



# How Big (Biological) Data Is Changing Our Approach to Environmental Health

**Speaker:** Dr. Cavin Ward-Caviness  
Principal Investigator, U.S. Environmental Protection Agency's Environmental Public Health Division

**Date/Time:** Thursday, April 4, 4:00 pm

**Location:** LSIII Auditorium (Rm1059)

**Abstract:** Big data has always been an important aspect of environmental health as we attempted to understand how pollution at scales of cities and nations altered disease and mortality risk. However, as technology and methodologies have advanced the increasing role of high-dimensional biological data has risen to the forefront. Assessments of genetics, epigenetics, and metabolomics at genome/metabolome-wide scales are becoming common place, allowing existing environmental data to be re-examined in novel ways. Researchers are now able to gain unprecedented insights into the molecular basis of environmental health. Even more recently the proliferation of electronic health records has allowed us to make new insights into how environmental pollutants affects understudied individuals, such as those with pre-existing disease. The deep clinical phenotyping from electronic health records also holds the potential to provide increased clarity on the health outcomes affected by pollutant exposures and possibly uncover novel health outcomes we never considered before. Pushing forward the field of environmental health using big data requires input and expertise from a diverse array of disciplines, but holds an essential key to continued improvements in health and wellness for all individuals.

**Discussion:** 5:00 – 5:50 pm. April 4. LSIII Auditorium (Rm1059)

# Biography of Dr. Cavin Ward-Caviness



Dr. Ward-Caviness' interests include the melding of environmental epidemiology with computational biology to better understand the links between the environment and human health. His primary focus is on the environmental risks associated with cardiovascular disease, metabolic disease, and aging. Utilizing high-dimensional molecular data, environmental exposure estimates, and electronic health records, he seeks to explore environmental health questions best answered using big data. He is particularly interested in determining which individuals are most susceptible to environmental exposures, and in uncovering the genetic, epigenetic, and metabolomic mechanisms that link exposures to health outcomes. More information about Ward-Caviness'

Laboratory, see the website: <https://www.wc-lab.com/>

## Lunch with Speaker: [Reservation required thru <memari@siu.edu>]

Noon – 1:00 pm. Thu April 4. DeJarnett American Heritage Room

## Workshop: [No reservation required. Bring your own laptop.]

1:00 – 3:00 pm Thu April 4. Morris Library Rm752-754. Materials required for the workshop ([https://github.com/CavinWard/methyl\\_course](https://github.com/CavinWard/methyl_course)).

## Meeting with Speaker: [Reservation required thru <geislerlee@siu.edu>]

9:00 am – noon. Thu April 4 & Fri April 5.

Noon – 1:00 pm. Fri April 5. LSII Rm449.

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## Financial Support for this Big Data Series

### Made Available by:

Sigma Xi Science, Mathematics, Engineering Education (SMEE) Program  
SIUC Office of Vice Chancellor for Research (OVCR)  
Department of Geography & Environmental Resources  
Department of Plant Biology  
Zoology Graduate Students Association  
SIUC Chapter of Sigma Xi

### Questions: contact

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