , <b>2021</b> ,	2.9	1
111	Effect of left atrial ligation-driven altered inflow hemodynamics on embryonic heart development: clues for prenatal progression of hypoplastic left heart syndrome. <i>Biomechanics and Modeling in Mechanobiology</i> , <b>2021</b> , 20, 733-750	3.8	5
110	Age related extracellular matrix and interstitial cell phenotype in pulmonary valves. <i>Scientific Reports</i> , <b>2020</b> , 10, 21338	4.9	3
109	Prosthetic aortic graft replacement of the ascending thoracic aorta alters biomechanics of the native descending aorta as assessed by transthoracic echocardiography. <i>PLoS ONE</i> , <b>2020</b> , 15, e0230208	3.7	5
108	Induction of aortic valve calcification by celecoxib and its COX-2 independent derivatives is glucocorticoid-dependent. <i>Cardiovascular Pathology</i> , <b>2020</b> , 46, 107194	3.8	8

107	NFB (Nuclear Factor Light-Chain Enhancer of Activated B Cells) Activity Regulates Cell-Type-Specific and Context-Specific Susceptibility to Calcification in the Aortic Valve. <i>Arteriosclerosis, Thrombosis, and Vascular Biology</i> , <b>2020</b> , 40, 638-655	9.4	10
106	Spatial Regulation of Valve Interstitial Cell Phenotypes within Three-Dimensional Micropatterned Hydrogels. <i>ACS Biomaterials Science and Engineering</i> , <b>2019</b> , 5, 1416-1425	5.5	7
105	Biofabrication of thick vascularized neo-pedicle flaps for reconstructive surgery. <i>Translational Research</i> , <b>2019</b> , 211, 84-122	11	0
104	Calpain 9 as a therapeutic target in TGF $\beta$ -induced mesenchymal transition and fibrosis. <i>Science Translational Medicine</i> , <b>2019</b> , 11,	17.5	16
103	Extracting physiological information in experimental biology via Eulerian video magnification. <i>BMC Biology</i> , <b>2019</b> , 17, 103	7.3	10
102	ROBO4 variants predispose individuals to bicuspid aortic valve and thoracic aortic aneurysm. <i>Nature Genetics</i> , <b>2019</b> , 51, 42-50	36.3	56
101	Systematic Analysis of the Smooth Muscle Wall Phenotype of the Pharyngeal Arch Arteries During Their Reorganization into the Great Vessels and Its Association with Hemodynamics. <i>Anatomical Record</i> , <b>2019</b> , 302, 153-162	2.1	3
100	Crystallinity of hydroxyapatite drives myofibroblastic activation and calcification in aortic valves. <i>Acta Biomaterialia</i> , <b>2018</b> , 71, 24-36	10.8	22
99	Monocytes and Macrophages in Heart Valves: Uninvited Guests or Critical Performers?. <i>Current Opinion in Biomedical Engineering</i> , <b>2018</b> , 5, 82-89	4.4	8
98	Bioprinting Cardiovascular Organs <b>2018</b> , 163-187		0
97	The root problem of heart valve engineering. <i>Science Translational Medicine</i> , <b>2018</b> , 10,	17.5	4
96	Cardiac regeneration following cryoinjury in the adult zebrafish targets a maturation-specific biomechanical remodeling program. <i>Scientific Reports</i> , <b>2018</b> , 8, 15661	4.9	10
95	Cohort-based multiscale analysis of hemodynamic-driven growth and remodeling of the embryonic pharyngeal arch arteries. <i>Development (Cambridge)</i> , <b>2018</b> , 145,	6.6	7
94	Optimizing Photo-Encapsulation Viability of Heart Valve Cell Types in 3D Printable Composite Hydrogels. <i>Annals of Biomedical Engineering</i> , <b>2017</b> , 45, 360-377	4.7	57
93	Living nano-micro fibrous woven fabric/hydrogel composite scaffolds for heart valve engineering. <i>Acta Biomaterialia</i> , <b>2017</b> , 51, 89-100	10.8	62
92	Heart function and hemodynamic analysis for zebrafish embryos. <i>Developmental Dynamics</i> , <b>2017</b> , 246, 868-880	2.9	61
91	Award Winner in the Young Investigator Category, 2017 Society for Biomaterials Annual Meeting and Exposition, Minneapolis, MN, April 05-08, 2017: Lymph node stiffness-mimicking hydrogels regulate human B-cell lymphoma growth and cell surface receptor expression in a molecular subtype-specific manner. <i>Journal of Biomedical Materials Research - Part A</i> , <b>2017</b> , 105, 1833-1844	5.4	12
