Richard A Gray

List of Publications by Year
in descending order

83 papers	5,271 citations	125106 35 h-index	97045 71 g-index
87 all docs	87 docs citations	87 times ranked	2984 citing authors

#	Article	IF	Citations
1	Design and execution of a verification, validation, and uncertainty quantification plan for a numerical model of left ventricular flow after LVAD implantation. PLoS Computational Biology, 2022, 18, e1010141.	1.5	7
2	Data-Driven Uncertainty Quantification for Cardiac Electrophysiological Models: Impact of Physiological Variability on Action Potential and Spiral Wave Dynamics. Frontiers in Physiology, 2020, 11, 585400.	1.3	15
3	A model for human action potential dynamics in vivo. American Journal of Physiology - Heart and Circulatory Physiology, 2020, 318, H534-H546.	1.5	4
4	Effect of Heart Structure on Ventricular Fibrillation in the Rabbit: A Simulation Study. Frontiers in Physiology, 2019, 10, 564.	1.3	8
5	Comprehensive Uncertainty Quantification and Sensitivity Analysis for Cardiac Action Potential Models. Frontiers in Physiology, 2019, 10, 721.	1.3	57
6	Credibility Evidence for Computational Patient Models Used in the Development of Physiological Closed-Loop Controlled Devices for Critical Care Medicine. Frontiers in Physiology, 2019, 10, 220.	1.3	32
7	Patient-Specific Cardiovascular Computational Modeling: Diversity of Personalization and Challenges. Journal of Cardiovascular Translational Research, 2018, 11, 80-88.	1.1	97
8	The role of conductivity discontinuities in design of cardiac defibrillation. Chaos, 2018, 28, 013106.	1.0	8
9	Validation and Trustworthiness of Multiscale Models of Cardiac Electrophysiology. Frontiers in Physiology, 2018, 9, 106.	1.3	43
10	Modeling bipolar stimulation of cardiac tissue. Chaos, 2017, 27, 093920.	1.0	4
11	Applicability Analysis of Validation Evidence for Biomedical Computational Models. Journal of Verification, Validation and Uncertainty Quantification, 2017, 2, .	0.3	37
12	Mechanism for Amplitude Alternans in Electrocardiograms and the Initiation of Spatiotemporal Chaos. Physical Review Letters, 2017, 118, 168101.	2.9	42
13	Simultaneous Quantification of Spatially Discordant Alternans in Voltage and Intracellular Calcium in Langendorff-Perfused Rabbit Hearts and Inconsistencies with Models of Cardiac Action Potentials and Ca Transients. Frontiers in Physiology, 2017, 8, 819.	1.3	38
14	Cardiac strength-interval curves calculated using a bidomain tissue with a parsimonious ionic current. PLoS ONE, 2017, 12, e0171144.	1.1	6
15	A Parsimonious Model of the Rabbit Action Potential Elucidates the Minimal Physiological Requirements for Alternans and Spiral Wave Breakup. PLoS Computational Biology, 2016, 12, e1005087.	1.5	38
16	Uncertainty and variability in computational and mathematical models of cardiac physiology. Journal of Physiology, 2016, 594, 6833-6847.	1.3	127
17	Estimability Analysis and Optimal Design in Dynamic Multi-scale Models of Cardiac Electrophysiology. Journal of Agricultural, Biological, and Environmental Statistics, 2016, 21, 261-276.	0.7	11
18	Implementation of Contraction to Electrophysiological Ventricular Myocyte Models, and Their Quantitative Characterization via Post-Extrasystolic Potentiation. PLoS ONE, 2015, 10, e0135699.	1.1	13

