

# Biomaterials Science

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

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## IN THIS ISSUE

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### Cover

See Shyam Lal Mudavath et al., pp. 1960–1974.

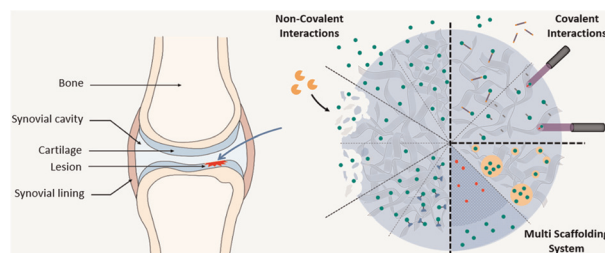
Image reproduced by permission of Shyam Lal Mudavath and Aaqib Javaid from *Biomater. Sci.*, 2025, **13**, 1960.

## REVIEWS

1871

### Control and interplay of scaffold–biomolecule interactions applied to cartilage tissue engineering

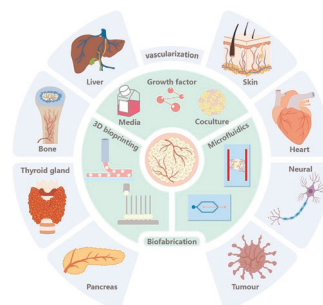
Silouane Dupuy, Jérémy Salvador, Marie Morille, Danièle Noël and Emmanuel Belamie\*



1901

### Advancing tissue engineering through vascularized cell spheroids: building blocks of the future

Chunxiang Lu, Aoxiang Jin, Huazhen Liu, Chuang Gao, Wenbin Sun, Yi Zhang, Qiqi Dai and Yuanyuan Liu\*



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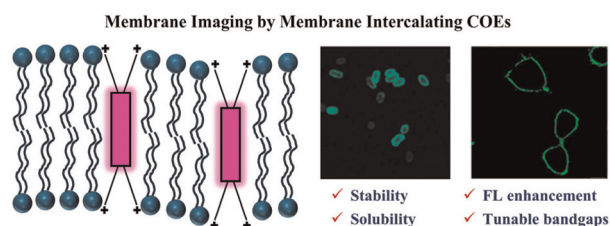
Fundamental questions  
Elemental answers

## REVIEWS

1923

**Membrane-intercalating conjugated oligoelectrolytes for lipid membrane imaging**

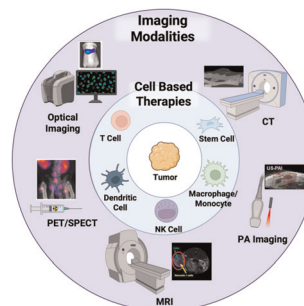
Lingna Wang, Zehua Chen, Zhaohui Dai, Meng Li, Bo Chen\* and Bing Wang\*



1939

**Recent advances in non-invasive *in vivo* tracking of cell-based cancer immunotherapies**

Anika D. Kulkarni, Tasneem Mukarrama, Brendan R. Barlow and Jinhwan Kim\*

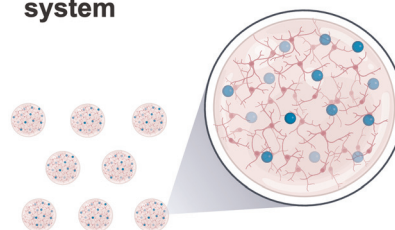


## PAPERS

1960

**Overcoming drug delivery challenges with lipid-based nanofibers for enhanced wound repair**

Aaqib Javaid, Krishana Kumar Sharma, Prakhar Varshney, Anurag Verma and Shyam Lal Mudavath\*

**Immunomodulatory encapsulation system**

hiPSC-derived dopaminergic neuron progenitors  
- Clinically relevant cells for Parkinson's disease

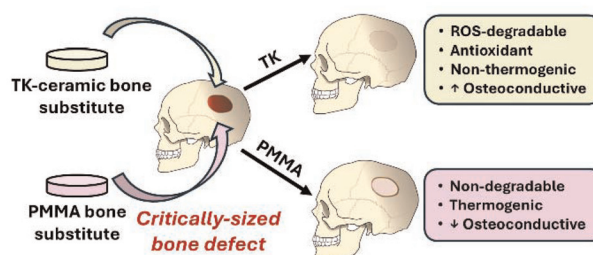
Tacrolimus-polycaprolactone (PCL) microparticles  
- Local immunosuppression

Alginate hydrogel  
- Physical barrier to T cells

1975

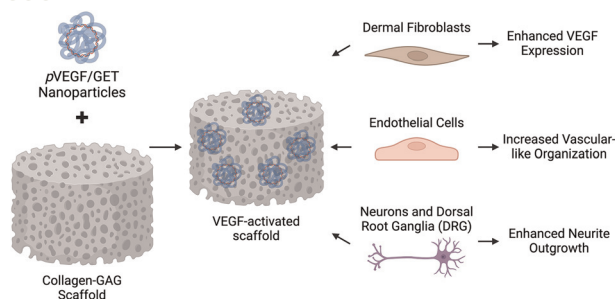
**Oxidation-responsive, settable bone substitute composites for regenerating critically-sized bone defects**

