Gunnar Seemann

List of Publications by Year
in descending order

123 papers	4,862 citations	126907 33 h-index	106344 65 g-index
129 all docs	129 docs citations	129 times ranked	4442 citing authors

#	Article	IF	Citations
1	Macrophages Facilitate Electrical Conduction in the Heart. Cell, 2017, 169, 510-522.e20.	28.9	703
2	Models of cardiac tissue electrophysiology: Progress, challenges and open questions. Progress in Biophysics and Molecular Biology, 2011, 104, 22-48.	2.9	483
3	Verification of cardiac tissue electrophysiology simulators using an <i>N</i> -version benchmark. Philosophical Transactions Series A, Mathematical, Physical, and Engineering Sciences, 2011, 369, 4331-4351.	3.4	253
4	Heterogeneous three-dimensional anatomical and electrophysiological model of human atria. Philosophical Transactions Series A, Mathematical, Physical, and Engineering Sciences, 2006, 364, 1465-1481.	3.4	229
5	Cardiac cell modelling: Observations from the heart of the cardiac physiome project. Progress in Biophysics and Molecular Biology, 2011, 104, 2-21.	2.9	139
6	Benchmarking electrophysiological models of human atrial myocytes. Frontiers in Physiology, 2012, 3, 487.	2.8	131
7	Computational modeling of the human atrial anatomy and electrophysiology. Medical and Biological Engineering and Computing, 2012, 50, 773-799.	2.8	128
8	Ranking the Influence of Tissue Conductivities on Forward-Calculated ECGs. IEEE Transactions on Biomedical Engineering, 2010, 57, 1568-1576.	4.2	121
9	Deficient Zebrafish <i>Ether-aÌ€-Go-Go</i> â€"Related Gene Channel Gating Causes Short-QT Syndrome in Zebrafish <i>Reggae</i> Mutants. Circulation, 2008, 117, 866-875.	1.6	115
10	Slow Conduction in the Border Zones of Patchy Fibrosis Stabilizes the Drivers for Atrial Fibrillation: Insights from Multi-Scale Human Atrial Modeling. Frontiers in Physiology, 2016, 7, 474.	2.8	109
11	The openCARP simulation environment for cardiac electrophysiology. Computer Methods and Programs in Biomedicine, 2021, 208, 106223.	4.7	84
12	Personalization of Atrial Anatomy and Electrophysiology as a Basis for Clinical Modeling of Radio-Frequency Ablation of Atrial Fibrillation. IEEE Transactions on Medical Imaging, 2013, 32, 73-84.	8.9	83
13	Simulation of the contraction of the ventricles in a human heart model including atria and pericardium. Biomechanics and Modeling in Mechanobiology, 2014, 13, 627-641.	2.8	81
14	Verification of cardiac mechanics software: benchmark problems and solutions for testing active and passive material behaviour. Proceedings of the Royal Society A: Mathematical, Physical and Engineering Sciences, 2015, 471, 20150641.	2.1	80
15	A Model of Electrical Conduction in Cardiac Tissue Including Fibroblasts. Annals of Biomedical Engineering, 2009, 37, 874-889.	2.5	77
16	Silica nanoparticles are less toxic to human lung cells when deposited at the airâ€"liquid interface compared to conventional submerged exposure. Beilstein Journal of Nanotechnology, 2014, 5, 1590-1602.	2.8	72
17	Sodium permeable and â€œhypersensitiveâ€•<scp>TREK</scp> â€1 channels cause ventricular tachycardia. EMBO Molecular Medicine, 2017, 9, 403-414.	6.9	65
18	Influence of <formula formulatype="inline"><tex Notation="TeX">${I_{Ks}}$</tex></formula> Heterogeneities on the Genesis of the T-wave: A Computational Evaluation. IEEE Transactions on Biomedical Engineering, 2012, 59, 311-322.	4.2	63

