# Molecular Organization on Surfaces


## Heather Allen

Professor, Chemistry and Biochemistry, Professor, Pathology


## CURRENT RESEARCH

### The common denominator between lung disorders, climate change, and cancer detection

When we breathe, we expose our bodies to the molecules and particles in the air, and to the extent to which the particles impact our lungs depends on many factors. When these molecules and particles do reach our lungs, the first thing they come into contact with are the many surfaces inside the lung, the lung lining. These interactions, absorption, or penetration, can affect  lung health. In addition, chemical exposure and/or mechanical ventilation during surgery can injure the lung lining. It is thus critical to study the breathing process and lung surfactant function in order to develop novel ways to help treat lung disorders, such as asthma, chronic obstructive pulmonary disease (COPD), and lung failures during and after surgical procedures. Prof. Heather C. Allen, Professor of Chemistry and Biochemistry at The Ohio State University, studies the fundamental science of water, ions, and lipids at surfaces, in addition to human tissues from surgery, to reveal the underpinnings of why and how molecules organize. As a physical and analytical chemist with specialization in atmospheric, chemical physics, and biophysics, Dr. Allen's work thus encompasses not only the biophysics of lung lining, but also a number of other areas involving molecular organization, including atmospheric aerosol, membrane, skin and cancer surfaces. Therefore, Dr. Allen's research provides a molecular level understanding to facilitate advancements in critical care, climate change research, and cancer detection.

A collective remark shared by Dr. Allen's students upon entering her lab is, "Everything seems so separate, yet everything is so connected!" In fact, a common denominator that ties Dr. Allen's many projects together is her...

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## AFFILIATION

Ohio State University

## EDUCATION

- Ph.D. in Chemistry 1997, University of California, Irvine

## AWARDS

- Distinguished Scholar Award, Ohio State University, 2015
- Alexander von Humboldt Research Award, 2015
- American Chemical Society Award for Encouraging Women into Careers in the Chemical Sciences, 2013
- American Association for the Advancement of Science (AAAS) Fellow, 2012
- Distinguished Diversity Enhancement Award, 2007

## RESEARCH AREAS

Life Science, Diagnostics, Oncology / Cancer, Respiratory

## FUNDING REQUEST

Your contributions will support the continued research of Dr. Heather Allen and her team, at Ohio State University, as they move their projects forward with steady progress to understand molecular organization at interfaces. Donations will help fund the $175K/year required per project to support personnel and equipment and to significantly advance this work. Partner with Dr. Allen to further understand molecules, their organization and connection to disease and response to climate, and to develop tools for facilitating lung recovery, cancer detection, and climate models!