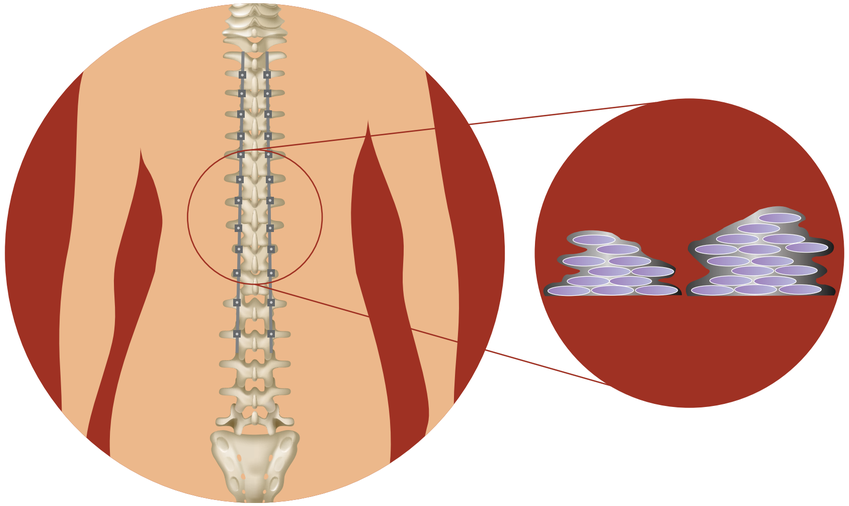
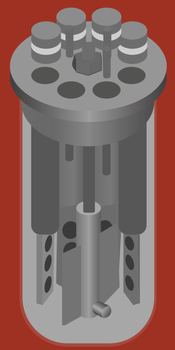
Methylene Blue Staining to Visualize Biofilms in Implant-Associated Infections

Bacterial biofilms often grow on orthopaedic implants and lead to infections



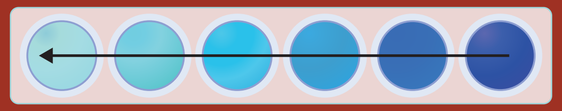
But removing them is challenging, as they are invisible to the naked eye

Can methylene blue (MB) be used as a staining agent to visualize biofilms grown on orthopaedic implants?

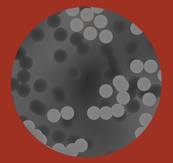


Biofilms grown *in vitro* on

✓ Biomaterials: Titanium, polyethylene, cobalt chromium, polyether ether ketone



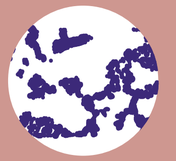
Stained with MB solutions



Biofilm staining validated with scanning electron microscopy

MB stained biofilms specifically

Visible dose-dependent staining



Species-specific staining

No stain on bone, tendon, muscle, nerve, and fat tissues

Dose-dependent staining of bacterial biofilms by MB over host tissue can help orthopaedic surgeons to visualize and remove biofilms while treating implant-associated infections

Methylene Blue Is an Effective Disclosing Agent for Identifying Bacterial Biofilms on Orthopaedic Implants
Shaw et al. (2020) I DOI: 10.2106/JBJS.20.00091