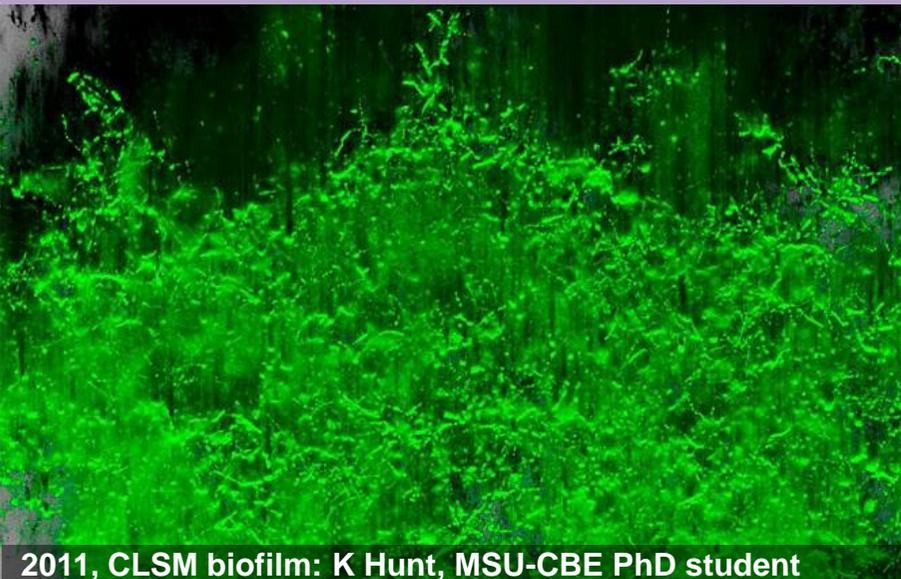
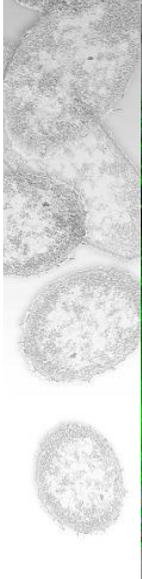


(c) 2003 Lei S. Meng

Antimicrobial surface technology: an overview

Darla Goeres, PhD
Associate Research Professor
Center for Biofilm Engineering
Montana State University

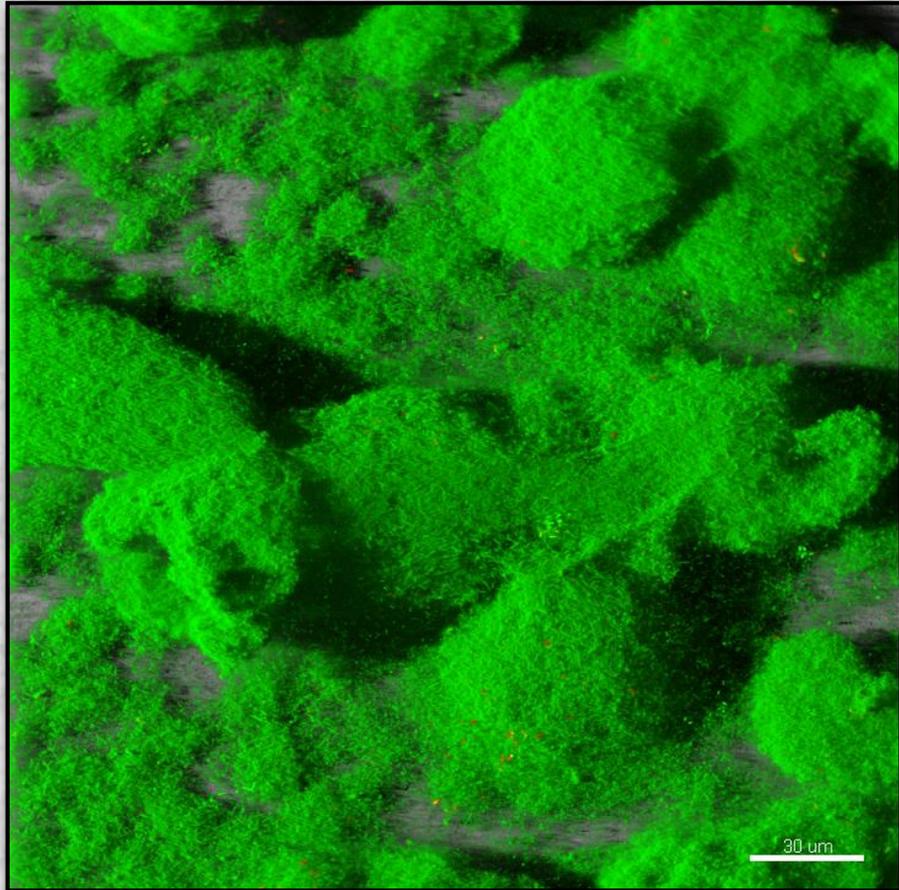


2011, CLSM biofilm: K Hunt, MSU-CBE PhD student

An ounce of prevention...

