Heinz C SchrÃ¶der

List of Publications by Year
in descending order

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97
papers

4,531
citations

81900
39
h-index

114465
63
g-index

100
all docs

100
docs citations

100
times ranked

3275
citing authors

#	Article	IF	Citations
1	Expression of silicatein and collagen genes in the marine sponge Suberites domuncula is controlled by silicate and myotrophin. FEBS Journal, 2000, 267, 4878-4887.	0.2	279
2	Biofabrication of biosilica-glass by living organisms. Natural Product Reports, 2008, 25, 455.	10.3	191
3	Engineering a morphogenetically active hydrogel for bioprinting of bioartificial tissue derived from human osteoblast-like SaOS-2 cells. Biomaterials, 2014, 35, 8810-8819.	11.4	160
4	The role of biosilica in the osteoprotegerin/RANKL ratio in human osteoblast-like cells. Biomaterials, 2010, 31, 7716-7725.	11.4	138
5	Inorganic polymeric phosphate/polyphosphate as an inducer of alkaline phosphatase and a modulator of intracellular Ca2+ level in osteoblasts (SaOS-2 cells) in vitro. Acta Biomaterialia, 2011, 7, 2661-2671.	8.3	131
6	Mammalian intestinal alkaline phosphatase acts as highly active exopolyphosphatase. BBA - Proteins and Proteomics, 2001, 1547, 254-261.	2.1	128
7	3D printing of hybrid biomaterials for bone tissue engineering: Calcium-polyphosphate microparticles encapsulated by polycaprolactone. Acta Biomaterialia, 2017, 64, 377-388.	8.3	117
8	Siliceous spicules in marine demosponges (example Suberites domuncula). Micron, 2006, 37, 107-120.	2.2	115
9	Inorganic Polyphosphate in Human Osteoblast-like Cells. Journal of Bone and Mineral Research, 1998, 13, 803-812.	2.8	113
10	Osteogenic Potential of Biosilica on Human Osteoblast-Like (SaOS-2) Cells. Calcified Tissue International, 2010, 87, 513-524.	3.1	110
11	Bioactive and biodegradable silica biomaterial for bone regeneration. Bone, 2014, 67, 292-304.	2.9	108
12	Inorganic Polyphosphates As Storage for and Generator of Metabolic Energy in the Extracellular Matrix. Chemical Reviews, 2019, 119, 12337-12374.	47.7	107
13	Poly(silicate)â€metabolizing silicatein in siliceous spicules and silicasomes of demosponges comprises dual enzymatic activities (silica polymerase and silica esterase). FEBS Journal, 2008, 275, 362-370.	4.7	91
14	Bio-silica and bio-polyphosphate: applications in biomedicine (bone formation). Current Opinion in Biotechnology, 2012, 23, 570-578.	6.6	91
15	A new polyphosphate calcium material with morphogenetic activity. Materials Letters, 2015, 148, 163-166.	2.6	88
16	Mineralization of SaOS-2 cells on enzymatically (silicatein) modified bioactive osteoblast-stimulating surfaces. Journal of Biomedical Materials Research - Part B Applied Biomaterials, 2005, 75B, 387-392.	3.4	86
17	Amorphous polyphosphate, a smart bioinspired nano-/bio-material for bone and cartilage regeneration: towards a new paradigm in tissue engineering. Journal of Materials Chemistry B, 2018, 6, 2385-2412.	5.8	81
18	Amorphous Ca2+ polyphosphate nanoparticles regulate the ATP level in bone-like SaOS-2 cells. Journal of Cell Science, 2015, 128, 2202-2207.	2.0	75