90	Matrix stiffening promotes a tumor vasculature phenotype. <i>Proceedings of the National Academy of Sciences of the United States of America</i> , <b>2017</b> , 114, 492-497	11.5	197

89	Developmental Mechanisms of Aortic Valve Malformation and Disease. <i>Annual Review of Physiology</i> , <b>2017</b> , 79, 21-41	23.1	37
88	Nanofiber-structured hydrogel yarns with pH-response capacity and cardiomyocyte-drivability for bio-microactuator application. <i>Acta Biomaterialia</i> , <b>2017</b> , 60, 144-153	10.8	13
87	JuPOETs: a constrained multiobjective optimization approach to estimate biochemical model ensembles in the Julia programming language. <i>BMC Systems Biology</i> , <b>2017</b> , 11, 10	3.5	10
86	The optimal shape of an aortic heart valve replacement on the road to the consensus. <i>QScience Connect</i> , <b>2017</b> , 2017,	0.8	1
85	Naturally Engineered Maturation of Cardiomyocytes. <i>Frontiers in Cell and Developmental Biology</i> , <b>2017</b> , 5, 50	5.7	92
84	Mechanotransduction Mechanisms in Mitral Valve Physiology and Disease Pathogenesis. <i>Frontiers in Cardiovascular Medicine</i> , <b>2017</b> , 4, 83	5.4	10
83	Notch-Tnf signalling is required for development and homeostasis of arterial valves. <i>European Heart Journal</i> , <b>2017</b> , 38, 675-686	9.5	39
82	Comparative analysis of metallic nanoparticles as exogenous soft tissue contrast for live in vivo micro-computed tomography imaging of avian embryonic morphogenesis. <i>Developmental Dynamics</i> , <b>2016</b> , 245, 1001-10	2.9	2
81	Cadherin-11 Overexpression Induces Extracellular Matrix Remodeling and Calcification in Mature Aortic Valves. <i>Arteriosclerosis, Thrombosis, and Vascular Biology</i> , <b>2016</b> , 36, 1627-37	9.4	35
80	Active tissue stiffness modulation controls valve interstitial cell phenotype and osteogenic potential in 3D culture. <i>Acta Biomaterialia</i> , <b>2016</b> , 36, 42-54	10.8	64
79	Fabrication of Aligned Nanofiber Polymer Yarn Networks for Anisotropic Soft Tissue Scaffolds. <i>ACS Applied Materials &amp; Interfaces</i> , <b>2016</b> , 8, 16950-60	9.5	76
78	Cyclic Mechanical Loading Is Essential for Rac1-Mediated Elongation and Remodeling of the Embryonic Mitral Valve. <i>Current Biology</i> , <b>2016</b> , 26, 27-37	6.3	24
77	Population Heterogeneity in the Epithelial to Mesenchymal Transition Is Controlled by NFAT and Phosphorylated Sp1. <i>PLoS Computational Biology</i> , <b>2016</b> , 12, e1005251	5	17
76	Valve interstitial cell tensional homeostasis directs calcification and extracellular matrix remodeling processes via RhoA signaling. <i>Biomaterials</i> , <b>2016</b> , 105, 25-37	15.6	22
75	Comparison of Mesenchymal Stem Cell Source Differentiation Toward Human Pediatric Aortic Valve Interstitial Cells within 3D Engineered Matrices. <i>Tissue Engineering - Part C: Methods</i> , <b>2015</b> , 21, 795-807	2.9	31
74	Mitral valve disease--morphology and mechanisms. <i>Nature Reviews Cardiology</i> , <b>2015</b> , 12, 689-710	14.8	172
73	Bioprinting of Cardiac Tissues <b>2015</b> , 351-370		10
72	Cadherin-11 coordinates cellular migration and extracellular matrix remodeling during aortic valve maturation. <i>Developmental Biology</i> , <b>2015</b> , 407, 145-57	3.1	31

71	Projected Hydrologic Changes Under Mid-21st Century Climatic Conditions in a Sub-arctic Watershed. <i>Water Resources Management</i> , <b>2015</b> , 29, 1467-1487	3.7	14
70	Growth and hemodynamics after early embryonic aortic arch occlusion. <i>Biomechanics and Modeling in Mechanobiology</i> , <b>2015</b> , 14, 735-51	3.8	23
69	Targeted Knock-Out Mice with Cardiac Hypertrophy Exhibit Structural Mitral Valve Abnormalities. <i>Journal of Cardiovascular Development and Disease</i> , <b>2015</b> , 2, 48-65	4.2	5
68	Current progress in tissue engineering of heart valves: multiscale problems, multiscale solutions. <i>Expert Opinion on Biological Therapy</i> , <b>2015</b> , 15, 1155-72	5.4	113
