

Biomaterials Science

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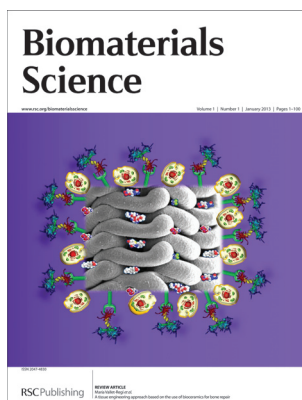
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Cover

See Mischa Zelzer,
Rein V. Ulijn *et al.*,
pp. 11–39.

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Sci.*, 2013, **1**, 11.



Inside cover

See María Vallet-Regí *et al.*,
pp. 40–51.

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EDITORIAL

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Mesoscopic science, where materials become life and life inspires materials. A great opportunity to push back the frontiers of life, materials, and biomaterials sciences

Norio Nakatsuji

Norio Nakatsuji of the Institute for Integrated Cell-Material Sciences (WPI-iCeMS), Kyoto University, Japan and Editor-in-Chief of *Biomaterials Science*, introduces the first issue.



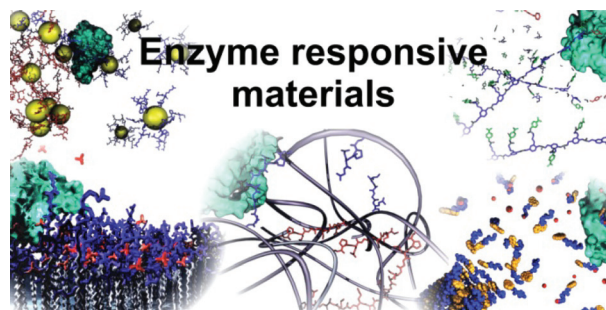
REVIEWS

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Enzyme responsive materials: design strategies and future developments

Mischa Zelzer,* Simon J. Todd, Andrew R. Hirst,
Tom O. McDonald and Rein V. Ulijn*

This review summarises recent advances in enzyme responsive material development, highlighting design strategies and future challenges in the field.



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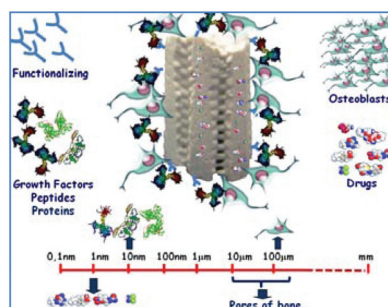


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A tissue engineering approach based on the use of bioceramics for bone repair

Antonio J. Salinas, Pedro Esbrit and María Vallet-Regí*

Understanding natural ossification mechanisms is essential for designing scaffolds for bone tissue engineering. Mesoporous bioactive ceramics formed scaffolds by rapid prototyping and are excellent candidates for bone regeneration.



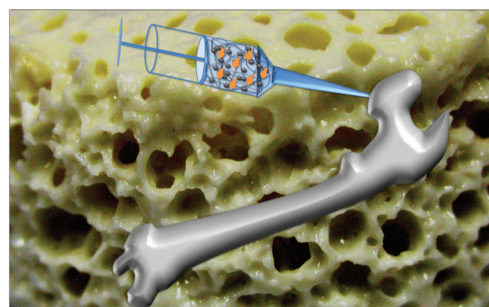
PAPERS

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Citrate-based biodegradable injectable hydrogel composites for orthopedic applications

Dipendra Gyawali, Parvathi Nair, Harry K. W. Kim and Jian Yang*

A biodegradable citrate-based injectable PEGMC/HA composite scaffold capable of cell delivery for orthopedic applications.

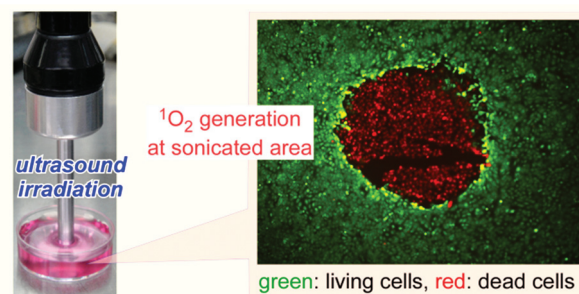


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Titanium dioxide nanoparticle-entrapped polyion complex micelles generate singlet oxygen in the cells by ultrasound irradiation for sonodynamic therapy

Atsushi Harada,* Masafumi Ono, Eiji Yuba and Kenji Kono

Titanium dioxide nanoparticle-entrapped polyion complex micelles can selectively exhibit cell-killing effect at only the ultrasound-irradiated area.

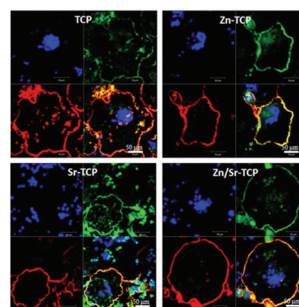


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Effects of zinc and strontium substitution in tricalcium phosphate on osteoclast differentiation and resorption

Mangal Roy, Gary A. Fielding, Amit Bandyopadhyay and Susmita Bose*

Tunable osteoclast cell differentiation and resorption of β -TCP bone substitute was achieved by Zn and/or Sr doping—a much needed property for successful bone remodelling.



