

Biomaterials Science

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

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ISSN 2047-4849 CODEN BSICCH 12(4) 813–1070 (2024)



Cover

See Hyungil Jung *et al.*,
pp. 907–918.

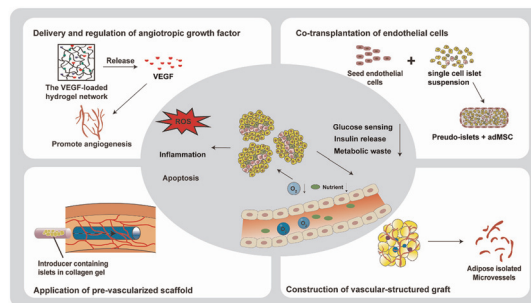
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907.

REVIEWS

821

Biomaterial-assisted strategies to improve islet graft revascularization and transplant outcomes

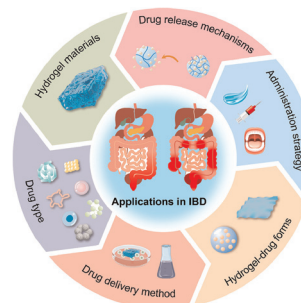
Boyang Qi, Yang Ding, Ying Zhang, Longfa Kou,
Ying-Zheng Zhao and Qing Yao*



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Advancements in hydrogel-based drug delivery systems for the treatment of inflammatory bowel disease: a review

Ye Liu, Jinjian Huang, Sicheng Li, Ze Li, Canwen Chen,
Guiwen Qu, Kang Chen, Yitian Teng, Rui Ma,
Xiuwen Wu* and Jianan Ren*



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Fundamental questions
Elemental answers

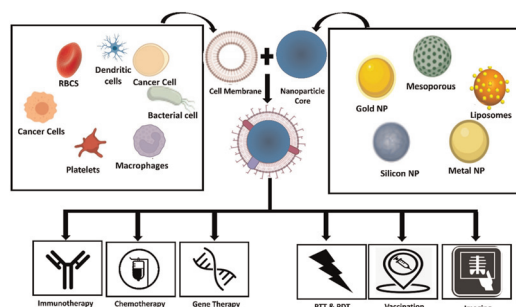


REVIEWS

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Cell membrane-coated biomimetic nanomedicines: productive cancer theranostic tools

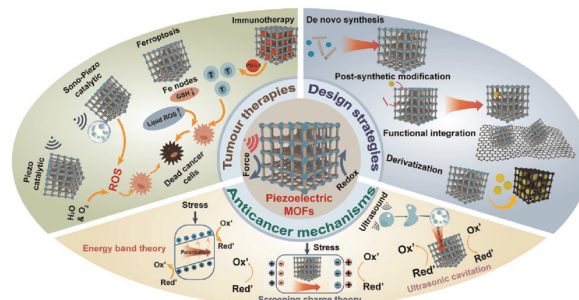
Muhammad Ijaz, Bilal Aslam, Ikram Hasan, Zia Ullah, Shubham Roy and Bing Guo*



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A metal–organic framework-integrated composite for piezocatalysis-assisted tumour therapy: design, related mechanisms, and recent advances

Shuteng Wang, Yifan Liu, Chunhua Quan,* Shifang Luan, Hengchong Shi and Lei Wang*

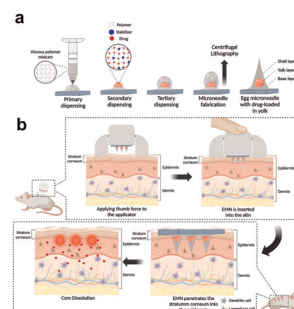


PAPERS

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Egg microneedles for transdermal vaccination of inactivated influenza virus

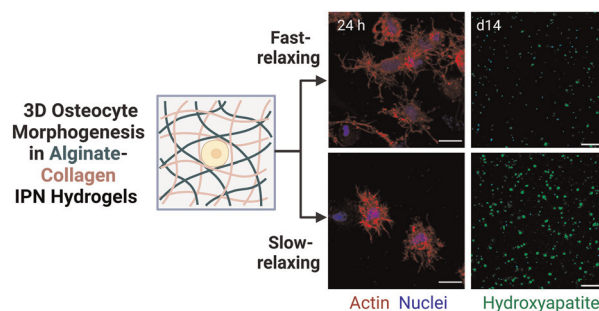
Geonwoo Kang, Minkyung Kim, Youjin Lee, Huisuk Yang, Baik-Lin Seong and Hyungil Jung*



