



# Introduction to the NC PFAS Testing Network

JASON D. SURRATT, PhD  
PROGRAM DIRECTOR (MANAGER)

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Jason D. Surratt, PhD

Program Director, PFAS Testing  
Network

Professor, Department of  
Environmental Sciences and  
Engineering, UNC Gillings  
School of Global Public Health

PhD, Chemistry, Caltech 2010

- *Dissertation: Analysis of the Chemical Composition of Atmospheric Organic Aerosols by Mass Spectrometry*

BA, Chemistry & BS, Meteorology, North Carolina State University 2003

North Carolina native, grew up in Charlotte, NC

Research foci: **resolving underlying atmospheric chemistry** (or sources) **that produces *harmful*** fine particulate matter (or aerosol particles) contained within **outdoor air pollution (“smog”)**



# Legislative Mandate: 2018 Appropriations Act (S99; SL 2018-5)

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**Section 13.1.(f)** – NC General Assembly finds that academic expertise & instrumentation in public and private universities in NC should be “maximally utilized to address the occurrence of PFAS, including GenX, in drinking water resources.”

**NC STATE**  
UNIVERSITY



**Duke**  
UNIVERSITY



THE UNIVERSITY  
of NORTH CAROLINA  
at CHAPEL HILL



NORTH CAROLINA  
AGRICULTURAL AND TECHNICAL  
STATE UNIVERSITY



# Legislative Mandate: 2018 Appropriations Act (*S99; SL 2018-5*)

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## **Section 13.1.(g) – Water sampling scope**

- ALL public water supply surface water intakes (n=190)
- One well selected by each municipal water supply system operating groundwater wells for public water supply (688 total wells in 158 municipalities; n=158)

***TOTAL SAMPLE UNIVERSE n=348***

# Legislative Mandate: 2018 Appropriations Act (*S99; SL 2018-5*)

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## **Section 13.1.(I) – Other Research Directives**

- Predictive modeling of private well contamination
- Performance testing of removal technologies
- Air emissions & atmospheric deposition
- Evaluate other research opportunities

# Legislative Mandate: 2018 Appropriations Act (S99; SL 2018-5)

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## **Section 13.1.(h) – Reporting requirements**

Quarterly progress reports to NCGA Environmental Review Commission and regulatory agencies (NCDEQ, NCDHHS, EPA)

*first report: Oct. 1, 2018 > > > final report: Dec. 1, 2019*

(provisional timeline extending 1 more year, pending final budget passage)

