# **Biomaterials Science**

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

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**Cover** See Qing Zhang *et al.*, pp. 6480–6491.



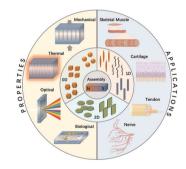
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Magnetically anisotropic hydrogels for tissue engineering

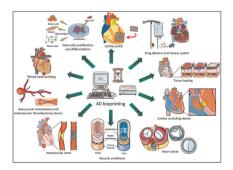
Lili Hao and Hongli Mao\*



#### 6403

# Application of 4D printing and bioprinting in cardiovascular tissue engineering

Zijing Zhou, Weijie Tang, Jinfu Yang and Chengming Fan\*



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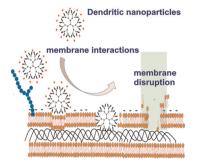
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#### REVIEWS

#### 6421

#### Dendritic systems for bacterial outer membrane disruption as a method of overcoming bacterial multidrug resistance

Kinga Skrzyniarz, Dorota Kuc-Ciepluch, Magdalena Lasak, Michał Arabski, Javier Sanchez-Nieves and Karol Ciepluch\*



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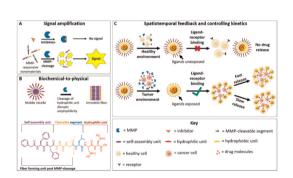
# Research progress in nucleus-targeted tumor therapy

Shaofeng Chen, Rumeng Cao, Ling Xiang, Ziyi Li, Hui Chen, Jiumeng Zhang\* and Xuli Feng\*



#### MMP-responsive nanomaterials

Jiye Son, Sadiyah Parveen, Douglas MacPherson, Yaron Marciano, Richard H. Huang and Rein V. Ulijn\*

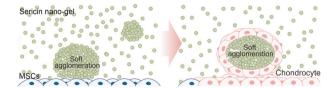


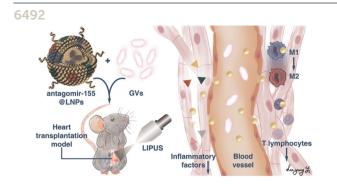
#### PAPERS

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Sericin nano-gel agglomerates mimicking the pericellular matrix induce the condensation of mesenchymal stem cells and trigger cartilage micro-tissue formation without exogenous stimulation of growth factors *in vitro* 

Qing Zhang,\* Wei Zhou, Futing Yang and Jifeng Shi

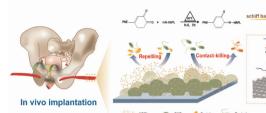




## Targeted microRNA delivery by lipid nanoparticles and gas vesicle-assisted ultrasound cavitation to treat heart transplant rejection

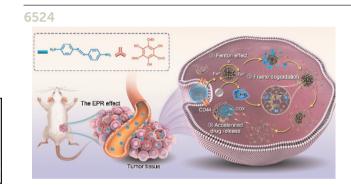
Rui Wang, Luyang Yi, Wuqi Zhou, Wenyuan Wang, Lufang Wang, Lingling Xu, Cheng Deng, Mengrong He, Yuji Xie, Jia Xu, Yihan Chen, Tang Gao, Qiaofeng Jin,\* Li Zhang\* and Mingxing Xie\*

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#### Fabrication and *in vitro* investigation of hyperbranched poly-lysine-grafted warp knitted polypropylene sling for potential treatment of stress urinary incontinence

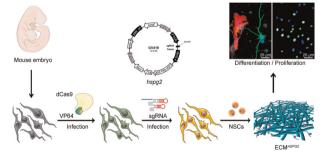
Shuying Zhao, Meiqi Fang, Yan Li,\* Fujun Wang, Hao Li and Lu Wang



#### Biodegradable covalent organic frameworks achieving tumor micro-environment responsive drug release and antitumor treatment

Tong Li, Dianwei Wang, Zhaopei Guo, Lin Lin, Meng Meng, Cong Liu, Kai Hao,\* Xuan Pang, Huayu Tian\* and Xuesi Chen

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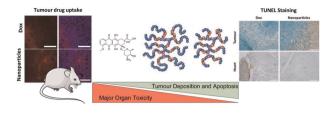
#### A precise design strategy for a cell-derived extracellular matrix based on CRISPR/Cas9 for regulating neural stem cell function

Yuanxin Zhai, Lingyan Yang,\* Wenlong Zheng, Quanwei Wang, Zhanchi Zhu, Fang Han, Ying Hao, Sancheng Ma\* and Guosheng Cheng\*

#### 6545

#### Chain-extension in hyperbranched polymers alters tissue distribution and cytotoxicity profiles in orthotopic models of triple negative breast cancers

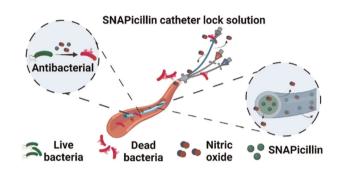
Cara Moloney,\* Fatemeh Mehradnia, Robert J. Cavanagh, Asmaa Ibrahim, Amanda K. Pearce, Alison A. Ritchie, Philip Clarke, Ruman Rahman, Anna M. Grabowska and Cameron Alexander\*