Reinaldo L. Dos Santos, Ardeena Ahmed, Brooke E. Hunn, Adolphus E. Addison, Dylan W. Marques, Karina A. Bruce and John R. Martin\*



## PAPERS

1993

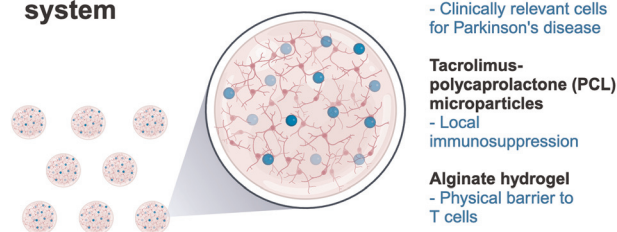


### Development of a VEGF-activated scaffold with enhanced angiogenic and neurogenic properties for chronic wound healing applications

Juan Carlos Palomeque Chávez, Matthew McGrath, Cian O'Connor, Adrian Dervan, James E. Dixon, Cathal J. Kearney, Shane Browne and Fergal J. O'Brien\*

2012

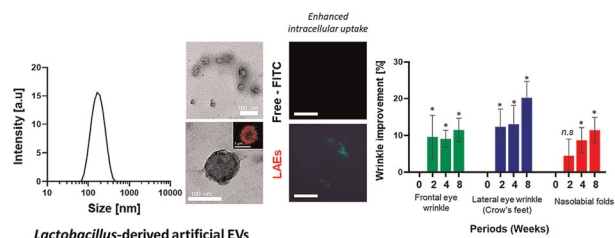
### Immunomodulatory encapsulation system



### An immunomodulatory encapsulation system to deliver human iPSC-derived dopaminergic neuron progenitors for Parkinson's disease treatment

Emily A. Atkinson,\* Holly N. Gregory, Lara N. Carter, Rachael E. Evans, Victoria H. Robertson, Rachael Dickman and James B. Phillips\*

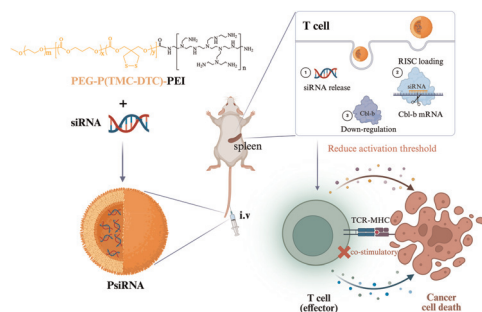
2026



### Lactobacillus-derived artificial extracellular vesicles for skin rejuvenation and prevention of photo-aging

Seongsu Kang, Saetbyeol Jeon, Hwira Baek, Sunghwan Hwang, Seulgi Kim, Sung Hun Youn, Jin Woong Kim,\* Seung-Hyun Jun\* and Nae-Gyu Kang\*

2036



### Polymersome-mediated Cbl-b silencing activates T cells against solid tumors

Guanhong Cui, Yu Shao, Junyao Wang, Congcong Xu,\* Jinping Zhang\* and Zhiyuan Zhong\*

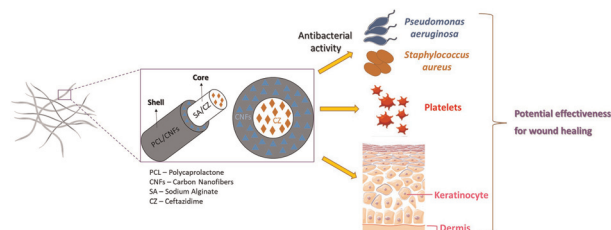


## PAPERS

2047

### Polycaprolactone/sodium alginate coaxial wet-spun fibers modified with carbon nanofibers and ceftazidime for improved clotting and infection control in wounds

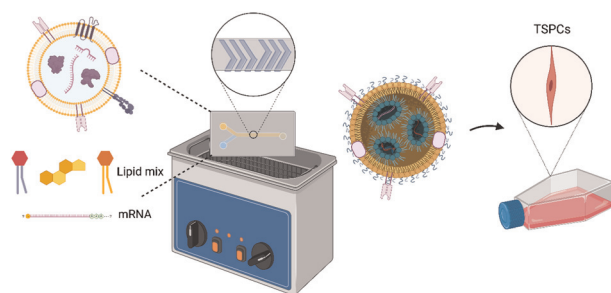
Elina Marinho, Beatriz M. Silva, Catarina S. Miranda, Sonia L. C. Pinho and Helena P. Felgueiras\*