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19	Filament Dynamics during Simulated Ventricular Fibrillation in a High-Resolution Rabbit Heart. BioMed Research International, 2015, 2015, 1-14.	0.9	35
20	Optical Mapping of Ventricular Fibrillation Dynamics. Advances in Experimental Medicine and Biology, 2015, 859, 313-342.	0.8	24
21	A high-resolution computational model of the deforming human heart. Biomechanics and Modeling in Mechanobiology, 2015, 14, 829-849.	1.4	46
22	Uncertainty quantification of fast sodium current steady-state inactivation for multi-scale models of cardiac electrophysiology. Progress in Biophysics and Molecular Biology, 2015, 117, 4-18.	1.4	55
23	Theory of Rotors and Arrhythmias. , 2014, , 341-350.		7
24	Compositional, Approximate, and Quantitative Reasoning for Medical Cyber-Physical Systems with Application to Patient-Specific Cardiac Dynamics and Devices. Lecture Notes in Computer Science, 2014, , 356-364.	1.0	3
25	Drug-induced post-repolarization refractoriness as an antiarrhythmic principle and its underlying mechanism. Europace, 2014, 16, iv39-iv45.	0.7	15
26	Acute effects of nonexcitatory electrical stimulation during systole in isolated cardiac myocytes and perfused heart. Physiological Reports, 2014, 2, e12106.	0.7	8
27	Verification of computational models of cardiac electroâ€physiology. International Journal for Numerical Methods in Biomedical Engineering, 2014, 30, 525-544.	1.0	63
28	Improving the Assessment of Heart Toxicity for All New Drugs Through Translational Regulatory Science. Clinical Pharmacology and Therapeutics, 2014, 95, 501-508.	2.3	80
29	Modeling the Structure and Function of L-Type Calcium Channel (Cav1.2) to Understand its Effect in Cardiac Propagation. Biophysical Journal, 2013, 104, 460a.	0.2	0
30	Quantification of Transmembrane Currents during Action Potential Propagation in the Heart. Biophysical Journal, 2013, 104, 268-278.	0.2	36
31	Curvature Analysis of Cardiac Excitation Wavefronts. IEEE/ACM Transactions on Computational Biology and Bioinformatics, 2013, 10, 323-336.	1.9	12
32	Transmembrane Current Imaging in the Heart during Pacing and Fibrillation. Biophysical Journal, 2013, 105, 1710-1719.	0.2	1
33	Ensuring reliability of safety-critical clinical applications of computational cardiac models. Frontiers in Physiology, 2013, 4, 358.	1.3	43
34	Optical Screening of Electrical, Mechanical, and Signaling Function on Adult Cardiac Myocytes as Alternative QT-Screen. Biophysical Journal, 2012, 102, 543a.	0.2	0
35	Assessing repolarization: Alternate hypotheses. Heart Rhythm, 2012, 9, 1038-1040.	0.3	1
36	A Novel Approach to Dual Excitation Ratiometric Optical Mapping of Cardiac Action Potentials With Di-4-ANEPPS Using Pulsed LED Excitation. IEEE Transactions on Biomedical Engineering, 2011, 58, 2120-2126.	2.5	56

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37	Several small shocks beat one big one. Nature, 2011, 475, 181-182.	13.7	17
38	Origin choice and petal loss in the flower garden of spiral wave tip trajectories. Chaos, 2009, 19, 033118.	1.0	19
39	Effects of unipolar stimulation on voltage and calcium distributions in the isolated rabbit heart. Basic Research in Cardiology, 2008, 103, 537-551.	2.5	12
40	Excito-oscillatory dynamics as a mechanism of ventricular fibrillation. Heart Rhythm, 2008, 5, 575-584.	0.3	7
41	Voltage-calcium state-space dynamics during initiation of reentry. Heart Rhythm, 2006, 3, 247-248.	0.3	9
42	Characterization of the relationship between preshock state and virtual electrode polarization-induced propagated graded responses resulting in arrhythmia induction. Heart Rhythm, 2006, 3, 583-595.	0.3	13
43	P5-26. Heart Rhythm, 2006, 3, S268-S269.	0.3	0
44	Interdependence of virtual electrode polarization and conduction velocity during premature stimulation. Journal of Electrocardiology, 2006, 39, S13-S18.	0.4	6
45	Measuring Curvature and Velocity Vector Fields for Waves of Cardiac Excitation in 2-D Media. IEEE Transactions on Biomedical Engineering, 2005, 52, 50-63.	2.5	29
46	Termination of spiral waves during cardiac fibrillation via shock-induced phase resetting. Proceedings of the National Academy of Sciences of the United States of America, 2005, 102, 4672-4677.	3.3	60
47	Head-tail interactions in numerical simulations of reentry in a ring of cardiac tissue. Heart Rhythm, 2005, 2, 851-859.	0.3	3
48	Head-tail interactions in numerical simulations of reentry in a ring of cardiac tissue. Heart Rhythm, 2005, 2, 1038-1046.	0.3	6
49	Effects of shock strengths on ventricular defibrillation failure. Cardiovascular Research, 2004, 61, 39-44.	1.8	28
50	Shock-Induced Epicardial and Endocardial Virtual Electrodes Leading to Ventricular Fibrillation via Reentry, Graded Responses, and Transmural Activation. Journal of Cardiovascular Electrophysiology, 2004, 15, 79-87.	0.8	16
51	Restitution Dynamics During Pacing and Arrhythmias in Isolated Pig Hearts. Journal of Cardiovascular Electrophysiology, 2004, 15, 455-463.	0.8	81
52	Global Mechanisms Of Defibrillation. , 2004, , 417-425.		2
53	Virtual Electrodeâ€Induced Positive and Negative Graded Responses:. Journal of Cardiovascular Electrophysiology, 2003, 14, 756-763.	0.8	50
54	Termination of spiral wave breakup in a Fitzhughâ€"Nagumo model via short and long duration stimuli. Chaos, 2002, 12, 941-951.	1.0	21

