Liesbet Lj Geris

List of Publications by Year
in descending order

134 papers	4,280 citations	117625 34 h-index	138484 58 g-index
142 all docs	142 docs citations	142 times ranked	4583 citing authors

#	Article	IF	Citations
1	The â€˜Digital Twinâ€™ to enable the vision of precision cardiology. European Heart Journal, 2020, 41, 4556-4564.	2.2	319
2	Current views on calcium phosphate osteogenicity and the translation into effective bone regeneration strategies. Acta Biomaterialia, 2012, 8, 3876-3887.	8.3	240
3	Angiogenesis in bone fracture healing: A bioregulatory model. Journal of Theoretical Biology, 2008, 251, 137-158.	1.7	216
4	Lipid availability determines fate of skeletal progenitor cells via SOX9. Nature, 2020, 579, 111-117.	27.8	140
5	The influence of micro-motion on the tissue differentiation around immediately loaded cylindrical turned titanium implants. Archives of Oral Biology, 2006, 51, 1-9.	1.8	108
6	Mechanisms of ectopic bone formation by human osteoprogenitor cells on CaP biomaterial carriers. Biomaterials, 2012, 33, 3127-3142.	11.4	103
7	The combined bone forming capacity of human periosteal derived cells and calcium phosphates. Biomaterials, 2011, 32, 4393-4405.	11.4	100
8	Staphylococcal biofilm growth on smooth and porous titanium coatings for biomedical applications. Journal of Biomedical Materials Research - Part A, 2014, 102, 215-224.	4.0	95
9	Developmentally Engineered Callus Organoid Bioassemblies Exhibit Predictive In Vivo Long Bone Healing. Advanced Science, 2020, 7, 1902295.	11.2	93
10	A computational model for cell/ECM growth on 3D surfaces using the level set method: a bone tissue engineering case study. Biomechanics and Modeling in Mechanobiology, 2014, 13, 1361-1371.	2.8	92
11	Oxygen as a critical determinant of bone fracture healingâ€"A multiscale model. Journal of Theoretical Biology, 2015, 365, 247-264.	1.7	80
12	The effect of micro-motion on the tissue response around immediately loaded roughened titanium implants in the rabbit. European Journal of Oral Sciences, 2007, 115, 21-29.	1.5	76
13	MOSAIC: A Multiscale Model of Osteogenesis and Sprouting Angiogenesis with Lateral Inhibition of Endothelial Cells. PLoS Computational Biology, 2012, 8, e1002724.	3.2	76
14	A threeâ€dimensional computational fluid dynamics model of shear stress distribution during neotissue growth in a perfusion bioreactor. Biotechnology and Bioengineering, 2015, 112, 2591-2600.	3.3	71
15	Connecting biology and mechanics in fracture healing: an integrated mathematical modeling framework for the study of nonunions. Biomechanics and Modeling in Mechanobiology, 2010, 9, 713-724.	2.8	70
16	Simultaneous three-dimensional visualization of mineralized and soft skeletal tissues by a novel microCT contrast agent with polyoxometalate structure. Biomaterials, 2018, 159, 1-12.	11.4	70
17	Numerical simulation of tissue differentiation around loaded titanium implants in a bone chamber. Journal of Biomechanics, 2004, 37, 763-769.	2.1	63
18	A hybrid bioregulatory model of angiogenesis during bone fracture healing. Biomechanics and Modeling in Mechanobiology, 2011, 10, 383-395.	2.8	60

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19	Towards a quantitative understanding of oxygen tension and cell density evolution in fibrin hydrogels. Biomaterials, 2011, 32, 107-118.	11.4	60
20	Coupling curvature-dependent and shear stress-stimulated neotissue growth in dynamic bioreactor cultures: a 3D computational model of a complete scaffold. Biomechanics and Modeling in Mechanobiology, 2016, 15, 169-180.	2.8	60
21	Dissecting the effects of preconditioning with inflammatory cytokines and hypoxia on the angiogenic potential of mesenchymal stromal cell (MSC)-derived soluble proteins and extracellular vesicles (EVs). Biomaterials, 2021, 269, 120633.	11.4	59