67	Endothelial-derived oxidative stress drives myofibroblastic activation and calcification of the aortic valve. <i>PLoS ONE</i> , <b>2015</b> , 10, e0123257	3.7	44
66	Micro/nano-computed tomography technology for quantitative dynamic, multi-scale imaging of morphogenesis. <i>Methods in Molecular Biology</i> , <b>2015</b> , 1189, 47-61	1.4	12
65	The influence of external free energy and homeostasis on growth and shape change. <i>Journal of the Mechanics and Physics of Solids</i> , <b>2014</b> , 64, 338-350	5	6
64	Three-dimensional printed trileaflet valve conduits using biological hydrogels and human valve interstitial cells. <i>Acta Biomaterialia</i> , <b>2014</b> , 10, 1836-46	10.8	302
63	Mechanical regulation of cardiac development. <i>Frontiers in Physiology</i> , <b>2014</b> , 5, 318	4.6	84
62	Endothelial retention and phenotype on carbonized cardiovascular implant surfaces. <i>Biomaterials</i> , <b>2014</b> , 35, 7714-23	15.6	17
61	Effects of shear stress pattern and magnitude on mesenchymal transformation and invasion of aortic valve endothelial cells. <i>Biotechnology and Bioengineering</i> , <b>2014</b> , 111, 2326-37	4.9	87
60	3D-Printed Hydrogel Technologies for Tissue-Engineered Heart Valves. <i>3D Printing and Additive Manufacturing</i> , <b>2014</b> , 1, 122-136	4	26
59	The living aortic valve: From molecules to function. <i>Global Cardiology Science &amp; Practice</i> , <b>2014</b> , 2014, 52-77.7		51
58	Heterogeneous susceptibility of valve endothelial cells to mesenchymal transformation in response to TNF $\alpha$ . <i>Annals of Biomedical Engineering</i> , <b>2014</b> , 42, 149-61	4.7	33
57	Hierarchical approaches for systems modeling in cardiac development. <i>Wiley Interdisciplinary Reviews: Systems Biology and Medicine</i> , <b>2013</b> , 5, 289-305	6.6	7
56	Quantitative optimization of solid freeform deposition of aqueous hydrogels. <i>Biofabrication</i> , <b>2013</b> , 5, 035001	10.5	66
55	Inflammatory cytokines promote mesenchymal transformation in embryonic and adult valve endothelial cells. <i>Arteriosclerosis, Thrombosis, and Vascular Biology</i> , <b>2013</b> , 33, 121-30	9.4	144
54	Stiffness and adhesivity control aortic valve interstitial cell behavior within hyaluronic acid based hydrogels. <i>Acta Biomaterialia</i> , <b>2013</b> , 9, 7640-50	10.8	106

53	Method for non-optical quantification of in situ local soft tissue biomechanics. <i>Journal of Biomechanics</i> , <b>2013</b> , 46, 1938-42	2.9	2
52	Side-specific endothelial-dependent regulation of aortic valve calcification: interplay of hemodynamics and nitric oxide signaling. <i>American Journal of Pathology</i> , <b>2013</b> , 182, 1922-31	5.8	109
51	3D bioprinting of heterogeneous aortic valve conduits with alginate/gelatin hydrogels. <i>Journal of Biomedical Materials Research - Part A</i> , <b>2013</b> , 101, 1255-64	5.4	665
50	Cadherin-11 expression patterns in heart valves associate with key functions during embryonic cushion formation, valve maturation and calcification. <i>Cells Tissues Organs</i> , <b>2013</b> , 198, 300-10	2.1	21
49	Translational paradigms in scientific and clinical imaging of cardiac development. <i>Birth Defects Research Part C: Embryo Today Reviews</i> , <b>2013</b> , 99, 106-20		2
48	Role of Bone Morphogenetic Proteins in Valvulogenesis <b>2013</b> , 307-315		
47	NFkB activation drives mesenchymal transformation and susceptibility to calcification in aortic valve endothelial cells. <i>FASEB Journal</i> , <b>2013</b> , 27, 386.10	0.9	1
46	TNF-a induced eNOS uncoupling mediates endothelial dysfunction through elevated reactive oxygen species. <i>FASEB Journal</i> , <b>2013</b> , 27, 379.5	0.9	
45	Rapid 3D printing of anatomically accurate and mechanically heterogeneous aortic valve hydrogel scaffolds. <i>Biofabrication</i> , <b>2012</b> , 4, 035005	10.5	475
