

# “Stream”-line Success

Ashley Ireland

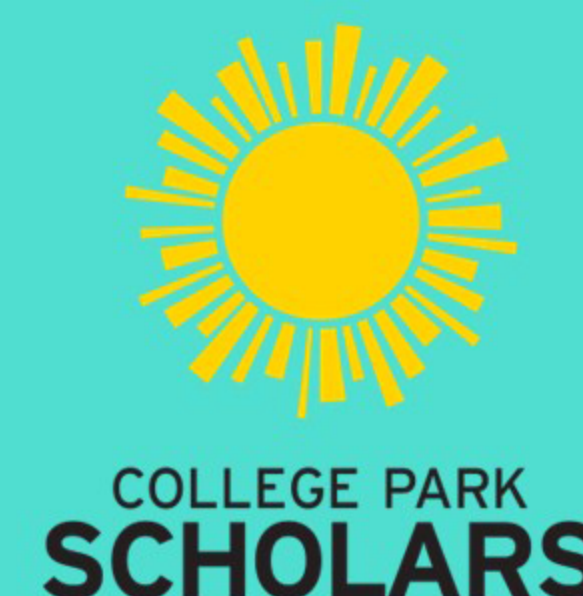
College Park Scholars – Science & Global Change Program

Biological Sciences: Ecology and Evolution

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CPSG230

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## What issue are we investigating?

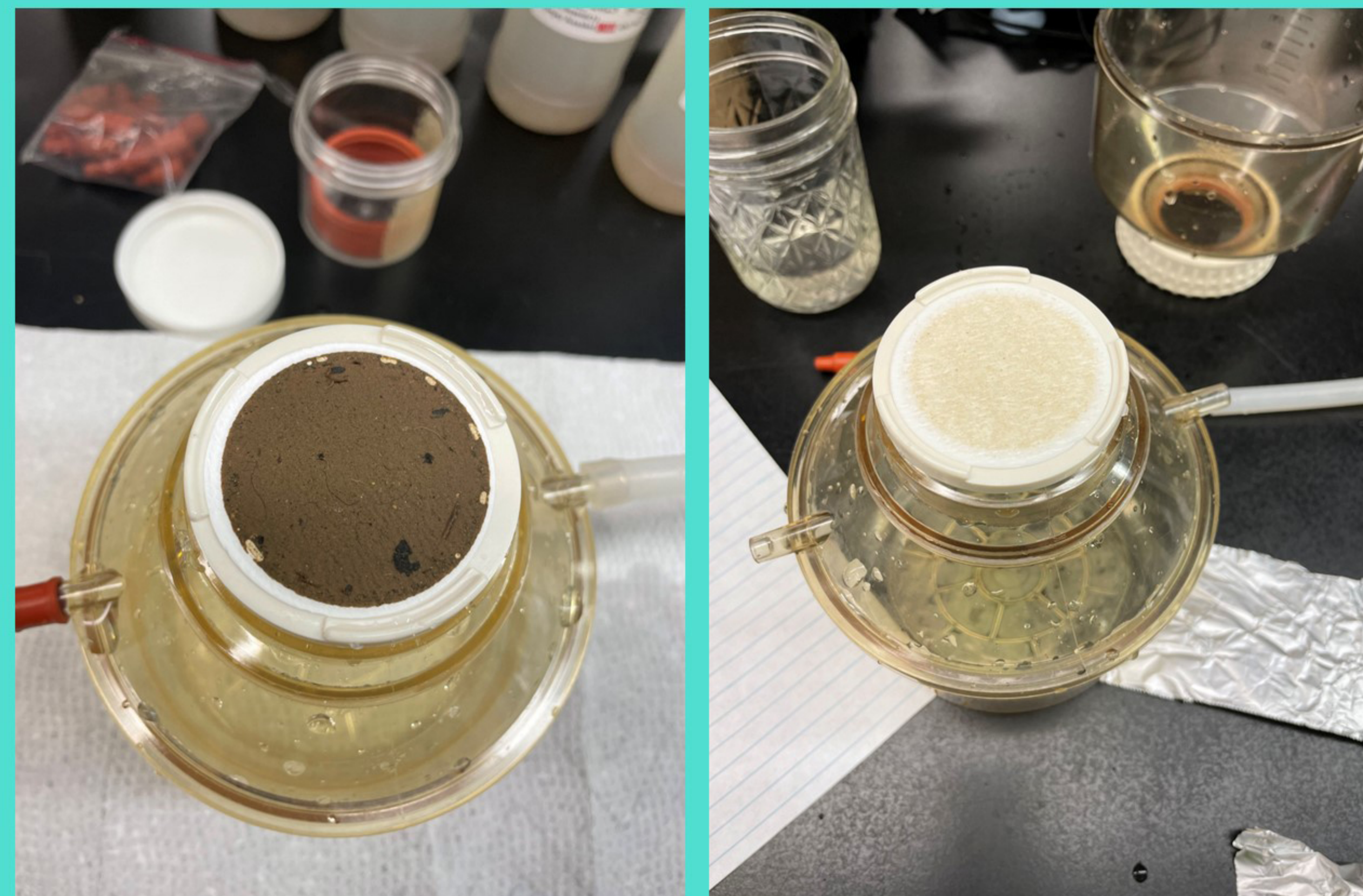
Dr. Sujay Kaushal’s biogeochemistry laboratory focuses on investigating the **ecology and biogeochemistry of aquatic ecosystems**, particularly surrounding human interactions with watersheds and aquatic ecosystem, along with how **anthropogenic activities are impacting water pollution**, such as agriculture, road salt application and waste generation. The lab collects and analyzes samples from different watershed locations looking for different elemental concentrations (carbon, nitrogen, sulfur, etc.) and monitoring microbial ecosystem processes through determining factors such as oxygen concentration and temperature.