22	Influence of controlled immediate loading and implant design on peri-implant bone formation. Journal of Clinical Periodontology, 2007, 34, 172-81.	4.9	53
23	Size Does Matter: An Integrative In Vivo-In Silico Approach for the Treatment of Critical Size Bone Defects. PLoS Computational Biology, 2014, 10, e1003888.	3.2	51
24	Scientific and regulatory evaluation of mechanistic <i>in silico</i> drug and disease models in drug development: Building model credibility. CPT: Pharmacometrics and Systems Pharmacology, 2021, 10, 804-825.	2.5	51
25	Histodynamics of bone tissue formation around immediately loaded cylindrical implants in the rabbit. Clinical Oral Implants Research, 2007, 18, 471-480.	4.5	50
26	The future is digital: In silico tissue engineering. Current Opinion in Biomedical Engineering, 2018, 6, 92-98.	3.4	50
27	Early BMP, Wnt and Ca2+/PKC pathway activation predicts the bone forming capacity of periosteal cells in combination with calcium phosphates. Biomaterials, 2016, 86, 106-118.	11.4	49
28	Three-Dimensional Characterization of Tissue-Engineered Constructs by Contrast-Enhanced Nanofocus Computed Tomography. Tissue Engineering - Part C: Methods, 2014, 20, 177-187.	2.1	46
29	Occurrence and Treatment of Bone Atrophic Non-Unions Investigated by an Integrative Approach. PLoS Computational Biology, 2010, 6, e1000915.	3.2	45
30	Cell based advanced therapeutic medicinal products for bone repair: Keep it simple?. Advanced Drug Delivery Reviews, 2015, 84, 30-44.	13.7	45
31	Application of mechanoregulatory models to simulate peri-implant tissue formation in an in vivo bone chamber. Journal of Biomechanics, 2008, 41, 145-154.	2.1	42
32	Patterned, organoid-based cartilaginous implants exhibit zone specific functionality forming osteochondral-like tissues in vivo. Biomaterials, 2021, 273, 120820.	11.4	42
33	Mathematical modeling of fracture healing in mice: comparison between experimental data and numerical simulation results. Medical and Biological Engineering and Computing, 2006, 44, 280-289.	2.8	41
34	Cancer modeling: From mechanistic to data-driven approaches, and from fundamental insights to clinical applications. Journal of Computational Science, 2020, 46, 101198.	2.9	39
35	Human pluripotent stem cell-derived cartilaginous organoids promote scaffold-free healing of critical size long bone defects. Stem Cell Research and Therapy, 2021, 12, 513.	5.5	37
36	3Dâ€Printed Synthetic Hydroxyapatite Scaffold With In Silico Optimized Macrostructure Enhances Bone Formation In Vivo. Advanced Functional Materials, 2022, 32, 2105002.	14.9	37

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37	Combinatorial Analysis of Growth Factors Reveals the Contribution of Bone Morphogenetic Proteins to Chondrogenic Differentiation of Human Periosteal Cells. Tissue Engineering - Part C: Methods, 2016, 22, 473-486.	2.1	35
38	Assessment of Mechanobiological Models for the Numerical Simulation of Tissue Differentiation around Immediately Loaded Implants. Computer Methods in Biomechanics and Biomedical Engineering, 2003, 6, 277-288.	1.6	33
39	Contrast-Enhanced Nanofocus X-Ray Computed Tomography Allows Virtual Three-Dimensional Histopathology and Morphometric Analysis of Osteoarthritis in Small Animal Models. Cartilage, 2014, 5, 55-65.	2.7	33
40	Safer chemicals using less animals: kick-off of the European ONTOX project. Toxicology, 2021, 458, 152846.	4.2	33
41	Spatial optimization in perfusion bioreactors improves bone tissueâ€engineered construct quality attributes. Biotechnology and Bioengineering, 2014, 111, 2560-2570.	3.3	32
42	Mathematical Modeling in Wound Healing, Bone Regeneration and Tissue Engineering. Acta Biotheoretica, 2010, 58, 355-367.	1.5	31
