William C. Beckerson, Ph.D. – Curriculum Vitae

Contact Information:

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Research:

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WCBeckerson/

Socials:

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@williamycete.bsky.social

@WilliaMycete

@aBitofBiology

Languages: (CEFR)

English - C2 Native

Spanish - A2.1 Elementary

Dutch - A1.1 Elementary

Professional Website:

WilliamCBeckersonPhD.com

EDUCATION

Doctor of Philosophy in Biology (Ph.D.) 08/2015-08/2020
Department of Biology: Program on Disease Evolution
University of Louisville - Louisville, Kentucky, USA

Master of Science in Biology (M.Sc.) 08/2015-05/2017
Department of Biology: Program on Disease Evolution
University of Louisville - Louisville, Kentucky, USA

Bachelor of Science in Biology (B.Sc.)/Business Management 08/2009-12/2013
Department of Biology
Georgetown College - Georgetown, Kentucky, USA

RESEARCH EXPERIENCE

Postdoctoral Research:

ERC: Marie Skłodowska-Curie Action Postdoctoral Fellowship (link)
Universiteit Utrecht - Utrecht, NL 08/2023-07/2025
PI: Sander van den Heuvel
Research project title: Characterizing the neuronal effects of *Ophiocordyceps* secreted proteins using *C. elegans*.

NSF: Postdoctoral Research Fellowship in Biology (link)
University of Central Florida - Florida, USA 08/2021-07/2023
PI: Charissa de Bekker
Research project title: Linking parasite genomes, environmental ques, and host phenomes in *Ophiocordyceps.*

Preeminent Postdoctoral Program (link)
University of Central Florida - Florida, USA 10/2020-08/2021
PI: Charissa de Bekker
Research project title: Establishing a molecular genetics toolkit for *Ophiocordyceps*

Dissertation Research:

Ruhr-Universität Bochum - Bochum, DE 08/2018-07/2019
Collaborator: Dominik Begerow
Research project title: Implementing CRISPR-Cas9 in *Microbotryum lychnidis-dioicae.*

AdF: Chateaubriand Fellowship Awardee (link)
Université Paris-Sud - Orsay, FR 05/2016-08/2016
Collaborator: Tatiana Giraud
Research project title: Comparative genomics of species-specific effectors in the *Microbotryum genus.*

University of Louisville - Kentucky, USA 08/2015-08/2020
PI: Michael Perlin
Research project title: Bioinformatic analysis and molecular characterization of secreted fungal effectors from the *Microbotryum* genus.

Pedagogical Research:

University of Louisville - Kentucky, USA 09/2017-07/2021
PI: Deborah Yoder-Himes
Research project title: Analyzing the impact of active learning on students of different social personalities.

PUBLICATIONS

Peer-Reviewed Research Articles:

Tsai MC, Barati MT, Kuppireddy VS, Beckerson WC, Long G, Perlin MH. (2024). Characterization of *Microbotryum lychnidis-dioicae* secreted effector proteins, their potential host targets, and localization in a heterologous host plant. *Journal of Fungi* 10(4), 262. https://doi.org/10.3390/jof10040262

Beckerson WC, Anderson JO, Kulkarni S, Perpich JD, Yoder-Himes D. (2024). It's About Time: Exploring the dose-dependent effects of active learning on students of different social personalities in an upper-level biology course. *Journal of College Science Teaching.* https://doi.org/10.1080/0047231X.2024.2316378

Will I, Beckerson WC, de Bekker C. (2023). Using machine learning to predict protein-protein interactions between a zombie ant fungus and its carpenter ant host. *Scientific Reports* 13, 13821. https://doi.org/10.1038/s41598-023-40764-8

Beckerson WC, Krider C, Mohammad UA, de Bekker C. (2023). 28 Minutes Later: Investigating the role of aflatrem-like compounds in *Ophiocordyceps* parasite manipulation of zombie ants. *Animal Behaviour* 203, 225-240. https://doi.org/10.1016/j.anbehav.2023.06.011

De Bekker C, Beckerson WC, Carolyn Elya. (2021). Mechanisms Behind the Madness: How do zombie-making fungal entomopathogens affect host behavior to increase transmission? *mBio* 12(5), e01872-21. https://doi.org/10.1128/mBio.01872-21

Beckerson WC, Anderson JO, Perpich JD, Yoder-Himes D. (2020). An Introvert's Perspective: Analyzing the impact of active learning on social personalities in an upper-level biology course. *Journal of College Science Teaching* 49(3), 47-57. https://doi.org/10.2505/4/jcst20_049_03_47

Beckerson WC, de la Vega RCR, Hartmann FE, Duhamel M, Giraud T, Perlin MH. (2019). Cause and Effectors: Whole genome comparisons reveal shared but rapidly evolving effector sets among host-specific plant-castrating fungi. *mBio* 10:e02391-19. https://doi.org/10.1128/mBio.02391-19

