

# IOWA

# Fiegel Lab



The Fiegel Lab is investigating the design of improved therapeutic drug delivery systems for the treatment and prevention of infections of the lungs and skin. The lab's scientists are also developing tools to evaluate interactions in biological environments. Work in aerosol biointeractions is applied to both environmental aerosols and inhalable drug delivery systems.

## Who We Work With

- Department of Pharmaceutical Sciences and Experimental Therapeutics
- Department of Microbiology
- Department of Occupational and Environmental Health

## Lab Director: Jennifer Fiegel



- Associate Professor of Chemical and Biochemical Engineering
- Associate Professor of Pharmaceutical Sciences and Experimental Therapeutics
- PhD, Chemical and Biomolecular Engineering, Johns Hopkins University

# IOWA

Technology  
Institute

University of Iowa Technology Institute  
330 S. Madison Street  
Iowa City, IA 52242  
319-335-5722 | [iti.uiowa.edu](http://iti.uiowa.edu)

# RESEARCH FOCUS & HIGHLIGHTS

**Treatments for Persistent Bacterial Infections:** To locally treat persistent bacterial infections of *P. aeruginosa* in the lungs, the lab has identified new combination therapies that work synergistically to eliminate biofilms by dispersing bacteria from within the biofilm, taking advantage of the greater susceptibility of dispersed bacteria to enhance the effectiveness of traditional antibiotics.

**New Tools to Evaluate Biointeractions:** To complement the development of antimicrobial aerosols, the lab has developed new tools to aid in the characterization of antimicrobial treatments and aerosol interactions with biological fluids, cells and tissues.

**Aerosol Interactions with Lung Fluids:** The lab has investigated two different phenomena that result from biomolecule adsorption onto nanoparticle surfaces. Researchers have quantified protein-nanoparticle interactions to inform understanding of nanoparticle translocation to different organs in the body. Second, the lab has investigated how inhalable nanoparticles can alter the functionality of lung surfactant.

**Dry Powder and Aerosol Formulations to Treat Skin Infections:** Work on skin infections focuses on designing improved delivery systems for antimicrobials and pain medication in chronic wounds. The aim is to develop patient-friendly treatment approaches using controlled release for long-term delivery and aerosolizable systems to reduce pain.

## LEARN MORE



### SCHEDULE A VISIT

by contacting Jennifer Fiegel at [jennifer-fiegel@uiowa.edu](mailto:jennifer-fiegel@uiowa.edu) or 319-335-5162



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on our website [fiegelab.org](http://fiegelab.org)

**Nanoparticle and Drug Spreading  
on Mucus-Like Gels**

