

Katherine A. Wolcott

Data Science, 3D Imaging & Educational Technology

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Education

- Aug 21 - present** **PhD Biology: Evolution & Biodiversity Informatics — GPA: 4.00 (best: 4.00)**
University of Miami (USA)
Thesis 3D imaging and computer vision to identify cacao's pollinators
Committee Wuchty S, Stanley E, Browne W, and B Whitlock
- Sep 18** **MSc Biology: Evolution, Ecology & Systematics — GPA: 1.40 (best: 1.00)**
Ludwig-Maximilians University, Munich (Germany)
Thesis Harm-free Anatomy and Physiology Instruction for *Helix pomatia* (Linneaus, 1758)
Committee Ruthensteiner B, Apel M, von Kotzebue L, Haszprunar G & MJ Gorman
- Dec 14** **BSc Biology: Ecology & Evolutionary Biology — GPA: 3.49 (best: 4.00)**
University of North Carolina, Asheville (United States)

Research Experience

- Aug 21 - present** **3D pollination biology of *Theobroma cacao* and its relatives (Byttnerioideae)[†]**
PhD Student
Biology, University of Miami, Coral Gables (USA)
• 3D morphometrics of micro-CT datasets in 3D Slicer • Comparative morphology
• Computer vision for floral shape prediction • Community outreach on cacao pollination
- Oct 19 - present** **Computer vision approaches to optimize image processing for EOLv3[†]**
Data Scientist
(Contractor)
Encyclopedia of Life (eol.org), Smithsonian Institution, Washington (USA)
• Machine learning & software development using Python, Google Colab and Tensorflow
• github.com/aubricot/computer_vision_with_eol_images
- Nov 19 - May 21** **3D analysis of ancient domesticated Watermelons, *Citrullus sp.*[†]**
Research Scientist
Systematic Botany & Mycology, Ludwig-Maximilians University, Munich (DE)
• 3D morphometrics of micro-CT datasets in Amira • Comparative morphology
- Feb 19 - Oct 19** **Determining best practices for new '-omics' methods in taxonomy[†]**
Research Scientist
Systematic Botany & Mycology, Ludwig-Maximilians University, Munich (DE)
• Data visualization using R, Gephi, Photoshop, qGIS • Web design (taxon-omics.com)
- Oct 18 - Feb 19** **3D analysis of eye protrusion in the miniature chameleon, *Brookesia minima***
Research Scientist
Herpetology, Bavarian State Collections of Zoology, Munich (DE)
• 3D reconstruction (modelling) from micro-CT datasets in Amira • Comparative morphology
- Oct 16 - Jul 18** **Harm-free Anatomy and Physiology Instruction for *Helix pomatia* – MSc Thesis**
Research Student
BIOTOPIA Museum, Bavarian State Collections of Zoology, LMU Biology, Munich (DE)
• 3D reconstruction (modelling) from micro-CT in Amira & Blender
• Educational software with Effigos, AG (snail.effigos.com; user: Gast, pw: EffigosExplorer)
- Apr 16 - Oct 18** **2D and 3D morphology of subantarctic sea spiders (*Pallenopsis* and *Colloseideis*)[†]**
Research Assistant
Arthropoda varia, Bavarian State Collections of Zoology, Munich (DE)
• Bio-imaging (micro-CT, SEM, LM) • Collections management & databasing
- May 17 - Oct 17** **Bionics content development for BIOTOPIA Naturkundemuseum Bayern**
Research Student
BIOTOPIA Natural History Museum & Ludwig-Maximilians University Munich (DE)
• 200+ exhibits & activities conceptualised highlighting natural history collection specimens

[†] see Publications, page 4

- Aug 22 – present** **Biology Senator & GAFAC Liason, Graduate Student Association (GSA)**
Department of Biology, Graduate School, University of Miami (USA)
- Aug 22 – present** **CAS Chair & GSA Liason, Graduate Activity Fee Allocation Committee (GAFAC)**
College of Arts & Sciences, Graduate School, University of Miami (USA)
- May - Aug 19** **Orientation & Administration Leader, Academic Resource Center**
ARC Office, Smithsonian National Museum of Natural History, Washington (USA)
- Mar 16, Mar 17** **Coordinator, EES IRT1 & IRT3 Conferences**
Evolution, Ecology & Systematics, Ludwig-Maximilians University, Munich (DE)
- Sep 15 - Sep 17** **President, EES 2015 Cohort**
Evolution, Ecology & Systematics, Ludwig-Maximilians University, Munich (DE)
- Jan 13 - May 14** **Mentor, Campus Recreation Group Fitness Instructor Training Program**
Department of Health & Wellness, University of North Carolina, Asheville (USA)
- Aug 14 - Dec 14** **Coordinator, UNC Asheville Biology Fall Seminar Series**
Department of Biology, University of North Carolina, Asheville (USA)
- Jan 14 - Dec 14** **President, UNC Asheville Biology Club**
Department of Biology, University of North Carolina, Asheville (USA)
- Aug 12 - Dec 14** **Coordinator, Super Saturdays Youth Biology Classes**
Super Saturdays, University of North Carolina, Asheville (USA)