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19	In Silico Screening of the Key Cellular Remodeling Targets in Chronic Atrial Fibrillation. PLoS Computational Biology, 2014, 10, e1003620.	3.2	59
20	Modeling Atrial Fiber Orientation in Patient-Specific Geometries: A Semi-automatic Rule-Based Approach. Lecture Notes in Computer Science, 2011, , 223-232.	1.3	59
21	The Influence of Age and Skull Conductivity on Surface and Subdermal Bipolar EEG Leads. Computational Intelligence and Neuroscience, 2010, 2010, 1-7.	1.7	56
22	Conduction Velocity Restitution of the Human Atriumâ€"An Efficient Measurement Protocol for Clinical Electrophysiological Studies. IEEE Transactions on Biomedical Engineering, 2011, 58, 2648-2655.	4.2	55
23	Preventive Ablation Strategies in a Biophysical Model of Atrial Fibrillation Based on Realistic Anatomical Data. IEEE Transactions on Biomedical Engineering, 2008, 55, 399-406.	4.2	52
24	In-silico modeling of atrial repolarization in normal and atrial fibrillation remodeled state. Medical and Biological Engineering and Computing, 2013, 51, 1105-1119.	2.8	51
25	Mesh structure-independent modeling of patient-specific atrial fiber orientation. Current Directions in Biomedical Engineering, 2015, 1, 409-412.	0.4	50
26	Electro-Mechanical Whole-Heart Digital Twins: A Fully Coupled Multi-Physics Approach. Mathematics, 2021, 9, 1247.	2.2	49
27	Patient-specific modeling of atrial fibrosis increases the accuracy of sinus rhythm simulations and may explain maintenance of atrial fibrillation. Journal of Electrocardiology, 2014, 47, 324-328.	0.9	48
28	In-silico assessment of the dynamic effects of amiodarone and dronedarone on human atrial patho-electrophysiology. Europace, 2014, 16, iv30-iv38.	1.7	45
29	Arrhythmic potency of human ether-Ã-go-go-related gene mutations L532P and N588K in a computational model of human atrial myocytes. Europace, 2014, 16, 435-443.	1.7	44
30	Wave-Direction and Conduction-Velocity Analysis From Intracardiac Electrogramsâ€"A Single-Shot Technique. IEEE Transactions on Biomedical Engineering, 2010, 57, 2394-2401.	4.2	43
31	Selective noradrenaline reuptake inhibitor atomoxetine directly blocks hERG currents. British Journal of Pharmacology, 2009, 156, 226-236.	5.4	39
32	Towards personalized clinical in-silico modeling of atrial anatomy and electrophysiology. Medical and Biological Engineering and Computing, 2013, 51, 1251-1260.	2.8	39
33	Modelling of short QT syndrome in a heterogeneous model of the human ventricular wall. Europace, 2005, 7, S105-S117.	1.7	38
34	Quantitative Reconstruction of Cardiac Electromechanics in Human Myocardium:. Journal of Cardiovascular Electrophysiology, 2003, 14, S219-S228.	1.7	35
35	Influence of left atrial size on P-wave morphology: differential effects of dilation and hypertrophy. Europace, 2018, 20, iii36-iii44.	1.7	32
36	Quantitative Analysis of Cardiac Tissue Including Fibroblasts Using Three-Dimensional Confocal Microscopy and Image Reconstruction: Towards a Basis for Electrophysiological Modeling. IEEE Transactions on Medical Imaging, 2013, 32, 862-872.	8.9	31

