BioInteractions

Advancing Healthcare Through Innovation™

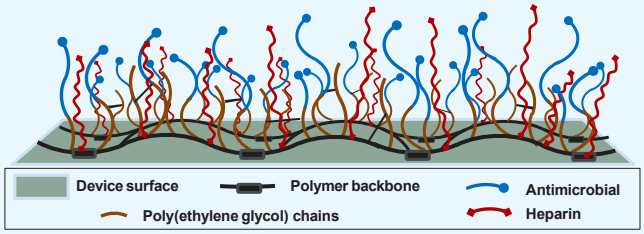
Evolve™

Antimicrobial. Antithrombogenic.

New from BioInteractions: **Evolve™**, an **antithrombogenic** and **antimicrobial coating**, developed specifically to target the hardier pathogens becoming more common for device-associated infections.

Evolve™ is a novel coating from BioInteractions; designed specifically to produce an **enhanced antimicrobial** effect against opportunistic pathogens whilst simultaneously demonstrating an **antithrombogenic effect**.

The covalently-bound coating combines the antithrombogenic effects of heparin with the proven antimicrobial properties of a biguanide, producing synergistically enhanced efficacy against the hardier strains of bacteria, without sacrificing the antithrombogenic capability.



In this era of expanding antibiotic resistance coupled with increasing patient age, **Evolve**™ offers manufacturers an innovative coating for their devices which gives clinician a new tool to overcome the complications commonly associated with implantable medical devices. The synergistic antimicrobial effect of the dual components indicates applicability for **all medical devices**.

The Clinical Problem

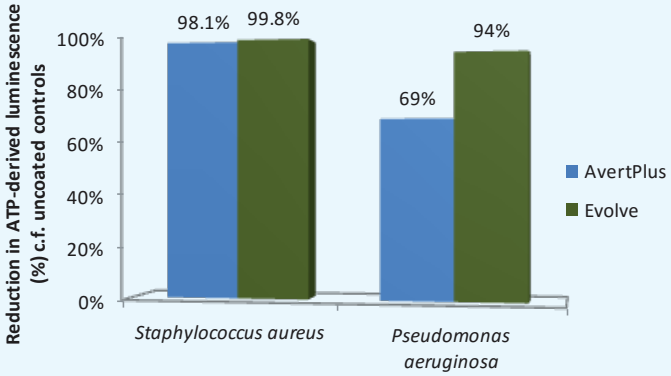
Implanted medical devices are prone to act as a platform for the build-up of microbial infections; and for blood-contacting devices there is an additional concern due to the formation of blood clots. Clotting may be avoided through either a heparin coating such as Astute®, or use of systemic anticoagulants. But while infections may be minimized through proper device care (e.g. placement, cleanliness, frequent changing of the device when applicable), they are difficult to eliminate without either antibiotics or an antimicrobial coating.

Most antimicrobial coatings utilize ionized silver which slowly diffuses away from the surface and, when internalized, disrupts bacterial protein function. However various incidences of strains with a higher tolerance for silver have been reported, many from clinically significant species (e.g: *Escherichia coli*; *Staphylococcus aureus*, including MRSA; *Acinetobacter baumannii*; *Klebsiella pneumonia).* BioInteractions' own antimicrobial Avert*Plus*™ technology is based on a covalently-bound biguanide functionality which initiates bacterial lysis and is highly effective against a broad range of clinically significant species.

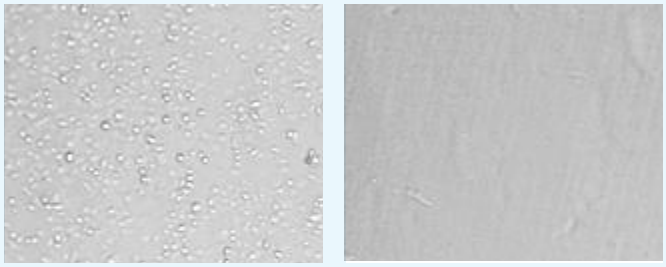
Two problems, one solution: Evolve™

While the Avert*Plus*™ and Astute® technologies are both non-fouling, each has a distinct functionality. Evolve™ bridges that gap, combining an enhanced antimicrobial function with antithrombogenic properties which are comparable with Astute®.

Evolve™ has high antimicrobial efficacy against clinically significant pathogens, well in excess of Avert*Plus*™.



Evolve™ also has high heparin and anti platelet activity, which is maintained even following incubation in PBS for 100 days.



Uncoated — Evolve™

Light microscopy of coated and uncoated polyurethane following exposure to 1x10^5 platelets per microlitre.

Evolve™ provides a surface-active defence against both host and pathogen-mediated fouling. Thus reducing the risk of device-linked complications and improving patient well-being.

BioInteractions is committed to the advancement of healthcare and welcomes interest in the **Evolve™** ***Antimicrobial Antithrombogenic Coating.***

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THE QUEEN'S AWARDS FOR ENTERPRISE: 2002

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