43	Combining microCT-based characterization with empirical modelling as a robust screening approach for the design of optimized CaP-containing scaffolds for progenitor cell-mediated bone formation. Acta Biomaterialia, 2016, 35, 330-340.	8.3	31
44	Mathematical modelling of the degradation behaviour of biodegradable metals. Biomechanics and Modeling in Mechanobiology, 2017, 16, 227-238.	2.8	31
45	Maximizing neotissue growth kinetics in a perfusion bioreactor: An in silico strategy using model reduction and Bayesian optimization. Biotechnology and Bioengineering, 2018, 115, 617-629.	3.3	31
46	Engineering 3D parallelized microfluidic droplet generators with equal flow profiles by computational fluid dynamics and stereolithographic printing. Lab on A Chip, 2020, 20, 490-495.	6.0	31
47	Designing optimal calcium phosphate scaffoldâ€"cell combinations using an integrative model-based approach. Acta Biomaterialia, 2011, 7, 3573-3585.	8.3	30
48	Use of Computational Modeling to Study Joint Degeneration: A Review. Frontiers in Bioengineering and Biotechnology, 2020, 8, 93.	4.1	30
49	Single-cell characterization and metabolic profiling of in vitro cultured human skeletal progenitors with enhanced in vivo bone forming capacity. Stem Cells Translational Medicine, 2020, 9, 389-402.	3.3	29
50	A cell-based combination product for the repair of large bone defects. Bone, 2020, 138, 115511.	2.9	29
51	Towards the Experimentally-Informed In Silico Nozzle Design Optimization for Extrusion-Based Bioprinting of Shear-Thinning Hydrogels. Frontiers in Bioengineering and Biotechnology, 2021, 9, 701778.	4.1	27
52	Bringing computational models of bone regeneration to the clinic. Wiley Interdisciplinary Reviews: Systems Biology and Medicine, 2015, 7, 183-194.	6.6	26
53	Immersed Boundary Models for Quantifying Flow-Induced Mechanical Stimuli on Stem Cells Seeded on 3D Scaffolds in Perfusion Bioreactors. PLoS Computational Biology, 2016, 12, e1005108.	3.2	26
54	Deciphering the combined effect of bone morphogenetic protein 6 and calcium phosphate on bone formation capacity of periosteum derived cell-based tissue engineering constructs. Acta Biomaterialia, 2018, 80, 97-107.	8.3	25

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55	Bayesian Multiobjective Optimisation With Mixed Analytical and Black-Box Functions: Application to Tissue Engineering. IEEE Transactions on Biomedical Engineering, 2019, 66, 727-739.	4.2	25
56	Relating the Chondrocyte Gene Network to Growth Plate Morphology: From Genes to Phenotype. PLoS ONE, 2012, 7, e34729.	2.5	24
57	Computational modeling of bone fracture non-unions: four clinically relevant case studies. In Silico Cell and Tissue Science, 2015, 2, 1.	2.6	24
58	Computational modeling of degradation process of biodegradable magnesium biomaterials. Corrosion Science, 2021, 190, 109674.	6.6	24
59	Regenerative orthopaedics: in vitro, in vivo â€¦ in silico. International Orthopaedics, 2014, 38, 1771-1778.	1.9	23
60	The Third Era of Tissue Engineering: Reversing the Innovation Drivers. Tissue Engineering - Part A, 2019, 25, 821-826.	3.1	22
61	Possible Contexts of Use for <i>In Silico</i> Trials Methodologies: A Consensus-Based Review. IEEE Journal of Biomedical and Health Informatics, 2021, 25, 3977-3982.	6.3	21
62	Human Platelet Lysate Improves Bone Forming Potential of Human Progenitor Cells Expanded in Microcarrier-Based Dynamic Culture. Stem Cells Translational Medicine, 2019, 8, 810-821.	3.3	20
63	Towards Selfâ€Regulated Bioprocessing: A Compact Benchtop Bioreactor System for Monitored and Controlled 3D Cell and Tissue Culture. Biotechnology Journal, 2019, 14, 1800545.	3.5	20
