

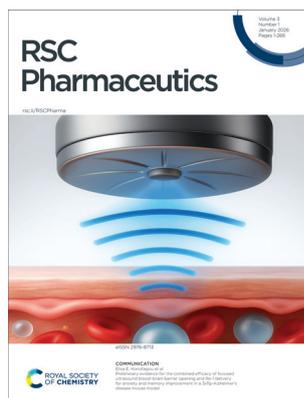
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**Cover**  
See Yusuke Sato *et al.*, pp. 77–87.

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

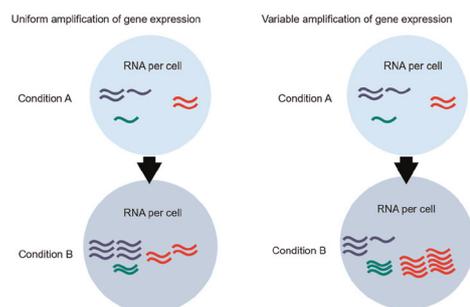
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## REVIEWS

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

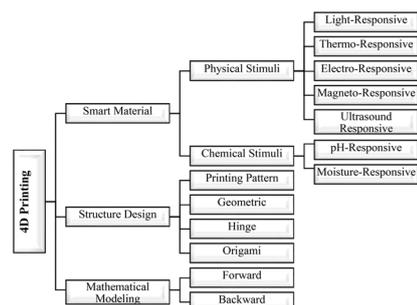
Sarfaraz K. Niazi



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### 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



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## REVIEWS

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

Joicy John

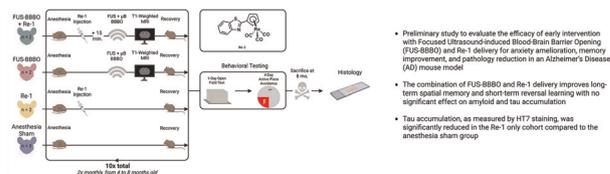


## COMMUNICATIONS

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## 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\*

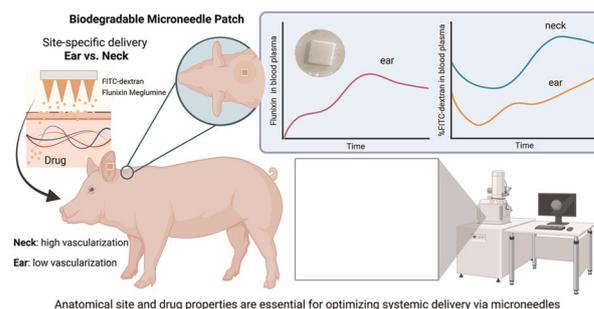


- Preliminary study to evaluate the efficacy of early intervention with Focused Ultrasound-induced Blood-Brain Barrier Opening (FUS-880) and Re-1 delivery for anxiety amelioration, memory improvement, and pathology reduction in an Alzheimer's Disease (AD) mouse model
- The combination of FUS-880 and 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

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## 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\*

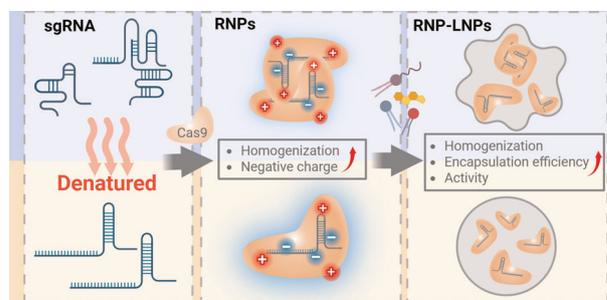


## PAPERS

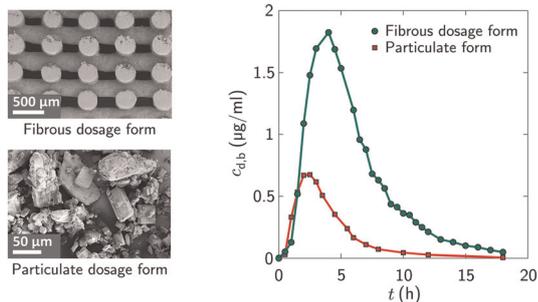
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## The effect of guide RNA thermal denaturation on the quality of Cas9 ribonucleoprotein-loaded lipid nanoparticle formulations