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19	Polyphosphate as donor of high-energy phosphate for the synthesis of ADP and ATP. Journal of Cell Science, 2017, 130, 2747-2756.	2.0	71
20	Silintaphinâ€•1â€ƒâ€"â€ƒinteraction with silicatein during structureâ€•guiding bioâ€•silica formation. FEBS Journal, 2011, 278, 1145-1155.	4.7	68
21	Genetic, biological and structural hierarchies during sponge spicule formation: from soft solâ€"gels to solid 3D silica composite structures. Soft Matter, 2012, 8, 9501.	2.7	68
22	A new printable and durable N,O-carboxymethyl chitosanâ€"Ca²⁺â€"polyphosphate complex with morphogenetic activity. Journal of Materials Chemistry B, 2015, 3, 1722-1730.	5.8	68
23	Changes in metabolism of inorganic polyphosphate in rat tissues and human cells during development and apoptosis. Biochimica Et Biophysica Acta - General Subjects, 1997, 1335, 51-60.	2.4	66
24	Enzyme-based biosilica and biocalcite: biomaterials for the future in regenerative medicine. Trends in Biotechnology, 2014, 32, 441-447.	9.3	65
25	Polyphosphate: A Morphogenetically Active Implant Material Serving as Metabolic Fuel for Bone Regeneration. Macromolecular Bioscience, 2015, 15, 1182-1197.	4.1	62
26	Silicateinsâ€"A Novel Paradigm in Bioinorganic Chemistry: Enzymatic Synthesis of Inorganic Polymeric Silica. Chemistry - A European Journal, 2013, 19, 5790-5804.	3.3	61
27	Induction of carbonic anhydrase in SaOS-2 cells, exposed to bicarbonate and consequences for calcium phosphate crystal formation. Biomaterials, 2013, 34, 8671-8680.	11.4	60
28	Anti-HIV-1 Activity of Inorganic Polyphosphates. Journal of Acquired Immune Deficiency Syndromes, 1997, 14, 110-118.	0.3	60
29	A Microplate Assay for DNA Damage Determination (Fast Micromethod)in Cell Suspensions and Solid Tissues. Analytical Biochemistry, 1999, 270, 195-200.	2.4	57
30	The Marine Sponge-Derived Inorganic Polymers, Biosilica and Polyphosphate, as Morphogenetically Active Matrices/Scaffolds for the Differentiation of Human Multipotent Stromal Cells: Potential Application in 3D Printing and Distraction Osteogenesis. Marine Drugs, 2014, 12, 1131-1147.	4.6	54
31	Alginate/silica composite hydrogel as a potential morphogenetically active scaffold for three-dimensional tissue engineering. RSC Advances, 2013, 3, 11185.	3.6	52
32	The inorganic polymer, polyphosphate, blocks binding of SARS-CoV-2 spike protein to ACE2 receptor at physiological concentrations. Biochemical Pharmacology, 2020, 182, 114215.	4.4	51
33	Modulation of the Initial Mineralization Process of SaOS-2 Cells by Carbonic Anhydrase Activators and Polyphosphate. Calcified Tissue International, 2014, 94, 495-509.	3.1	49
34	Polyphosphate as a metabolic fuel in Metazoa: A foundational breakthrough invention for biomedical applications. Biotechnology Journal, 2016, 11, 11-30.	3.5	48
35	Transformation of Amorphous Polyphosphate Nanoparticles into Coacervate Complexes: An Approach for the Encapsulation of Mesenchymal Stem Cells. Small, 2018, 14, e1801170.	10.0	47
36	Bio-sintering processes in hexactinellid sponges: Fusion of bio-silica in giant basal spicules from Monorhaphis chuniâ˜†. Journal of Structural Biology, 2009, 168, 548-561.	2.8	45

