Hans Van Oosterwyck

List of Publications by Year
in descending order

130 papers	5,162 citations	109137 35 h-index	98622 67 g-index
145 all docs	145 docs citations	145 times ranked	5610 citing authors

#	Article	IF	Citations
1	The effect of pore geometry on the in vitro biological behavior of human periosteum-derived cells seeded on selective laser-melted Ti6Al4V bone scaffolds. Acta Biomaterialia, 2012, 8, 2824-2834.	4.1	594
2	The influence of static and dynamic loading on marginal bone reactions around osseointegrated implants: an animal experimental study. Clinical Oral Implants Research, 2001, 12, 207-218.	1.9	312
3	Current views on calcium phosphate osteogenicity and the translation into effective bone regeneration strategies. Acta Biomaterialia, 2012, 8, 3876-3887.	4.1	240
4	Angiogenesis in bone fracture healing: A bioregulatory model. Journal of Theoretical Biology, 2008, 251, 137-158.	0.8	216
5	The influence of bone mechanical properties and implant fixation upon bone loading around oral implants. Clinical Oral Implants Research, 1998, 9, 407-418.	1.9	174
6	Prediction of permeability of regular scaffolds for skeletal tissue engineering: A combined computational and experimental study. Acta Biomaterialia, 2012, 8, 1648-1658.	4.1	166
7	Magnitude and distribution of occlusal forces on oral implants supporting fixed prostheses: an in vivo study. Clinical Oral Implants Research, 2000, 11, 465-475.	1.9	155
8	Individualised, micro CT-based finite element modelling as a tool for biomechanical analysis related to tissue engineering of bone. Biomaterials, 2004, 25, 1683-1696.	5.7	155
9	Lipid availability determines fate of skeletal progenitor cells via SOX9. Nature, 2020, 579, 111-117.	13.7	140
10	Differential regulation of bone and body composition in male mice with combined inactivation of androgen and estrogen receptorâ€Î±. FASEB Journal, 2009, 23, 232-240.	0.2	119
11	The influence of micro-motion on the tissue differentiation around immediately loaded cylindrical turned titanium implants. Archives of Oral Biology, 2006, 51, 1-9.	0.8	108
12	Polysaccharides for tissue engineering: Current landscape and future prospects. Carbohydrate Polymers, 2019, 205, 601-625.	5.1	104
13	The role of actin protrusion dynamics in cell migration through a degradable viscoelastic extracellular matrix: Insights from a computational model. PLoS Computational Biology, 2020, 16, e1007250.	1.5	102
14	Oxygen as a critical determinant of bone fracture healingâ€"A multiscale model. Journal of Theoretical Biology, 2015, 365, 247-264.	0.8	80
15	MOSAIC: A Multiscale Model of Osteogenesis and Sprouting Angiogenesis with Lateral Inhibition of Endothelial Cells. PLoS Computational Biology, 2012, 8, e1002724.	1.5	76
16	Finite element study of trochanteric gamma nail for trochanteric fracture. Medical Engineering and Physics, 2003, 25, 99-106.	0.8	72
17	Micro-CT-based screening of biomechanical and structural properties of bone tissue engineering scaffolds. Medical and Biological Engineering and Computing, 2006, 44, 517-525.	1.6	72
18	Computational Models of Sprouting Angiogenesis and Cell Migration: Towards Multiscale Mechanochemical Models of Angiogenesis. Mathematical Modelling of Natural Phenomena, 2015, 10, 108-141.	0.9	71

