

IN THIS ISSUE

eISSN 2976-8713 CODEN RPSHBW 3(1) 1-266 (2026)



Cover
See Yusuke Sato *et al.*,
pp. 77–87.

Image reproduced by
permission of Yusuke Sato
from *RSC Pharm.*, 2026, **3**,
77.



Inside cover
See Elisa E. Konofagou *et al.*,
pp. 60–66.

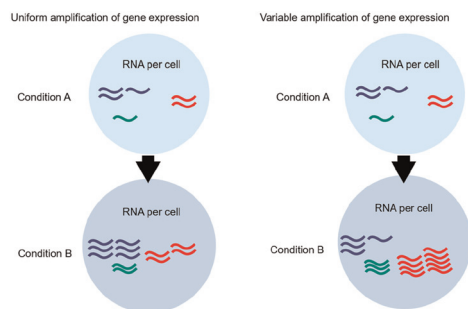
Image reproduced by
permission of Rebecca Noel,
Daniella Jimenez and
Elisa Konofagou from
RSC Pharm., 2026, **3**, 60.

REVIEWS

10

mRNA therapeutics beyond vaccines: dosing precision challenges and clinical translation framework

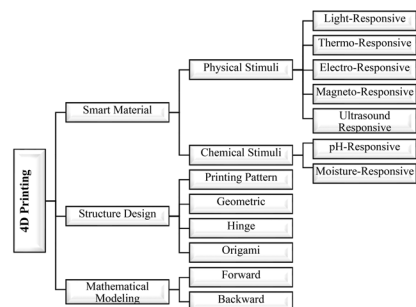
Sarfaraz K. Niazi



22

4D printing innovations and the embracing of additive manufacturing transformations

Debarupa Dutta Chakraborty, Prithviraj Chakraborty,*
Subhasish Pramanik, Manali Dutta, Arpan Sen,
Sudarshana Borah, Pallab Kumar Nath and
Sabnam Nargis



Advance your career in science

with professional recognition that showcases
your **experience, expertise and dedication**

Stand out from the crowd

Prove your commitment
to attaining excellence in
your field

Gain the recognition you deserve

Achieve a professional
qualification that inspires
confidence and trust

Unlock your career potential

Apply for our professional
registers (RSci, RSciTech)
or chartered status
(CChem, CSci, CEnv)

Apply now

rsc.li/professional-development

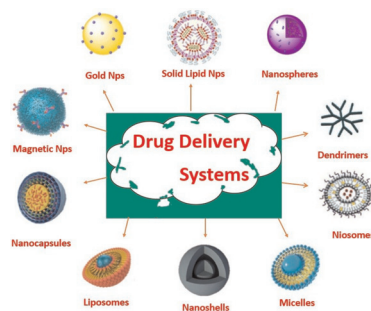


REVIEWS

43

Advancements in nano-based drug delivery systems for therapeutics: a comprehensive review

Joicy John

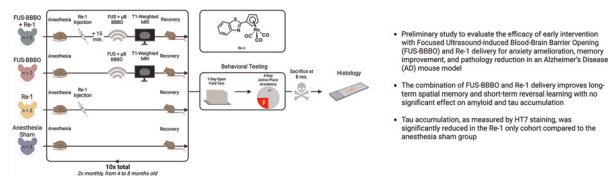


COMMUNICATIONS

60

Preliminary evidence for the combined efficacy of focused ultrasound blood–brain barrier opening and Re-1 delivery for anxiety and memory improvement in a 3xTg-Alzheimer's disease mouse model

Rebecca L. Noel, Samantha L. Gorman, Alec J. Batts, Despoina Tsakri, Daniella A. Jimenez, Maria Pelecanou, Marina Sagnou and Elisa E. Konofagou*

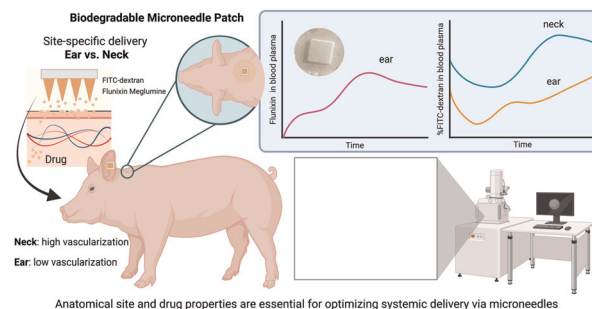


- Preliminary study to evaluate the efficacy of early intervention with Focused Ultrasound-induced Blood-Brain Barrier Opening (FUS-880) and Re-1 delivery for anxiety amelioration, memory improvement, and pathology reduction in an Alzheimer's Disease (AD) mouse model
- The combination of FUS-880 and Re-1 delivery improves long-term spatial memory and short-term reversal learning with no significant effect on amyloid and tau accumulation
- Tau accumulation, as measured by HT7 staining, was significantly reduced in the Re-1 only cohort compared to the anesthesia sham group