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Interpenetrating network hydrogels for studying the role of matrix viscoelasticity in 3D osteocyte morphogenesis

Margherita Bernero, Doris Zauchner, Ralph Müller and Xiao-Hua Qin*



The diagram illustrates the 3D culture process for placental organoids. It begins with trophoblasts (green stars) and a hydrogel. These combine to form a cell-seeded hydrogel. After 7 days of 3D culture, placental organoids (blue and green structures) are formed. A zoomed-in view shows the organoids within the hydrogel matrix. A heatmap below the organoids shows the expression of various markers, with a color scale from blue (low) to red (high).

Emily M. Slaby, Seema B. Plaisier, Sarah R. Brady,
Shivani C. Hiremath and Jessica D. Weaver*

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Shivani C. Hiremath and Jessica D. Weaver*

The diagram illustrates four antibacterial mechanisms for a membrane:

- Photodynamic:** Shows reactive species like $HO^{\bullet}$ and H_2O_2 attacking bacteria.
- Photothermal:** Shows heat (represented by red wavy lines) being applied to the membrane.
- Particle Filtration:** Shows various particles being trapped by the membrane's pores.
- Bacteria Filtration:** Shows bacteria being blocked by the membrane, indicated by a red 'X' over a crossed-out arrow.

Mohammad Ali Haghghat Bayan, Chiara Rinoldi,
Daniel Rybak, Seyed Shahrooz Zargarian,
Anna Zakrzewska, Olga Cegielska, Kaisa Põhako-Palu,
Shichao Zhang, Agata Stobnicka-Kupiec, Rafat L. Górny,
Pawet Nakielski, Karin Kogermann, Luciano De Sio,
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Pawet Nakielski, Karin Kogermann, Luciano De Sio,
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The diagram illustrates the synthesis and application of the PAA-Ca NP. The synthesis process involves the reaction of PAA and CaCl₂ to form PAA-Ca NP, followed by treatment with Na₂HPO₄ to form CaP, then DA to form CaP/CDA, and finally SH-PED-Cat to form Cat-CaP/CDA, which is treated with GSH to form Cat-CaP/CDA(GSH). The application part shows the use of Cat-CaP/CDA(GSH) for ROS and RNS scavenging. It depicts a 660nm light source, ROS and RNS radicals, and the conversion of GSH to GSSG. The final state shows 'Enhanced biocompatibility and reactivity' and 'No gas' release.

Xiangjun Chen, Qing Fan, Keke Li, Weiwei Li,
Longle Wang, Wenting Li* and Wei Hong*

Xiangjun Chen, Qing Fan, Keke Li, Weiwei Li,
Longle Wang, Wenting Li* and Wei Hong*

The diagram illustrates the process of osteogenesis, showing three distinct pathways that converge to promote bone formation (OSTEOGENESIS).

- Osteo-inductive factors:** These factors lead to the expression of a **Set of osteogenic factor specific genes & miRNAs**.
- Core osteogenic genes & miRNAs:** These are the central components of the osteogenic process.
- 3D nanotopographical cues:** These cues lead to the expression of a **Set of 3D specific genes & miRNAs**.

All three pathways (Osteo-inductive factors, Core osteogenic genes & miRNAs, and 3D nanotopographical cues) contribute to the overall process of **OSTEOGENESIS**, which is represented by the bone structure at the bottom.

Legend:

- Red double helix = genes
- Red double helix with dots = miRNAs

Gowri Manohari Balachander,* Sagar Nilawar,
Sai Rama Krishna Meka, Lopamudra Das Ghosh and
Kaushik Chatterjee*

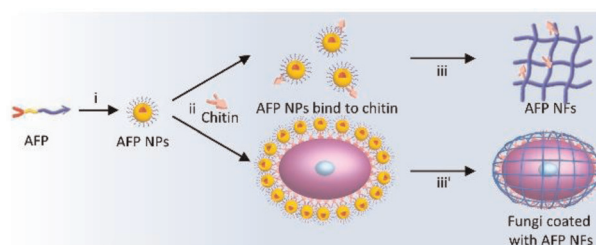
Gowri Manohari Balachander,* Sagar Nilawar,
Sai Rama Krishna Meka, Lopamudra Das Ghosh and
Kaushik Chatterjee*

