Abstract Submitted
for the DFD16 Meeting of
The American Physical Society

Fluid dynamic effects on staphylococci bacteria biofilms ERICA SHERMAN, University of Nebraska - Lincoln, KENNETH BAYLES, JENNIFER ENDRES, University of Nebraska Medical Center, TIMOTHY WEI, University of Nebraska - Lincoln — *Staphylococcus aureus* bacteria are able to form biofilms and distinctive tower structures that facilitate their ability to tolerate treatment and to spread within the human body. The formation of towers, which break off, get carried downstream and serve to initiate biofilms in other parts of the body are of particular interest here. It is known that flow conditions play a role in the development, dispersion and propagation of biofilms in general. The influence of flow on tower formation, however, is not at all understood. This work is focused on the effect of applied shear on tower development. The hypothesis being examined is that tower structures form within a specific range of shear stresses and that there is an as yet ill defined fluid dynamic phenomenon that occurs hours before a tower forms. In this study, a range of shear stresses is examined that brackets 0.6 dynes/cm^2, the nominal shear stress where towers seem most likely to form. This talk will include PTV measurements and cell density data indicating variations in flow and biofilm evolution as a function of the applied shear. Causal relations between flow and biofilm development will be discussed.

Timothy Wei
University of Nebraska - Lincoln

Date submitted: 29 Jul 2016 Electronic form version 1.4