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\*



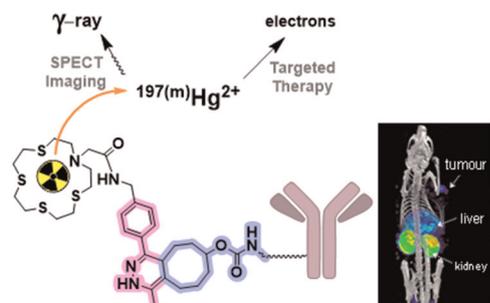
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### Enhancing the bioavailability of sparingly-soluble drugs by expandable, solid-solution fibrous dosage forms

Aron H. Blaesi,\* Henning Richter and Nannaji Saka

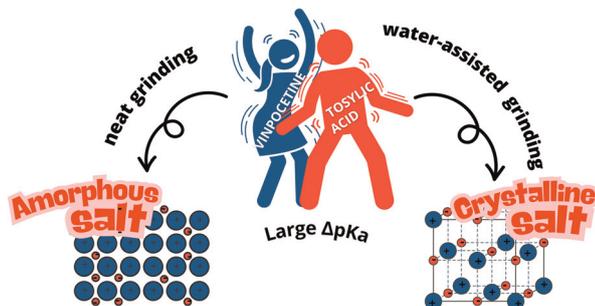
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### Bifunctional sulfur-rich macrocyclic chelators and their immunoconjugates for the targeted delivery of theranostic mercury-197

Parmissa 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\*

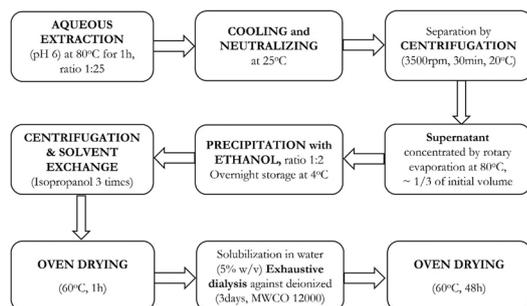
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### The ideal duo for salt formation: vinpocetine and tosylic acid

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

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### 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\*



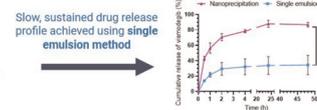
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### Development of vismodegib-loaded PLGA nanoparticles for the treatment of pancreatic cancer: formulation and *in vitro* assessment in co-culture monolayers and spheroids

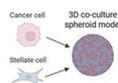
Ubah Abdi, Minao Zhang and Wafa T. Al-Jamal\*

#### Formulation of Vis-PLGA NPs

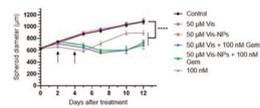
- Polymer type
- Drug to polymer ratio
- Formulation method: nanoprecipitation and single emulsion method



#### *in vitro* assessment



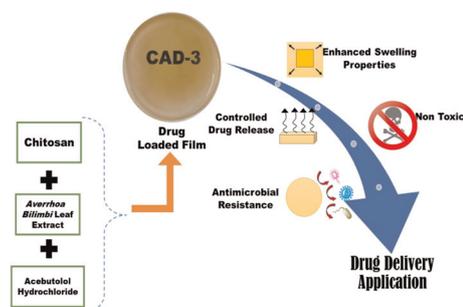
Sequential treatment enhanced chemotherapeutic growth inhibition and apoptosis in 3D spheroids



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### Sustained drug delivery of the $\beta$ -blocker acebutolol hydrochloride *via* chitosan–bilimbi leaf extract films

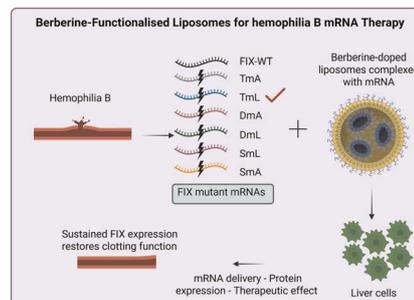
Jennifer P. Pinto, Manjunath B. Megalmani, Ajitkumar Appayya Hunashyal, Oshin Jacintha D'souza, Sharanappa T. Nandibewoor, Saraswati P. Masti and Ravindra B. Chougale\*



