

ABIGAIL S. GANCZ

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RESEARCH INTERESTS:

Human Microbiome Adaptation, Evolution, and Disease Associations, Human-Environmental Interactions, Bioinformatic Methods for Multiomic Analyses

EDUCATION:

PhD in Anthropology, Penn State College of Liberal Art **2019 – 2024**
“Uncovering Hidden Frailty and Disease Risk in Archaeological Populations Via Ancient Oral Microbiome Analysis”, supervised by Dr. Laura Weyrich

MA in Anthropology, Penn State College of Liberal Arts **2019 – 2022**

Bachelor of Science in Public Health, University of North Carolina, Chapel Hill **2015 – 2019**
Majors: Biostatistics & Anthropology (*Highest Distinction*)
Senior Honors Thesis (*Highest Honors*): “Evaluating the Utility of Portable X-ray Fluorescence to the Discrimination of Human Remains from Commingled Contexts”, supervised by Dr. D.L. Hutchinson

PROFESSIONAL EXPERIENCE:

Laboratory and Field Work:

Postdoctoral Fellow at the North Carolina State University College of Veterinary Medicine Department of Human Health and Pathobiology (PI Dr. Casey Theriot) **2024 – Present**

- Conducted research into the mechanistic associations of lipids and other metabolites with treatment via fecal microbiota transplants (FMTs) of recurrent *Clostridioides difficile* infection (CDI).
- Collaborated with academic and industrial partners to conduct bioinformatic analyses.

Graduate Researcher at Penn State Ancient Biomolecules Research Environment (PSABRE), Pennsylvania State University, State College (PI Dr. Laura S. Weyrich) **2019 – 2024**

- Developed bioinformatic and statistical analysis pipelines for ancient DNA associated with human oral microbiomes
- Utilized techniques in molecular biology, genetics, microbiology, and anthropology
- Identified and described novel microbial communities in ancient Britain and documented their relationship to human health and disease
- Presented at professional conferences and symposia, trained undergraduates in bioinformatic methods, and developed science outreach initiatives

Graduate Researcher at Bioarchaeology Laboratory, Pennsylvania State University, State College (PI Dr. George Milner) **2019 – 2020**

- Performed bioarchaeological analyses of human ancestral remains with the goal of identifying ages, pathologies, and traumas

Researcher with the Mogou Bioarcheological Field Project, Lanzhou, China (PI Dr. Elizabeth Berger) **2019 – 2024**

- Collected bioarchaeological information from human ancestral remains with the goal of identifying ages, pathologies, and traumas
- Performed paleodemographic and statistical analyses of ancient Chinese populations

Research Assistant at Osteology Lab, Research Labs of Archaeology, University of North Carolina, Chapel Hill (PI Dr. Dale Hutchinson) **2018 – 2019**

- Performed osteological and stable isotope analyses on human ancestral remains

Research Assistant at Digital Imaging Lab, Research Labs of Archaeology, University of North Carolina, Chapel Hill; Artifact processing, identification, and 3D modeling (PI Dr. Steve Davis) **2015 – 2019**

- Identified artifacts, performed photogrammetry (3D reconstructions), and trained others

Intern at Repatriation Office, Department of Anthropology at National Museum of Natural History, Smithsonian Institute, Washington DC; Development of digital models **2016**

- Developed digital models of artifacts for repatriation purposes

Field Assistant at archaeological excavation of the Omrit, Kibbutz Kfar Szold, Israel (PI Dr. Jennifer Gates-Foster) **2016**

- Excavated an archaeological site and recovered, processed, and recorded artifacts

Student Research Assistant at Biology Laboratories of George Washington University at Washington DC **2014**

- Performed DNA extractions, analysis, and other laboratory tasks

Academic Teaching Experience:

Teaching Assistant for ANTH 1: Introduction to Anthropology, Pennsylvania State University **Spring 2021**

Instructor of Laser Cutting and Advanced Laser Cutting, The Rivet, State College, PA **2021 – 2024**

SKILLS AND LANGUAGES:

Technological:

Bioinformatic

Processing & analysis of modern and ancient DNA and microbiome data

Statistical Software

R Studio, Statistical Analysis Software (SAS)

GIS Programs	ArcGIS, GoogleEarth
Design	Adobe Photoshop, Adobe Illustrator, Adobe Bridge
Data Management	Microsoft Excel, Microsoft Access

