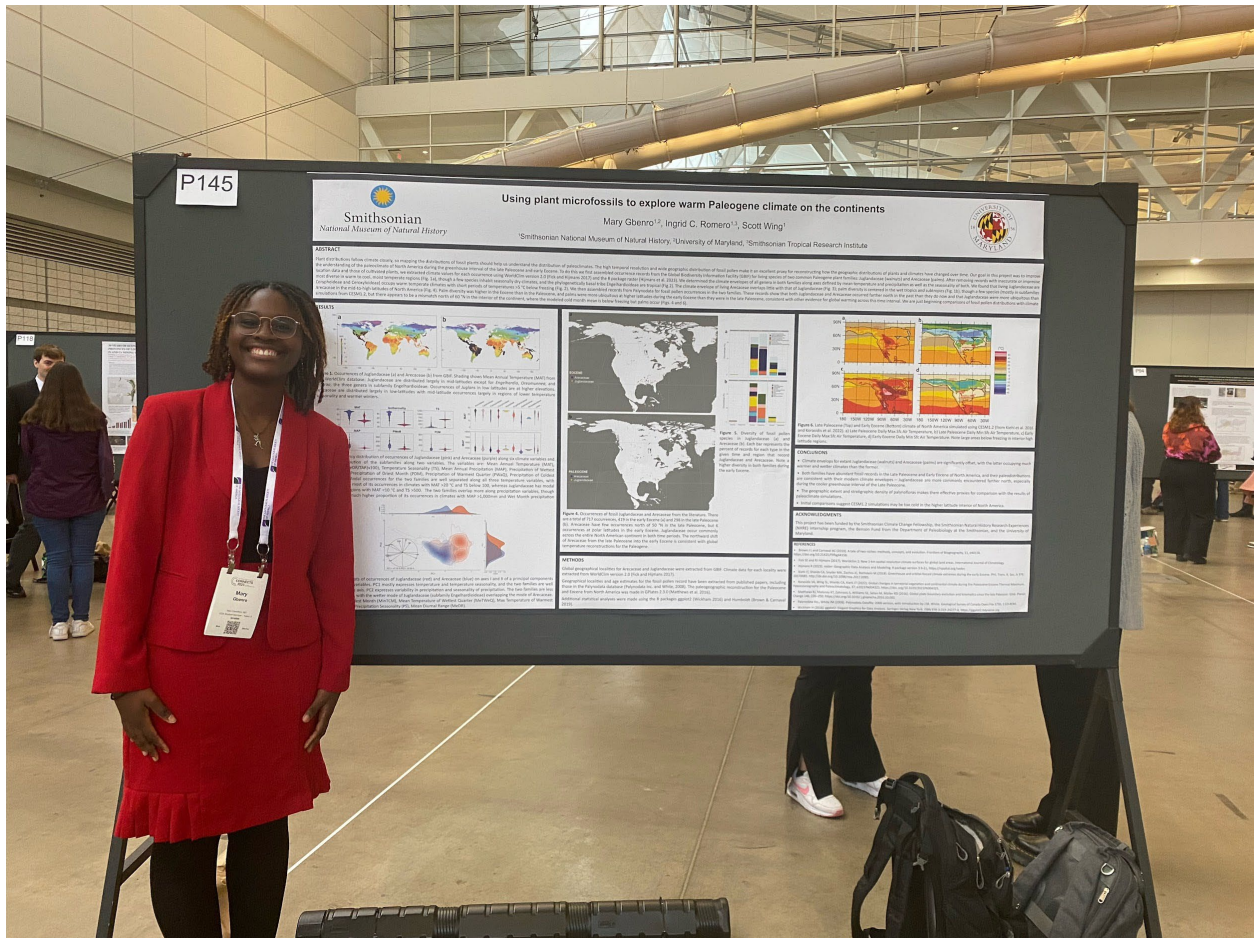


Thanks to the funding from the Environmental Science and Policy Department, I was able to head to Pittsburgh, Pennsylvania for the Geological Society of America (GSA) Connects 2023 Conference. At GSA, I was able to present in the poster session titled “Insights from Microfossils and Their Modern Analogs: From Traditional and Emerging Approaches, to Critical Re-Evaluations”. I was fortunate enough to present my poster titled, “Using plant microfossils to explore warm Paleogene climate on the continents”. This poster was a continuation of the project I began this summer at the National Museum of Natural History with paleobotany curator Dr. Scott Wing, and postdoctoral fellow Dr. Ingrid Romero. I hope to continue this research, and look forward to the publication of the manuscript in which I have co-authorship.



