

Phylindia Gant

pgant@ufl.edu

EDUCATION

University of Florida

Ph. D. Geological Sciences - Exp May 2025

Thesis: Biosignatures on Earth and Mars

University of Virginia

M.A. Environmental Science - Aug 2016

Thesis: Alluvial fans as potential sites for preserving biosignatures on Mars

Purdue University

B.S. Interdisciplinary Science - Earth and Planetary Science, Chemistry - May 2010

PROFESSIONAL EXPERIENCE

Student Collaborator, Science Team, NASA Mars Science Laboratory

September 2023 – present

Currently serve on the NASA Mars Science Laboratory Curiosity Rover mission as a student collaborator on the Sample Analysis at Mars (SAM) instrument

Graduate Research Assistant, University of Florida

Department of Geology, August 2021-present

Investigating biosignatures in iron metabolizing organisms using gas-chromatography mass spectrometry

- Experienced in geochemical techniques such as mass spectrometry methods (ICP-MS, GC-MS) and X-Ray Diffraction (XRD)
- Adept at preparing and handling samples to ensure accurate and reliable geochemical analyses.
- Utilizes wet chemistry techniques for qualitative and quantitative analysis of chemical substances.
- Authored standard operating procedures
- Organize weekly lab group meetings
- Mentor undergraduate members of the laboratory

Student Collaborator, Science Team, NASA Mars 2020 Perseverance Rover

August 2021 – August 2024

Currently serve on the NASA Mars 2020 Perseverance rover mission as a science team member

- Biosignatures Working Group
- Geological Context Working Group
- Diversity, Equity, and Inclusion Working Group

Rover Operations, NASA Mars 2020 Perseverance Rover

August 2021 – August 2024

Currently support daily rover operations on the NASA Mars 2020 Perseverance rover mission, staffing the following roles:

- Tactical documentarian (2021 - present)
- Mars 2020 Mission Blog Writer

Research Technician, Purdue University

Department of Physics, October 2018 - August 2021

Performed physical and chemical sample preparation for cosmogenic nuclide analyses by accelerator mass spectrometry

- Responsible for physical and chemical separation of minerals from geologic matrices
- Performed quantitative chemical analyses of mineral separates and chemical leachates
- Used chemistry techniques, such as ICP and X-Ray fluorescence, and other commonly employed analytical techniques
- Planned, constructed, operated, and maintained sophisticated laboratory instrumentation
- Supervised, taught techniques, and trained graduate and undergraduate students in all aspects of measurement and application of radionuclides
- Directed and performed required methods for mineral separation including rock crushing, grain-size sorting, gravity and heavy liquid separations, acid leaching, and magnetic separation

Graduate Research Assistant, Northwestern University

Department of Earth and Planetary Sciences, September 2016 - July 2018

- Conducted and supported research in planetary science in the area of geodynamics
- Collected, interpreted, and evaluated data on magnetite at high pressures using laboratory facilities at Argonne National Laboratory
- Presented poster of work at American Geophysical Union Fall Meeting 2017

NASA Intern, NASA Langley Research Center

Mars Spatial System Support, June 2016 - December 2016

Created MarsGIS product to aid the Evolvable Mars Campaign in choosing a human manned landing site on Mars

- Digitized proposed landing sites data from PDF to ArcMaps using ArcGIS 10.4.1
- Characterized data from proposed resource sites using database tool created for project
- Constructed layout for universal online product usage without access to ArcGIS using online software
- Lead Space Analysis and Concept Directorate Youth Day involvement for NASA Langley Center wide Youth Day event
- Future work will be focused on identifying special sites unique for astrobiological exploration and tools necessary to explore the surface of Mars at these special sites

Research Technician, University of Virginia

Department of Neurology, February 2015 - June 2016

Investigated the role of miRNA and protein factors in neurodegenerative disorders caused by nucleotide repeat disorders such as ALS and myotonic muscular dystrophy

- Assisted principal investigator in designing and implementing research methods, procedures, and techniques
- Mastered new molecular biology techniques including PCR, electrophoresis, and RNA and DNA extraction methods
- Responsible for daily laboratory operations and managing available laboratory funds