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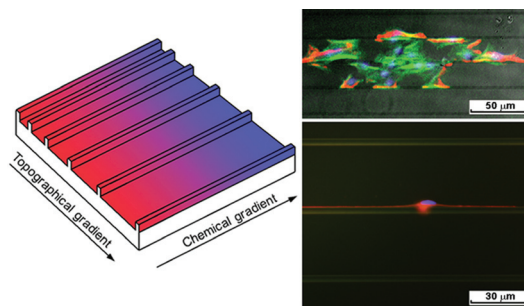


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A bio-inspired neural environment to control neurons comprising radial glia, substrate chemistry and topography

Paul Roach, Terrance Parker, Nikolaj Gadegaard and Morgan R. Alexander*

Chemical and micro-topographical gradients are used as a high-throughput means to assess neural cell interaction. Surface conditioning by radial glial cells, which naturally guide neurons in the developing brain, enhances neuron attachment and alignment.



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the structure of
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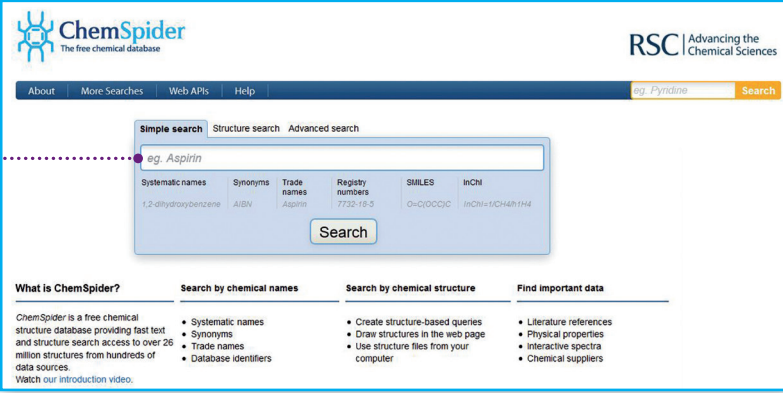
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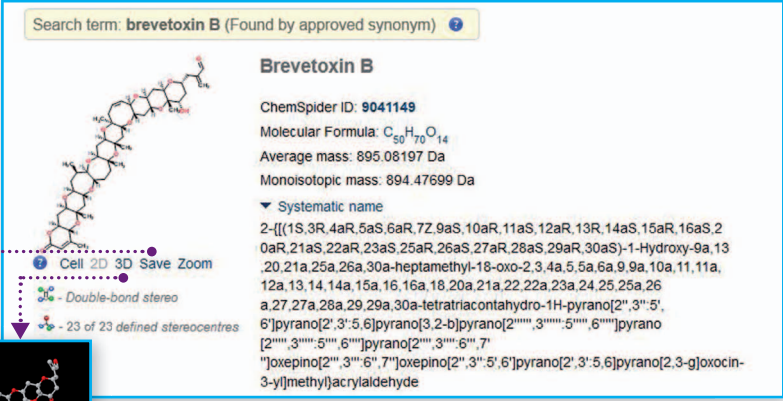
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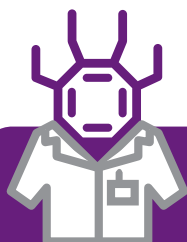
The screenshot shows the ChemSpider homepage with a search bar containing 'eg. Aspirin'. Below the search bar, a table displays search results for Aspirin, including systematic names, synonyms, trade names, registry numbers, SMILES, and InChI. The 'Simple search' tab is selected, and the 'Search' button is visible. Below the search results, there are sections for 'What is ChemSpider?', 'Search by chemical names', 'Search by chemical structure', and 'Find important data'.

Once you've found a structure,
save it in a format that can be
opened in any chemical
drawing program; use it again
and again.



The screenshot shows the detailed structure of Brevetoxin B. On the left is a 3D ball-and-stick model of the molecule. On the right, the following information is displayed: ChemSpider ID: 9041149, Molecular Formula: C₅₀H₇₀O₁₄, Average mass: 895.08197 Da, Monoisotopic mass: 894.47699 Da. Below this, the systematic name is listed: 2-[[[(1S,3R,4aR,5aS,6aR,7Z,9aS,10aR,11aS,12aR,13R,14aS,15aR,16aS,20aR,21aS,22aR,23aS,25aR,26aS,27aR,28aS,29aR,30aS)-1-Hydroxy-9a,13,20,21a,25a,26a,30a-heptamethyl-18-oxo-2,3,4a,5,5a,6a,9,9a,10a,11,11a,12a,13,14,14a,15a,16,16a,18,20a,21a,22,22a,23a,24,25,25a,26a,27,27a,28a,29,29a,30a-tetratriacontahydro-1H-pyrano[2',3':5',6']pyrano[2'',3'':5,6]pyrano[3,2-b]pyrano[2''',3''':5'',6''']pyrano[2''',3''':5'',6''']pyrano[2''',3''':5'',6''']pyrano[2'',3'':5,6]pyrano[2,3-g]oxocin-3-yl)methyl]acrylaldehyde. At the bottom, it says '23 of 23 defined stereocentres'.

View the image in 3D



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