67

Systemic drug delivery in pigs using biodegradable microneedle patches

Katherine A. Miranda-Muñoz, Tsungcheng Tsai, Jacy L. Riddle, Ke He, Lee Blaney, Jeremy G. Powell and Jorge Almodovar*



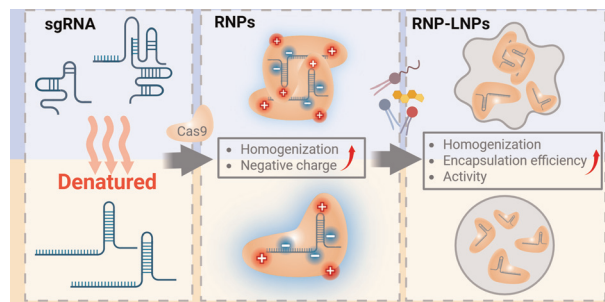
Anatomical site and drug properties are essential for optimizing systemic delivery via microneedles

PAPERS

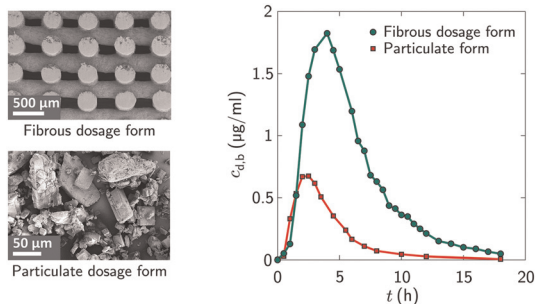
77

The effect of guide RNA thermal denaturation on the quality of Cas9 ribonucleoprotein-loaded lipid nanoparticle formulations

Rina Shimizu, Yuji Kashiwakura, Morisada Hayakawa, Shunsuke Kita, Mina Sato, Masatoshi Maeki, Manabu Tokeshi, Katsumi Maenaka, Tsukasa Ohmori, Yuma Yamada, Hideyoshi Harashima and Yusuke Sato*



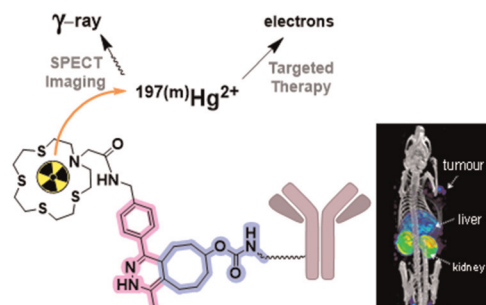
88



Enhancing the bioavailability of sparingly-soluble drugs by expandable, solid-solution fibrous dosage forms

Aron H. Blaesi,* Henning Richter and Nannaji Saka

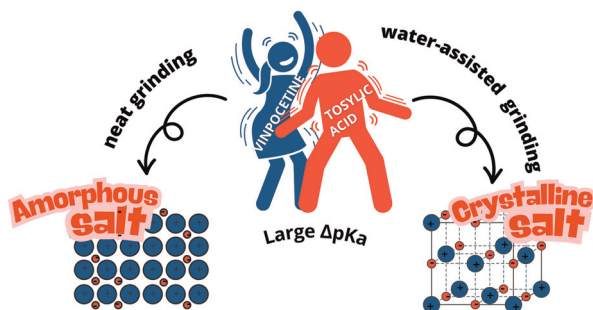
103



Bifunctional sulfur-rich macrocyclic chelators and their immunoconjugates for the targeted delivery of theranostic mercury-197

Parmisa Randhawa, Misaki Kondo, Arthur C. K. Chu, Cristina Rodríguez-Rodríguez, Zhongli Cai, Conrad Chan, Yumeela Ganga-Sah, Shaohuang Chen, Neil Weatherall, Patrick R. W. J. Davey, Helen Merckens, Raymond M. Reilly, Valery Radchenko and Caterina F. Ramogida*