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37	Modeling of IK1 mutations in human left ventricular myocytes and tissue. American Journal of Physiology - Heart and Circulatory Physiology, 2007, 292, H549-H559.	3.2	30
38	A Computer Simulation Study of Anatomy Induced Drift of Spiral Waves in the Human Atrium. BioMed Research International, 2015, 2015, 1-15.	1.9	30
39	Alterations of atrial electrophysiology related to hemodialysis session: insights from a multiscale computer model. Journal of Electrocardiology, 2011, 44, 176-183.	0.9	29
40	OUP accepted manuscript. Europace, 2016, 18, iv35-iv43.	1.7	29
41	Modeling of cardiac ischemia in human myocytes and tissue including spatiotemporal electrophysiological variations / Modellierung kardialer IschÃmie in menschlichen Myozyten und Gewebe. Biomedizinische Technik, 2009, 54, 107-125.	0.8	28
42	In Silico Investigation of Electrically Silent Acute Cardiac Ischemia in the Human Ventricles. IEEE Transactions on Biomedical Engineering, 2011, 58, 2961-2964.	4.2	28
43	Impact of amiodarone and cisapride on simulated human ventricular electrophysiology and electrocardiograms. Europace, 2012, 14, v90-v96.	1.7	28
44	Basket-Type Catheters: Diagnostic Pitfalls Caused by Deformation and Limited Coverage. BioMed Research International, 2016, 2016, 1-13.	1.9	28
45	Electrophysiological characterization of a large set of novel variants in the SCN5A-gene: identification of novel LQTS3 and BrS mutations. Pflugers Archiv European Journal of Physiology, 2016, 468, 1375-1387.	2.8	28
46	MODELING OF PROTEIN INTERACTIONS INVOLVED IN CARDIAC TENSION DEVELOPMENT. International Journal of Bifurcation and Chaos in Applied Sciences and Engineering, 2003, 13, 3561-3578.	1.7	27
47	Patient-Specific Identification of Atrial Flutter Vulnerabilityâ€"A Computational Approach to Reveal Latent Reentry Pathways. Frontiers in Physiology, 2018, 9, 1910.	2.8	27
48	Predicting Tissue Conductivity Influences on Body Surface Potentialsâ€"An Efficient Approach Based on Principal Component Analysis. IEEE Transactions on Biomedical Engineering, 2011, 58, 265-273.	4.2	26
49	Modeling effects of voltage dependent properties of the cardiac muscarinic receptor on human sinus node function. PLoS Computational Biology, 2018, 14, e1006438.	3.2	26
50	Genetic Ablation of TASK-1 (Tandem of P Domains in a Weak Inward Rectifying K ⁺) Tj ETQq0 0 0 rgBT /Overlock 10 Tf 50 2 Channels Suppresses Atrial Fibrillation and Prevents Electrical Remodeling. Circulation: Arrhythmia and Electrophysiology, 2019, 12, e007465.	4.8	25
51	Postpartum hormones oxytocin and prolactin cause pro-arrhythmic prolongation of cardiac repolarization in long QT syndrome type 2. Europace, 2019, 21, 1126-1138.	1.7	25
52	Confocal Microscopy-Based Estimation of Parameters for Computational Modeling of Electrical Conduction in the Normal and Infarcted Heart. Frontiers in Physiology, 2018, 9, 239.	2.8	24
53	Impact of Physiological Ventricular Deformation on the Morphology of the T-Wave: A Hybrid, Static-Dynamic Approach. IEEE Transactions on Biomedical Engineering, 2011, 58, 2109-2119.	4.2	21
54	Pharmacologic TWIKâ€Related Acidâ€Sensitive K+ Channel (TASKâ€1) Potassium Channel Inhibitor A293 Facilitates Acute Cardioversion of Paroxysmal Atrial Fibrillation in a Porcine Large Animal Model. Journal of the American Heart Association, 2020, 9, e015751.	3.7	21

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55	An environment for sustainable research software in Germany and beyond: current state, open challenges, and call for action. F1000Research, 2020, 9, 295.	1.6	21
56	Simulation of clinical electrophysiology in 3D human atria: a highâ€performance computing and highâ€performance visualization application. Concurrency Computation Practice and Experience, 2008, 20, 1317-1328.	2.2	20
57	Influence of ischemic core muscle fibers on surface depolarization potentials in superfused cardiac tissue preparations: a simulation study. Medical and Biological Engineering and Computing, 2012, 50, 461-472.	2.8	20
58	Left and Right Atrial Contribution to the P-wave in Realistic Computational Models. Lecture Notes in Computer Science, 2015, , 439-447.	1.3	19
59	Quantitative Reconstruction of Cardiac Electromechanics in Human Myocardium:. Journal of Cardiovascular Electrophysiology, 2003, 14, S210-S218.	1.7	18
60	The influence of fibre orientation, extracted from different segments of the human left ventricle, on the activation and repolarization sequence: a simulation study. Europace, 2007, 9, vi96-vi104.	1.7	18
61	Novel insights into the electrophysiology of murine cardiac macrophages: relevance of voltage-gated potassium channels. Cardiovascular Research, 2022, 118, 798-813.	3.8	18
62	Rotor Termination Is Critically Dependent on Kinetic Properties of IKur Inhibitors in an In Silico Model of Chronic Atrial Fibrillation. PLoS ONE, 2013, 8, e83179.	2.5	17
63	Characterization of Radiofrequency Ablation Lesion Development Based on Simulated and Measured Intracardiac Electrograms. IEEE Transactions on Biomedical Engineering, 2014, 61, 2467-2478.	4.2	17
64	Parameter Estimation of Ion Current Formulations Requires Hybrid Optimization Approach to Be Both Accurate and Reliable. Frontiers in Bioengineering and Biotechnology, 2015, 3, 209.	4.1	17
65	Effects of early afterdepolarizations on excitation patterns in an accurate model of the human ventricles. PLoS ONE, 2017, 12, e0188867.	2.5	17
66	Strong scaling and speedup to 16,384 processors in cardiac electro — Mechanical simulations. , 2009, 2009, 2795-8.		16
67	ECG-Based Detection of Early Myocardial Ischemia in a Computational Model: Impact of Additional Electrodes, Optimal Placement, and a New Feature for ST Deviation. BioMed Research International, 2015, 2015, 1-11.	1.9	16
68	A robust computational framework for estimating 3D Bi-Atrial chamber wall thickness. Computers in Biology and Medicine, 2019, 114, 103444.	7.0	16
69	An environment for sustainable research software in Germany and beyond: current state, open challenges, and call for action. F1000Research, 2020, 9, 295.	1.6	16
70	Computational Modelling of Low Voltage Resonant Drift of Scroll Waves in the Realistic Human Atria. Lecture Notes in Computer Science, 2015, , 421-429.	1.3	14
71	A Semi-automatic Approach for Segmentation of Three-Dimensional Microscopic Image Stacks of Cardiac Tissue. Lecture Notes in Computer Science, 2013, , 300-307.	1.3	14
72	Comparing measured and simulated wave directions in the left atrium â€“ a workflow for model personalization and validation. Biomedizinische Technik, 2012, 57, 79-87.	0.8	13