Grants & Fellowships \$150,000 of supporting funds received to-date

- Aug 23 - present** **Fairchild Graduate Fellowship – 1 Year Stipend**
\$44,000 – Fairchild Tropical Botanic Garden, Coral Gables (USA)
- May 23** **CAS Dean’s Summer Research Fellowship**
\$5,000 – College of Arts & Sciences, University of Miami (USA)
- Jan 23** **FGST Award – 3D pollination biology of Cacao and its relatives**
\$2,000 – Society for Integrative and Comparative Biology (USA)
- Nov 22** **TFEPS Student Award – 3D pollination biology of Cacao and its relatives**
\$1,000 - Tropical Fern and Exotic Plant Society (USA)
- Oct 22** **GAFAC Award– 3D pollination biology of Cacao and its relatives**
\$400 – Graduate Activity Fee Allocation Committee, University of Miami (USA)
- May 22** **FNPS Endowment Research Grant – 3D pollination biology of Cacao and its relatives**
\$2,500 - Florida Native Plant Society (USA)
- May 22** **Cross Lab Award – 3D pollination biology of Cacao and its relatives**
\$500 - Biology, Computer Science & Materials Science, University of Miami (USA)
- May 22** **Evoy Fund – 3D pollination biology of Cacao and its relatives**
\$500 - Biology Department, University of Miami (USA)
- May 22** **Kushlan Award – 3D pollination biology of Cacao and its relatives**
\$1,000 - Biology Department, University of Miami (USA)
- Jun 22** **Bill Dahl Graduate Student Research Award**
\$1,500 - Botanical Society of America (USA)
- Aug 21 - May 23** **University of Miami Fellowship – 2 Year Stipend**
\$63,000 - Graduate School, University of Miami (USA)

- Apr 17** **Lehre@LMU-Award Stipend Recipient for Student Research Projects**
€1,000 - Research-Oriented Teaching Initiative, Ludwig-Maximilians University, Munich (DE)
- Oct 16 - Mar 18** **DAAD Graduate Scholarship for Graduates of All Disciplines – 1.5 Year Stipend**
€18,000 - Evolution, Ecology & Systematics, Ludwig-Maximilians University, Munich (DE)
- May 15 - Sep 15** **GeoCorps America Mosaics in Science Participant – Vegetation Monitoring Stipend**
\$8,500 - Bureau of Land Management, US Department of the Interior, Monte Vista (USA)
- May 14 - Aug 14** **DAAD Research Internship in Science and Engineering – Summer Stipend**
€1,200 - Chair of Restoration Ecology, Technical University Munich, Freising (DE)

Honors & Awards

- Sep 23** **1st Place, Best Lightning Talk at Tomography for Scientific Advancement (ToScA)**
University of Strathclyde, Glasgow (SCT)
- Jan 23** **3rd Place, Best Talk at Departmental Research Symposium**
Biology Department, University of Miami Graduate School, Miami (USA)
- May 22** **1st Place, Best Departmental Graduate Research Proposal**
Biology Department, University of Miami Graduate School, Miami (USA)
- Mar 21** **NSF Graduate Research Fellowship Program – Honorable Mention**
Application in Top 10 for Biodiversity and Systematics of 13,000 total submissions
- May 17** **Teacher Education Quality Initiative Announcements-Thesis Project Highlighted**
Qualitätsoffensive Lehrerbildung, Ludwig-Maximilians University, Munich (DE)
- Dec 14** **UNC Asheville Bachelor's Distinction in Biology**
University of North Carolina, Asheville (USA)
- May 12 - 14** **UNC Asheville Chancellor's List (1 semester) & Dean's List (3 semesters)**
University of North Carolina, Asheville (USA)

Ongoing Professional Collaborations

- Oct 16 – present** **Developed Roman Snail Explorer Educational Software with Effigos, AG**
Bavarian State Collections of Zoology, Munich & Effigos, Leipzig (DE)
- Tested in classrooms by 400+ university & 30+ middle school students
 - Now in Virtual Reality for Samsung Oculus, in Augmented Reality for iPad
- Feb 19 – Dec 23** **Social Media, Web Design, Data Visualization for Taxon-omics DFG SPP 1991**
27 Museums, Research Institutes, & Universities, Various Locations (DE)
- Collaboration focused on 21st century approaches to discovering biodiversity
 - Web content and visualizations have over 15,000 views worldwide

Publications [†] [ORCID ID: 0000-0002-6025-4569](https://orcid.org/0000-0002-6025-4569)

Wolcott, Stanley, Gutierrez, Wuchty, and Whitlock 2023. 3D pollination biology of cacao using micro-CT and geometric morphometrics. *Applications in Plant Sciences*. doi.org/10.1002/aps3.11549. [Cover Image]

Wolcott, Chomicki, Staedler ... and Renner 2021. 3D X-ray-computed tomography of 3300 to 6000-year-old *Citrullus* seeds from Libya and Egypt compared to extant seeds throws doubts on species assignments. *Plants, People, Planet*. doi.org/10.1002/ppp3.10220.