64	Verifying and Validating Quantitative Systems Pharmacology and <i>In Silico</i> Models in Drug Development: Current Needs, Gaps, and Challenges. CPT: Pharmacometrics and Systems Pharmacology, 2020, 9, 195-197.	2.5	20
65	Immuno-Modulatory Effects of Intervertebral Disc Cells. Frontiers in Cell and Developmental Biology, 0, 10, .	3.7	20
66	An Integrated Bioprocess for the Expansion and Chondrogenic Priming of Human Periosteumâ€Derived Progenitor Cells in Suspension Bioreactors. Biotechnology Journal, 2018, 13, 1700087.	3.5	19
67	The Bone-Forming Properties of Periosteum-Derived Cells Differ Between Harvest Sites. Frontiers in Cell and Developmental Biology, 2020, 8, 554984.	3.7	19
68	A Qualitative Model of the Differentiation Network in Chondrocyte Maturation: A Holistic View of Chondrocyte Hypertrophy. PLoS ONE, 2016, 11, e0162052.	2.5	19
69	Mechanical Loading Affects Angiogenesis and Osteogenesis in an <i>In Vivo</i> Bone Chamber: A Modeling Study. Tissue Engineering - Part A, 2010, 16, 3353-3361.	3.1	18
70	Computational Modeling and Reverse Engineering to Reveal Dominant Regulatory Interactions Controlling Osteochondral Differentiation: Potential for Regenerative Medicine. Frontiers in Bioengineering and Biotechnology, 2018, 6, 165.	4.1	18
71	<i>In silico</i> regenerative medicine: how computational tools allow regulatory and financial challenges to be addressed in a volatile market. Interface Focus, 2016, 6, 20150105.	3.0	17
72	Sensitivity Analysis by Design of Experiments. Studies in Mechanobiology, Tissue Engineering and Biomaterials, 2016, , 327-366.	1.0	17

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73	Computational modelling of local calcium ions release from calcium phosphate-based scaffolds. Biomechanics and Modeling in Mechanobiology, 2017, 16, 425-438.	2.8	17
74	Predicting in vitro human mesenchymal stromal cell expansion based on individual donor characteristics using machine learning. Cytotherapy, 2020, 22, 82-90.	0.7	17
75	Computational modelling of biomaterial surface interactions with blood platelets and osteoblastic cells for the prediction of contact osteogenesis. Acta Biomaterialia, 2011, 7, 779-790.	8.3	16
76	Wobble tRNA modification and hydrophilic amino acid patterns dictate protein fate. Nature Communications, 2021, 12, 2170.	12.8	16
77	Selfâ€Oxygenation of Tissues Orchestrates Fullâ€Thickness Vascularization of Living Implants. Advanced Functional Materials, 2021, 31, 2100850.	14.9	16
78	Virtual physiological human 2016: translating the virtual physiological human to the clinic. Interface Focus, 2018, 8, 20170067.	3.0	15
79	From Translation to Protein Degradation as Mechanisms for Regulating Biological Functions: A Review on the SLRP Family in Skeletal Tissues. Biomolecules, 2020, 10, 80.	4.0	15
80	A Semiquantitative Framework for Gene Regulatory Networks: Increasing the Time and Quantitative Resolution of Boolean Networks. PLoS ONE, 2015, 10, e0130033.	2.5	14
81	Tumor exposed-lymphatic endothelial cells promote primary tumor growth via IL6. Cancer Letters, 2021, 497, 154-164.	7.2	14
82	ECHO, the executable CHOndrocyte: A computational model to study articular chondrocytes in health and disease. Cellular Signalling, 2020, 68, 109471.	3.6	13
83	Turning Natureâ€™s own processes into design strategies for living bone implant biomanufacturing: a decade of Developmental Engineering. Advanced Drug Delivery Reviews, 2021, 169, 22-39.	13.7	13
84	Estetrol Combined to Progestogen for Menopause or Contraception Indication Is Neutral on Breast Cancer. Cancers, 2021, 13, 2486.	3.7	13
85	Modelling the early phases of bone regeneration around an endosseous oral implant. Computer Methods in Biomechanics and Biomedical Engineering, 2009, 12, 459-468.	1.6	12
86	A cell based modelling framework for skeletal tissue engineering applications. Journal of Biomechanics, 2010, 43, 887-892.	2.1	12