#	Article	IF	Citations
19	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.	1.4	70
20	Modeling fluid flow through irregular scaffolds for perfusion bioreactors. Biotechnology and Bioengineering, 2009, 103, 621-630.	1.7	68
21	The Influence of Swelling on Elastic Properties of Polyacrylamide Hydrogels. Frontiers in Materials, 2020, 7, .	1.2	65
22	Numerical simulation of tissue differentiation around loaded titanium implants in a bone chamber. Journal of Biomechanics, 2004, 37, 763-769.	0.9	63
23	A hybrid bioregulatory model of angiogenesis during bone fracture healing. Biomechanics and Modeling in Mechanobiology, 2011, 10, 383-395.	1.4	60
24	Towards a quantitative understanding of oxygen tension and cell density evolution in fibrin hydrogels. Biomaterials, 2011, 32, 107-118.	5.7	60
25	The Use of Microfocus Computerized Tomography as a New Technique for Characterizing Bone Tissue Around Oral Implants. Journal of Oral Implantology, 2000, 26, 5-12.	0.4	59
26	Analysis of Initial Cell Spreading Using Mechanistic Contact Formulations for a Deformable Cell Model. PLoS Computational Biology, 2013, 9, e1003267.	1.5	54
27	<i>In silico</i>biology of bone modelling and remodelling: regeneration. Philosophical Transactions Series A, Mathematical, Physical, and Engineering Sciences, 2009, 367, 2031-2053.	1.6	52
28	Size Does Matter: An Integrative In Vivo-In Silico Approach for the Treatment of Critical Size Bone Defects. PLoS Computational Biology, 2014, 10, e1003888.	1.5	51
29	A multi-scale mechanobiological model of in-stent restenosis: deciphering the role of matrix metalloproteinase and extracellular matrix changes. Computer Methods in Biomechanics and Biomedical Engineering, 2014, 17, 813-828.	0.9	47
30	Occurrence and Treatment of Bone Atrophic Non-Unions Investigated by an Integrative Approach. PLoS Computational Biology, 2010, 6, e1000915.	1.5	45
31	Computational model-informed design and bioprinting of cell-patterned constructs for bone tissue engineering. Biofabrication, 2016, 8, 025009.	3.7	44
32	Actuation enhances patterning in human neural tube organoids. Nature Communications, 2021, 12, 3192.	5.8	43
33	Application of mechanoregulatory models to simulate peri-implant tissue formation in an in vivo bone chamber. Journal of Biomechanics, 2008, 41, 145-154.	0.9	42
34	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.	1.6	41
35	Biomechanics of oral implants: a review of the literature. Technology and Health Care, 1997, 5, 253-273.	0.5	40
36	Matrix deformations around angiogenic sprouts correlate to sprout dynamics and suggest pulling activity. Angiogenesis, 2020, 23, 315-324.	3.7	40

#	Article	IF	Citations
37	Influence of joint component mechanical properties and adhesive layer thickness on stress distribution in micro-tensile bond strength specimens. Dental Materials, 2009, 25, 4-12.	1.6	38
38	Numerical analysis of bone adaptation around an oral implant due to overload stress. Proceedings of the Institution of Mechanical Engineers, Part H: Journal of Engineering in Medicine, 2004, 218, 407-415.	1.0	35
39	The remodeling of cardiovascular bioprostheses under influence of stem cell homing signal pathways. Biomaterials, 2010, 31, 20-28.	5.7	35
40	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.	0.9	33
41	Trabecular bone scaffolding using a biomimetic approach. Journal of Materials Science: Materials in Medicine, 2002, 13, 1245-1249.	1.7	32
42	A repeated sampling bone chamber methodology for the evaluation of tissue differentiation and bone adaptation around titanium implants under controlled mechanical conditions. Journal of Biomechanics, 2004, 37, 1819-1822.	0.9	32
43	Adhesion of new bioactive glass coating. , 1999, 44, 243-252.		31
44	A poroviscoelastic description of fibrin gels. Journal of Biomechanics, 2008, 41, 3265-3269.	0.9	31
45	Computational models for wall shear stress estimation in scaffolds: A comparative study of two complete geometries. Journal of Biomechanics, 2012, 45, 1586-1592.	0.9	31
46	Three-dimensional force measurements on oral implants: a methodological study. Journal of Oral Rehabilitation, 2000, 27, 744.	1.3	30
47	Peri-implant bone tissue strains in cases of dehiscence: a finite element study. Clinical Oral Implants Research, 2002, 13, 327-333.	1.9	30
48	Designing optimal calcium phosphate scaffoldâ€“cell combinations using an integrative model-based approach. Acta Biomaterialia, 2011, 7, 3573-3585.	4.1	30
49	Use of micro-CT-based finite element analysis to accurately quantify peri-implant bone strains: a validation in rat tibiae. Biomechanics and Modeling in Mechanobiology, 2012, 11, 743-750.	1.4	30
50	Cyclically stretching developing tissue in vivo enhances mechanical strength and organization of vascular grafts. Acta Biomaterialia, 2010, 6, 2448-2456.	4.1	27
51	<i>In silico</i>design of treatment strategies in wound healing and bone fracture healing. Philosophical Transactions Series A, Mathematical, Physical, and Engineering Sciences, 2010, 368, 2683-2706.	1.6	27
52	Mechanical propertiesâ€“translucencyâ€“microstructure relationships in commercial monolayer and multilayer monolithic zirconia ceramics. Dental Materials, 2022, 38, 797-810.	1.6	27
53	Influence of notch geometry and interface on stress concentration and distribution in micro-tensile bond strength specimens. Journal of Dentistry, 2008, 36, 808-815.	1.7	26
54	Modeling contact interactions between triangulated rounded bodies for the discrete element method. Computer Methods in Applied Mechanics and Engineering, 2014, 277, 219-238.	3.4	26