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37	Silicatein-Mediated Polycondensation of Orthosilicic Acid: Modeling of a Catalytic Mechanism Involving Ring Formation. Silicon, 2012, 4, 33-38.	3.3	44
38	Enzymatically Synthesized Inorganic Polymers as Morphogenetically Active Bone Scaffolds. International Review of Cell and Molecular Biology, 2014, 313, 27-77.	3.2	42
39	Retinol encapsulated into amorphous Ca2+ polyphosphate nanospheres acts synergistically in MC3T3-E1 cells. European Journal of Pharmaceutics and Biopharmaceutics, 2015, 93, 214-223.	4.3	41
40	Amorphous polyphosphateâ€“hydroxyapatite: A morphogenetically active substrate for bone-related SaOS-2 cells in vitro. Acta Biomaterialia, 2016, 31, 358-367.	8.3	39
41	Amorphous polyphosphate/amorphous calcium carbonate implant material with enhanced bone healing efficacy in a critical-size defect in rats. Biomedical Materials (Bristol), 2016, 11, 035005.	3.3	37
42	Fabrication of amorphous strontium polyphosphate microparticles that induce mineralization of bone cells in vitro and in vivo. Acta Biomaterialia, 2017, 50, 89-101.	8.3	37
43	Nonenzymatic Transformation of Amorphous CaCO₃ into Calcium Phosphate Mineral after Exposure to Sodium Phosphate in Vitro: Implications for in Vivo Hydroxyapatite Bone Formation. ChemBioChem, 2015, 16, 1323-1332.	2.6	36
44	Modular Small Diameter Vascular Grafts with Bioactive Functionalities. PLoS ONE, 2015, 10, e0133632.	2.5	35
45	Acquisition of Structure-guiding and Structure-forming Properties during Maturation from the Pro-silicatein to the Silicatein Form. Journal of Biological Chemistry, 2012, 287, 22196-22205.	3.4	33
46	Biosilicaâ€loaded poly(Ïµâ€caprolactone) nanofibers mats provide a morphogenetically active surface scaffold for the growth and mineralization of the osteoclastâ€related SaOSâ€2 cells. Biotechnology Journal, 2014, 9, 1312-1321.	3.5	33
47	Isoquercitrin and polyphosphate co-enhance mineralization of human osteoblast-like SaOS-2 cells via separate activation of two RUNX2 cofactors AFT6 and Ets1. Biochemical Pharmacology, 2014, 89, 413-421.	4.4	33
48	Purification and characterization of two exopolyphosphatases from the marine sponge Tethya lyncurium. Biochimica Et Biophysica Acta - General Subjects, 1995, 1245, 17-28.	2.4	32
49	Dual effect of inorganic polymeric phosphate/polyphosphate on osteoblasts and osteoclasts in vitro. Journal of Tissue Engineering and Regenerative Medicine, 2012, 7, n/a-n/a.	2.7	32
50	Inorganic polyphosphate induces accelerated tube formation of HUVEC endothelial cells. Cellular and Molecular Life Sciences, 2018, 75, 21-32.	5.4	32
51	Amplified morphogenetic and bone forming activity of amorphous versus crystalline calcium phosphate/polyphosphate. Acta Biomaterialia, 2020, 118, 233-247.	8.3	32
52	Mineralization of boneâ€related Sa<scp>OS</scp>â€2 cells under physiological hypoxic conditions. FEBS Journal, 2016, 283, 74-87.	4.7	30
53	Morphology of Sponge Spicules: Silicatein a Structural Protein for Bioâ€Silica Formation. Advanced Engineering Materials, 2010, 12, B422.	3.5	29
54	The effect of toxicity of heavy metals contained in tailing sands on the organic carbon metabolic activity of soil microorganisms from different land use types in the karst region. Environmental Earth Sciences, 2015, 74, 6747-6756.	2.7	29

