PHARMAPEDIA

PSG CP E-News Letter

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AI-generated nanoparticles prove capable of delivering modern medicines to diseased cells

Cardiff University and AstraZeneca have conducted a groundbreaking study using artificial intelligence (AI) to design microscopic particles for efficient drug delivery to target and treat diseased cells. The research, led by Professor Arwyn T Jones, aims to enhance drug delivery by using nanoparticles as microscopic shuttles to transport therapeutic molecules precisely to targeted sites within the human body. The AI-designed nanoparticle demonstrated superior efficacy as a drug delivery vehicle compared to other prototypes.

The innovative approach, combining machine learning and AI, showcases the potential of computational methods in designing nano therapeutics. The researchers believe that this technique could be applied to analyze and design thousands of nanoparticle variations for delivering diverse therapeutic molecules, addressing a wide range of diseases. The AI-driven method provides valuable insights into how cells and proteins regulate nanoparticle performance as drug delivery agents, demonstrating the potential of machine learning in efficiently designing nanotherapeutics for improved disease targeting and treatment.

Ref: https://doi.org/10.1002/smtd.202201695.

Starton Therapeutics Announces the Launch of STARSILON a Novel Proprietary Transdermal PATCH Delivery Platform.

STARSILON is a proprietary transdermal patch delivery platform launched by Starton Therapeutics in December 2023. A typical solubilized drug-in-adhesive technology is most commonly employed for transdermal patches which has been found to have limited applicability for these difficult to work with APIs. The technology described in the provisional applications offer viable alternatives to the typical solubilized drug-in-adhesive transdermal platform and enables the Company to pursue its goal to achieve continuous and low-dose delivery of various molecules, such as those in use for oncology, inflammation, and CNS activities with the potential for significant improvement in efficacy, reduction in toxicity and improved tolerance. In addition, the new technology can potentially reduce the size of transdermal patches and expand the period of release.

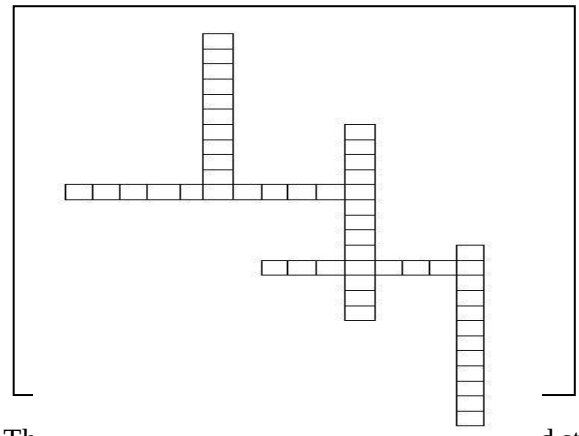
Ref: https://www.startontx.com/2024/01/02/starton-announces-starsilon-delivery-platform/

Nanobots for bladder cancer treatment, promising high efficacy and targeted delivery.

Recent advancements in bladder cancer treatment have sparked interest in the potential use of nanobots, self-propelled nanoparticles, as a promising solution. Currently, bladder cancer is treated with localized intravesical chemotherapy or immunotherapy after tumor removal. However, recurrence rates remain high, prompting exploration into alternative methods such as nanobot technology. Nanobots are designed to be highly mobile in body fluids like urine, offering improved diffusion compared to conventional drug formulations or regular nanoparticles. A recent study focused on urease-powered nanobots, utilizing urea, a waste substance in urine, as their energy source.

These nanobots, built on a mesoporous silica base with a 450 nm diameter, propel themselves through chemical reactions with urease, producing ammonia and CO2 and enhancing their motion. In a significant development, these urease-powered nanobots were tested for therapeutic efficacy in a mouse model of bladder cancer. Remarkably, a single dose resulted in nearly a 90% reduction in tumor size. This demonstrates the potential of nanobots as an alternative and effective treatment for bladder cancer.

Ref : https://www.nature.com/articles/s41565-023-01577-y#citeas.



Cross Word Puzzles

1.Th[illegible]d state into a powder form

2.Which was the company to sell the first commercially available biosynthetic human insulin?

3.First liposomal drug approved by FDA is known as

4.Opioid drug caused the highest overdosing death in U.S

5.Paragraph IV of FDA also known as

ANSWERS FOR THE PREVIOUS E-NEWSLETTER PUZZLE:
1. Epinephrine. **2.**Memantine. **3.** Filtration **4.** Capecitabine.

CORNER OF EXCELLENCE

G. Divakar (II - M. Pharm, Pharmacy Practice, PSGCP)

Got 1st price in G. Rangachari Memorial (PG Pharmacy Fellowship award 2023-2024) and secured Rs.12,000 award prize.

THE BEAUTIFUL OLD

The first pharmaceutical text was written on clay tablets by the Mesopotamians .

PHARMA FACTS

1. Nearly 19% of trials terminate early because they don't have enough participants, causing an estimated $800 billion loss in value.

2. The global pharmaceutical market is worth $300 billion. The USA makes up 40% of the worldwide pharmaceutical.

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Send your correct answers to psgcp.ceutics@gmail.com.The first three participants with correct answers will be acknowledged in the next issue.