## **Section 13.1.(i) – Appropriation**

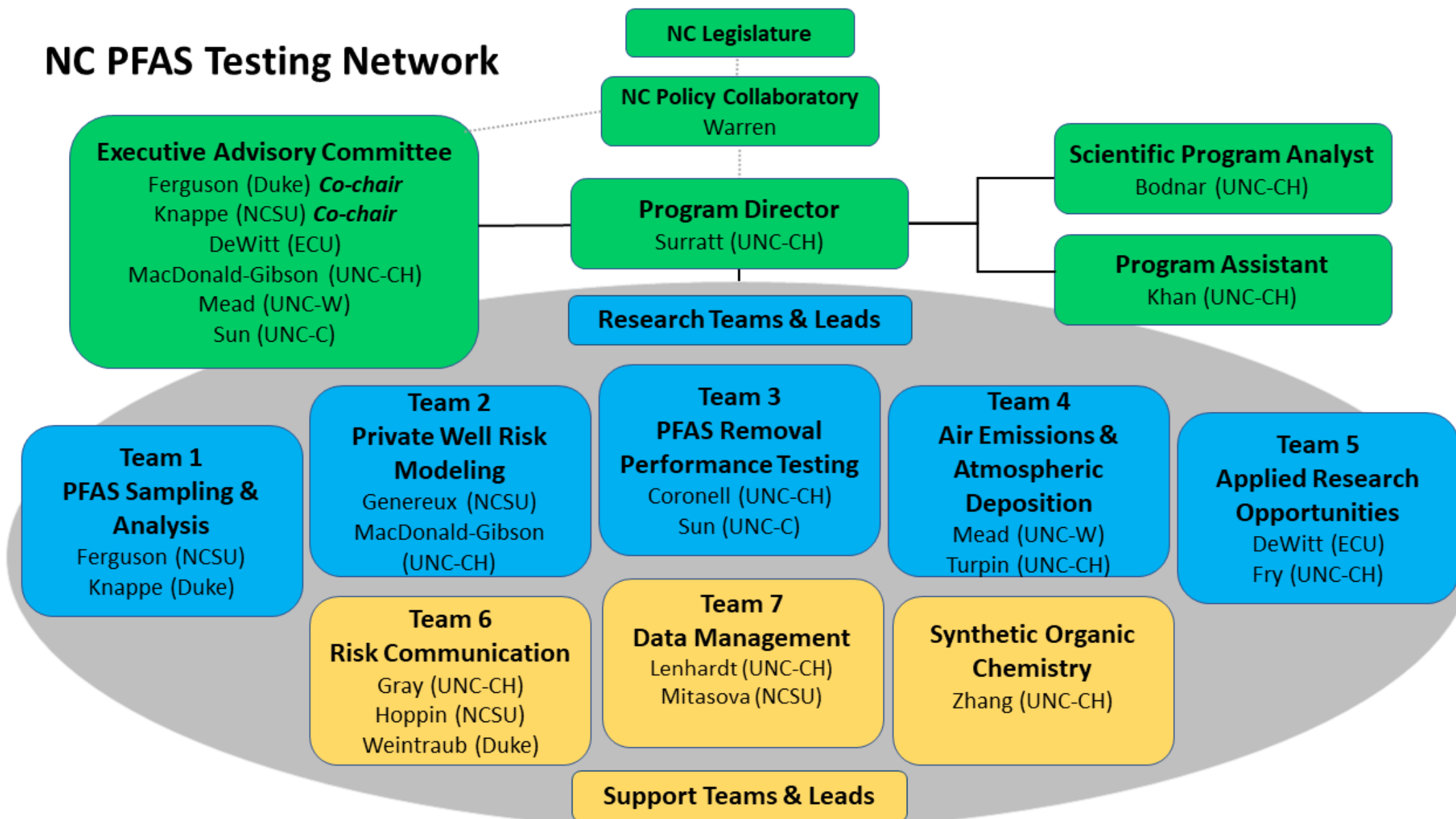
 **\$5,015,000**

*(FY 2018-19; non-recurring; non-reverting)*

*Additional \$1.7 M provided by NC Policy Collaboratory (through grant matching)*

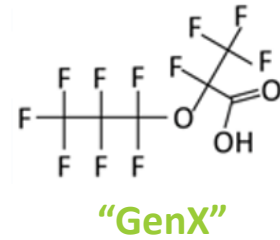


# NC PFAS Testing Network



# Research Questions for PFAS Water Sampling Team

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- What are the concentrations of targeted legacy and emerging PFAS contaminants including “GenX” in North Carolina public drinking water sources?
- What unanticipated and untargeted PFAS compounds occur in North Carolina public drinking water sources?
- How much of the total organic fluorine in North Carolina public drinking water sources can be accounted for by targeted PFAS quantitation?



# Research Questions for Private Well Risk Modeling Team

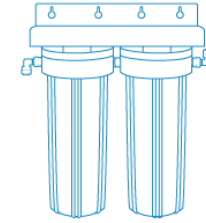
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- **For GenX and other PFASs, what are the current rates of input to the aquifer and output from the aquifer to tributaries of the Cape Fear River?**
- **Why are some wells contaminated and others are not?**
- **How can we help private well owners assess risks?**

# Research Questions for PFAS Removal Testing Team

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- What is the best option to remove PFAS from drinking water?
- How successful are the household filters in removing PFAS from tap water?
- Are there promising novel PFAS removal methods we can develop?
- What do we do with waste streams enriched in PFAS?

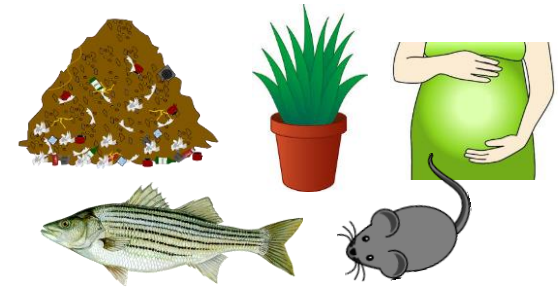
# Research Questions for Air Sampling Team

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- What PFAS compounds are present in ambient NC air or in wet deposition?
- What is the geographic distribution and what does this tell us about sources?
- What is the contribution of wet deposition to the Cape Fear watershed?
- Does gas-to-particle conversion (multiphase atmospheric chemistry) alter the fate of small polar gaseous PFAS, as seen for similar non-fluorinated organics?

# Research Questions for the Applied Research Team(s)



- (A)** What are novel sources of PFAS to surface and groundwater (municipal solid waste landfills and unlined construction and demolition landfills)?
- (B)** How do PFASs bioaccumulate from the environment into ecologically important species?
- (C)** Do emerging PFASs impact the immune system to the same degree as legacy PFASs?
- (D)** Can PFASs be taken up by important food crops and do soil properties affect this uptake?
- (E)** Do PFASs in drinking water pose a risk to pregnant women and how do they affect cells of the placenta?
- (F)** Can we develop models to predict where PFASs go in organisms and in the environment?

