Docket #: S22-058

Gold nanoparticle antimicrobials

To combat the growing problem of antibiotic resistant bacteria, Stanford researchers have developed nanoclusters comprising a metallic core conjugated to a nucleotide. These nanoclusters (used alone or as adjuvants) kill bacterial persister cells, a subpopulation of bacterial cells that are dormant and highly tolerant of traditional antibiotics. The newly developed nanoclusters were found to be highly efficacious in eradicating persister cells and for treating infections for a broad range of bacterial species, including Gram-positive and Gram-negative bacteria.

Stage of Development
In vivo toxicity studies: 3 times/day for 14 days intraperitoneal (IP) injection

Applications

- Use of functionalized nanoparticles as adjuvants for antimicrobial agents

Advantages

- Kills persister cells

Publications

- Zhixin Cao, Xiaohua Chen, Jing Chen, Anping Xia, Brian Bacacao, Jessica Tran, Devesh Sharma, Laurent A Bekale, Peter L Santa Maria. "Gold nanocluster adjuvant enables the eradication of persister cells by antibiotics and abolishes the emergence of resistance." Nanoscale vol. 14,28 10016-10032. 21 Jul. 2022.

Patents

- Published Application: WO2023164224
- Published Application: 20250177558

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