PAPERS

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A self-assembling peptide inhibits the growth and function of fungi via a wrapping strategy

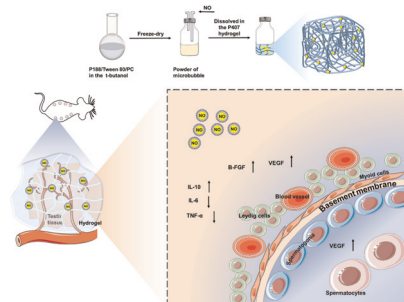
Gao-Feng Qi, Xin Cui, Xue-Feng Gong, Xu Cui, Huan-Ge Xu, Qi-Lin Liang, Kuo Zhang, Xiao-Ling Sha, Litao Li, Gui-Yuan Wang, Hong-Wen Liang and Lei Wang*



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P407 hydrogel loaded with nitric oxide microbubbles promotes angiogenesis and functional improvement in testicular transplantation

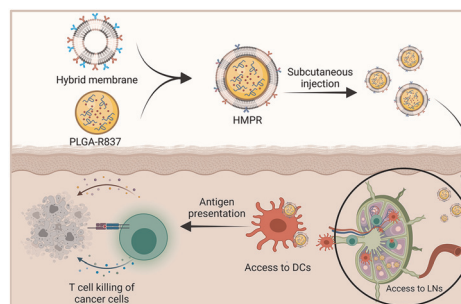
Qi Xu, Lin Qiu, Qin Gu, Xinji Wang, Xiehua Pan, Mengqi Tong, Yanghua Fu, Yingzheng Zhao* and Haitao Xi*



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Immunoactivity of a hybrid membrane biosurface on nanoparticles: enhancing interactions with dendritic cells to augment anti-tumor immune responses

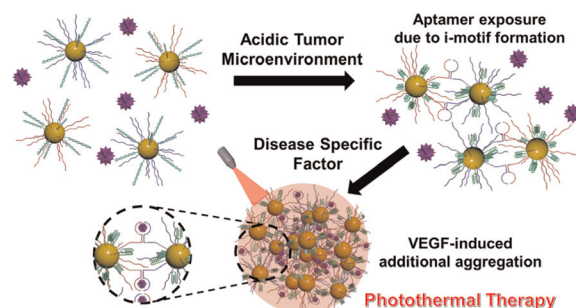
Luying Yu, Ao Zhou, Jingyan Jia, Jieting Wang, Xueyang Ji, Yu Deng, Xinhua Lin* and Fang Wang*



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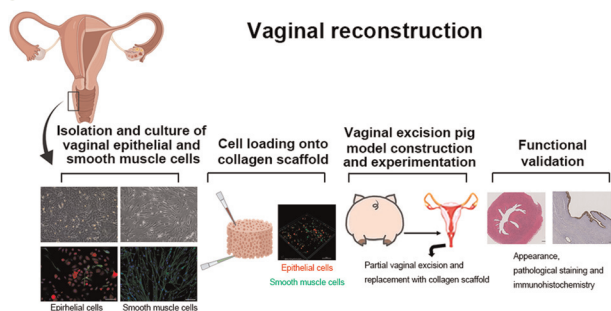
Transformation of nanoparticles via the transition of functional DNAs responsive to pH and vascular endothelial growth factor for photothermal anti-tumor therapy

Jinseong Kim, Yunyoung Nah, Seongmin Kim and Won Jong Kim*



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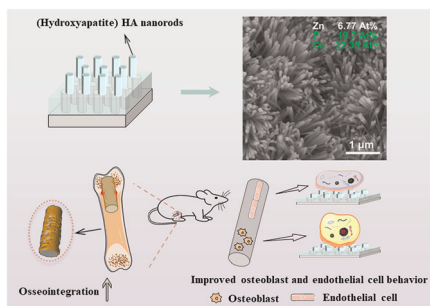
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Vaginal reconstruction by collagen scaffolds loaded with vaginal epithelial and smooth muscle cells in pigs

Guangfeng Zhao, Yishan Dong, Ziyang Ye, Simin Yao, Limin Wang, Yannan Zhao, Bing Chen, Dan Liu, Jianwu Dai* and Yali Hu*

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Reduced corrosion of Zn alloy by HA nanorods for enhancing early bone regeneration

Mengting Mao, Jun Chen, Fuwei Liu, Liang Kong, Yong Han* and Lan Zhang*