Kuppireddy VS, Uversky VN, Toh SS, Tsai M-C, Beckerson WC, Cahill CC, Carman B, Perlin MH. (2017). Identification and initial characterization of effectors of an anther smut fungus and the potential host target proteins. *International Journal of Molecular Science* 18, 2489. https://doi.org/10.3390/ijms18112489

Peer-Reviewed Teaching Lessons:

Beckerson WC, de Bekker C. (2025). Zombie Ants VR: Using zombie ants and virtual reality to teach about coevolution and extended phenotypes. *CourseSource*. – **In Preparation**

Beckerson WC. (2024). Replicating Darwin's Theory: Teaching evolution with microbiology by means of replica plating. *CourseSource*. https://doi.org/10.24918/cs.2024.34

Beckerson WC. (2022). Small Organisms with Big Consequences: Understanding the microbial world around us. *CourseSource*. https://doi.org/10.24918/cs.2022.27

Textbooks:

Beckerson WC, Laraba I, Torres-Cruz TJ, Steinkraus D, Hajek A. (2024). *Mechanisms of Host Manipulation and Mimicry in Fungi*. In: Haelewaters D. (ed.) *Biodiversity and Evolution of Fungal Parasites and Pathogens*. Amsterdam, Netherlands: Elsevier. (ISBN: 9780323885331) – **Preprint** https://doi.org/10.22541/au.172124619.90197485/v1

Savchenko K, Beckerson WC, Aime C. (2024). *Economically Important Plant Parasites: Rusts and smuts*. In: Haelewaters D. (ed.) *Biodiversity and Evolution of Fungal Parasites and Pathogens*. Amsterdam, Netherlands: Elsevier. (ISBN: 9780323885331) – **Preprint** https://doi.org/10.22541/au.172175972.21516456/v1

Perlin MH, Beckerson WC, Gopinath A, Cobbs G. (2019). *Molecular and Cellular Genetics: Laboratory Studies*. San Diego, California United States: Cognella Academic Publishing. **2nd Edition**. ISBN: 9781793514943

Perlin MH, Beckerson WC, Gopinath A, Cobbs G. (2018). *Molecular and Cellular Genetics: Laboratory Studies*. San Diego, California United States: Cognella Academic Publishing. **1st Edition**. ISBN: 9781516528288

Science Journal for Kids: *An open access platform for kid-friendly adaptations of peer-reviewed science articles

Beckerson WC, Krider C, Mohammad U, de Bekker C. (2025). Which chemical makes ants walk like zombies? In: Panayotova E & Firth F. *Science Journal for Kids*. https://www.sciencejournalforkids.org/articles/which-chemical-makes-ants-walk-like-zombies/. adapted from: https://doi.org/10.1016/j.anbehav.2023.06.011

De Bekker C, Beckerson WC, Carolyn Elya (2023). How do some fungi turn insects into zombies? In: Panayotova E & Firth F. *Science Journal for Kids*. https://www.sciencejournalforkids.org/articles/how-do-some-fungi-turn-insects-into-zombies/. adapted from: https://doi.org/10.1128/mBio.01872-21

FUNDING

My success in securing grant funding for various research projects has been facilitated by highlighting the value of interdisciplinary research approaches that bridge biology with complementary fields. By fostering strategic collaborations across a diverse range of disciplines, I have consistently demonstrated the capacity for cross-disciplinary endeavors to address complex research questions.

Extramural Funding and Fellowships ($147,605 & €213,446):

HORIZON Marie Skłodowska-Curie Actions Postdoctoral Fellowship - NL (€203,464) 08/2022
Grant agreement ID: 101108298 (DOI: 10.3030/101108298)

NSF Postdoctoral Research Fellowship in Biology - USA ($138,000) 06/2021
Award number: 2109435

GSA Fungal Genetics Conference Travel Award - USA ($250) 03/2019

DAAD Short Term Research Grant - DE ($4,075) 11/2018

Chateaubriand STEM Fellowship - FR ($5,280) 05/2016

Intramural Funding: Utrecht University (€9,982):

Public Engagement Seed Fund - NL (€9,982) 07/2024

Intramural Funding: University of Central Florida ($55,000):

Preeminent Postdoctoral Program - USA ($55,000) 08/2020
Co-written with: Dr. Charissa de Bekker

Intramural Funding: University of Louisville ($3,236):

Biology 1970's Cohort Fund Grant - USA ($200) 06/2019

Graduate Student Council Travel Grant - USA ($350) 01/2019

Graduate Network of Arts and Science Travel Grant - USA ($250) 01/2019

Graduate Student Council Travel Grant - USA ($350) 05/2018

Arts & Science Research & Creative Activities Grant - USA ($500) 04/2018

Biology Graduate Student Association Travel Grant - USA ($175) 02/2018

Joint Arts & Science Research & Creative Activities Grant - USA ($1,311) 04/2016
Co-written with: Venkata S. Kuppireddy