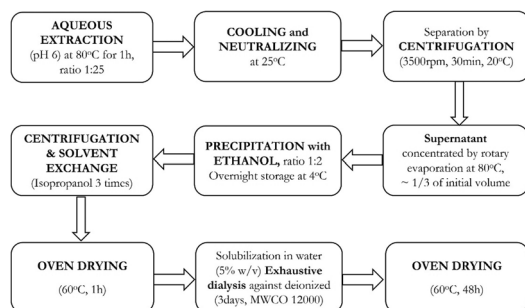
117



The ideal duo for salt formation: vinpocetine and tosylic acid

Ilenia D'Abbrunzo, Francesca Beltrame, Lara Gigli, Nicola Demitri, Cinzia Cepek, Ferdinando Bassato, Giuseppe Procida, Dario Voinovich and Beatrice Perissutti*

126



An evaluation of the pharmaceutical properties of the Nigerian baobab polysaccharide for sustained release oral tablets

Munirah A. Ajiboye, Yogesh Rawat, Nihad Mawla, Rand Abdulhussain, Haja Muhamad, Adeola O. Adebisi, Barbara R. Conway, Alan M. Smith, Gordon A. Morris, Katie Addinall, Maria Dimopoulou, Athanasios Angelis-Dimakis and Kofi Asare-Addo*



136

Development of vismodegib-loaded PLGA nanoparticles for the treatment of pancreatic cancer: formulation and *in vitro* assessment in co-culture monolayers and spheroids

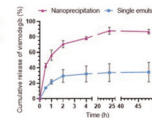
Ubah Abdi, Minao Zhang and Wafa T. Al-Jamal*

Formulation of Vis-PLGA NPs

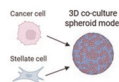
- Polymer type
- Drug to polymer ratio
- Formulation method: nanoprecipitation and single emulsion method



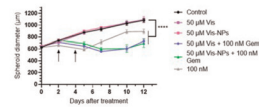
Slow, sustained drug release profile achieved using single emulsion method



in vitro assessment



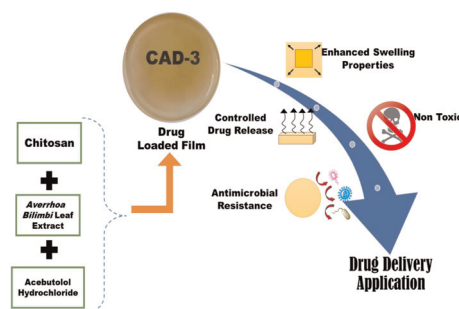
Sequential treatment enhanced chemotherapeutic growth inhibition and apoptosis in 3D spheroids



150

Sustained drug delivery of the β -blocker acebutolol hydrochloride *via* chitosan–bilimbi leaf extract films

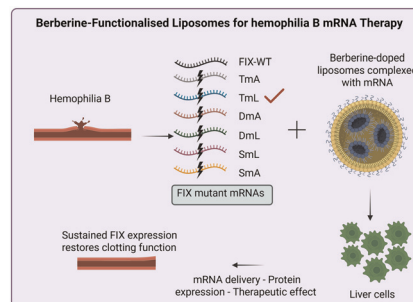
Jennifer P. Pinto, Manjunath B. Megalmani, Ajitkumar Appayya Hunashyal, Oshin Jacintha D'souza, Sharanappa T. Nandibewoor, Saraswati P. Masti and Ravindra B. Chougale*



168

Berberine-doped liposomes enhance factor IX mutant mRNA delivery for protein replacement therapy in hemophilia B

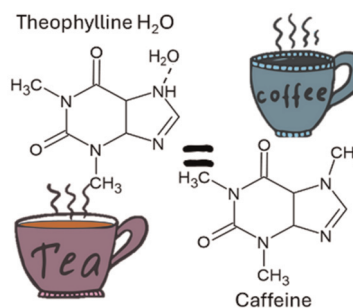
Porkizhi Arjunan, Gokulnath Mahalingam, Harini Manogaran, Mohankumar Murugesan, Saravanabhavan Thangavel and Srujan Marepally*



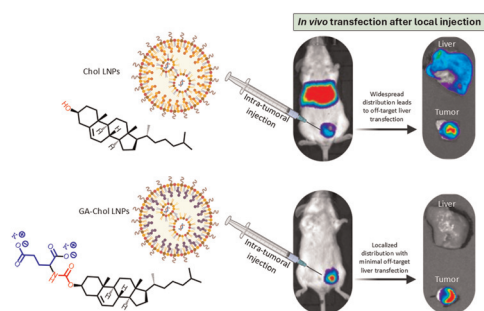
180

Water mimicry enables the formation of a solid solution of caffeine and theophylline sulphate and a new type of non-stoichiometric hydrate

Enrico Spoletti, Ricardo Albarran Velo, Greta Camilla Magnano, Chiara Cappuccino, Daniel O'Nolan, Lilia Croitor, Dario Voinovich, Beatrice Perissutti and Matteo Lusi*



