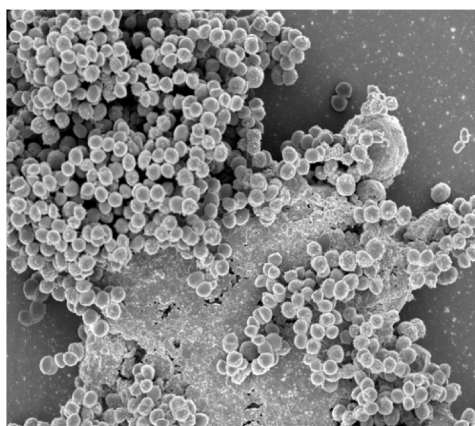


Household biofilm chelation therapy

“The BIV has allowed P&G to establish a good relationship with academic experts in applied biofilm research and imaging, which we hope to take forward via future collaborations.” P&G



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Field emission scanning electron micrograph of an *M. luteus* biofilm

OUTCOMES: Following initial screening, three strains of bacteria were selected as representatives of household-relevant microbes. Several chelating agents were applied to biofilms of these microbes under conditions found in typical household cleaning regimes. Despite efforts to optimize biofilm formation, *C. propinquum* and *M. luteus* biofilms were very weak and chelating agents did not reduce the biofilm biomass. *S. aureus* biofilms were stronger, but were not significantly reduced by chelating agents. Images of *M. luteus* biofilms cultured under typical domestic conditions showed that biofilms were relatively thin and patchy across the surface. The biofilm architecture did not appear to be affected by treatment with chelating agents. Higher resolution field emission scanning electron microscopy images showed that

microbial cells were present in patches, and that there were other areas where cells were absent, but the residue from previous biofilm growth was clearly apparent.

INITIAL AIMS: Effective removal of biofilms is important for household hygiene and disinfection. Many surfaces around the home are known to harbor biofilm, including food-contact surfaces in the kitchen, bathroom surfaces and kitchen appliances. These surfaces are usually difficult to clean with conventional detergents which can create issues such as visual fouling, undesirable odours or even transfer of pathogenic bacteria. Consequently there is a need to find new, broad-spectrum and fast-acting technologies that can remove household biofilms. This study explored the value of chelating agents for household biofilm dispersal.

- Chelators do not have intrinsic anti-biofilm activity against selected model bacteria
- Imaging methods gave important detailed insights into biofilm architecture