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55	Role of ATP during the initiation of microvascularization: acceleration of an autocrine sensing mechanism facilitating chemotaxis by inorganic polyphosphate. Biochemical Journal, 2018, 475, 3255-3273.	3.7	28
56	In Situ Polyphosphate Nanoparticle Formation in Hybrid Poly(vinyl alcohol)/Karaya Gum Hydrogels: A Porous Scaffold Inducing Infiltration of Mesenchymal Stem Cells. Advanced Science, 2019, 6, 1801452.	11.2	28
57	Development of a morphogenetically active scaffold for three-dimensional growth of bone cells: biosilica-alginate hydrogel for SaOS-2 cell cultivation. Journal of Tissue Engineering and Regenerative Medicine, 2015, 9, E39-E50.	2.7	26
58	Polyphosphate as a Bioactive and Biodegradable Implant Material: Induction of Bone Regeneration in Rats. Advanced Engineering Materials, 2016, 18, 1406-1417.	3.5	26
59	Rebalancing Î²-Amyloid-Induced Decrease of ATP Level by Amorphous Nano/Micro Polyphosphate: Suppression of the Neurotoxic Effect of Amyloid Î²-Protein Fragment 25-35. International Journal of Molecular Sciences, 2017, 18, 2154.	4.1	26
60	Uptake of polyphosphate microparticles in vitro (SaOS-2 and HUVEC cells) followed by an increase of the intracellular ATP pool size. PLoS ONE, 2017, 12, e0188977.	2.5	25
61	Morphogenetic (Mucin Expression) as Well as Potential Anti-Corona Viral Activity of the Marine Secondary Metabolite Polyphosphate on A549 Cells. Marine Drugs, 2020, 18, 639.	4.6	25
62	The biomaterial polyphosphate blocks stoichiometric binding of the SARS-CoV-2 S-protein to the cellular ACE2 receptor. Biomaterials Science, 2020, 8, 6603-6610.	5.4	23
63	Amorphous, Smart, and Bioinspired Polyphosphate Nano/Microparticles: A Biomaterial for Regeneration and Repair of Osteo-Articular Impairments In-Situ. International Journal of Molecular Sciences, 2018, 19, 427.	4.1	22
64	Biologically induced transition of bio-silica sol to mesoscopic gelatinous flocs: a biomimetic approach to a controlled fabrication of bio-silica structures. Soft Matter, 2013, 9, 654-664.	2.7	21
65	Enzyme-accelerated and structure-guided crystallization of calcium carbonate: Role of the carbonic anhydrase in the homologous system. Acta Biomaterialia, 2014, 10, 450-462.	8.3	21
66	Acceleration of chronic wound healing by bio-inorganic polyphosphate: <i>In vitro</i> studies and first clinical applications. Theranostics, 2022, 12, 18-34.	10.0	21
67	A bio-imitating approach to fabricate an artificial matrix for cartilage tissue engineering using magnesium-polyphosphate and hyaluronic acid. RSC Advances, 2016, 6, 88559-88570.	3.6	20
68	Electrospun bioactive mats enriched with Ca-polyphosphate/retinol nanospheres as potential wound dressing. Biochemistry and Biophysics Reports, 2015, 3, 150-160.	1.3	19
69	The morphogenetically active polymer, inorganic polyphosphate complexed with GdCl 3 , as an inducer of hydroxyapatite formation in vitro. Biochemical Pharmacology, 2016, 102, 97-106.	4.4	18
70	Biomimetic Alginate/Gelatin Cross-Linked Hydrogels Supplemented with Polyphosphate for Wound Healing Applications. Molecules, 2020, 25, 5210.	3.8	18
71	Nanoparticle-directed and ionically forced polyphosphate coacervation: a versatile and reversible coreâ€“shell system for drug delivery. Scientific Reports, 2020, 10, 17147.	3.3	18
72	Bifunctional dentifrice: Amorphous polyphosphate a regeneratively active sealant with potent anti-Streptococcus mutans activity. Dental Materials, 2017, 33, 753-764.	3.5	17