#	Article	IF	Citations
55	Bringing computational models of bone regeneration to the clinic. Wiley Interdisciplinary Reviews: Systems Biology and Medicine, 2015, 7, 183-194.	6.6	26
56	Relating the Chondrocyte Gene Network to Growth Plate Morphology: From Genes to Phenotype. PLoS ONE, 2012, 7, e34729.	1.1	24
57	Fluorescent oxygen sensitive microbead incorporation for measuring oxygen tension in cell aggregates. Biomaterials, 2013, 34, 922-929.	5.7	24
58	Computational modeling of bone fracture non-unions: four clinically relevant case studies. In Silico Cell and Tissue Science, 2015, 2, 1.	2.6	24
59	3D full-field quantification of cell-induced large deformations in fibrillar biomaterials by combining non-rigid image registration with label-free second harmonic generation. Biomaterials, 2017, 136, 86-97.	5.7	24
60	Finite element modelling of a unilateral fixator for bone reconstruction: Importance of contact settings. Medical Engineering and Physics, 2010, 32, 461-467.	0.8	23
61	Free Form Deformationâ€"Based Image Registration Improves Accuracy of Traction Force Microscopy. PLoS ONE, 2015, 10, e0144184.	1.1	23
62	Fibrin structural and diffusional analysis suggests that fibers are permeable to solute transport. Acta Biomaterialia, 2017, 47, 25-39.	4.1	23
63	The importance of loading frequency, rate and vibration for enhancing bone adaptation and implant osseointegration. , 0, 16, 65-68.		23
64	TFMLAB: A MATLAB toolbox for 4D traction force microscopy. SoftwareX, 2021, 15, 100723.	1.2	22
65	Pre-load on oral implants after screw tightening fixed full prostheses: an in vivo study. Journal of Oral Rehabilitation, 2001, 28, 226-233.	1.3	19
66	Bi-Modular Flow Characterization in Tissue Engineering Scaffolds Using Computational Fluid Dynamics and Particle Imaging Velocimetry. Tissue Engineering - Part C: Methods, 2010, 16, 1553-1564.	1.1	19
67	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.	1.6	18
68	A Computational Tool for the Upscaling of Regular Scaffolds During<i>In Vitro</i>Perfusion Culture. Tissue Engineering - Part C: Methods, 2011, 17, 619-630.	1.1	18
69	Validation of a finite element model of a unilateral external fixator in a rabbit tibia defect model. Medical Engineering and Physics, 2013, 35, 1037-1043.	0.8	18
70	Influence of Prosthesis Material on the Loading of Implants That Support a Fixed Partial Prosthesis: In Vivo Study. Clinical Implant Dentistry and Related Research, 2000, 2, 100-109.	1.6	17
71	Functional and biomechanical evaluation of a completely recellularized stentless pulmonary bioprosthesis in sheep. Journal of Thoracic and Cardiovascular Surgery, 2008, 135, 395-404.	0.4	17
72	Modeling extracellular matrix viscoelasticity using smoothed particle hydrodynamics with improved boundary treatment. Computer Methods in Applied Mechanics and Engineering, 2017, 322, 515-540.	3.4	17

