



# Montana Biofilm Science & Technology Meeting and Workshop



July 12-14, 2022



Hilton Garden Inn Bozeman

## Draft AGENDA

6/17/2022 11:32 AM

### 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

**8:10-8:15**  
**Session Introduction**  
Darla Goeres, Research Professor  
of Regulatory Science, CBE

**8:15-8:40**  
**Defining biofilms as biological films: Keeping the cart behind the horse**  
Matthew Fields

**8:40-9:10**  
**Industrial perspective on biofilm biology: Formation, maintenance, and mitigation**  
Chris Jones, Director, R&D,  
Sharklet Technologies

**9:10-9:35**  
**Important factors for defining medical biofilms**  
Garth James, PI, Medical Biofilms  
Laboratory, CBE; Associate  
Research Professor, Chemical &  
Biological Engineering, MSU

#### 9:35-10:05 Break

**10:05-10:30**  
**The importance of clearly defining biofilm in laboratory standard test methods**  
Darla Goeres

**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  
Garth James  
Chris Jones  
Moderator: Darla Goeres

**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;  
Assistant Research 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;  
Associate Research Professor,  
Mathematical Sciences, MSU

**1:55-2:10**  
**Physical and chemical imaging of biological samples at the Imaging and Chemical Analysis Laboratory (ICAL) at Montana State University**  
Sara Zacher, Lab Manager,  
Imaging and Chemical Analysis  
Laboratory, MSU

**2:10-2:35**  
**Correlative microscopy links identity, morphology, biochemistry, and activity of uncultured microbes**  
Anthony Kohtz, PhD Student,  
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**  
**Is there a universal biofilm defense?**  
Phil Stewart, Regents Professor,  
Chemical & Biological  
Engineering, MSU, CBE

**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, Assistant Research Professor, Chemical & Biological Eng., 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, Chemical & Biological 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**

**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**

**Sensing slime: Microfabricated sensors to detect biofilm for space applications**

Haley Ketteler, Masters Student, Mechanical & Industrial Eng., MSU, CBE  
Matthew McGlennen, PhD Student, Mechanical & Industrial Eng., MSU, CBE

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

**10:10-10:40**

**Off-planet production of high protein foods using fungal biomats**

Ross Carlson, Professor, Chemical & Biological Eng., 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**



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