44	Computational simulation of hemodynamic-driven growth and remodeling of embryonic atrioventricular valves. <i>Biomechanics and Modeling in Mechanobiology</i> , <b>2012</b> , 11, 1205-17	3.8	22
43	Computational fluid dynamics of developing avian outflow tract heart valves. <i>Annals of Biomedical Engineering</i> , <b>2012</b> , 40, 2212-27	4.7	30
42	Multidisciplinary Inquiry-Based Investigation Learning Using an Ex Ovo Chicken Culture Platform: Role of Vitamin A on Embryonic Morphogenesis. <i>American Biology Teacher</i> , <b>2012</b> , 74, 636-643	0.3	3
41	Quantification of embryonic atrioventricular valve biomechanics during morphogenesis. <i>Journal of Biomechanics</i> , <b>2012</b> , 45, 895-902	2.9	22
40	Quantitative in vivo imaging of embryonic development: opportunities and challenges. <i>Differentiation</i> , <b>2012</b> , 84, 149-62	3.5	43
39	Interactions between TGF $\beta$ 1 and cyclic strain in modulation of myofibroblastic differentiation of canine mitral valve interstitial cells in 3D culture. <i>Journal of Veterinary Cardiology</i> , <b>2012</b> , 14, 211-21	1.9	30
38	The mechanobiology of mitral valve function, degeneration, and repair. <i>Journal of Veterinary Cardiology</i> , <b>2012</b> , 14, 47-58	1.9	21
37	Serotonin potentiates transforming growth factor-beta3 induced biomechanical remodeling in avian embryonic atrioventricular valves. <i>PLoS ONE</i> , <b>2012</b> , 7, e42527	3.7	19
36	Multi-scale biomechanical remodeling in aging and genetic mutant murine mitral valve leaflets: insights into Marfan syndrome. <i>PLoS ONE</i> , <b>2012</b> , 7, e44639	3.7	13

35	Cyclic strain anisotropy regulates valvular interstitial cell phenotype and tissue remodeling in three-dimensional culture. <i>Acta Biomaterialia</i> , <b>2012</b> , 8, 1710-9	10.8	92
34	Valvular heart diseases in the developing world: developmental biology takes center stage. <i>Journal of Heart Valve Disease</i> , <b>2012</b> , 21, 234-40		9
33	Inflammatory regulation of valvular remodeling: the good(?), the bad, and the ugly. <i>International Journal of Inflammation</i> , <b>2011</b> , 2011, 721419	6.4	27
32	Aortic valve disease and treatment: the need for naturally engineered solutions. <i>Advanced Drug Delivery Reviews</i> , <b>2011</b> , 63, 242-68	18.5	141
31	Hemodynamic patterning of the avian atrioventricular valve. <i>Developmental Dynamics</i> , <b>2011</b> , 240, 23-35	2.9	59
30	Quantitative three-dimensional imaging of live avian embryonic morphogenesis via micro-computed tomography. <i>Developmental Dynamics</i> , <b>2011</b> , 240, 1949-57	2.9	36
29	Quantitative Three-Dimensional Analysis of Embryonic Chick Morphogenesis Via Microcomputed Tomography. <i>Anatomical Record</i> , <b>2011</b> , 294, 1-10	2.1	27
28	Quantitative three-dimensional analysis of embryonic chick morphogenesis via microcomputed tomography. <i>Anatomical Record</i> , <b>2011</b> , 294, 1-10	2.1	19
27	Cardiac developmental toxicity. <i>Birth Defects Research Part C: Embryo Today Reviews</i> , <b>2011</b> , 93, 291-7		11
26	The cycle of form and function in cardiac valvulogenesis. <i>Aswan Heart Centre Science &amp; Practice Series</i> , <b>2011</b> , 2011,		9
25	Two-photon microscopy-guided femtosecond-laser photoablation of avian cardiogenesis: noninvasive creation of localized heart defects. <i>American Journal of Physiology - Heart and Circulatory Physiology</i> , <b>2010</b> , 299, H1728-35	5.2	29
24	Transforming growth factor $\beta$ bone morphogenetic protein, and vascular endothelial growth factor mediate phenotype maturation and tissue remodeling by embryonic valve progenitor cells: relevance for heart valve tissue engineering. <i>Tissue Engineering - Part A</i> , <b>2010</b> , 16, 3375-83	3.9	23
23	Isolation and culture of avian embryonic valvular progenitor cells. <i>Journal of Visualized Experiments</i> , <b>2010</b> ,	1.6	3