#	Article	IF	Citations
73	Computational modelling of biomaterial surface interactions with blood platelets and osteoblastic cells for the prediction of contact osteogenesis. Acta Biomaterialia, 2011, 7, 779-790.	4.1	16
74	Does tranexamic acid stabilised fibrin support the osteogenic differentiation of human periosteum derived cells?. , 2011, 21, 272-285.		16
75	The influence of Young's modulus of loaded implants on bone remodeling: An experimental and numerical study in the goat knee. Journal of Biomedical Materials Research - Part A, 2009, 90A, 792-803.	2.1	15
76	Spatiotemporal Analyses of Cellular Tractions Describe Subcellular Effect of Substrate Stiffness and Coating. Annals of Biomedical Engineering, 2019, 47, 624-637.	1.3	15
77	A Causal Relation between Bioluminescence and Oxygen to Quantify the Cell Niche. PLoS ONE, 2014, 9, e97572.	1.1	15
78	Fibrodysplasia Ossificans Progressiva: What Have We Achieved and Where Are We Now? Follow-up to the 2015 Lorentz Workshop. Frontiers in Endocrinology, 2021, 12, 732728.	1.5	15
79	Deciphering Mechanical Regulation of Chondrogenesis in Fibrinâ€“Polyurethane Composite Scaffolds Enriched with Human Mesenchymal Stem Cells: A Dual Computational and Experimental Approach. Tissue Engineering - Part A, 2014, 20, 1197-1212.	1.6	14
80	Inverse method based on 3D nonlinear physically constrained minimisation in the framework of traction force microscopy. Soft Matter, 2021, 17, 10210-10222.	1.2	14
81	Advanced in silico validation framework for three-dimensional traction force microscopy and application to an in vitro model of sprouting angiogenesis. Acta Biomaterialia, 2021, 126, 326-338.	4.1	13
82	Modelling the early phases of bone regeneration around an endosseous oral implant. Computer Methods in Biomechanics and Biomedical Engineering, 2009, 12, 459-468.	0.9	12
83	CCM2-deficient endothelial cells undergo a ROCK-dependent reprogramming into senescence-associated secretory phenotype. Angiogenesis, 2021, 24, 843-860.	3.7	12
84	Effect of ultrasound on bone fracture healing: A computational bioregulatory model. Computers in Biology and Medicine, 2018, 100, 74-85.	3.9	11
85	Modeling of Mechanosensing Mechanisms Reveals Distinct Cell Migration Modes to Emerge From Combinations of Substrate Stiffness and Adhesion Receptorâ€“Ligand Affinity. Frontiers in Bioengineering and Biotechnology, 2020, 8, 459.	2.0	11
86	Full L1-regularized Traction Force Microscopy over whole cells. BMC Bioinformatics, 2017, 18, 365.	1.2	10
87	Preâ€load on oral implants after screw tightening fixed full prostheses: an <i>in vivo</i> study. Journal of Oral Rehabilitation, 2001, 28, 226-233.	1.3	9
88	Combustion-derived particles inhibit in vitro human lung fibroblast-mediated matrix remodeling. Journal of Nanobiotechnology, 2018, 16, 82.	4.2	9
89	Effect of ultrasound on bone fracture healing: A computational mechanobioregulatory model. Journal of the Acoustical Society of America, 2019, 145, 1048-1059.	0.5	9
90	Chlorite oxidized oxyamylose differentially influences the microstructure of fibrin and self assembling peptide hydrogels as well as dental pulp stem cell behavior. Scientific Reports, 2021, 11, 5687.	1.6	8