87	Towards in silico Models of the Inflammatory Response in Bone Fracture Healing. Frontiers in Bioengineering and Biotechnology, 2021, 9, 703725.	4.1	12
88	A mathematical model of adult subventricular neurogenesis. Journal of the Royal Society Interface, 2012, 9, 2414-2423.	3.4	11
89	Effect of ultrasound on bone fracture healing: A computational bioregulatory model. Computers in Biology and Medicine, 2018, 100, 74-85.	7.0	11
90	Neurofibromatosis type 1â€related pseudarthrosis: Beyond the pseudarthrosis site. Human Mutation, 2019, 40, 1760-1767.	2.5	11

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91	Computational Modeling of Human Mesenchymal Stromal Cell Proliferation and Extra-Cellular Matrix Production in 3D Porous Scaffolds in a Perfusion Bioreactor: The Effect of Growth Factors. Frontiers in Bioengineering and Biotechnology, 2020, 8, 376.	4.1	11
92	Optimizing neotissue growth inside perfusion bioreactors with respect to culture and labor cost: a multi-objective optimization study using evolutionary algorithms. Computer Methods in Biomechanics and Biomedical Engineering, 2020, 23, 285-294.	1.6	11
93	<i>In Vivo</i>Ectopic Bone Formation by Devitalized Mineralized Stem Cell Carriers Produced Under Mineralizing Culture Condition. BioResearch Open Access, 2014, 3, 265-277.	2.6	10
94	Multifactorial Optimization of Contrast-Enhanced Nanofocus Computed Tomography for Quantitative Analysis of Neo-Tissue Formation in Tissue Engineering Constructs. PLoS ONE, 2015, 10, e0130227.	2.5	10
95	Cartilaginous spheroid-assembly design considerations for endochondral ossification: towards robotic-driven biomanufacturing. Biofabrication, 2021, 13, 045025.	7.1	10
96	Effect of ultrasound on bone fracture healing: A computational mechanobioregulatory model. Journal of the Acoustical Society of America, 2019, 145, 1048-1059.	1.1	9
97	Modelling towards a more holistic medicine: The Virtual Physiological Human (VPH). Morphologie, 2019, 103, 127-130.	0.9	9
98	A flexible and easy-to-use open-source tool for designing functionally graded 3D porous structures. Virtual and Physical Prototyping, 2022, 17, 682-699.	10.4	9
99	Limb derived cells as a paradigm for engineering selfâ€assembling skeletal tissues. Journal of Tissue Engineering and Regenerative Medicine, 2018, 12, 794-807.	2.7	8
100	Numerical Simulation of Bone Regeneration in a Bone Chamber. Journal of Dental Research, 2009, 88, 158-163.	5.2	7
101	In silico methods â€“ Computational alternatives to animal testing. ALTEX: Alternatives To Animal Experimentation, 2018, 35, 126-128.	1.5	7
102	Uncoupling of in-vitro identity of embryonic limb derived skeletal progenitors and their in-vivo bone forming potential. Scientific Reports, 2019, 9, 5782.	3.3	6
103	An Introduction to Uncertainty in the Development of Computational Models of Biological Processes. Studies in Mechanobiology, Tissue Engineering and Biomaterials, 2016, , 3-11.	1.0	6
104	Computational design of tissue engineering scaffolds. , 2019, , 73-92.		5
105	Guide to mechanical characterization of articular cartilage and hydrogel constructs based on a systematic in silico parameter sensitivity analysis. Journal of the Mechanical Behavior of Biomedical Materials, 2021, 124, 104795.	3.1	5
106	Mechanical Regulation of Limb Bud Formation. Cells, 2022, 11, 420.	4.1	5
107	Ribosome exit tunnel electrostatics. Physical Review E, 2022, 105, 014409.	2.1	5
108	Continuum-level modelling of cellular adhesion and matrix production in aggregates. Computer Methods in Biomechanics and Biomedical Engineering, 2011, 14, 403-410.	1.6	4

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109	The development of a 3D printable chitosan-based copolymer with tunable properties for dentoalveolar regeneration. Carbohydrate Polymers, 2022, 289, 119441.	10.2	4