## 6561

#### Antimicrobial efficacy of a nitric oxide-releasing ampicillin conjugate catheter lock solution on clinically-isolated antibiotic-resistant bacteria

Manjyot Kaur Chug, Lauren Griffin, Mark Garren, Emma Tharp, Grace H. Nguyen, Hitesh Handa and Elizabeth J. Brisbois\*



#### 6573

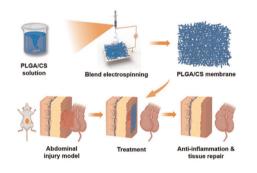
#### An anti-inflammatory chondroitin sulfatepoly(lactic-co-glycolic acid) composite electrospinning membrane for postoperative abdominal adhesion prevention

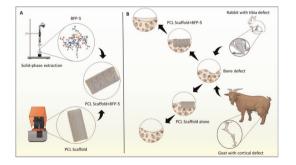
Rui Gao, Fenghui Li, Yushan Zhang, Pengxu Kong, Yu Gao, Jingrong Wang, Xiang Liu, Shuangyang Li, Liqin Jiang,\* Ju Zhang, Chuangnian Zhang, Zujian Feng,\* Pingsheng Huang and Weiwei Wang\*

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Peptide derived from stromal cell-derived factor  $1\delta$ enhances the *in vitro* expression of osteogenic proteins *via* bone marrow stromal cell differentiation and promotes bone formation in *in vivo* models

Jong Keun Seon, Sree Samanvitha Kuppa, Ju Yeon Kang, Jun Sik Lee, Su A Park, Taek Rim Yoon, Kyung Soon Park and Hyung Keun Kim\*



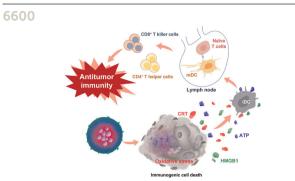


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6611

C12-PLL13

I. Attraction



Cationic amino groups

III. Disintegration

Hydrophobic tail Polypeptide backbone Acid-sensitive stable polymeric micelle-based oxidative stress nanoamplifier as immunostimulating anticancer nanomedicine

Gayoung Kwon, Jinsu Baek, Nuri Kim, Soonyoung Kwon, Nanhee Song, Seong-Cheol Park, Byeong-Su Kim and Dongwon Lee\*

#### Synthetic lipo-polylysine with anti-cancer activity

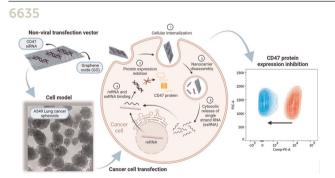
Xuan Yi, Pengqi Wan, Wei Shen, Xiaonong Zhang, Peng Zhang\* and Chunsheng Xiao\*

# 6619

II. Perforation

#### Dual-responsive PEG-lipid polyester nanoparticles for siRNA and vaccine delivery elicit anti-cancer immune responses by modulating tumor microenvironment

Zixu Liu, Linxuan Zhao, Yupeng Feng, Qingqing Wang, Nan Dong, Yu Zhang, Tian Yin, Haibing He, Xing Tang,\* Jingxin Gou\* and Li Yang\*



# Harnessing graphene oxide nanocarriers for siRNA delivery in a 3D spheroid model of lung cancer

Francesca Grilli, Eman M. Hassan, Fabio Variola and Shan Zou\*

#### 6650

Synthesis, characterization, and biological verification of asialoglycoprotein receptortargeted lipopolysaccharide-encapsulated PLGA nanoparticles for the establishment of a liver fibrosis animal model

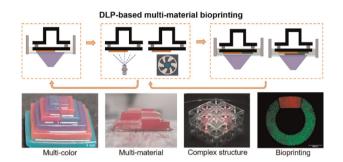
Ching-Ju Huang, Shao-Jung Hsu, Yi-Chiung Hsu, Liang-Kun Chen, Chuan Li, Hui-Chun Huang\* and Yu-Hsiang Lee\*

#### Anti-AscPR-mAb LPS ALPNPS Healthy Lver Healthy organ I Healthy Specifically Cause Liver Damage

#### 6663

Development of digital light processing-based multi-material bioprinting for fabrication of heterogeneous tissue constructs

Hao Su, Bingxian Lu, Ming Li, Xue Yang, Minghao Qin and Yang Wu\*



#### **EXPRESSION OF CONCERN**

#### 6674

# Expression of Concern: Low-intensity focused ultrasound (LIFU)-activated nanodroplets as a theranostic agent for noninvasive cancer molecular imaging and drug delivery

Jianxin Liu, Fenfen Xu, Ju Huang, Jinshun Xu, Yang Liu, Yuanzhi Yao, Meng Ao, Ao Li, Lan Hao, Yang Cao, Zhongqian Hu, Haitao Ran, Zhigang Wang and Pan Li\*