

Case Study

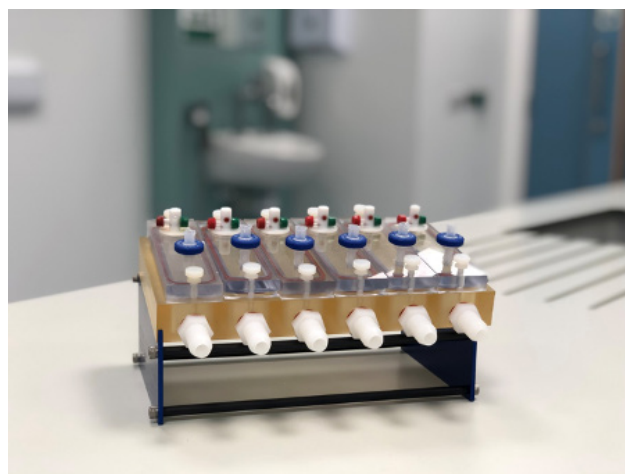
NEXT GENERATION WOUND TREATMENT

Helping industry find academic partners to explore new applications for a known technology

Annually over 18 million patients globally suffer from chronic wounds, of which over 50% will develop a localised infection due to biofilms, a major impediment to wound healing, and long term health. This can lead to increased health service costs, morbidity and further complications for the patient, which ultimately includes amputation. The indicative annual cost for wound management in Europe accounts for 2–4% of health-care budgets and has been estimated to be as high as €10 billion.

Current antimicrobials in woundcare have limited effectiveness against biofilms. The project, 'Development of Next Generation synergistic antibiofilm treatments for wounds' was awarded an NBIC Proof of Concept (POC) award and in-kind contributions from 5DHPG Ltd, enabling process development work and prototype production to be carried out at the University of Leeds, whilst 5DHPG supplied raw materials and carried out antimicrobial and antibiofilm testing.

The innovative approach of the project was the development of a synergistic combination of both antimicrobials in combination with 5Ds patent protected antibiofilm agents into one formulation, and its incorporation into modern hydrogel-based low adherent fibrous wound dressing. Two synergistic compositions, including metalised chelating agents applied to both carboxymethylcellulose and alginate substrates exhibited outstanding antibiofilm performance. With further development work, these technologies could be readily commercialised by companies operating in the advanced wound care space.



The model is used to reproduce biofilms on glass coupons under defined conditions suitable for testing the efficacy of antimicrobials and materials impregnated with antimicrobials. The model can be adapted to allow for the growth of biofilm on skin and wound dressings.

Dr Steve Law, Research and Innovation Manager, 5D Health Protection Group Ltd said,

“The novel antibiofilm technologies had been developed to laboratory scale by 5DHPG Ltd, but the NBIC award allowed the exploration of how the technologies could be applied on modern wound care substrates and also enabled evaluation of wound dressing prototypes in robust antibiofilm models”.

The project has been successfully completed, with all outcomes achieved. Two routes for advancement of the project are being pursued: sharing of the results with targeted industry partner(s) with a view to generate collaboration and co-development projects, and to seek further funding based on further development of synergistic antibiofilm compositions and further development of deployment techniques.



Professor Stephen Russell

Professor of Textile Materials and Technology and Director of the Clothworker's Centre for Textile Materials Innovation for Healthcare at the University of Leeds.



Dr Steve Law

Research and Innovation Manager at 5D Health Protection Group Ltd. Dr Law has over 25 years experience in the innovation and development of polymeric materials.