110	Computational Modeling Under Uncertainty: Challenges and Opportunities. Studies in Mechanobiology, Tissue Engineering and Biomaterials, 2016, , 467-476.	1.0	3
111	In silico tools predict effects of drugs on bone remodelling. Nature Reviews Rheumatology, 2020, 16, 475-476.	8.0	3
112	Mathematical modeling of fracture healing: coupling between mechanics, angiogenesis and osteogenesis. IFMBE Proceedings, 2009, , 2651-2654.	0.3	3
113	An ECHO of Cartilage: In Silico Prediction of Combinatorial Treatments to Switch Between Transient and Permanent Cartilage Phenotypes With Ex Vivo Validation. Frontiers in Bioengineering and Biotechnology, 2021, 9, 732917.	4.1	3
114	Mechanisms of cell migration in the adult brain: modelling subventricular neurogenesis. Computer Methods in Biomechanics and Biomedical Engineering, 2013, 16, 1096-1105.	1.6	2
115	Product and Process Design. , 2014, , 747-781.		2
116	A visco-elastic model for the prediction of orthodontic tooth movement. Computer Methods in Biomechanics and Biomedical Engineering, 2014, 17, 581-590.	1.6	2
117	A mathematical model for bone healing predictions under the ultrasound effect. , 2015, , .		2
118	A modular, standalone perfusion bioreactor for robust, monitored and controlled tissue engineering. Cytotherapy, 2018, 20, S81-S82.	0.7	2
119	An open source crash course on parameter estimation of computational models using a Bayesian optimization approach. The Journal of Open Source Education, 2021, 4, 89.	0.4	2
120	Bioreactor Sensing and Monitoring for Cell Therapy Manufacturing. , 2018, , 243-268.		2
121	In Vitro, In Vivo, and In Silico Models of Lymphangiogenesis in Solid Malignancies. Cancers, 2022, 14, 1525.	3.7	2
122	Mathematical Modelling of Cell Adhesion in Tissue Engineering using Continuum Models. Studies in Mechanobiology, Tissue Engineering and Biomaterials, 2010, , 431-450.	1.0	1
123	In Vivo, In Vitro, In Silico: Computational Tools for Product and Process Design in Tissue Engineering. Studies in Mechanobiology, Tissue Engineering and Biomaterials, 2012, , 1-15.	1.0	1
124	A mechano-regulatory model for bone healing predictions under the influence of ultrasound. , 2015, 2015, 921-4.		1
125	Bayesian Multi-Objective Optimisation of Neotissue Growth in a Perfusion Bioreactor Set-Up. Computer Aided Chemical Engineering, 2017, 40, 2155-2160.	0.5	1
126	Designing microtissue bioassemblies for skeletal regeneration: Healing critical size long bone defects. Cytotherapy, 2018, 20, S14.	0.7	1

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127	Micro computed tomography with and without contrast enhancement for the characterization of microcarriers in dry and wet state. Scientific Reports, 2021, 11, 2819.	3.3	1
128	A Finite Volume Spatial Discretisation for Taxis-Diffusion-Reaction Systems with Axi-Symmetry: Application to Fracture Healing. , 2007, , 299-311.		1
129	In Silico Biology of Bone Regeneration Inside Calcium Phosphate Scaffolds. Computational Methods in Applied Sciences (Springer), 2014, , 31-48.	0.3	1
130	Computational analysis of high-throughput material screens. , 0, , 101-132.		0
131	In silico cell and tissue science. In Silico Cell and Tissue Science, 2014, 1, .	2.6	0
132	Reproducible research in computational sciences: A use case for uncertainty quantification using Jupyter Notebooks. , 0, , .		0
133	Biomaterial Surface Characteristics Modulate the Outcome of Bone Regeneration Around Endosseous Oral Implants: In Silico Modeling and Simulation. , 2010, , 95-106.		0
134	BioDeg: A finite element software for the simulation of the corrosion and biodegradation process in metallic biomaterials. Journal of Open Source Software, 2022, 7, 4281.	4.6	0