

Call for Abstracts

5th Symposium on Frontiers in Biomechanics: Mechanics in Infection

Co-Chairs: Scott I Simon- UC Davis (sisimon@ucdavis.edu), Wendy Thomas- U of Washington (wendyt@uw.edu)

Sponsored by: United States National Committee on Biomechanics (USNCB), and University of Washington Department of Bioengineering

Site: Wed. September 25, 2013, at Foege N130 on the UW campus.

Registration fee \$75 (Student-\$25).

Objective:

Bacteria and viruses have evolved a variety of strategies to survive and thrive inside the host organism in spite of immune responses by the host to protect them from harmful microbes. These host-pathogen interactions involve key biochemical mediators, many of which are catalyzed by biomechanical reactions and analyzing these processes requires expertise in both microbiology and biomechanics. Our strategy in this Symposium will be to open a wide dialogue between microbiologists studying the evasion and infection mechanisms utilized by microbes and bioengineers and biophysicists who analyze the mechanics underlying cell membrane and cytoplasmic stresses, strain, passive and active motions, molecular interactions and adhesion, migration, and transport in-vivo and in-vitro at various length scales from whole organism motility to molecular conformational dynamics.

A day-long symposium is planned preceding the Annual Fall meeting of the Biomedical Engineering Society in Seattle on September 25, 2013. The aim is to engage BMES members and students and raise interest in this important sector of medicine for Biomechanics. The overall goal is to discuss and identify ways in which Biomechanics can facilitate a deeper understanding of infectious diseases and contribute to the development of novel approaches to clinical therapy. We endeavor to produce a Special Issue on Biomechanics of infectious diseases in the *Annals of Biomedical Engineering*.

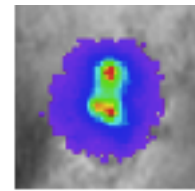
We especially invite students and post-docs to attend this Frontiers Meeting to present a poster and actively participate in the discussions on this emerging field of investigation in biomechanics.

Abstracts are requested for poster presentation.

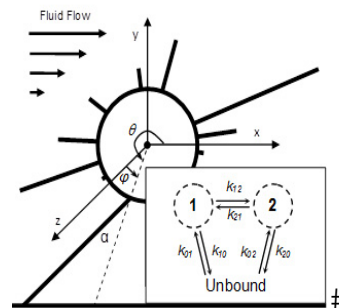
Format of Abstract: 500 word limit printed on standard page, Title and author affiliations not included in limit. Please email abstracts to the co-chairs.

To register, <http://engage.washington.edu/site/Calendar?id=112281&view=Detail>

Or full site: <http://depts.washington.edu/bioe/index.php/frontiers-in-biomechanics/>



**Bioluminescent
S. Aureus**



Schedule of Speakers

8:00 AM- Continental Breakfast and introductions

Morning Session:

8:30- Keynote 1. **Insights into TB immunity and therapies from the zebrafish**

Lalita Ramakrishnan UW <http://depts.washington.edu/micro/faculty/ramakrishnan.htm>

9:30-10:00 Topic 1 **Pathogen Evasion of Host Phagocytic Defenses**

Victor Nizet, UCSD <http://nizetlab.ucsd.edu/Research/>

10:00-10:30 Topic 2 **Neutrophil adhesion to A. phagocytophilum under shear stress.**

Scott I Simon, UC Davis <http://www.bme.ucdavis.edu/simonlab/>

10:30-10:45: break.

10:45- 11:15 Topic 3 **Thrombosis and pathogens: “Novel antimicrobial technologies to inhibit Staphylococcus aureus and Staphylococcus epidermidis biofilms”**

Hongmin Sunm U Missouri <http://medicine.missouri.edu/imed/sun-h.html>

11:15 – 11:45- Topic 4 **Modeling migration and self-assembly: Mechanics of actin-based bacterial propulsion and cell crawling**

Alex Mogilner, UC Davis <https://www.math.ucdavis.edu/~mogilner/LabPage.html>

11:45 -12:15 Panel discussion

12:15 – 1:00 Lunch

Afternoon Session:

1:00- 2:00 Keynote 2 **How mechanical factors regulate early bacterial colonization and bacterial uptake by macrophages**

Viola Vogel, ETH Zurich <http://www.appliedmechanobio.ethz.ch/>

2:00 – 2:30 Topic 7 **The endothelial interaction mechanism of the B. burgdorferi vascular adhesin BBK32 is shear force-stimulated.**

Tara Moriarty, U Toronto <http://www.lmp.utoronto.ca/research/faculty-research-database/moriarty-tara>

2:30- 3:00 Topic 8 **Micro-Mechanobiology: How bacteria use mechanical force to enhance adhesion**

Wendy Thomas, UW- <http://faculty.washington.edu/wendyt/>

3:00 – 3:15 break

3:15 – 3:45 Topic 5 **The extracellular matrix of bacterial biofilms.**

Matt Parsek <http://depts.washington.edu/micro/faculty/parsek.htm>

3:45 – 4:15 Topic 6 **Mechanics of Biofilm Detachment**

Philip Stewart, http://www.mbprogram.montana.edu/faculty.asp?per_id=10&in_id=11

4:15 – 4:45 Panel summary

4:45 – 6:00 Breakout Poster session (light hors-d'oeuvres and drinks)

Travel Information:

The North Foege (Bioengineering) Building is located on the University of Washington Campus at the corner of 15th Ave NE and NE Pacific St in Seattle. (3720 15th Ave NE).



You may want to stay at any hotel near the Washington State Convention Center for the BMES meeting. If so, get to Foege...

By public transportation (\$2.50; 16-30 minutes including wait and walking time):

- Walk 0.2 miles from Convention Center to Convention Place Station, at 9th and Pine, Bay A (northbound).
- Catch bus 71, 72, 73 or 74 northbound (one leaves every 10 mins)
- Get off at the at NE Campus Parkway and Brooklyn Ave NE ('Bus Stop' on map)
- Walk 0.3 miles (East, in direction bus was headed, to 15th Ave NE, and then turn right on 15th to NE Pacific St.
- The Foege Building is on the SE corner of the intersection. The symposium is held in the 1st floor lobby and adjoining N130 seminar room.

By car: From I-5 northbound or southbound, take the NE 45th St exit and follow NE 45th St east about ½ mile. Take a right on 15th Ave NE and drive south about ½ mile. Cross NE Pacific St and curve left as 15th turns into Columbia Rd. Continue to the 'parking kiosk' (see map) to pay and receive instructions where to park. You may ask for a map and directions to North Foege from your assigned parking lot.

You may want to stay at a hotel near campus within walking distance to Foege. (letters indicate location on map). Use the map above or a map provided by the hotel to walk to the North Foege Building.

- A. College Inn <http://www.collegeinnseattle.com/> (0.2 mile, but nonconventional 'european style')
- B. University Inn <http://www.universityinnseattle.com/> (0.6 mile)
- C. Watertown Hotel <http://www.watertownseattle.com/> (0.7 mile)
- D. Hotel Deca <http://www.hoteldeca.com/> (0.7 miles)