Wolcott, Margos, Fingerle, and Becker 2021. Influence of host association on Lyme Borreliosis spirochete evolution. *Ticks and Tick-borne Diseases*. doi.org/10.1016/j.ttbdis.2021.101766.

Miralles, Bruy, **Wolcott** ... and Vences 2020. Repositories for Taxonomic Data: Where We Are and What is Missing. *Systematic Biology*. doi.org/10.1093/sysbio/syaa026.

Dömel ... **Wolcott**, Leese and Melzer 2019. Combining morphological and genomic evidence to resolve species diversity and study speciation processes of the *Pallenopsis patagonica* (Pycnogonida) species complex. *Frontiers in Zoology*. doi.org/10.1186/s12983-019-0316-y.

Wolcott and Renner 2017. The J.W. Helfer collections made near Calcutta, in Burma, and on the Andaman Islands between 1836 and 1840 – an overlooked resource. *Archives of Natural History*. doi.org/10.3366/anh.2017.0450.

Wolcott, Hammock, Schulz, and Orrell 2023. Computer vision for biodiversity database image processing. In preparation for *BioScience*.

Select Presentations & Posters

Wolcott, Stanley, Gutierrez, Wuchty, and Whitlock 2023. 3D pollination biology of cacao using micro-CT and GMM. Tomography for Scientific Advancement (ToScA), University of Strathclyde, Glasgow (SCT).

Wolcott, Hammock, Schulz, Orrell 2023 [invited]. Computer vision for EOL image processing. Institute for Data Science & Computing, Smithsonian Institution (USA).

Wolcott, Stanley, Gutierrez, Wuchty, and Whitlock 2023 [invited]. 3D pollination biology of *Ayenia euphrasiifolia*. Florida Native Plant Society 42nd Annual Conference, April 2023 (USA).

Wolcott 2021 [invited]. Academic relationship status: it's complicated. Navigating an atypical biology career to find my niche in data science for natural history museums. EES-Alumni Seminar Series, July 2021 (DE).

Wolcott, Hammock, Schulz, Orrell 2020. Computer vision for biodiversity database image processing. Digital Data, Indiana University, Bloomington (USA).

Wolcott, Ruthensteiner, Apel, von Kotzebue, Haszprunar, Gorman 2018. Can dissection alternatives replace traditional dissection in the biology classroom? Association for Science Teacher Education, Baltimore (USA)

Wolcott and Renner 2016. The J.W. Helfer collections made near Calcutta, in Burma, and on the Andaman Islands between 1836 and 1840—an overlooked resource. Summer Seminar Series, Botanical Gardens, Munich (DE).

Peer Review

Applications in Plant Sciences 2023 [invited]. 1 article.

Integrative and Comparative Biology 2024 [invited Editorial Reviewer]. 3 articles.

Mentoring

Jill Cary (Undergraduate) 2023. Evolutionary Biology of the Byttnerioideae. Biology, University of Miami (USA).

Languages

Mother Tongue English **Other Languages** German (intermediate) French (early intermediate)

Select Certifications & Continuing Education

Mar 23	Trap, Neuter, Release (TNR) Certification – The Neighborhood Cats
Aug 22	Inclusive Pedagogy and Bridging International Borders – BEDE Network
Jun 21 - present	NAUI Advanced SCUBA Diver – The Dive Academy Las Terrenas
Jun 20	Bystander intervention to stop xenophobic harassment – Hollaback & AAJC
Apr 20	Accessible Data Visualization – Data Visualization Society
Mar 20	Color Theory – Data Visualization Society
Nov 19	Cultivating empathy & belonging in the NMNH – Smithsonian Washington, DC
Nov 17	Gender and Equality in Science Mini-Symposium – LMU Munich
Jul 17	Fundamentals of Advanced Light Microscopy – LMU Munich
Sep 15	Intercultural Communication Workshop – LMU Munich
2010 - present	Yoga Alliance Registered Yoga Instructor – Semperviva Yoga Vancouver
2008 - present	Adult First Aid/CPR/AED Certified – American Red Cross