22	Arterial and aortic valve calcification inversely correlates with osteoporotic bone remodelling: a role for inflammation. <i>European Heart Journal</i> , <b>2010</b> , 31, 1975-84	9.5	152
21	Isolation of valvular endothelial cells. <i>Journal of Visualized Experiments</i> , <b>2010</b> ,	1.6	36
20	An ex-ovo chicken embryo culture system suitable for imaging and microsurgery applications. <i>Journal of Visualized Experiments</i> , <b>2010</b> ,	1.6	36
19	Neonatal and adult cardiovascular pathophysiological remodeling and repair: developmental role of periostin. <i>Annals of the New York Academy of Sciences</i> , <b>2008</b> , 1123, 30-40	6.5	111
18	Mechanobiology of the aortic heart valve. <i>Journal of Heart Valve Disease</i> , <b>2008</b> , 17, 62-73		115



17	Cyclic strain regulates pro-inflammatory protein expression in porcine aortic valve endothelial cells. <i>Journal of Heart Valve Disease</i> , <b>2008</b> , 17, 571-7; discussion 578		30
16	Quantitative volumetric analysis of cardiac morphogenesis assessed through micro-computed tomography. <i>Developmental Dynamics</i> , <b>2007</b> , 236, 802-9	2.9	56
15	Quantitative volumetric analysis of cardiac morphogenesis assessed through micro-computed tomography. <i>Developmental Dynamics</i> , <b>2007</b> , 236, spc1-spc1	2.9	
14	Transitions in early embryonic atrioventricular valvular function correspond with changes in cushion biomechanics that are predictable by tissue composition. <i>Circulation Research</i> , <b>2007</b> , 100, 1503-1517	15.7	122
13	The next frontier in cardiovascular developmental biology--an integrated approach to adult disease?. <i>Nature Clinical Practice Cardiovascular Medicine</i> , <b>2007</b> , 4, 60-1		15
12	Valvulogenesis: the moving target. <i>Philosophical Transactions of the Royal Society B: Biological Sciences</i> , <b>2007</b> , 362, 1489-503	5.8	115
11	Valvular endothelial cells and the mechanoregulation of valvular pathology. <i>Philosophical Transactions of the Royal Society B: Biological Sciences</i> , <b>2007</b> , 362, 1445-57	5.8	96
10	Periostin promotes atrioventricular mesenchyme matrix invasion and remodeling mediated by integrin signaling through Rho/PI 3-kinase. <i>Developmental Biology</i> , <b>2007</b> , 302, 256-66	3.1	142
9	Equibiaxial strain stimulates fibroblastic phenotype shift in smooth muscle cells in an engineered tissue model of the aortic wall. <i>Biomaterials</i> , <b>2006</b> , 27, 5252-8	15.6	48
8	Transcriptional profiles of valvular and vascular endothelial cells reveal phenotypic differences: influence of shear stress. <i>Arteriosclerosis, Thrombosis, and Vascular Biology</i> , <b>2006</b> , 26, 69-77	9.4	151
7	Valvular endothelial cells regulate the phenotype of interstitial cells in co-culture: effects of steady shear stress. <i>Tissue Engineering</i> , <b>2006</b> , 12, 905-15		165
6	Toxicity models of pulsed copper exposure to <i>Pimephales promelas</i> and <i>Daphnia magna</i> . <i>Environmental Toxicology and Chemistry</i> , <b>2006</b> , 25, 2541-50	3.8	22
5	Effects of pulsed contaminant exposures on early life stages of the fathead minnow. <i>Archives of Environmental Contamination and Toxicology</i> , <b>2005</b> , 49, 511-9	3.2	21
4	Unique morphology and focal adhesion development of valvular endothelial cells in static and fluid flow environments. <i>Arteriosclerosis, Thrombosis, and Vascular Biology</i> , <b>2004</b> , 24, 1429-34	9.4	224
3	Porcine aortic valve interstitial cells in three-dimensional culture: comparison of phenotype with aortic smooth muscle cells. <i>Journal of Heart Valve Disease</i> , <b>2004</b> , 13, 478-85; discussion 485-6		100
2	Spatiotemporal single-cell RNA sequencing of developing hearts reveals interplay between cellular differentiation and morphogenesis		2
1	JuPOETs: A Constrained Multiobjective Optimization Approach to Estimate Biochemical Model Ensembles in the Julia Programming Language		2