2066

### Hybrid lipid nanoparticles derived from human mesenchymal stem cell extracellular vesicles by microfluidic sonication for collagen I mRNA delivery to human tendon progenitor stem cells

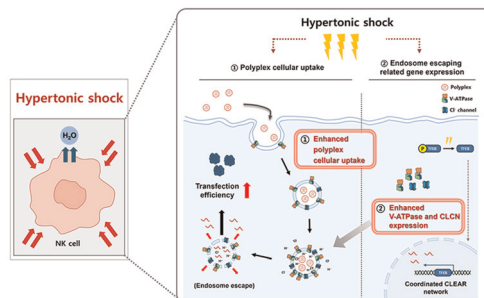
Rubén Pareja Tello,\* Erwin Pavel Lamparelli, Maria Camilla Ciardulli, Jouni Hirvonen, Goncalo Barreto, Nicola Mafulli, Giovanna Della Porta\* and Hélder A. Santos\*



2082

### Enhanced *in vitro* transfection efficiency of mRNA-loaded polyplexes into natural killer cells through osmoregulation

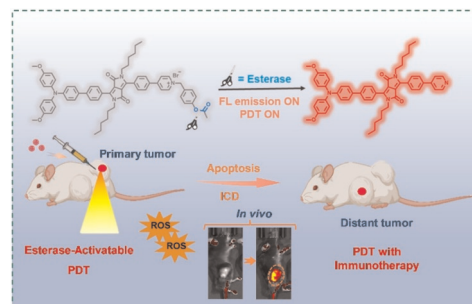
Myeongkwan Song, Ha Yeon Park, Hyun Jin Kim\* and Soonjo Kwon\*



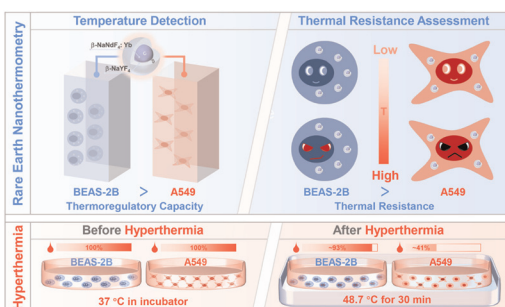
2092

### An esterase-activated prodrug against pancreatic cancer by imaging-guided photodynamic immunotherapy

Kaini Yang, Qingyang Sha, Xinsheng Li, Jianli Hua\* and Wei Chen\*



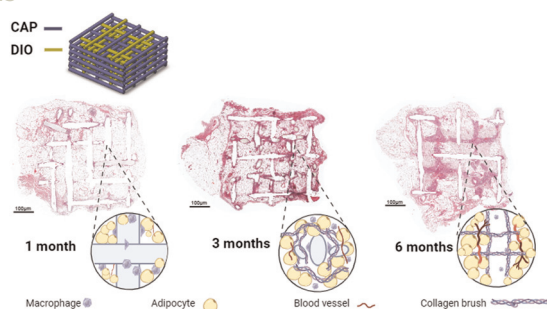
2102



### A Nd–Yb ratiometric luminescent nanothermometer for assessing thermal resistance discrepancies between A549 and BEAS-2B cells to achieve selective hyperthermia

Yishuo Sun, Qingbing Wang,\* Na Wu, Mengya Kong, Yuyang Gu and Wei Feng\*

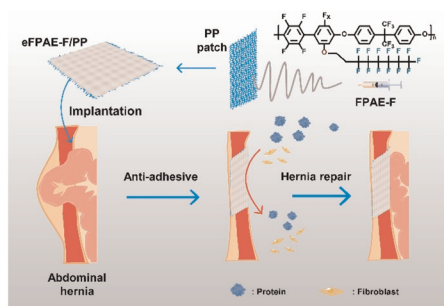
2115



### *In vitro* and *in vivo* degradation studies of a dual medical-grade scaffold design for guided soft tissue regeneration

Mina Mohseni, Silvia Cometta, Leopold Klein, Marie-Luise Wille, Cedryck Vaquette, Dietmar W. Hutmacher\* and Flavia Medeiros Savi\*

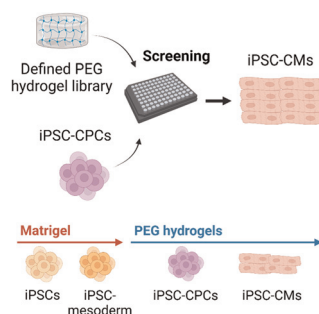
2134



### Fluorinated poly(aryl ether)/polypropylene composite patch for prevention of abdominal adhesions after hernia repairs

Wenqing Zhang, Huawei Yang, Xu Zhang, Zhaoyang Wang\* and Shifang Luan

2142



### Synthetic hydrogels support robust and reproducible cardiomyocyte differentiation

Margot J. Amitrano, Mina Cho, Eva M. Coughlin, Sean P. Palecek and William L. Murphy\*

