# **Biomaterials Science**

An international high impact journal exploring the underlying science behind the function, interactions and design of biomaterials

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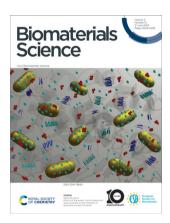
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#### Cover See Yi-Cheun Yeh *et al.*, pp. 4184–4199.

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# **Inside cover** See Neha Jain *et al.*, pp. 4200–4209.

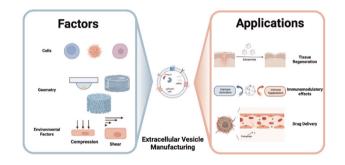
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# Biomaterial-enabled 3D cell culture technologies for extracellular vesicle manufacturing

James Johnston, Trevor Stone, Jr. and Yichun Wang\*



#### 4073

# Hydrogels for dermal and transdermal drug delivery

Hélène Labie and Muriel Blanzat\*



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## **REVIEWS**

#### 4094

# Advanced biomaterials for human glioblastoma multiforme (GBM) drug delivery

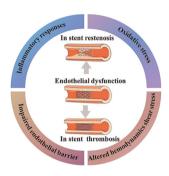
Zahra Nozhat, Shabnam Heydarzadeh, Mina Shahriari-Khalaji, Shibo Wang, M. Zubair Iqbal\* and Xiangdong Kong\*



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# Restoring endothelial function: shedding light on cardiovascular stent development

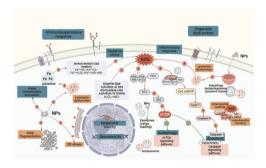
Wen Liu, Xiaoyu Wang and Yakai Feng\*



#### 4151

# Immunotoxicity of metal and metal oxide nanoparticles: from toxic mechanisms to metabolism and outcomes

Jiaming Bi, Chuzi Mo, Siwei Li, Mingshu Huang, Yunhe Lin, Peiyan Yuan, Zhongjun Liu,\* Bo Jia\* and Shuaimei Xu\*

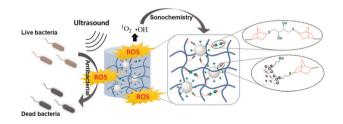


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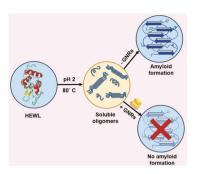
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Ultrasonic interfacial crosslinking of TiO<sub>2</sub>-based nanocomposite hydrogels through thiol—norbornene reactions for sonodynamic antibacterial treatment

Su-Rung Yang, Reuben Wang, Chen-Jie Yan, Yi-Yun Lin, Yu-Jia Yeh, Ying-Yu Yeh and Yi-Cheun Yeh\*



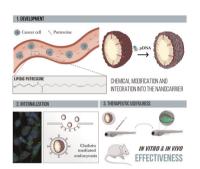
#### 4200



# Effects of the aspect ratio of plasmonic gold nanorods on the inhibition of lysozyme amyloid formation

Khushboo Rani, Bhumika Pippal, Shubham Kumar Singh, Anurupa Karmakar, Raviraj Vankayala and Neha Jain\*

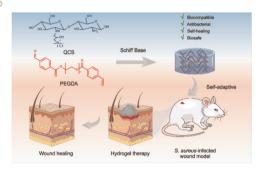
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# Effectiveness of a novel gene nanotherapy based on putrescine for cancer treatment

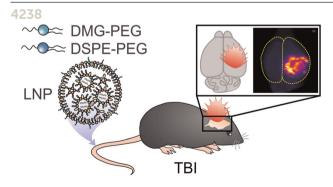
Saínza Lores, Manuel Gámez-Chiachio, María Cascallar, Carmen Ramos-Nebot, Pablo Hurtado, Sandra Alijas, Rafael López López, Roberto Piñeiro, Gema Moreno-Bueno\* and María de la Fuente\*

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# A chitosan-based self-healing hydrogel for accelerating infected wound healing

Haohao Cui, Bingbing Cui, Huiying Chen, Xiwen Geng, Xingchen Geng, Zhanrong Li, Shaokui Cao, Jianliang Shen\* and Jingguo Li\*



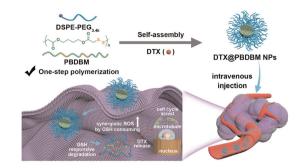
# Analysis of PEG-lipid anchor length on lipid nanoparticle pharmacokinetics and activity in a mouse model of traumatic brain injury

Lauren E. Waggoner, Katelyn F. Miyasaki and Ester J. Kwon\*

#### 4254

Facile synthesis of poly(disulfide)s through one-step oxidation polymerization for redoxresponsive drug delivery

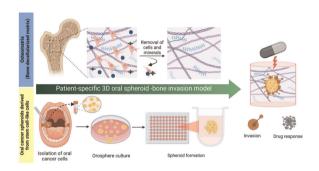
Ruhe Zhang, Tiangi Nie, Liying Wang, Danni He, Yang Kang,\* Chao Zhang\* and Jun Wu\*



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## Osteomatrix as a personalized 3D tissue-specific invasion test-bed for oral carcinoma

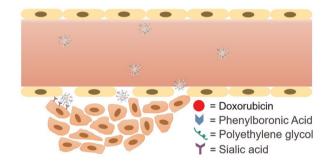
Sukanya V. S., Pravin Shankar Giri, Vijaykumar Nellore and Subha Narayan Rath\*