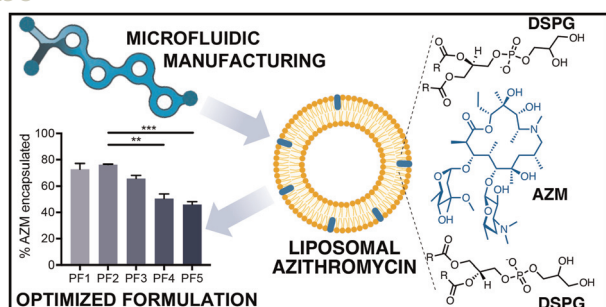
187



Improved localized mRNA delivery using lipid nanoparticles with a novel synthetic cholesterol derivative

Deepak K. Sahel, Jonas Renner, Kseniia Yu. Vlasova, Nathan D. Pennock, Sakib T. Haque, Antony Jozic, Joshua M. Walker, Conroy Sun and Gaurav Sahay*

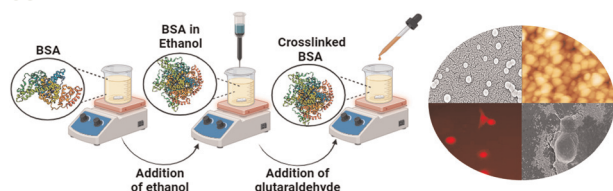
198



Systematic development and optimization of a microfluidic formulation protocol for liposomal azithromycin

Abdullah A. Masud, Nabilah Ibnat, Areli Medina Hernandez, Kaysi M. Lee, Sophia Li, Ryan Marion, David J. Feola and Vincent J. Venditto*

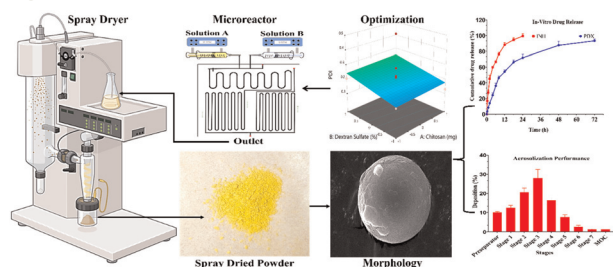
209



Chemotherapeutic loaded dynamic aggregated albumin nanoparticles for lung cancer therapy

Jyotish Kumar, Sourima Kundu, Asmita Mojumdar, B. S. Unnikrishnan,* Devika B. Chithrani and Gopinath Packirisamy*

220



Spray-dried inhalable nano-embedded microparticles of isoniazid and pyridoxine hydrochloride for pulmonary tuberculosis

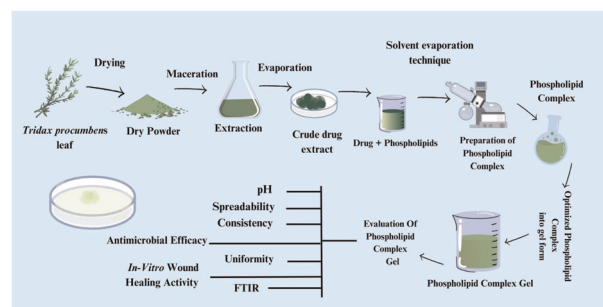
Eknath Kole, Krishna Jadhav, Priya Chichmalkar, Rahul K. Verma, Arun Mujumdar and Jitendra Naik*



237

Formulation and evaluation of a *Tridax procumbens*-loaded phospholipid complex (phytosome) gel for wound healing and antimicrobial activities

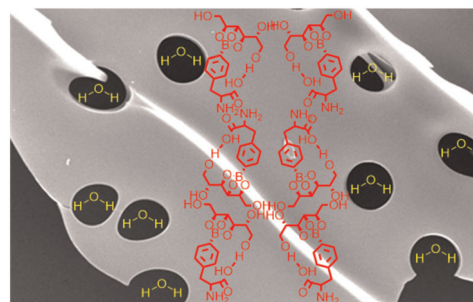
Priyanka S. Jadhav, Priyanka H. Shinde and Jameel Ahmed S. Mulla*



247

Alditols in complex with boronophenylalanine for improving aqueous solubility for boron neutron capture therapy

Teng-San Hsieh, Yu-Hou Yu, Zhen-Fan You, Rong-Jiun Sheu, Jin-Pei Deng and Chung-Shan Yu*



256

Engineering tunable GTP/TPI-responsive liposomes through liposomal membrane modulation using a bis-triphenylphosphonium lipid switch

Brooke E. Smith, Caleb G. Russell, Mayesha B. Mustafa and Michael D. Best*