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73	Spatial Patterns of Excitation at Tissue and Whole Organ Level Due to Early Afterdepolarizations. Frontiers in Physiology, 2017, 8, 404.	2.8	13
74	Cardiac ischemiaâ€"insights from computational models. Herzschrittmachertherapie Und Elektrophysiologie, 2018, 29, 48-56.	0.8	13
75	Anticholinergic antiparkinson drug orphenadrine inhibits HERG channels: block attenuation by mutations of the pore residues Y652 or F656. Naunyn-Schmiedeberg's Archives of Pharmacology, 2007, 376, 275-284.	3.0	12
76	Myocyte Remodeling Due to Fibro-Fatty Infiltrations Influences Arrhythmogenicity. Frontiers in Physiology, 2018, 9, 1381.	2.8	12
77	A framework for personalization of computational models of the human atria. , 2011, 2011, 4324-8.		11
78	Scroll Waves in 3D Virtual Human Atria: A Computational Study. , 2007, , 129-138.		11
79	A Fully-Coupled Electro-Mechanical Whole-Heart Computational Model: Influence of Cardiac Contraction on the ECG. Frontiers in Physiology, 2021, 12, 778872.	2.8	10
80	Anatomical and spiral wave reentry in a simplified model for atrial electrophysiology. Journal of Theoretical Biology, 2017, 419, 100-107.	1.7	8
81	openCARP: An Open Sustainable Framework for In-Silico Cardiac Electrophysiology Research. , 0, , .		8
82	Computer based modeling of the congenital long-QT 2 syndrome in the Visible Man torso: From genes to ECG. Annual International Conference of the IEEE Engineering in Medicine and Biology Society, 2007, 2007, 1410-3.	0.5	7
83	Large scale cardiac modeling on the Blue Gene supercomputer. , 2008, 2008, 577-80.		6
84	Myofiber orientation and electrical activation in human and sheep atrial models. , 2012, 2012, 6365-8.		6
85	Estimating refractory periods during atrial fibrillation based on electrogram cycle lengths in a heterogeneous simulation setup. Current Directions in Biomedical Engineering, 2017, 3, 317-320.	0.4	6
86	Electro-mechanical (dys-)function in long QT syndrome type 1. International Journal of Cardiology, 2019, 274, 144-151.	1.7	6
87	Extracting Clinically Relevant Circular Mapping and Coronary Sinus Catheter Potentials from Atrial Simulations. Lecture Notes in Computer Science, 2009, , 30-38.	1.3	6
88	Comparing Simulated Electrocardiograms of Different Stages of Acute Cardiac Ischemia. Lecture Notes in Computer Science, 2011, , 11-19.	1.3	6
89	Clinical applications of image fusion for electrophysiology procedures. , 2012, , .		5
90	Detecting phase singularities and rotor center trajectories based on the Hilbert transform of intraatrial electrograms in an atrial voxel model. Current Directions in Biomedical Engineering, 2015, 1, 38-41.	0.4	5

