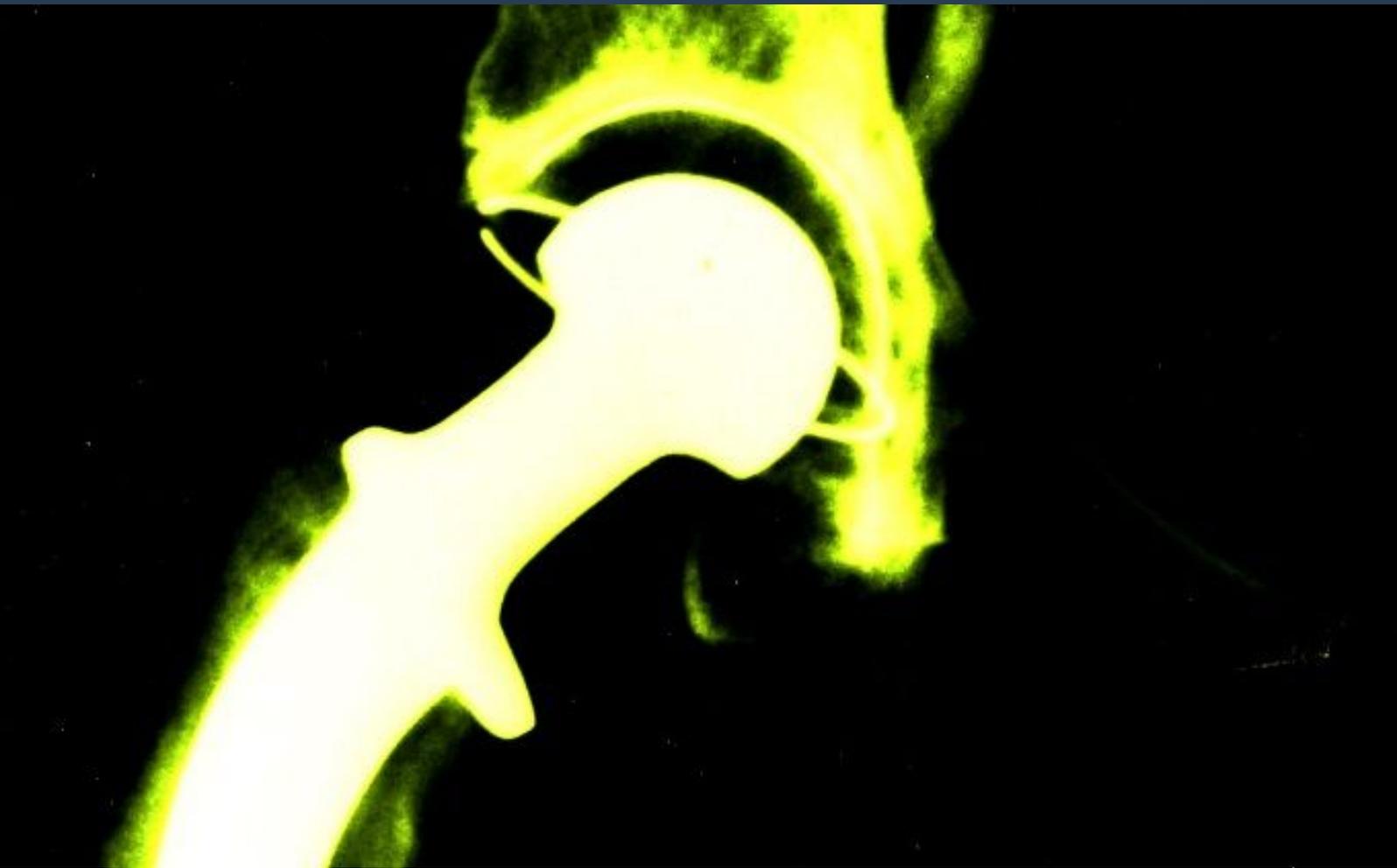


Defensomes as Antimicrobial Surface Treatments

A novel antimicrobial surface treatment using synthetic immune system-inspired proteins called defensomes.



IP Status

Patented

Seeking

Development partner, Licensing

About **University of Birmingham**

At the University of Birmingham our research leads to new inventions and fuels innovation and business growth.

Tech Overview

What's the problem?

Many infections, especially bone and prosthetic infections, involve the formation of a bacterial biofilm. Biofilms inhibit the penetration of antimicrobial agents and are therefore harder to clear than normal infections. Silver nanoparticles have been investigated as antimicrobial surface treatments but these have shown significant cell toxicity.

A new solution:

A novel antimicrobial surface treatment using synthetic immune system-inspired proteins called defensomes.

Further Details:

Many infections, particularly bone and prosthetic infections, involve the formation of a microbial biofilm. Biofilms inhibit the penetration of antimicrobial agents and, since the cells within the biofilm are relatively quiescent, the antimicrobial effect of such agents is decreased. Silver nanoparticles have been used as coatings for prostheses but these have demonstrated significant cytotoxicity.

The researchers at the university have addressed this issue by exploiting the function of defensins, immune cell-derived antimicrobial peptides, which form an important part of the body's innate immune system. The researchers have developed synthetic peptides called "defensomes", which have a similar structure to biological defensins, and improved antimicrobial function.

Defensomes are chemically immobilised on the surfaces of medical devices, e.g. implants, to prevent the establishment of biofilms, which would otherwise contribute to increased morbidity. Their data indicates a strong inhibition of biofilm establishment and low development of resistance to the defensome coating, indicating the promise of the technology. A patent has been filed protecting this development.

Benefits

- Effective prevention of biofilm formation
- Low development of resistance
- Potential for reduced morbidity associated with prostheses

Applications

Medical devices where bacterial growth affects safety and patient outcomes such as surgically implanted prostheses and orthopaedic repair implants. Market – Medical Device manufacturers.

Opportunity

Synthetic defensomes have been developed and IP protected. Laboratory trials have demonstrated efficacy. The university is seeking research and development partners who have the capability to bring a product to market under a license agreement.

ZSR894

Patents

- PCT/GB2015/050544 published under WO2015/128643. Initial filing GB1403268.4 dated 25/Feb/2014