Graduate Network of Arts and Sciences Research Fund - USA ($100) 01/2016

Significant Contributions and Other Grants ($313,369):

NSF Gordon Research Seminar Standard Grant - USA ($16,480) 04/2024
Co-written with: Andrew Swafford & Anna Selmecki Award number: 2424381

NSF Track I International Research Experience for Students - USA ($296,889) 08/2018
Co-written with: (PI) Dr. Michael H. Perlin Award number: 1824851

TEACHING

I approach teaching with the same rigor and dedication that I apply to my biological research, continuously seeking evidence-based strategies to improve instruction and enhance student learning outcomes. I am particularly committed to integrating technology and active learning techniques to create dynamic, student-centered university classrooms that foster critical thinking and engagement.

Teaching Qualifications:

Universiteit Utrecht Teaching Qualification Program - Utrecht University, NL 02/2024-11/2024
The "Basis Kwalificatie Onderwijs, or "BKO", is a mark of quality used by all Dutch universities. It functions as a reliable frame of reference with respect to one's didactic skills. The BKO track consists of modules that allow lecturers to assess and develop all facets of teaching. At the end of the track, the participant is awarded a BKO certificate and is qualified for teaching at all Dutch universities: (link)

Higher Education Training Program - University of Central Florida, USA 08/2021-12/2021
Participants in the Preparing Tomorrow's Faculty (PTF) course engage in a learning community facilitated by Faculty Center staff at the University of Central Florida. During the course, participants assemble a teaching portfolio following modules on student learning and motivation, integrated course design, teaching pedagogies, assessment and feedback, course climate, and career development: (link)

Teaching Experience:

Invited Group Lecturer for Developmental Biology - Wageningen University, NL 05/2024
EZO30306: Developmental Biology of Animals
1 sections 16 students One class 120 min Spring 2024

MSCA Postdoctoral Research Fellow - Universiteit Utrecht, NL — 08/2023-07/2025

B-B1BIOT09: Biotechnology & Society

1 section	140 students	One class	45 min	Spring 2025

BETA-B2WTC: Science Communication

1 section	4 students	One class	120 min	Spring 2025

B-MEBIFB19: Fungal Biology

1 section	12 students	Once/week	105 min/class	Autumn 2024

MBLS-107: Functional Biology

2 sections	5 & 5 students	Once/month	120 min/class	Spring 2024

B-MEBIFB19: Fungal Biology

1 section	13 students	Once/week	105 min/class	Autumn 2023

NSF Postdoctoral Research Fellow - University of Central Florida, USA — 08/2021-07/2023

Concurrent teaching for the duration of a PRFB fellowship is prohibited as outlined on pg. 15 of the administrative guide for the Postdoctoral Research Fellowships in Biology program: (link)

Adjunct Faculty of Record - Georgetown College, USA — 08/2019-08/2020

BIO 100: Introductory Biology for Non-Majors (100% Remote Learning)

1 section	24 students	Four/week	75 min/class	Summer 2020

BIO 111: Introductory Biology for Majors

1 section	24 students	Twice/week	75 min/class	Autumn 2019

BIOL 111: Introductory Biology Lab

1 section	24 students	Once/week	110 min/class	Autumn 2019

Invited Group Lecturer for Biotechnology Methods - University of Louisville, USA — 08/2018-12/2018

BIOL 416: Biotechnology Methods

2 sections	4 & 5 students	Twice/week	240 min/class	Autumn 2018

Teaching Innovation Learning Lab in Microbiology - University of Louisville, USA — 08/2017-12/2019