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55	Effect of Shock-Induced Changes in Transmembrane Potential on Reentrant Waves and Outcome During Cardioversion of Isolated Rabbit Hearts. Journal of Cardiovascular Electrophysiology, 2002, 13, 1118-1127.	0.8	29
56	Effect of Action Potential Duration and Conduction Velocity Restitution and Their Spatial Dispersion on Alternans and the Stability of Arrhythmias. Journal of Cardiovascular Electrophysiology, 2002, 13, 1141-1149.	0.8	210
57	Steepness of the Restitution Curve: A Slippery Slope?. Journal of Cardiovascular Electrophysiology, 2002, 13, 1173-1175.	0.8	28
58	Effect of Strength and Timing of Transmembrane Current Pulses on Isolated Ventricular Myocytes. Journal of Cardiovascular Electrophysiology, 2001, 12, 1129-1137.	0.8	30
59	Entrainment by an Extracellular AC Stimulus in a Computational Model of Cardiac Tissue. Journal of Cardiovascular Electrophysiology, 2001, 12, 1176-1184.	0.8	10
60	An Experimentalistâ€™s Approach to Accurate Localization of Phase Singularities during Reentry. Annals of Biomedical Engineering, 2001, 29, 47-59.	1.3	136
61	Mechanism of Ventricular Defibrillation for Near-Defibrillation Threshold Shocks. Circulation, 2001, 104, 1313-1319.	1.6	74
62	Standing Excitation Waves in the Heart Induced by Strong Alternating Electric Fields. Physical Review Letters, 2001, 87, 168104.	2.9	23
63	Defibrillation Mechanisms:.. Journal of Cardiovascular Electrophysiology, 2000, 11, 1008-1013.	0.8	44
64	Virtual Electrodes and Deexcitation: New Insights into Fibrillation Induction and Defibrillation. Journal of Cardiovascular Electrophysiology, 2000, 11, 339-353.	0.8	173
65	Dynamics of wavelets and their role in atrial fibrillation in the isolated sheep heart. Cardiovascular Research, 2000, 48, 220-232.	1.8	128
66	A Mechanism of Transition From Ventricular Fibrillation to Tachycardia. Circulation Research, 2000, 86, 684-691.	2.0	125
67	Shock-Induced Figure-of-Eight Reentry in the Isolated Rabbit Heart. Circulation Research, 1999, 85, 742-752.	2.0	83
68	What Exactly Are Optically Recorded "Action Potentials"?. Journal of Cardiovascular Electrophysiology, 1999, 10, 1463-1466.	0.8	31
69	Sinusoidal Stimulation of Myocardial Tissue:.. Journal of Cardiovascular Electrophysiology, 1999, 10, 1619-1630.	0.8	19
70	Spatial and temporal organization during cardiac fibrillation. Nature, 1998, 392, 75-78.	13.7	904
71	Self-organization and the dynamical nature of ventricular fibrillation. Chaos, 1998, 8, 79-93.	1.0	121
72	Effects of Postshock Atrial Pacing on Atrial Defibrillation Outcome in the Isolated Sheep Heart. Circulation, 1998, 98, 64-72.	1.6	14

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73	Quantification of Effects of Global Ischemia on Dynamics of Ventricular Fibrillation in Isolated Rabbit Heart. Circulation, 1998, 98, 1688-1696.	1.6	99
74	Effects of Atrial Defibrillation Shocks on the Ventricles in Isolated Sheep Hearts. Circulation, 1998, 97, 1613-1622.	1.6	18
75	Optical Mapping of Drug-Induced Polymorphic Arrhythmias and Torsade de Pointes in the Isolated Rabbit Heart. Journal of the American College of Cardiology, 1997, 29, 831-842.	1.2	141
76	Video Imaging of Atrial Defibrillation in the Sheep Heart. Circulation, 1997, 95, 1038-1047.	1.6	31
77	Vortex shedding as a precursor of turbulent electrical activity in cardiac muscle. Biophysical Journal, 1996, 70, 1105-1111.	0.2	141
78	Pectinate muscle network and wave front curvature contribute to slow conduction and reentry in the atrium. Journal of the American College of Cardiology, 1996, 27, 60-61.	1.2	44
79	SPIRAL WAVES AND THE HEART. International Journal of Bifurcation and Chaos in Applied Sciences and Engineering, 1996, 06, 415-435.	0.7	71
80	Incomplete Reentry and Epicardial Breakthrough Patterns During Atrial Fibrillation in the Sheep Heart. Circulation, 1996, 94, 2649-2661.	1.6	131
81	Mechanisms of Cardiac Fibrillation. Science, 1995, 270, 1222-1222.	6.0	408
82	Nonstationary Vortexlike Reentrant Activity as a Mechanism of Polymorphic Ventricular Tachycardia in the Isolated Rabbit Heart. Circulation, 1995, 91, 2454-2469.	1.6	232
83	Wave-front curvature as a cause of slow conduction and block in isolated cardiac muscle.. Circulation Research, 1994, 75, 1014-1028.	2.0	299