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91	Methods for analyzing signal characteristics of stable and unstable rotors in a realistic heart model. , 2015, , .		5
92	Interregional electro-mechanical heterogeneity in the rabbit myocardium. Progress in Biophysics and Molecular Biology, 2017, 130, 344-355.	2.9	5
93	Adaption of Mathematical Ion Channel Models to measured data using the Particle Swarm Optimization. IFMBE Proceedings, 2009, , 2507-2510.	0.3	5
94	Investigating Arrhythmogenic Effects of the hERG Mutation N588K in Virtual Human Atria. Lecture Notes in Computer Science, 2009, , 144-153.	1.3	5
95	MATHEMATICAL MODELING OF CARDIAC ELECTRO-MECHANICS: FROM PROTEIN TO ORGAN. International Journal of Bifurcation and Chaos in Applied Sciences and Engineering, 2003, 13, 3747-3755.	1.7	4
96	Classification of cardiac excitation patterns during atrial fibrillation. Current Directions in Biomedical Engineering, 2016, 2, 161-166.	0.4	4
97	Cycle length statistics during human atrial fibrillation reveal refractory properties of the underlying substrate: a combined <i>in silico</i> and clinical test of concept study. Europace, 2021, 23, i133-i142.	1.7	4
98	The missing link between cardiovascular rhythm control and myocardial cell modeling. Biomedizinische Technik, 2006, 51, 205-209.	0.8	3
99	A Framework for Modeling of Mechano-Electrical Feedback Mechanisms of Cardiac Myocytes and Tissues. Annual International Conference of the IEEE Engineering in Medicine and Biology Society, 2007, 2007, 160-3.	0.5	3
100	Electrophysiological Modeling for Cardiology: Methods and Potential Applications. IT - Information Technology, 2010, 52, 242-249.	0.9	3
101	Comparison of simulated and clinical intracardiac electrograms. , 2013, 2013, 6858-61.		3
102	Understanding the cellular mode of action of vernakalant using a computational model: answers and new questions. Current Directions in Biomedical Engineering, 2015, 1, 418-422.	0.4	3
103	Effects of Fibroblasts coupling on the Electrophysiology of Cardiomyocytes from Different Regions of the Human Atrium: a Simulation Study. , 0, , .		3
104	CVAR-Seg: An Automated Signal Segmentation Pipeline for Conduction Velocity and Amplitude Restitution. Frontiers in Physiology, 2021, 12, 673047.	2.8	3
105	Influence of electrophysiological heterogeneity on electrical stimulation in healthy and failing human hearts. Medical and Biological Engineering and Computing, 2005, 43, 783-792.	2.8	2
106	Orthogonal recursive bisection data decomposition for high performance computing in cardiac model simulations: Dependence on anatomical geometry. , 2009, 2009, 2799-802.		2
107	Simulation of intracardiac electrograms around acute ablation lesions. Current Directions in Biomedical Engineering, 2016, 2, 607-610.	0.4	2
108	Estimating cardiac active tension from wall motionâ€"An inverse problem of cardiac biomechanics. International Journal for Numerical Methods in Biomedical Engineering, 2021, 37, e3448.	2.1	2

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109	Molecular Mechanism of Autosomal Recessive Long QT-Syndrome 1 without Deafness. International Journal of Molecular Sciences, 2021, 22, 1112.	4.1	2
110	A computational model of rabbit geometry and ECG: Optimizing ventricular activation sequence and APD distribution. PLoS ONE, 2022, 17, e0270559.	2.5	2
111	Model assisted biosignal analysis of atrial electrograms. TM Technisches Messen, 2016, 83, 102-111.	0.7	1
112	Effect of left atrial hypertrophy on P-wave morphology in a computational model. Current Directions in Biomedical Engineering, 2016, 2, 603-606.	0.4	1
113	Hyperthermia dependence of cardiac conduction velocity in rat myocardium: Optical mapping and cardiac near field measurements. , 2017, 2017, 3688-3691.		1
114	T-Wave Changes Due to Cardiac Deformation Are Dependent on the Temporal Relationship Between Repolarization and Diastolic Phase. , 2018, , .		1
115	Comment: postpartum hormones oxytocin and prolactin cause pro-arrhythmic prolongation of cardiac repolarization in long QT syndrome type 2â€"Authorsâ€™ reply. Europace, 2019, 21, 1141-1142.	1.7	1
116	Computational Mechanistic Investigation of Chronotropic Effects on Murine Sinus Node Cells. , 0, , .		1
117	Left Atrial Hypertrophy Increases P:Wave Terminal Force Through Amplitude but not Duration. , 0, , .		1
118	Insights into Electrophysiological Studies with Papillary Muscle by Computational Models. Lecture Notes in Computer Science, 2005, , 216-225.	1.3	0
119	Accelerating mono-domain cardiac electrophysiology simulations using OpenCL. Current Directions in Biomedical Engineering, 2015, 1, 413-417.	0.4	0
120	Magnetocardiography did not uncover electrically silent ischemia in an in-silico study case. , 2015, , .		0
121	Abstract 13021: Regional Electromechanical Heterogeneity in the Rabbit Wild-Type and Long-QT-Syndrome Heart. Circulation, 2015, 132, .	1.6	0
122	Regularity of Node Distribution Impacts Conduction Velocities in Finite Element Simulations of the Heart. , 0, , .		0
123	Mathematical Modeling of Nonselective Channels: Estimating Ion Current Fractions and Their Impact on Pathological Simulations. , 0, , .		0