BIO 357: General Microbiology

1 section	64 students	Eight/Semester	75 min/class	Autumn 2019

BIO 357: General Microbiology

1 section	49 students	Four/Semester	75 min/class	Autumn 2018

BIO 357: General Microbiology

1 section	43 students	Four/Semester	75 min/class	Spring 2018

BIO 357: General Microbiology

1 section	65 students	Four/Semester	75 min/class	Autumn 2017

Graduate Teaching Assistant - University of Louisville, USA — 08/2015-04/2020

BIOL 331: Genetics and Molecular Biology

2 sections	20 & 20 students	Twice/week	110 min/class	Spring 2020

BIOL 331: Genetics and Molecular Biology

2 sections	20 & 22 students	Twice/week	110 min/class	Autumn 2019

BIOL 331: Genetics and Molecular Biology

2 sections	20 & 22 students	Twice/week	110 min/class	Spring 2019

BIOL 331: Genetics and Molecular Biology

1 section	19 students	Twice/week	110 min/class	Autumn 2018

BIOL 104: introduction to Biological Systems

2 sections	14 students	Three/week	110 min/class	Summer 2018

BIOL 331: Genetics and Molecular Biology

2 sections	20 & 21 students	Twice/week	110 min/class	Spring 2018

BIOL 331: Genetics and Molecular Biology

1 section	8 students	Twice/week	110 min/class	Autumn 2017

BIOL 258: Microbiology

2 sections	15 & 6 students	Four Days/week	90 min/class	Summer 2017

BIOL 331: Genetics and Molecular Biology

2 sections	17 & 21 students	Twice/week	110 min/class	Spring 2017

BIOL 331: Genetics and Molecular Biology

1 section	16 students	Twice/week	110 min/class	Autumn 2016

BIOL 244: Principles of Biology

2 sections	27 & 28 students	Twice/week	110 min/class	Spring 2016

BIOL 104: Introduction to Biological Systems

3 sections	33, 33, 33 students	Once/week	110 min/class	Autumn 2015

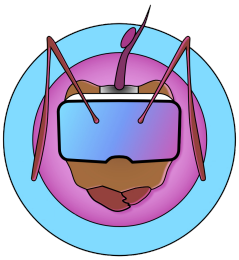
OUTREACH *hyperlinks imbedded in the logos*

I am a strong proponent of public engagement in science and believe in the importance of making scientific knowledge accessible to local communities. As such, I have participated in numerous outreach events, aiming to inspire curiosity and promote a deeper understanding of biology among a broad range of audiences. For me, public education is just as vital as university education. It helps bridge the gap between scientific research and the broader community and fosters a more informed and scientifically literate society.

Virtual Reality Video Game Project: Zombie Ants VR

- Associate Producer, Concept Artist -

Website: https://www.williamcbeckersonphd.com/outreach
Steam download: https://store.steampowered.com/app/2416150/Zombie_Ants_VR/



Zombie Ants VR is a short (10-15 minute) educational experience that takes the player through the life cycle of *Ophiocordyceps*, a group of fungi that manipulates the behavior of ants in order to better spread their spores to new hosts. This fungus was a major inspiration for the video game series *the Last of Us* and is more commonly known as the "Zombie Fungus".

In Partnership with the Utrecht University Museum (UMU):

- 06/2025 — Exhibition with the University Museum Utrecht - Utrecht, NL

Other VR Events:

- 04/2025 — Utrecht University FacultyDay+ - Utrecht, NL
- 03/2025 — OnderwijsFestival (Education Festival) - Utrecht, NL
- 11/2024 — Pathways to Sustainability Conference 2024 - Utrecht, NL
- 11/2024 — Utrecht University Faculty Club Event - Utrecht, NL
- 02/2022 — Otronicon: 3-day alpha testing of ZombieAntVR with kids - Orlando, Florida, USA

National Co-ordinating Centre for Public Engagement

- Engaged Futures Catalyst Group Member -

The Engaged Futures Catalyst Group at the NCCPE is a collaborative initiative in the UK that brings together leaders from universities and public engagement practitioners to envision and shape the future of engagement in higher education. It focuses on fostering strategic thinking, sharing best practices, and building sustainable frameworks for embedding public engagement in institutional

Meetings:

- 6/2024 — Consolation Reflections - Virtual meeting
- 6/2024 — Resourcing the University in 2045 - Virtual meeting
- 5/2024 — The Inclusive University - Virtual meeting
- 4/2024 — Research and Researchers in 2045 - Virtual meeting
- 3/2024 — Selecting Consultation Themes - Virtual meeting
- 2/2024 — Designing Goals for Positive Change (Pathway 3) - Virtual meeting
- 2/2024 — Identifying Current Problems (Pathway 1) - Virtual meeting
- 1/2024 — Briefing Session - Virtual meeting

Pint of Science

- Presenter and Coordinator

Pint of Science is an annual science festival that aims to communicate contemporary scientific developments to the public by bringing scientists to pubs, cafés and other public places to share their research and findings. The festival takes place annually in the month of May and covers all aspects of research. Each year, thousands of researchers across more than 400 cities and 25 countries share and discuss their findings with the public at their corresponding local pubs.

Events:

- 05/2025 — Event Coordinator - Utrecht, NL
  The Spectrum in STEM – Celebrating LGBTQIA+ in science
- 05/2024 — Presenter: A Fungus and its Zombie Ant: A very real example of zombie-making parasites (link) - Utrecht, NL

Community Science Initiative: the Zombie Fungus Foray

- Creator -

Website: https://wcbeckerson.wixsite.com/thezombiefungusforay
iNaturalist: https://www.inaturalist.org/projects/the-zombie-fungus-foray

K-12 Classroom Outreach:

10/2022	Amsterdam International Community School - Amsterdam, NL
10/2021	Wharton High School: National Honor Society - Tampa, FL, USA
10/2021	Freedom High School: Environmental Science Periods 1-7 - Tampa, FL, USA
10/2021	Wharton High School: SPLASH Club, and Biology Sections 1-6 - Tampa, FL, USA
2/2021	Mica Mountain High School: Sections III & VI - Tucson, AR, USA
10/2020	Jackson Heights Middle School: Ecology - Oviedo, FL, USA
10/2020	Oviedo High School: Sophomore Biology Sections 2, 3, 6, & 7 - Oviedo, FL, USA
10/2020	Oviedo High School: AP Biology Sections I & II - Oviedo, FL, USA

iNaturalist Curator:

8/2020-current	Curator for the *Ophiocordyceps* genus
8/2020	The Zombie Fungus Foray Project Creator

Seminole County Parks Partnership:

10/2021	Chuluota Wilderness Area Guided Hike for Zombie Ants - Geneva, Florida, USA
7/2021	Eco Camp: Grossology Week Guide to Zombie Ants - Geneva, Florida, USA
6/2021	Eco Camp: Biology Bootcamp Guide to Zombie Ants - Geneva, Florida, USA

Orlando Science Center Partnership:

10/2021	Pumpkins and Protons Halloween Party Exhibit - Orlando, Florida, USA
10/2019	Spooky Science Week Exhibit: Real-life Zombie Ants! - Orlando, Florida, USA

stemCONNECT Partnership:

10/2021	Spooky Themed Month Virtual Presentation - Orlando, Florida, USA Real-life Zombies and Where to Find Them
4/2021	EARTH DAY Virtual Presentation - Orlando, Florida, USA Real-life Zombies and Where to Find Them

TikTok:

6/2021-2022	@TheZombieFungusForay (link)

Other Outreach Activities:

Internship supervisor for Het Baarnsch Lyceum secondary school- Utrecht, NL — 04/2025
Supervisor for 3 students shadowing the daily routine of a scientists as part of their career trajectory

Interview with a student from Esuela Maranatha Cristiana - El Escalón, SV — 09/2024
5th Grade Oral Presentation on a scientist

Interview with a student from Russelberg Highschool - Tessenderlo, BE — 04/2024
What is *Ophiocordyceps*, how does it infect ants, and is it similar to the *Cordyceps* in "The Last of Us"

Museum of Natural Sciences: International Microorganism Day - Brussels, BE — 10/2023
In collaboration with the Young Belgian Society for Microbiology

Guest on Val 202's Frekvenca X show about "The Last of Us" (link) - SI — 03/2023

Guest on NPR's The Colin McEnroe Show: "The Last of Us" (link) - Connecticut, USA — 02/2023

Correspondent for Inverse: Science behind "The Last of Us" (link) - New York, USA — 01/2023

Correspondent for Newsweek: Science behind "The Last of Us" (link) - New York, USA — 01/2023

Orlando MegaCon Presenter (link) - Florida, USA — 05/2022
Examining the Science Behind Zombie Movies

Orlando Taste of Science - Science Festival, Scientists Inc. (link) - Florida, USA — 04/2022
Real-life Zombies and Where to Find Them

TikTok: — 12/2021-08/2022
@aBitofBiology (link)

Orlando MegaCon Panelist - Florida, USA — 08/2021
The Last Damn Zombie Science Panel You'll Ever Need!

Interview a Biologist - Vermont, USA — 10/2021
with Stacey Grimaldo Garcia of Middleburry College

Skype a Scientist Live: Orlando - Florida, USA — 02/2021
Spooky Science: Real Life Zombies and Where to Find Them (link)

Beer with a Scientist: Monnik Beer Company - Kentucky, USA — 03/2020
Our Friends the Fungi: The many types of fungi and the history of how we've used them

Skype a Scientist — 04/2019-10/2021

10/2020	Creekside Middle School: Sixth Grade Class – Bentonville, Arizona, USA
5/2019	Marie Curie Institute: Fourth and Fifth Grade Class – Amsterdam, New York, USA
5/2019	Corry Area High School: Ninth Grade Class – Corry, Pennsylvania, USA
4/2019	Newark Central: Second Grade Class – Newark, New York, USA
4/2019	E.K. Powe Elementary School: First Grade Class – Durham, North Carolina, USA
4/2019	Annunciation Catholic School: Seventh Grade Class – Denver, Colorado, USA

Guest Speaker at University of Louisville: Meet the Professor - Kentucky, USA — 04/2019
Science Information Literacy & Oral Communication

Guest Speaker at Lexington Christian Academy High School - Kentucky, USA — 12/2018
The history of genetic modification of our food

Guest Speaker at Lexington Christian Academy High School - Kentucky, USA — 02/2016
What is a GMO?

ExBEERiment: Socialize with Science at Louisville Science Center - Kentucky, USA — 09/2016
The science of brewing beer

CONFERENCE PRESENTATIONS

The transparent sharing of new findings and data with other research groups significantly accelerates scientific progress. By presenting my up-to-date research findings openly at a diverse set of conferences, I aim to champion open science practices and facilitate international cooperation. Through global collaborations with diverse expertises, we can better address complex scientific challenges.