Languages:

Hebrew	Fluent reading, writing, speaking
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HONORS AND AWARDS:

Penn State Graduate Exhibition Data Visualization Award (Honorable Mention)	2024
3 Minute Thesis PSU Competition Finalist	2024
PSU Anthropology Hill Fellowship; \$1288	2023
Penn State Global Graduate Student Travel Grant; \$1500	2023
PSU RGSO Dissertation Support; \$2000	2023
AABA William S. Pollitzer Student Travel Award; \$500	2021
Millennium Café Pitch Competition Finalist; \$25	2020
Pennsylvania Space Grant Consortium Graduate Research Fellowship; \$5000	2020
AAPA William S. Pollitzer Student Travel Award; \$500	2020
National Science Foundation Graduate Research Fellowship; \$138,000	2019
University Graduate Fellowship, The Graduate School at Penn State; \$30,000	2019
Fulbright United Kingdom Durham Award; £12,000 (<i>declined</i>)	2019
Research Laboratories of Archaeology Travel Award: Used to Travel to the American Association of Physical Anthropologists Meeting; \$250	2019
Research Laboratories of Archaeology Travel Award: Used to Travel to the Society for American Archaeologists Annual Conference; \$250	2018
Summer Undergraduate Research Fellowship (SURF), Honors College UNC-CH; Project title: “Statistical Analysis of the Old Chapel Hill Cemetery: Age, Occupation, and Gender as Correlated to Social Rank and Spatial Placement”; \$3000	2017
Robinson Honors Fellowship, Honors College UNC-CH; Scholarship for self-designed study of the Mediterranean from the golden age of Greece to the upheaval of World War I; \$6000	2016

Froelich Fellowship, Honors College UNC-CH; Scholarship awarded to Honors Carolina students to study abroad, participate in a program or internship, or pursue civic engagement; \$7500	2015 – 2019
General Alumni Association Scholarship, UNC-CH; \$10,000	2015 – 2019
Jane Fairweather Scholarship Award, MD; \$500	2015

PUBLICATIONS

Liu, S., Rodriguez, J.S., ..., Gancz, A.S. , ..., Mangui, S. "Analysis of Metagenomic Data." <i>Nature Reviews Methods Primers</i> (2025).	2025
Gancz, A.S.* , Muller S., Weyrich, L.S. "Ancient Human Microbiomes." Encyclopedia of Quaternary Science, 3rd edition : Ramalakshmi Boobalan and Prashanth Ravichandran (2024)	2024
Gancz, A.S.* , Wright, S.L., Weyrich, L.S. "Ancient human dental calculus metadata collection and sampling strategies: Recommendations for best practices." <i>American Journal of Biological Anthropology</i> (2023). DOI: 10.1002/ajpa.24871	2023
Gancz, A.S.* , Farrer, A.G., Nixon, M.P., Wright, S.L., Arriola, L., Adler, C., Davenport, E.R., Gully, N., Cooper, A., Britton, K., Dobney, K., Silverman, J.D., Weyrich, L.S. "Ancient dental calculus reveals oral microbiome shifts associated with lifestyle and disease in Great Britain." <i>Nature Microbiology</i> 8.12 (2023): 2315-2325. DOI: 10.1038/s41564-023-01527-3	2023
Gancz, A.S.* and Weyrich, L.S.. "Studying ancient human oral microbiomes could yield insights into the evolutionary history of noncommunicable diseases." <i>F1000Research</i> 12 (2023). DOI: 10.12688/f1000research.129036.2	2023
Gancz, A.S.* , Wright, S.L., Moore, N.E., Weyrich, L.S. "The Millions of Microbial Reasons You Need to Brush Your Teeth." <i>Frontiers for Young Minds</i> (2022).	2022
Zivich, P.N., Gancz, A.S.* , and Aiello, A.E. "Effect of hand hygiene on infectious diseases in the office workplace: A systematic review." <i>American Journal of Infection Control</i> 46.4 (2018): 448-455. DOI: 10.1016/j.ajic.2017.10.006	2018

PRESENTATIONS:

Gancz, A.S. , <i>Differential Lipidomic Expression in Recurrent Clostridioides difficile Patients Pre and Post Fecal Microbiota Transplantations</i> , poster presented at the Human Microbiome: Diversity, Selection, and Adaptation Keystone Symposia	2025
Gancz, A.S. , <i>Lipidomic Interrogation of Fecal Microbiota Transplantations in Cases of Recurrent C. difficile Infection</i> , invited talk presented at the NCSU Microbiomes and Complex Microbial Communities Cluster	2025

- Gancz, A.S.**, Soltysiak, A., Weyrich, L.S.; *Investigating the Ancient Oral Microbiome as a Marker of Frailty in Middle Eastern Populations Over Time*, Poster presented at the International Society for Biomolecular Archaeology (ISBA) **2023**
- Gancz, A.S.**, Farrer, A.G., Dobney, K., Wright, S.L., Weyrich, L.S.; *Health and Dietary Drivers of Human Oral Microbiome Composition in Ancient Britain*, Poster presented at the Annual Meeting of the American Association of Physical Anthropologists **2022**
- Gancz, A.S.** and Lenover, M.; *Adaptive Utilization of Digital Forums for Bioanthropological Outreach*, Poster presented at the Annual Meeting of the American Association of Physical Anthropologists **2021**
- Gancz, A.S.**, Reitsema, L.J., Reinberger, K.L. Vassallo, S. Kyle, B.; *Reconstructing Weaning and Childhood Diets at the 6th-5th C. BCE Skeletal Population of the Greek Colony of Himera*, Poster presented at the Annual Meeting of the American Association of Physical Anthropologists **2019**
- Gancz, A.S.**; *Investigating Weaning at the 7-5th century BCE Greek Colony of Himera Using Stable Isotope Analysis*, Poster presented at the Council for Undergraduate Research 2018 REU Symposium **2018**
- Gancz, A.S.**; *Raw Material Characteristics and Spatial Patterning at Shawnee-Minisink Paleoindian Site* Poster presented at the Society for American Archaeology Annual Conference **2018**
- Gancz, A.S.**; *Statistical Analysis of the Old Chapel Hill Cemetery: Age, Occupation, and Gender as Correlated to Social Rank and Spatial Placement*, Poster presented at the Office of Undergraduate Research Symposium at UNC-CH **2018**
- Gancz, A.S.**, Hollinger E., Hollshwander C., Partridge N; *Hands on 3D digitalization and Replication: Converting a Physical Object to a 3D Model*, Workshop led at the Sharing Our Knowledge Tlingit Conference in Sitka, Alaska **2017**
- Gancz, A.S.**, Hollinger E., Hollshwander C., Partridge N; *3D Digitization & Replication: Incorporating Emerging Technology into Communities, Schools, and Homes*, Podium presentation at the Sharing Our Knowledge Tlingit Conference in Sitka, Alaska **2017**

COMMUNITY SERVICE AND OUTREACH:

- PSU Anthropology Outreach Coordinator **2022 – 2024**
- PSU Anthropology Colloquium Committee Member **2021 – 2023**
- SPAAM4 Organizing Committee Member **2021 – 2022**
- Stories Under the Sky Science Outreach Program: Abigail Gancz & Kyle C.M. Smith, in partnership with the PSU Arboretum **2021 – 2023**

PSU Anthropology Graduate Student Association Community Education Extended Learning (CEEL) Program Volunteer	2020
PSU Envision STEM career Day Supporting Young Women “The Bare Bones of Archaeology” Workshop Leader	2020
Office of Undergraduate Research Student Liaison for Department of Anthropology	2018 – 2019
Science Complex Phase III Planning & Vision Advisory Committee Undergraduate Student Representative	2017 – 2018
Morehead Planetarium Middle School Science Club Virtual Reality in Archaeology Workshop Organizer	2017
Makerspace Flintknapping Experimental Archaeology Workshop Organizer	2017
Maker-In-Residence Leadership Committee at UNC-CH	2015 – 2018

PROFESSIONAL ORGANIZATION MEMBERSHIP:

American Association of Biological Anthropologists	2018 – 2024
Standards, Precautions & Advances in Ancient Metagenomics (SPAAM)	2020 – 2024

MEDIA EXPOSURE

We Are... the One Health Microbiome Center Feature Series	October 2023
“How unearthing diseases' ancient origins could help produce modern cures” BBC Future Feature	October 2023