Senior Associate, Chemistry

SC Johnson and Son, Inc., January 2012 - August 2014

Formulator within Air Care RD&E developing global products from ideation through commercialization

- Coordinated line trials and execute all testing on new formulas including performance and stability testing
- Lead cross functional teams interacting closely with marketing, processing, and product supply
- Authored procedures, protocols, and specification

Quality Assurance Laboratory Technician

Contractor, Nestle Beverages/Aerotek Staffing, February 2011 - December 2011

Performed quality checks of line production and ensured standards met desired quality specifications

- Performed chemical, physical, and quality control testing of incoming materials, packaging, and finished products to assure compliance with quality guidelines

Soil Analysis Technician

Contractor, Suretech Laboratories/Aerotek Staffing, August 2010 - December 2010

Support lead chemist in analyzing over 6,000 samples daily to provide accurate analysis of feed ingredients, feeds and forages, and specialized in soil analysis

- Determined elemental analysis of samples using ICP-MS
- Measured soil lime index using pH meters and weighed samples on the analytical balance to measure organic content

Undergraduate Research Assistant, Purdue University

Department of Earth and Planetary Science, Chemistry, and Biology, Fall 2006 - Spring 2010

Dr. Timothy Filley Biogeochemistry Research Laboratory

- Funded by NSF grant, assisted in the implementation of analytical methods for the determination of stable and labile pools of soil organic matter
- Routinely utilized soil preparation methods including freeze drying, grinding, weighing, and centrifugation

Dr. Joseph Francisco Physical Chemistry Research

- Constructed transitional state molecules to test using Gausview software
- Investigated and identified molecule groups which best react to drive reaction to completion faster
- Researched scientific papers to support my findings

Soil Microbiology Agricultural Lab

- Measured chemicals to accurate specifications and oxidized samples under fume hoods
- Increased wet chemistry skills in areas of: titration, UV-VIS, mass spectroscopy, GC, and HPLC

Research Experience for Undergraduates (REU), University of New Mexico

Project Title: Porphyrin Based pH sensingobic and superhydrophillic surfaces, Summer 2006

- Investigated ligation state changes and identified color changes of tin porphyrins.
- Conducted independent research on advanced pH detectors and presented findings to peers, lab members, and principle investigators.
- Mastered new research methods while demonstrated proficiency in using technical equipment at Sandia National Laboratory.

ABSTRACTS | PRESENTATIONS

(* indicates student advisee)

P.C. Gant, A.J. Williams. Biosignature Preservation In Acidic And Circumneutral Icelandic Hot Spring Deposits. Lunar and Planetary Science Conference, March 2025. (Oral Presentation).

J. Ruse*, A.J. Williams, **P.C. Gant**, and B.J. Siew. Lipid biosignatures in lava tubes: implications for life detection on mars. Lunar and Planetary Science Conference, March 2025 (Poster).

B. J. Siew*, A.J. Williams, **P. C. Gant**, J.J. Buffo, and V. Hamil. Lipid Biosignatures in Alkaline Lakes: Implications for Life Detection on Mars. Lunar and Planetary Science Conference, March 2025 (Poster).

B. Sutter, A. Williams, **P. Gant**, L. Chou, R.A. Lybrand, D.W. Ming, C.N. Achilles, A.C. McAdam. Soil Organic Carbon In Basaltic Soils Of Iceland Revealed By Gcms-Tmah Analysis: Analytical Analog For Interpreting Curiosity Rover Sam-Gcms-Tmah Analysis Of Gale Crater Materials. Lunar and Planetary Science Conference, March2025 (Poster).

P.C. Gant, A.J. Williams. Biosignature Preservation In Acidic And Circumneutral Icelandic Hot Spring Deposits. Astrobiology Science Conference, May 2024. (Oral Presentation).

P.C. Gant, A.J. Williams. Assessing the Performance of TMAH Thermochemolysis on Mg-Sulfate Mars Analog Standards. Lunar and Planetary Science Conference, March 2024. (Poster).

