

**ABIGAIL S. GANCZ**

asg5573@psu.edu

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**RESEARCH INTERESTS:**

Human Microbiome Adaptation, Evolution, and Disease Associations, Human-Environmental Interactions, Ancient DNA Methodologies

**EDUCATION:**

**PhD in Anthropology, Penn State College of Liberal Arts** **2019 – present**  
Expected defense date: April 2024

**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:**

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

- 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 Bioarchaeological Field Project, Lanzhou, China (PI Dr. Elizabeth Berger) **2019 – present**

- 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

Field Assistant at Archaeological excavation of the Smith Mountain Site, Penhook, VA (PI Dr. Joseph Gingerich) **2017, 2018**

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

Photogrammetry Specialist at the 2017 Tlingit Sharing Our Knowledge Conference, Sitka, Alaska; Collaboration with Smithsonian team on 3D modeling, education, and public outreach **2017**

- Collaborated with Smithsonian team on 3D modeling, education, and public outreach

Spatial Analysis Summer Intern; Hunter-Gatherer Social Behavior During the North American Pleistocene Project; National Museum of Natural History, Smithsonian Institute **2017**

- Performed lithic and spatial analysis of the Shawnee Minisink Site, PA

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**

Teaching Assistant for ANTH 411: Skeletal Forensics, Pennsylvania State University **Fall 2020**

### **Work Experience:**

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

- Taught courses as a digital fabrication instructor specializing in laser cutting technology

Photogrammetry Specialist at National Museum of Natural History, Smithsonian Institute, Washington DC **2018**

- Developed digital 3D models for the Office of Repatriation

Residential Technology Advisor at ResNET Information Technology Services at the University of North Carolina, Chapel Hill; Instruction and technological assistance **2017 – 2019**

- Instructed and assisted dormitory residents with technological issues

Student Instructor the BeAM Makerspaces at the University of North Carolina, Chapel Hill **2016 – 2019**

- Instructed students, faculty and staff in digital fabrication techniques including 3D printing, woodshop, and electronics

### **SKILLS AND LANGUAGES:**

#### **Technological:**

Bioinformatic	Processing & Analysis of ancient DNA and microbiome data, NGS data, amplicon data
3D Modeling and Photogrammetry	Agisoft Photoscan, Blender, Autodesk Fusion 360, MeshMixer, MeshLab, NextEngine 3D Software
Fabrication	Aspire (CNS Routing Shopbot Software), Cura, Universal Laser System User Interface, Vinyl Master Professional
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

#### **Methodological:**

Stable Isotope Analysis	Collagen extraction for stable isotope analysis and preparation of samples for mass spectrometry as practiced at the Bioarchaeology and Biochemistry Laboratory directed by Dr. Laurie Reitsema at UGA
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Digitalization	Accurate and high-resolution 3D modeling using digital cameras and scanners of targets including active excavations, features, and artifacts
Osteological Analysis	Paleopathological and osteometric analysis of skeletal collections

**Languages:**

Hebrew	Fluent reading, writing, speaking
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**PROFESSIONAL EXPERIENCE:**

PSU Anthropology Hill Fellowship; \$1288	<b>2023</b>
Penn State Global Graduate Student Travel Grant; \$1500	<b>2023</b>
PSU RGSO Dissertation Support; \$2000	<b>2023</b>
AABA William S. Pollitzer Student Travel Award; \$500	<b>2021</b>
Millennium Café Pitch Competition Finalist; \$25	<b>2020</b>
Pennsylvania Space Grant Consortium Graduate Research Fellowship; \$5000	<b>2020</b>
AAPA William S. Pollitzer Student Travel Award; \$500	<b>2020</b>
National Science Foundation Graduate Research Fellowship; \$138,000	<b>2019</b>
University Graduate Fellowship, The Graduate School at Penn State; \$30,000	<b>2019</b>
Fulbright United Kingdom Durham Award; £12,000 ( <i>declined</i> )	<b>2019</b>
Research Laboratories of Archaeology Travel Award: Used to Travel to the American Association of Physical Anthropologists Meeting; \$250	<b>2019</b>
Research Laboratories of Archaeology Travel Award: Used to Travel to the Society for American Archaeologists Annual Conference; \$250	<b>2018</b>
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	<b>2017</b>
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	<b>2016</b>
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	<b>2015 – 2019</b>

General Alumni Association Scholarship, UNC-CH; \$10,000 2015 – 2019

Jane Fairweather Scholarship Award, MD; \$500 2015

### PUBLICATIONS

**Gancz, A.S.\***, Wright, S.L., Weyrich, L.S. "Ancient human dental calculus metadata collection and sampling strategies: Recommendations for best practices." *American Journal of Biological Anthropology* (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." *Nature Microbiology* 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." *F1000Research* 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." *Frontiers for Young Minds* (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." *American Journal of Infection Control* 46.4 (2018): 448-455. DOI: 10.1016/j.ajic.2017.10.006 2018

### PRESENTATIONS:

**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 218 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 – present**

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	<b>2018 – present</b>
Standards, Precautions & Advances in Ancient Metagenomics (SPAAM)	<b>2020 – present</b>

**MEDIA EXPOSURE**

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