# Ongoing NC PFAST Network Research Activities

NC State & Duke Water Sampling



Location: Lillington, NC

NC State Fish Sampling



Location: Cape Fear River

UNC Air Sampling (Gas + Particles)



Location: Fayetteville, NC

UNCW Wet/Dry Deposition Collection



Location: Wilmington, NC

NC State Alligator Sampling



Location: Cape Fear River

ECU Toxicological Assessments



Location: ECU's campus



# Program Management & Support Teams

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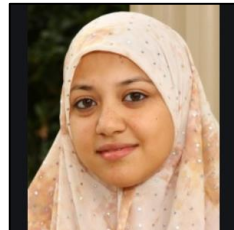
## Program Management Team



**Jason Surratt, PhD**  
**Program Director**  
*Professor, Environmental  
Sciences & Engineering,  
UNC Chapel Hill*



**Wanda Bodnar, PhD**  
**Scientific Program Analyst**  
*Assistant Professor, Environ-  
mental Sciences & Engineering,  
UNC Chapel Hill*



**Manal Khan, MPA**  
**Program Assistant**  
*Business Services Coordinator,  
Environmental Sciences &  
Engineering,  
UNC Chapel Hill*

## Team 6: Risk Communications



**Kathleen Gray, PhD**  
*Associate Director & Assistant  
Professor, Institute for the  
Environment,  
UNC Chapel Hill*



**Jane Hoppin, ScD**  
*Associate Professor, Biological  
Sciences & Deputy Director,  
NCSU CHHE,  
NC State University*



**Jory Weintraub, PhD**  
*Science Communication  
Program Director, Initiative  
for Science and Society &  
Director, Broader Impacts  
Resource Center,  
Duke University*

## Team 7: Data Science & Management

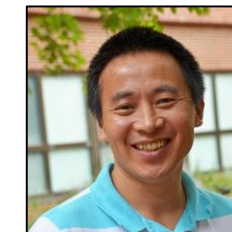


**Christopher Lenhardt**  
*Domain Scientist,  
Renaissance Computing  
Institute (RENCI),  
UNC Chapel Hill*



**Helena Mitasova, PhD**  
*Professor, Marine, Earth &  
Atmospheric Sciences & Associate  
Director, Center for Geospatial  
Analytics (CGA),  
NC State University*

## PFAST Network Synthetic Chemist





**Zhenfa Zhang, PhD**  
*Assistant Professor,  
Environmental Sciences &  
Engineering,  
UNC Chapel Hill*



Please Visit Our Website – <https://ncpfastnetwork.com/>


**NC PFAS Testing Network** [About](#) [Research Team](#) [Data and Tools](#) [In the News](#) [Resources](#) [Newsletters](#) [FAQs](#)






The beauty of North Carolina's lakes and rivers is being threatened by a group of human-made chemicals, known as PFAS, including GenX.

[What are PFAS?](#)



To understand the extent of PFAS contamination across the state, the North Carolina General Assembly funded a statewide research study.

[Learn about the study](#)



This study is a collaboration among universities to document the presence of PFAS and understand its impacts on the environment and our health.

[Meet the research team](#)

Goals: increase awareness of study findings and create opportunities for dialogue about the study among diverse groups

## Communications Team:

- Research symposia at Duke (fall 2018), UNC (fall 2019), NCSU (spring 2020)
- Research briefings in Wilmington, Fayetteville and RTP

[ncpfastnetwork.com](http://ncpfastnetwork.com)



Dr. Jory Weintraub leads science communication training



Goals: increase awareness of study findings and create opportunities for dialogue about the study among diverse groups

## Communications Team:

- Science cafes
- Science communication training for researchers

[ncpfastnetwork.com](http://ncpfastnetwork.com)



Dr. Scott Belcher @ NC Museum of Natural Sciences

# Data Management Team

**[ncpfastnetwork.com](http://ncpfastnetwork.com)**

- Has begun development of NC PFAST Data Hub
- This public portal will allow access to latest data from the Network through interactive visualizations that provide PFAS levels in air, groundwater, and water supply systems
- Once Data Hub is officially launched, data will be updated as soon as it becomes available from the research teams
- Will also provide a notification service so that the public can sign-up to be notified when any new data are released
- For more information, please visit our website and click the “Data and Tools” menu at top of homepage

*Thank you!*



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