Conference Chair:

Gordon Research Seminar: Cellular Molecular Fungal Biology - New Hampshire, USA — 07/2022-06/2024
Chaired with co-chair Andrew Swafford

Oral Presentations:

Host-Microbe Genetics Meeting - Leiden, NL — 10/2024
"The First of Us: Yeast two-hybrid unveils a novel scramblase binding protein in the repertoire of Ophiocordyceps effectors"

Gordon Research Conference: Cellular Molecular Fungal Biology - New Hampshire, USA — 06/2024
CEREBRALfungi: Characterizing the neuronal effects of behavioral-modifying protein from the zombie fungi, Ophiocordyceps, using C. elegans

8th Conference on Physiology of Yeasts and Filamentous Fungi - Cork, IR — 06/2023
Using Yeast to heterologously study the behavior-modifying effects of recalcitrant zombie fungi biomolecules

Gordon Research Seminar: Cellular Molecular Fungal Biology - New Hampshire, USA — 06/2022
28 Minutes Later: Analyzing the role of aflatrem-like effectors in the behavioral manipulation of Zombie Ants

Animal Behavior Society Online Conference - Online — 08/2021
28 Minutes Later: The role of secreted effectors in the behavioral manipulation of zombie ants

Ruhr-Universität Bochum *Microbotryum* Symposium - Bochum, DE — 07/2019
An Unorthodox CRISPR Approach for an Unorthodox Fungus

Asilomar Fungal Genetics Conference: Smut Convergence - California, USA — 03/2019
Cause and Effectors: Secretome comparison of members from the anther-smut pathogen species complex, *Microbotryum violaceum*

Gordon Research Seminar Cellular Molecular Fungal Biology - New Hampshire, USA — 06/2018
The First Cut is the Deepest: Implementing CRISPR Cas9 as a transformation system for site specific gene disruptions in the fungal pathogen species complex *Microbotryum violaceum*

Kentucky Academy of Science Conference - Kentucky, USA — 11/2016
Identifying unique small-secreted proteins in divergent species of the fungal pathogen complex *Microbotryum violaceum*

Ruhr-Universität Bochum *Microbotryum* Symposium - Bochum, DE — 06/2016
Analyzing the role of protein-protein interactions in host/pathogen co-evolution

Poster Presentations:

European Worm Meeting - Utrecht, NL — 07/2024
Zombie Worms: Using *C. elegans* to characterize the behavior-modifying effects of an *Ophiocordyceps* zombie fungus protein

Gordon Research Conference: Cellular Molecular Fungal Biology - New Hampshire, USA — 06/2024
CEREBRALfungi: Characterizing the neuronal effects of behavioral-modifying protein from the zombie fungi, Ophiocordyceps, using C. elegans

European Conference on Fungal Genetics - Innsbruck, AT — 03/2023
28 Minutes Later: A proof of concept for testing behavior-manipulating compounds from zombie-making fungi

Gordon Research Conference Cellular Molecular Fungal Biology - New Hampshire, USA — 06/2022
28 Minutes Later: Analyzing the role of aflatrem-like effectors in the behavioral manipulation of Zombie Ants

National Association of Biology Teachers: Professional Conference - Gorgia, USA — 11/2021
It's About Time: Exploring the dose-dependent effects of active learning on student social personality in an upper-level biology course

National Association of Biology Teachers: Professional Conference - Gorgia, USA — 11/2021
The Zombie Fungus Foray: Community science outreach using iNaturalist to discover Zombie Ants

National Association of Biology Teachers: Professional Conference - Illinois, USA — 11/2019
An Introvert's Perspective: Analyzing the impact of active learning on multiple levels of class social personalities in an upper-level biology course

Asilomar Fungal Genetics Conference - California, USA — 03/2019
Cause and Effectors: Secretome comparison of members from the anther-smut pathogen species complex, *Microbotryum violaceum*

Gordon Research Conference Cellular Molecular Fungal Biology - New Hampshire, USA — 06/2018
The First Cut is the Deepest: Implementing CRISPR Cas9 as a transformation system for site specific gene disruptions in the fungal pathogen species complex *Microbotryum violaceum*

PROFESSIONAL PRESENTATIONS

The exchange of knowledge between researchers from different institutions is essential for stimulating new scientific ideas through the lens of new perspectives. Towards this end, I champion open science and share my academic insights with other institutions. These interactions have resulted in many lasting collaborations, enhanced my research capabilities, and strengthened my scientific network.

Freudenthal institute Invited Speaker - Utrecht, NL — 03/2025
Meet the zombie ants and gamification of science education

Wageningen University Invited Speaker - Wageningen, NL — 02/2025
The First of Us: Using *C. elegans* to characterize the effects of the first *Ophiocordyceps* zombie fungus effector

Life Sciences Academy Seminar Series: Science Communication Invited Speaker - Utrecht, NL — 01/2025
Public Engagement and Research

Universiteit Utrecht Faculty Pedagogical Journal Club Invited Speaker - Utrecht, NL — 02/2024
The dose-dependent effect of group-based active learning on students with different social personalities.