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# Phenylboronic acid-modified nanoscale multi-arm polymers for tumor-targeted therapy

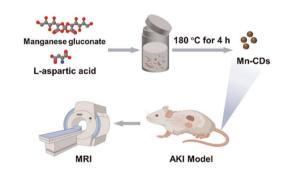
Chongzhi Wang, YiKai Tang, Yang Yuan, Cheng Li, Wei Wu\* and Xiqun Jiang\*

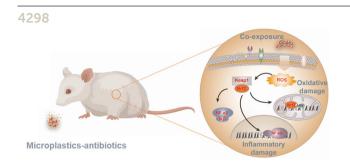


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# Non-invasive diagnosis of acute kidney injury using Mn-doped carbon dots-based magnetic resonance imaging

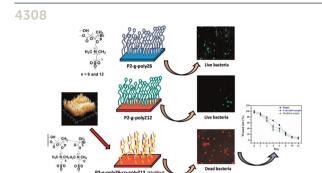
Xingtai Huang, Zihan Wang, Shujie Li, Shiqi Lin, Lirong Zhang, Zhaowei Meng, Xuejun Zhang and Shao-Kai Sun\*





# Microplastic-contaminated antibiotics as an emerging threat to mammalian liver: enhanced oxidative and inflammatory damages

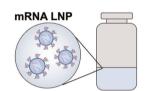
Jianxin Fu, Lan Zhang, Keyu Xiang, Yu Zhang, Guoging Wang\* and Lingxin Chen\*



Effect of carbon spacer length on the antibacterial properties of zwitterionic poly(sulfobetaine) type copolymeric brushes and their application in wound healing

Shaifali Dhingra, Shih-Po Su, Yang-Hsiang Chan and Sampa Saha\*

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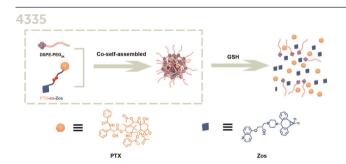


### lyophilization with 20% sucrose

- ✓ mRNA encapsulation
- ✓ Colloidal stability
- ✓ In vitro mRNA transfection
- ✓ In vivo mRNA transfection

# Successful batch and continuous lyophilization of mRNA LNP formulations depend on cryoprotectants and ionizable lipids

Alexander Lamoot, Joris Lammens, Emily De Lombaerde, Zifu Zhong, Mark Gontsarik, Yong Chen, Thomas R. M. De Beer\* and Bruno G. De Geest\*



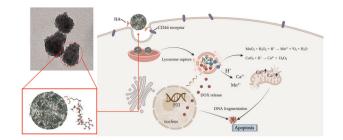
Redox-responsive drug-inhibitor conjugate encapsulated in DSPE-PEG<sub>2k</sub> micelles for overcoming multidrug resistance to chemotherapy

Penghui Wang, Yuling Wang, Xuelin Xia, Wei Huang\* and Deyue Yan\*

#### 4346

SiO<sub>2</sub>/hyaluronic acid nanoparticles carry CaO<sub>2</sub>, DOX and p53 plasmid to effectively achieve ion interference/chemical/gene multimodal therapy of lung cancer

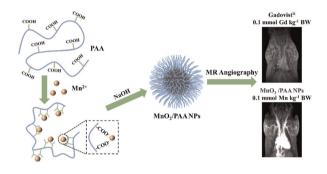
Yi Zhuo, Xuan Huang, Nan-long Lin, Feng-qiang Yu, Yan-xun Chen, Mao-hao Guan, Wei-qiang Yi and Fan-cai Lai\*



#### 4359

Ultra-small manganese dioxide nanoparticles with high  $T_1$  relaxivity for magnetic resonance angiography

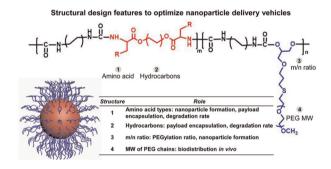
Yuting Jiang, Haojie Gu, Zhongyuan Cai, Shengxiang Fu, Yingzi Cao, Lingling Jiang, Changgiang Wu, Wei Chen, Chunchao Xia, Su Lui, Bin Song, Qiyong Gong and Hua Ai\*



#### 4370

Optimization of amino acid-based poly(ester urea urethane) nanoparticles for the systemic delivery of gambogic acid for treating triple negative breast cancer

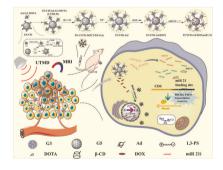
Ying Ji,\* Juan Li, Shilin Xiao, Hiu Yee Kwan, Zhaoxiang Bian and Chih-Chang Chu



#### 4385

Ultrasound-enhanced theranostics of orthotopic breast cancer through a multifunctional core-shell tecto dendrimer-based nanomedicine platform

Junli Gong, Cong Song, Gaoming Li, Yunqi Guo, Zhiqiang Wang, Honghua Guo, Jindong Xia, Yuchen Tao, Qiusheng Shi, Xiangyang Shi\* and Mingwu Shen\*



## **CORRECTION**

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## Correction: Effectiveness of a novel gene nanotherapy based on putrescine for cancer treatment

Saínza Lores, Manuel Gámez-Chiachio, María Cascallar, Carmen Ramos-Nebot, Pablo Hurtado, Sandra Alijas, Rafael López López, Roberto Piñeiro, Gema Moreno-Bueno\* and María de la Fuente\*