Caption: Mary Gbenro in front of her poster, “Using plant microfossils to explore warm Paleogene climate on the continents” at GSA Connects 2023.

Using plant microfossils to explore warm Paleogene climate on the continents

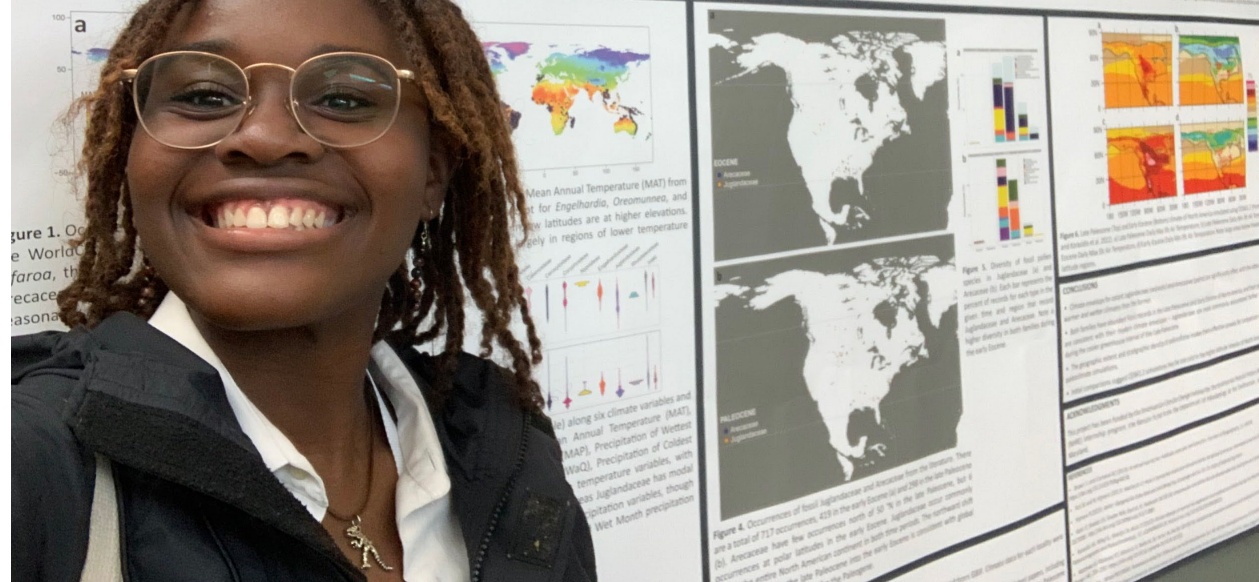
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ABSTRACT

Plant distributions follow climate closely, so mapping the distributions of fossil plants should help us understand the distribution of paleoclimates. The high temporal resolution and wide geographic distribution of fossil pollen make it an excellent proxy for reconstructing the geographic distribution of paleoclimate during the Paleogene. To do this we first assembled occurrence records from the Global Biodiversity Information Facility (GBIF) for the long span of time covered by fossil pollen records. We then used the climate data from the Paleogeographic Database (PDDB) to extract climate values for each occurrence using WorldClim version 2.0 (Fick and Hijmans 2017) and the R package raster (Ihiguerite et al. 2015). We determined the climate envelope of living Anacardiaceae and Sapotaceae pollen taxa along with that of Angiosperms (Fig. 1). We then compared the occurrence of fossil pollen to the climate envelope of living Anacardiaceae and Sapotaceae pollen taxa (Fig. 1) to explore the possibility that the occurrence of fossil pollen from these taxa is constrained by climate. We found that both taxa were more abundant in the mid-to-high latitudes of North America (Fig. 4). Palm diversity was higher in the Paleocene than in the Eocene, and palms were more ubiquitous at higher latitudes during the early Eocene than they were in the late Eocene, consistent with other evidence for global warming and low CO₂ levels in the Paleocene. We are currently working on expanding our dataset to include other fossil pollen taxa and will report the results in a future publication.