Once microbes attach and a biofilm forms, complete kill &/or removal is challenging...preventing biofilm formation &/or initial attachment events has become the 'holy grail' in biofilm control.





Goal

Mimicking, coating, engineering or discovering an intrinsically bioactive material that does not allow microorganisms to attach.

Application Areas

Industrial applications & built environment



Food preparation & textiles

Medical devices & pharmaceuticals



Classes of antimicrobial surfaces based on Mechanism of Action (MOA)

Repelling Surfaces

- Surface does not allow for protein adhesion or eliminates binding sites
- Surface is self-cleaning or polishing

Killing Surfaces

- Contact-active surface
- Release of biocides/antibiotics

Combination Surfaces

- Release of biocide & renewal of surface, for instance

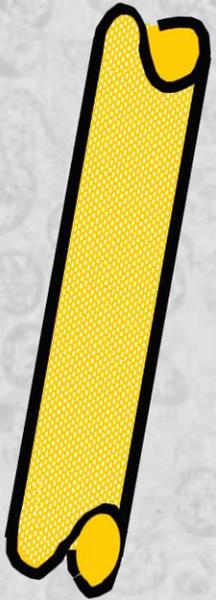
Test Methods:

Base choice on MOA & application

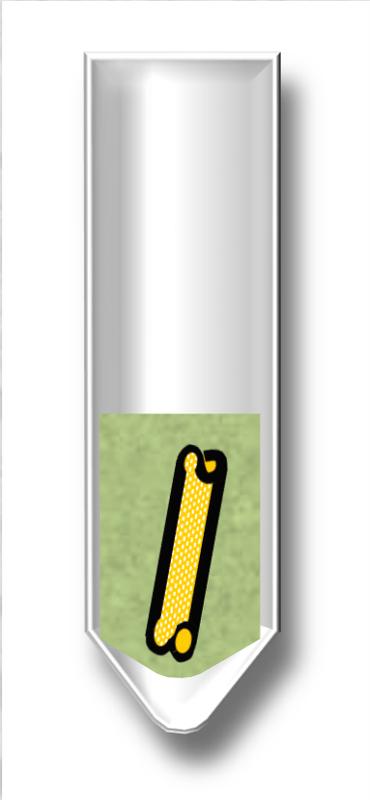
Other parameters to consider:

- Controls
- Microorganism(s)
- Conditioning fluid
- Resistance development
- Toxicology
- Method sensitivity (looking for a needle in a haystack)
- Method bias
- Rate (how fast does the active work)
- Duration (test until failure)

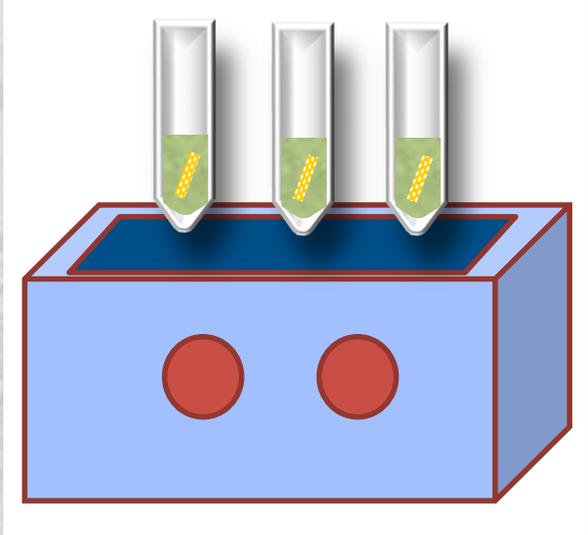
Treat



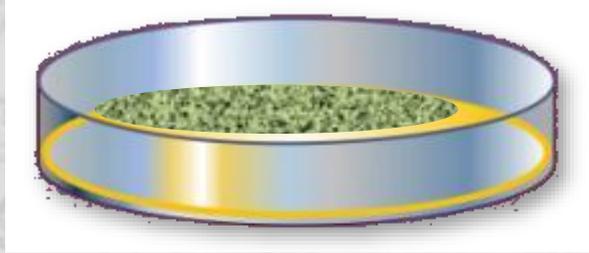
Expose



Sample



Analyze



Standardized Test Methods

Askew, Peter. 2014. Efficacy Assessment of Treated Articles: A Guidance. <http://dx.doi.org/10.6027/NA2014-904>

Standardized Test Methods: *Examples*

- **AATCC 100** Assessment of antibacterial finishes on textile applications
- **AATCC 147** Antibacterial activity assessment of textile materials: parallel streak method
- **JIS Z 2801** Antimicrobial products: test for antimicrobial activity and efficacy
- **ASTM E2149** STM for determining the antimicrobial activity of immobilized antimicrobial agents under dynamic contact conditions
- **ASTM E2180** STM for determining the activity of incorporated antimicrobial agent(s) in polymeric or hydrophobic materials