



# Montana Biofilm Science & Technology Meeting and Workshop



July 12-14, 2022



Hilton Garden Inn Bozeman  
**Draft AGENDA**

5/13/2022 2:45 PM

## Monday July 11

**6:00–8:30 pm**  
**Registration & Welcome Reception** Larkspur Foyer

## Tuesday July 12

**7:30–8:00 am**  
**Registration & continental breakfast** Larkspur Foyer

**Meeting:** Larkspur Ballroom

**8:00-8:10**  
**Opening Remarks**  
Matthew Fields, Director, CBE;  
Professor, Microbiology &  
Cell Biology, MSU  
Paul Sturman, Industrial  
Coordinator, CBE

### SESSION 1: Defining a Biofilm

**8:10-8:40**  
**Session Introduction**

**The importance of clearly defining biofilm in laboratory standard test methods**  
Darla Goeres, Research  
Professor of Regulatory  
Science, CBE

**8:40-9:05**  
**Title TBA**  
Garth James, PI, Medical  
Biofilms Laboratory, CBE;  
Assoc. Research Professor,  
Chem. & Bio. Eng., MSU

**9:05-9:30**  
**Title TBA**  
Matthew Fields

### 9:30-10:00 Break

**10:00-10:30**  
**Industrial perspective on biofilm biology: Formation, maintenance, and mitigation**  
Chris Jones, Director, R&D,  
Sharklet Technologies

**10:30-11:00**  
**Why evolution in biofilms is different, and some remarkable consequences**  
Vaughn Cooper, Professor,  
Microbiology & Molecular  
Genetics, Computational &  
Systems Biology, University  
of Pittsburgh

**11:00-11:45**  
**Panel Discussion**  
Vaughn Cooper  
Matthew Fields  
Darla Goeres  
Garth James  
Chris Jones

**11:45-12:00**  
**Poster Pitches**  
CBE Researchers

### 12:00-1:00 Lunch

## SESSION 2: CBE Imaging and Analysis Capabilities

**1:00-1:15**  
**CBE Imaging capabilities**  
Heidi Smith, Manager, Bio-  
Imaging Facility, CBE; Asst.  
Res. Professor, Microbiol. &  
Cell Biology, MSU

**1:15-1:30**  
**CBE Analytical capabilities**  
Kristen Brileya, Technical  
Operations Manager, CBE

**1:30-1:55**  
**Statistical considerations in image analysis**  
Al Parker, Biostatistician, CBE;  
Assoc. Research Professor,  
Mathematical Sciences, MSU

**1:55-2:10**  
**Montana Nanotechnology Facility (MONTNS)**  
Phil Stewart, Regents  
Professor, Chemical &  
Biological Eng., MSU, CBE

**2:10-2:35**  
**Correlative microscopy links identity, morphology, biochemistry, and activity of uncultured microbes**  
Roland Hatzenpichler, Asst.  
Professor, Chemistry &  
Biochemistry, MSU, CBE

### CBE Open House: Poster session and lab demonstrations

**3:00–5:00**  
3rd Floor Barnard Hall, MSU  
Schedule available onsite

## Wednesday July 13

**7:30–8:00 am**  
**Registration & continental breakfast** Larkspur Foyer

**Meeting:** Larkspur Ballroom

### SESSION 3: Medical Biofilms

**8:00-8:10**  
**Session Introduction**  
Garth James

**8:10-8:40**  
**Antibiotic tolerance across species**

Phil Stewart

**8:40-9:10**  
**Using organoid models to analyze gastrointestinal bacterial infections**

Diane Bimczok, Associate Professor, Microbiology & Cell Biology, MSU, CBE

**9:10-9:40**  
**Biofilms and chronic wounds: An overview of recent Medical Biofilms Lab research**

Elinor Pulcini, Asst. Res. Professor, Chem. & Bio. Engineering, MSU, CBE

**9:40-10:10 Break**

**10:10-10:40**  
**Accumulation of protoporphyrin IX by biofilm bacteria attenuates bovine neutrophil functional responses**

Joey Lockhart, Postdoctoral Researcher, Biological Sciences, University of Calgary \*Young Investigator

**10:40-11:10**  
**Application of PNA-FISH based-methods for bacterial detection and localization in biofilms**

Laura Cerqueira, Junior Researcher, Chemical Engineering, University of Porto \*Young Investigator

**Special Presentation**

**11:10-11:55**  
**Functions of the *Pseudomonas aeruginosa* matrix**

Boo-Shan Tseng, Assistant Professor, School of Life Sciences, University of Nevada Las Vegas

**12:00-1:00 Lunch**

**SESSION 4: Engineered Biofilms**

**1:00-1:05**  
**Session Introduction**  
Matthew Fields

**1:05-1:35**  
**From bones to sustainable building material**

Chelsea Heveran, Assistant Professor, Mechanical & Industrial Eng., MSU, CBE

**1:35-2:05**  
**Untapped potential of fungal-based biofilms for wastewater treatment and recovery of added-value products**

Erika Espinosa-Ortiz, Assistant Research Professor, Chem. & Biol. Eng., CBE, MSU

**2:05-2:35**  
**Building synthetic biofilm with 3D hydrogel printing**

Isaak Thornton, PhD Student, Mechanical & Industrial Engineering, MSU, CBE  
Kathryn Zimlich, PhD Student, Microbiology & Cell Biology, MSU, CBE

**2:35-3:05**  
**Ureolytically-induced calcium carbonate composites as bioadhesives**

Sobia Anjum, PhD Student, Civil Engineering, MSU, CBE

**Strategic Planning Meeting for CBE Members**

**3:15-5:00**  
Hilton Garden Inn

**6:00 BBQ Dinner**  
Big Yellow Barn, Bozeman

**Thursday  
July 14**

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**7:30-8:00 am**  
**Registration & continental breakfast** Larkspur Foyer

**Meeting:** Larkspur Ballroom

**SESSION 5: Biofilms in Space**

**8:00-8:45**  
**Session Introduction**

**Potential for biofouling control by nutrient removal in an ISS water system**  
Liz Sandvik, Research Engineer, CBE

**8:45-9:10**  
**Influence of antimicrobial coatings on biofilm accumulation of multidomain ISS wastewater isolates**

Maddie Mettler, PhD Student, Chemical & Biological Engineering, MSU, CBE

**9:10-9:40**  
**Use of microsensors to detect biofilms in space**

Stephan Warnat, Assistant Professor, Mech. & Ind. Engineering, MSU, CBE

**9:40-10:10 Break**

**10:10-10:40**  
**Growing protein from fungi in a space environment**

Ross Carlson, Professor, Chemical & Biological Engineering, MSU, CBE

**10:40-11:10**  
**Microbial isolation and characterization of two flex lines from the urine processor assembly onboard the International Space Station**

Hang Nguyen, Microbiologist, JES Tech, NASA

**11:10-11:40**  
**Preliminary results of the ISS-operated *Pseudomonas aeruginosa* 'Space Biofilms' experiment**

Pamela Flores, PhD Student, Molecular Cellular & Developmental Biology, University of Colorado, Boulder

Luis Zea, Assistant Research Professor, BioServ Technologies, Aerospace Engineering Sciences, University of Colorado, Boulder

**11:40 Meeting Wrap up**