Paint Branch Stream: Picture taken during sampling behind the Varsity Apartment Complex and Looney’s Pub. Interns often had to venture out onto the slippery rocks to get the best sample possible, avoid wearing shoes you care about!

## How did I contribute?

As an intern, I was responsible for collecting stream samples at locations near campus, such as Paint Branch Stream and Campus Creek. Once a sample was collected, I had to **filter out the debris and acidify the sample** with nitric acid ( $\text{HNO}_3$ ) to make sure it was ready for testing and analyzing. Also, I helped with miscellaneous activities around the lab, such as organizing and acid washing used instruments.



Depending on the weather and location, sample filters could either be caked on or lightly dusted.

## Impact:

With the research being generated from the laboratory, elemental concentrations and ecological data can be reported to government agencies, such as the USGS, for reference. Our data gives reasoning to advocate for heightened regulations when it comes to anthropogenic activities that may cause harm to surrounding aquatic ecosystems. The lab looks to this data to offer **advice and reasoning on how to increase watershed restoration and conservation efforts to reduce water pollution**. As discussed in Science and Global Change, anthropogenic changes are only forecasted to get worse, so it is important to take scientific action and advocacy seriously and implement regulations and strategies as soon as possible.

## Future Work:

The lab plans on continuing their work through deeper delves into **Freshwater Salinization Syndrome** and human-accelerated chemical changes within the water. However, I would personally be interested in seeing the lab take on the Chesapeake Bay and compare the elemental concentration levels of the bay to the surrounding watersheds and aquatic ecosystems. The bay is notorious for its pollution levels and diminishing wildlife, so **how much can be traced back to the chemical and elemental changes within the watershed itself?**

## Site Information:

Dr. Sujay Kaushal’s Biogeochemistry Laboratory

University of Maryland,

Room 1511 and 1513

Chemistry Building 1526

8051 Regents Dr, College Park, MD 20742

Lab Manager: Bennett Kellmayer

For more information, visit: <https://kaushallab.wixsite.com/kaushallab>



## Acknowledgments:

I would like to take the time to acknowledge my site supervisor, Bennett Kellmayer, for teaching me the ropes about working in a laboratory, and how fun and exciting the experiences can be. I would like to acknowledge Dr. Sujay Kaushal for giving me this amazing opportunity. I would like to acknowledge Dr. Holtz and Dr. Merck for giving me the background knowledge and foundation necessary to be successful in this project.



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