#	Article	IF	Citations
91	Finite Element Studies on the Role of Mechanical Loading in Bone Response Around Oral Implants*. Meccanica, 2002, 37, 441-451.	1.2	7
92	Numerical Simulation of Bone Regeneration in a Bone Chamber. Journal of Dental Research, 2009, 88, 158-163.	2.5	7
93	Intercellular Adhesion Stiffness Moderates Cell Decoupling as a Function of Substrate Stiffness. Biophysical Journal, 2020, 119, 243-257.	0.2	7
94	Fast quantitative time lapse displacement imaging of endothelial cell invasion. PLoS ONE, 2020, 15, e0227286.	1.1	7
95	Quantifying the mechanical micro-environment during three-dimensional cell expansion on microbeads by means of individual cell-based modelling. Computer Methods in Biomechanics and Biomedical Engineering, 2013, 16, 1071-1084.	0.9	6
96	Modelling the effect of repositioning on the evolution of skeletal muscle damage in deep tissue injury. Biomechanics and Modeling in Mechanobiology, 2013, 12, 267-279.	1.4	6
97	Simulating flow induced migration in vascular remodelling. PLoS Computational Biology, 2020, 16, e1007874.	1.5	6
98	Hierarchical Biomechanics: Concepts, Bone as Prominent Example, and Perspectives Beyond. Applied Mechanics Reviews, 2022, 74, .	4.5	6
99	An affine micro-sphere-based constitutive model, accounting for junctional sliding, can capture F-actin network mechanics. Computer Methods in Biomechanics and Biomedical Engineering, 2013, 16, 1002-1012.	0.9	4
100	Reporter cell activity within hydrogel constructs quantified from oxygen-independent bioluminescence. Biomaterials, 2014, 35, 8065-8077.	5.7	4
101	Computational Modeling of Mass Transport and Its Relation to Cell Behavior in Tissue Engineering Constructs. Studies in Mechanobiology, Tissue Engineering and Biomaterials, 2012, , 85-105.	0.7	3
102	Computational mechanobiology: may the force be with you. Journal of Mathematical Biology, 2015, 70, 1323-1326.	0.8	3
103	L1-regularized reconstruction for traction force microscopy. , 2016, , .		3
104	Mathematical modeling of fracture healing: coupling between mechanics, angiogenesis and osteogenesis. IFMBE Proceedings, 2009, , 2651-2654.	0.2	3
105	Numerical Modeling of Perfusion Flow in Irregular Scaffolds. IFMBE Proceedings, 2009, , 2677-2680.	0.2	3
106	The effect of micromotion on tissues surrounding immediately loaded implants. Computer Methods in Biomechanics and Biomedical Engineering, 2005, 8, 93-94.	0.9	2
107	MODELLING OF IN VITRO MESENCHYMAL STEM CELL CULTIVATION, CHONDROGENESIS AND OSTEOGENESIS. Journal of Biomechanics, 2008, 41, S466.	0.9	2
108	A mathematical model for bone healing predictions under the ultrasound effect. , 2015, , .		2

#	Article	IF	Citations
109	Actomyosinâ€dependent invasion of endothelial sprouts in collagen. Cytoskeleton, 2020, 77, 261-276.	1.0	2
110	Patterned dextran ester films as a tailorable cell culture platform. Carbohydrate Polymers, 2021, 252, 117183.	5.1	2
111	AN INTEGRATED MATHEMATICAL MODELLING FRAMEWORK FOR THE STUDY OF BONE FRACTURE HEALING. Journal of Biomechanics, 2008, 41, S107.	0.9	1
112	A mechano-regulatory model for bone healing predictions under the influence of ultrasound. , 2015, 2015, 921-4.		1
113	Cell Adhesion: Basic Principles and Computational Modeling. , 2019, , 45-58.		1
114	Computer-aided, pre-surgical analysis for oral rehabilitation. , 2003, , 52-68.		1
115	In Silico Biology of Bone Regeneration Inside Calcium Phosphate Scaffolds. Computational Methods in Applied Sciences (Springer), 2014, , 31-48.	0.1	1
116	The influence of mechanical parameters on tissue differentiation and bone formation around immediately loaded implants in the bone chamber model. Computer Methods in Biomechanics and Biomedical Engineering, 2005, 8, 275-276.	0.9	0
117	Super-resolved Traction Force Microscopy over whole cells. , 2017, , .		0
118	Mechanobiology of bone regeneration and bone adaptation to achieve stable long-term fixation of endosseous implants. WIT Transactions on State-of-the-art in Science and Engineering, 2005, , 1-37.	0.0	0
119	Biomaterial Surface Characteristics Modulate the Outcome of Bone Regeneration Around Endosseous Oral Implants: In Silico Modeling and Simulation. , 2010, , 95-106.		0
120	Title is missing!. , 2020, 16, e1007250.		0
121	Title is missing!. , 2020, 16, e1007250.		0
122	Title is missing!. , 2020, 16, e1007250.		0
123	Title is missing!. , 2020, 16, e1007250.		0
124	Title is missing!. , 2020, 16, e1007250.		0
125	Title is missing!. , 2020, 16, e1007250.		0
126	Simulating flow induced migration in vascular remodelling. , 2020, 16, e1007874.		0

#	Article	IF	Citations
127	Simulating flow induced migration in vascular remodelling. , 2020, 16, e1007874.		0
128	Simulating flow induced migration in vascular remodelling. , 2020, 16, e1007874.		0
129	Simulating flow induced migration in vascular remodelling. , 2020, 16, e1007874.		0
130	Microwave Interferometric on-chip Measurement of the Collagen Gel. , 2022, , .		0