P.C. Gant, A.J. Williams, M.A.M. Floyd, D. Emerson. Detecting a Novel Biosignature Using Modern Spaceflight Technology. Lunar and Planetary Science Conference, March 2023. (Poster).

P.C. Gant, A.J. Williams, M.A.M. Floyd, D. Emerson, L.L. Kivrak, L. Judge. Biosignatures in Iron Oxidizing Microbes (BIOMe) – A Study on Metabolic Processes Preserved as Biosignatures from Iron Metabolizing Microorganisms. Astrobiology Science Conference, May 2022. (Poster).

Gant, Phylindia, James Walsh, John Lazarz, Steven D Jacobsen, Donna Jurdy. 2017. Magnetite Equation of State: Implications for Mars' Interior and Magnetization. American Geophysical Union. 12 December 2017. New Orleans, LA. (Poster).

Gant, Phylindia. 2016. Alluvial Fans as Potential Sites for Preservation of Biosignatures on Mars. Geological Society of America. 25 September 2016. Denver, CO. (Poster).

PUBLICATIONS

Weng, M. and 19 other co-authors, including **P.Gant**, 2022. Life Underground: Investigating Microbial Communities and their Biomarkers in Mars-analog Lava Tubes at Craters of the Moon National Monument and Preserve. *Journal of Geophysical Research: Planets* 127.11.

Professional Development

Executive Secretary, NASA Review Panel, Winter 2024
Culturally Inclusive Planetary Engagement Workshop, Atlanta, Georgia November 2024
XX Josep Comas I Sola International School of Astrobiology, Santander, Spain, Summer 2024
International Geobiology Summer Course, Penn State University, Summer 2023

Science Communication Writing Samples

[“Could People Breathe the Air on Mars?”](#) The Conversation, 16 May 2022
[“Nobody Tell Elmo About Issole.”](#) NASA Mars 2020 Blog, 2 February 2022

TEACHING EXPERIENCE

Geology 1102, “Age of Dinosaurs,” Teaching Assistant, Spring 2025
Geology 3105, “Evolution of Earth and Life,” Teaching Assistant, Fall 2022, Fall 2024
Earth 101, “Earth Science for the 21st Century,” Teaching Assistant, Fall 2017

Undergraduate Mentoring

Ben Siew, Fall 2024 – Spring 2025
JJ Ruse, Fall 2024 – Spring 2025

AWARDS | FELLOWSHIPS

NASA Scope LPSC/SciAct Affiliate and Travel Grant (\$2,000), Spring 2025
Association for Academic Women’s (AAW) Honorable Mention Award 2025
Outreach Award, University of Florida Department of Geology, Spring 2024
Jackson Wild Media Fellowship 2021
Board of Education Summer Fellowship 2021 (\$1,000)
AGU Travel Grant 2017
GEM University Fellow 2016

LEADERSHIP | ACTIVITIES

Science Outreach, Fall 2017 - present

Independently organizing, coordinating, and implementing public service projects to address the low numbers of minorities, especially minority women, in STEM Fields

Black Graduate Student Organization, University of Florida

Vice President, June 2024 – present

Planning and executing educational and recreational activities for the betterment of the members and the community

Treasurer, June 2023 – June 2024

Prepared and managed budget, ensured organization is in compliance with student finance office, tracked organizations financial history

Public Relations Chair, Aug 2022 – June 2024

Responsible for marketing and promoting BGSO and its programs, creating and designing flyers, and maintaining the organizations social media presences and website

Girls 4 Science, August 2013 - July 2018

Volunteered with minority in Chicago exposing them to different areas of science through group activities, workshops, and field trips

SC Johnson and Son, Inc., October 2013 - August 2014

Council of Chemist and Formulations, Sustainability Committee Member

Facilitated activities to increase awareness of “green” raw materials available for use in product development

Racine Area Manufacturers and Commerce, August 2012 - August 2014

Young Professionals of Racine Board of Directors

Organized networking events connecting young professionals to one another, local business, and resources

PROFESSIONAL MEMBERSHIPS

American Geophysical Union

Delta Sigma Theta Sorority, Inc.

Geological Society of America

National Association of Black Geoscientist