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

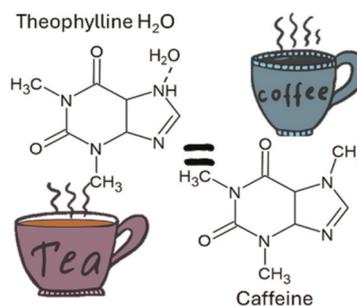
Porkizhi Arjunan, Gokulnath Mahalingam, Harini Manogaran, Mohankumar Murugesan, Saravanabhavan Thangavel and Srujan Marepally\*



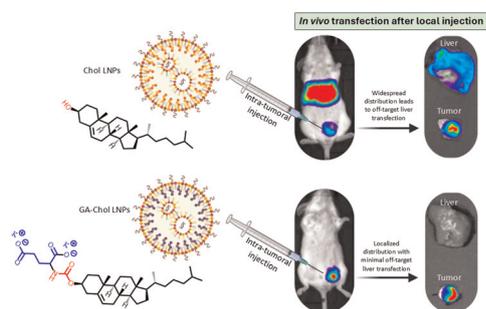
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### Water mimicry enables the formation of a solid solution of caffeine and theophylline sulphate and a new type of non-stoichiometric hydrate

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



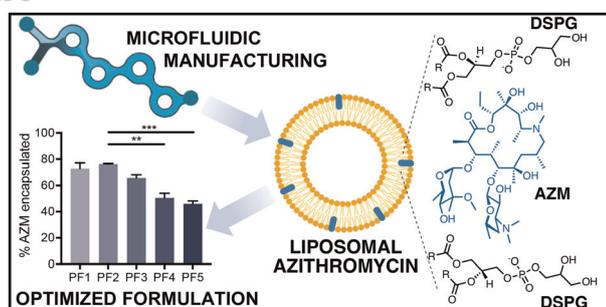
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### Improved localized mRNA delivery using lipid nanoparticles with a novel synthetic cholesterol derivative

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

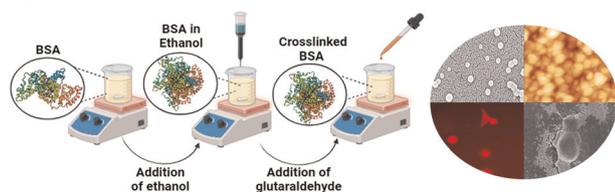
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### Systematic development and optimization of a microfluidic formulation protocol for liposomal azithromycin

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

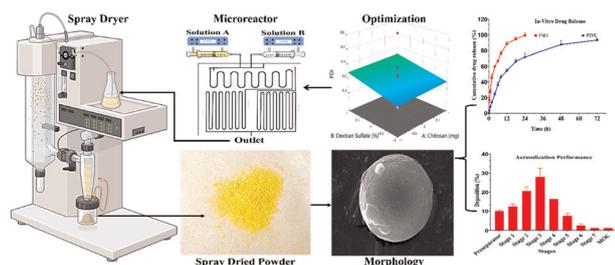
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### Chemotherapeutic loaded dynamic aggregated albumin nanoparticles for lung cancer therapy

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

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

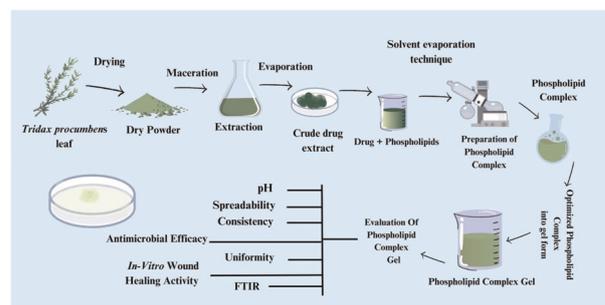
Eknath Kole, Krishna Jadhav, Priya Chichmalkar, Rahul K. Verma, Arun Mujumdar and Jitendra Naik\*



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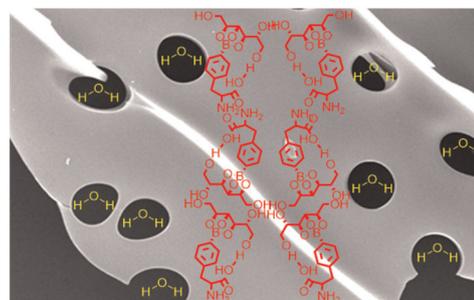
Priyanka S. Jadhav, Priyanka H. Shinde and Jameel Ahmed S. Mulla\*



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

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### 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\*