Arkansas State University Queretaro STEM Week Invited Speaker - Queretaro, MX — 02/2023
Real-life Zombies and Where to Find Them: How fungi manipulate animal behavior!

Utrecht U. Molecular Life Sciences Honors Program Invited Speaker - Utrecht, NL — 10/2022
Observations from the Crypt: The science behind zombie ants and their fungal parasites

University of Oxford Invited Speaker - Oxford, UK — 09/2022
28 Minutes Later: The role of secreted effectors in the behavioral manipulation of zombie ants

University of Louisville Invited Speaker Series - Kentucky, USA — 09/2020
Comparative secretomics and functional analysis of effectors utilized by the *Microbotryum* genus of anther-smut fungal pathogens, and their role in host-specificity

University of Central Florida Invited Speaker Series - Florida, USA — 09/2020
Comparative secretomics and functional analysis of effectors utilized by the *Microbotryum* genus of anther-smut fungal pathogens, and their role in host-specificity

Georgetown College Invited Speaker Seminar - Kentucky, USA — 11/2019
Cause and Effectors: How rapidly evolving effectors lead to host-specificity between *Microbotryum* and Caryophyllaceae

Belknap Academic Building Anniversary Event Invited Speaker - Kentucky, USA — 08/2019
An Introvert's Perspective: Analyzing the impact of active learning on multiple levels of class social personalities in an upper-level biology course

Ruhr-Universität Bochum Invited Speaker - Bochum, DE — 06/2019
The History and Future of CRISPR Cas9

Ruhr-Universität Bochum Invited Speaker - Bochum, DE 06/2018
The First Cut is the Deepest: CRISPR Cas9 and how to get started

Georgetown College Invited Speaker Seminar - Kentucky, USA 10/2016
Here and Back Again: A GCPALS tale

Université du Paris Sud Chateaubriand Fellowship Invited Speaker - Orsay, FR 05/2016
Identification of Small-Secreted Proteins in the *Microbotryum* genus

PROFESSIONAL DEVELOPMENT

The pursuit of scientific knowledge is a life-long journey of learning, and one that extends beyond the confines of a formal education. To be effective scientists, mentors, and educators, we should constantly sharpen our ideas and competencies by learning from other experts in our fields. To improve my own teaching and research skills, I actively participating in annual workshops, trainings, and educational conferences, ensuring that I am up to date with new findings and able to adapt to an ever-expanding body of knowledge.

Training/Workshops/Conferences:

Fiji ImageJ Software Workshop - Utrecht, NL 10/2024

Teaching and Learning Inspiration Days Conference - Utrecht, NL 01/2024-02/2024
- Feb 1st — Using open educational resources
- Jan 30th — AR/VR: Experience the future of learning
- Jan 30th — Evidence-informed educational change
- Jan 29th — Education with societal partners in practice

Parametric Modeling for 3D Printing w/ Fusion – Basics Workshop - Utrecht, NL 01/2024

Fused Deposition Modeling for 3D Printing – Basics Workshop - Utrecht, NL 12/2023

2023 Royal Dutch Association for Microbiology Mycology Conference - Utrecht, NL 11/2023

Public Engagement Academy for Postdocs - Utrecht, NL 11/2023-11/2024
Founding member of an academy to teach and facilitate outreach by postdoctoral scholars including the following modules:
- Aug 6th — Dialogue training
- June 25th — Media training
- May 14th — Popular science writing
- Apr 2nd — Engaging children
- Feb 20th — Public communication skills
- Jan 9th — Impact measurements

Wetenschnapps: Public Engagement - recognition and rewards in practice - Utrecht, NL 11/2023

Universiteit Utrecht Professional Media Communication Training - Utrecht, NL 11/2023

2022 Royal Dutch Association for Microbiology Mycology Conference - Utrecht, NL 11/2022

NSF Improving Undergraduate STEM Education Program - Florida, USA 03/2022-05/2022
- Mar-May — the Inclusive STEM Teaching Project

Collaborative Institutional Training Initiative - Florida, USA 01/2021-03/2021
- Mar 3rd — Human Subjects Research – Group 2
- Feb 24th — Social/Behavioral Research Investigators and Key Personnel
- Feb 10th — Communicating Research Findings
- Jan 13th — Conflict of Interest

NIH Grant Writing Virtual Conference - Florida, USA 05/2020

Training with Remote Teaching Options for COVID-19 - Kentucky, USA 02/2020

Research Academy RUHR: Open Access Science Workshop - Bochum, DE 08/2019

Faculty Search Committee: Diversity Training - Kentucky, USA 02/2019

ACADEMIC AND UNIVERSITY SERVICES

Throughout my academic career, I have actively engaged in extracurricular activities within the university to help build a connected academic community. My commitment to these roles reflects my dedication to cultivating an enriching environment for both students and staff that places value in the overall university experience beyond the confines of formal teaching and research settings.