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73	Fabrication of a new physiological macroporous hybrid biomaterial/bioscaffold material based on polyphosphate and collagen by freeze-extraction. Journal of Materials Chemistry B, 2017, 5, 3823-3835.	5.8	16
74	The therapeutic potential of inorganic polyphosphate: A versatile physiological polymer to control coronavirus disease (COVID-19). Theranostics, 2021, 11, 6193-6213.	10.0	16
75	Collagenâ€inducing biologization of prosthetic material for hernia repair: Polypropylene meshes coated with polyP/collagen. Journal of Biomedical Materials Research - Part B Applied Biomaterials, 2018, 106, 2109-2121.	3.4	15
76	Biomimetic transformation of polyphosphate microparticles during restoration of damaged teeth. Dental Materials, 2019, 35, 244-256.	3.5	15
77	A biomimetic approach to ameliorate dental hypersensitivity by amorphous polyphosphate microparticles. Dental Materials, 2016, 32, 775-783.	3.5	14
78	Biologization of Allogeneic Bone Grafts with Polyphosphate: A Route to a Biomimetic Periosteum. Advanced Functional Materials, 2019, 29, 1905220.	14.9	14
79	Caged Dexamethasone/Quercetin Nanoparticles, Formed of the Morphogenetic Active Inorganic Polyphosphate, are Strong Inducers of MUC5AC. Marine Drugs, 2021, 19, 64.	4.6	14
80	A Novel Biomimetic Approach to Repair Enamel Cracks/Carious Damages and to Reseal Dentinal Tubules by Amorphous Polyphosphate. Polymers, 2017, 9, 120.	4.5	13
81	A physiologically active interpenetrating collagen network that supports growth and migration of epidermal keratinocytes: zinc-polyP nanoparticles integrated into compressed collagen. Journal of Materials Chemistry B, 2020, 8, 5892-5902.	5.8	12
82	3D bioprinting of tissue units with mesenchymal stem cells, retaining their proliferative and differentiating potential, in polyphosphate-containing bio-ink. Biofabrication, 2022, 14, 015016.	7.1	12
83	Restoration of Impaired Metabolic Energy Balance (ATP Pool) and Tube Formation Potential of Endothelial Cells under â€œhigh glucoseâ€, Diabetic Conditions by the Bioinorganic Polymer Polyphosphate. Polymers, 2017, 9, 575.	4.5	11
84	The silicatein propeptide acts as inhibitor/modulator of selfâ€organization during spicule axial filament formation. FEBS Journal, 2013, 280, 1693-1708.	4.7	10
85	Polyphosphate Reverses the Toxicity of the Quasi-Enzyme Bleomycin on Alveolar Endothelial Lung Cells In Vitro. Cancers, 2021, 13, 750.	3.7	10
86	Triple-target stimuli-responsive anti-COVID-19 face mask with physiological virus-inactivating agents. Biomaterials Science, 2021, 9, 6052-6063.	5.4	10
87	The phosphoanhydride bond: one cornerstone of life. Biochemist, 2019, 41, 22-27.	0.5	9
88	An unexpected biomaterial against SARS-CoV-2: Bio-polyphosphate blocks binding of the viral spike to the cell receptor. Materials Today, 2021, 51, 504-524.	14.2	8
89	Contribution of Microtubules to Cellular Physiology: Microinjection of Well-Characterized Monoclonal Antibodies into Cultured Cells. Annals of the New York Academy of Sciences, 1986, 466, 609-621.	3.8	6
90	Amorphous polyphosphate nanoparticles: application of the morphogenetically active inorganic polymer for personalized tissue regeneration. Journal Physics D: Applied Physics, 2019, 52, 363001.	2.8	6

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91	Polyphosphate, the physiological metabolic fuel for corneal cells: a potential biomaterial for ocular surface repair. Biomaterials Science, 2019, 7, 5506-5515.	5.4	6
92	Inorganic Polymeric Materials for Injured Tissue Repair: Biocatalytic Formation and Exploitation. Biomedicines, 2022, 10, 658.	3.2	5
93	Electrical properties of <i>in vitro</i> biomineralized recombinant silicatein deposited by microfluidics. Applied Physics Letters, 2012, 101, 193702.	3.3	4
94	Morphogenetically-Active Barrier Membrane for Guided Bone Regeneration, Based on Amorphous Polyphosphate. Marine Drugs, 2017, 15, 142.	4.6	4
95	Safety and feasibility study of using polyphosphate (PolyP) in alveolar cleft repair: a pilot study. Pilot and Feasibility Studies, 2021, 7, 199.	1.2	4
96	Polyphosphate in Antiviral Protection: A Polyanionic Inorganic Polymer in the Fight Against Coronavirus SARS-CoV-2 Infection. Progress in Molecular and Subcellular Biology, 2022, , 145-189.	1.6	4
97	Biomimetic routes to micro/nanofabrication. , 2020, , 83-113.		1