RESULTS



Caption: Mary Gbenro in front of her poster after presentations.

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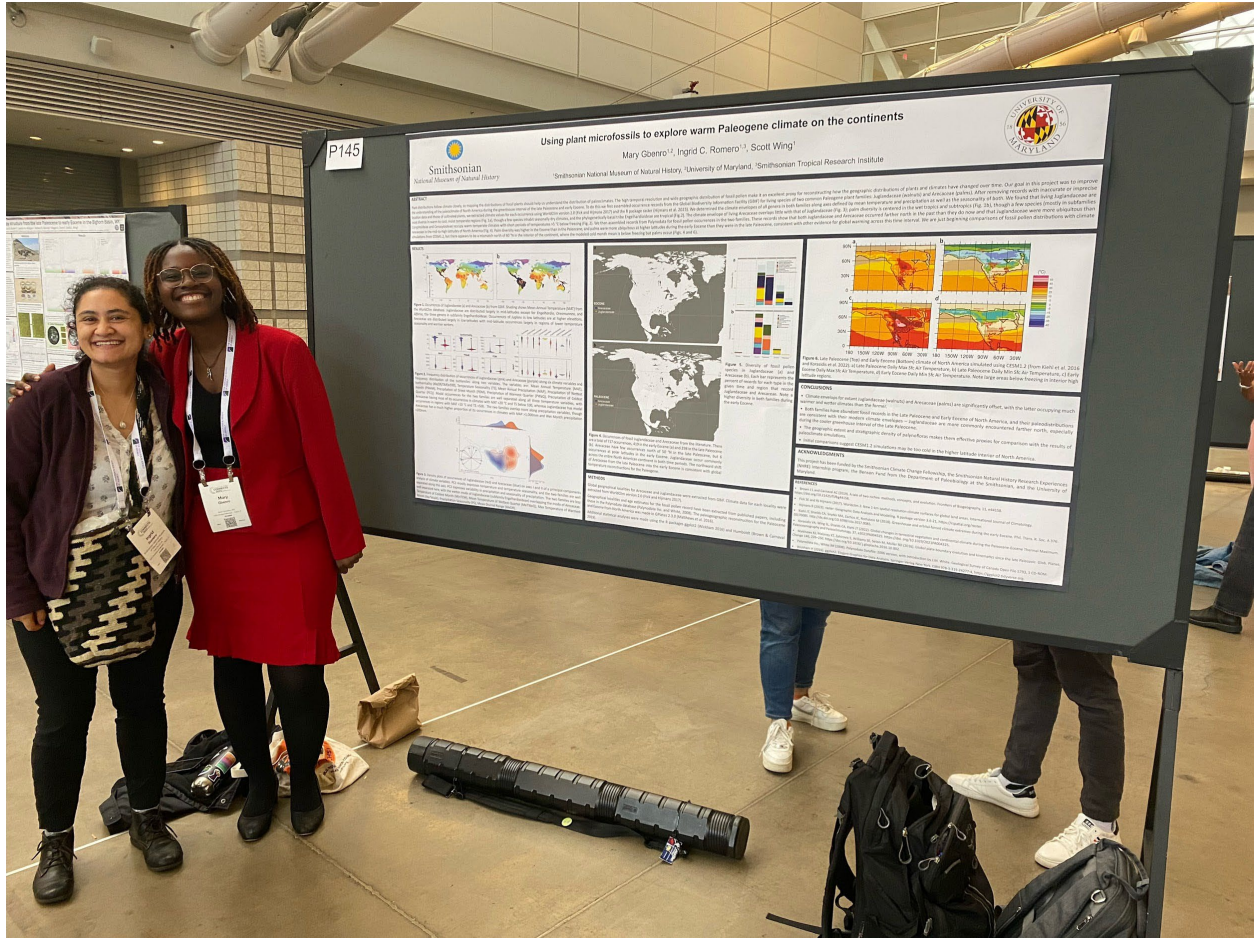
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'Mary Gbenro' listed in the presenters section of the GSA Connects 2023 Guidebook.



Mary Gbenro (left) with one of her mentors Dr. Ingrid Romero (right) in front of her poster.