University Services:

Member of the Faculty of Open Science Team (FOST) - Utrecht, NL 01/2025-current
Faculty of Science committee for public engagement at Universiteit Utrecht

Utrecht Selective Life Sciences Extra Curricular Track selection committee 2024 - Utrecht, NL 11/2024-1/2025

Utrecht Selective Life Sciences Extra Curricular Track selection committee 2023 - Utrecht, NL 11/2023-1/2024

2022 University of Louisville Biology Alumni Advice Panel - Kentucky, USA 11/2022

2021 University of Louisville Biology Alumni Advice Panel - Kentucky, USA 08/2021

Chair of the University of Central Florida Invited Speaker Series - Florida, USA 08/2021-04/2022
Diversity, Equity, and Inclusion: Classroom Isolation Subcommittee - Florida, USA 02/2021
Biology Undergraduate Student Association: Graduate Student Panel - Kentucky, USA 10/2019
Biology Faculty Search Committee: Graduate Student Representative - Kentucky, USA 02/2019
Student Grievance & Discipline Committee - Kentucky, USA 08/2016-4/2017
- 2016-2017 Natural Science Division Representative

University of Louisville Graduate Network of Arts & Sciences - Kentucky, USA 08/2016-4/2018
- 2017-2018 Vice President
- 2017 Natural Science Rep. for Grant Review Committee
- 2016-2018 Department of Biology Representative

University of Louisville Biology Graduate Student Association - Kentucky, USA 08/2015-7/2020
- 2019-2020 President
- 2018-2019 Graduate Student Rep.
- 2016-2017 Social Chair
- 2016 & 2020 Webmaster
- 2016-2020 Member

Community Services:

Florida Undergraduate Research Conference Abstract Reviewer - Florida, USA 06/2021
UCF Student Scholar Symposium for Undergraduate Research Judge - Florida, USA 03/2021
DuPont Manual Regional Science Fair Judge - Kentucky, USA 06/2019
DuPont Manual Regional Science Fair Judge - Kentucky, USA 06/2018
Louisville Regional Science & Engineering Fair Judge - Kentucky, USA 03/2018

Peer-review Services:

Current Biology	1 primary research article	2025
Reinvention Journal of Undergraduate Research	1 primary research article	2025
Genome Biology and Evolution	2 primary research article	2024
Molecular Ecology	2 primary research articles	2022-2023
CourseSource	4 formal lesson plans 1 conference publication	2020-2025
Society for Molecular Plant-Microbe Interactions	1 primary research article	2020

PROFESSIONAL SERVICES

In addition to my administrative capacity within the university, I am also an active member of many societies and organizations tasked with sharing and improving research and education. Through these groups, I collaborate with others to champion initiatives that enhance the success of academic programs, foster community engagement, and improve the accessibility of science.

Designing the Framework for Introductory Biology subdiscipline of CourseSource

- Project Leader 01/2025-current

Responsible for leading a group of science professionals to develop a standardized list of introductory biology core concepts, learning objectives, and suggested assessment strategies for the peer-reviewed lessons journal CourseSource.

Membership in Professional Societies/Organizations:

Association for Science Education 01/2025-current
Animal Behavior Society 08/2021-current
American Society for Microbiology 08/2021-2023
National Science Teaching Association 11/2019-2023
National Association of Biology Teachers 11/2019-current
- 2021-2022 Justice, Equity, Diversity, and Inclusion Committee
- 2019-2020 Community Science Committee

Genetics Society of America 03/2018-current
- 2022 Science Communication Virtual Networking Moderator for the 31st FGC

Kentucky Academy of Science 11/2014-7/2020

STUDENTS MENTORED

The success of junior scientists depends on academic support and an inclusive learning environment. Towards this end, I am active in promoting inclusivity in my own lab and in the research community as a whole so that individuals from all backgrounds feel safe and empowered to contribute in science, regardless of their age, gender, race, sexual orientation, ethnicity, or socioeconomic status.

Master's Students:

I have supervised 6 master's students, acting in a mentor capacity for the research projects of 3 and as the daily supervisor for the other 3. As their daily supervisor, I guided the students through the successful completion of their master's theses.

Diversity metrics:
4 students identify as female, 1 identifies as male, and 1 identifies as trans-male.
6 students identify as white.
4 students were born in the Netherlands, 1 was born in Germany, and 1 was born in Spain.
5 students were taught in the Netherlands and 1 was taught in the United States of America.

Undergraduate Students:

I have supervised 11 undergraduates, acting as the supervisor for all 11 on a variety of research projects. The work from 3 of these students was successfully published in 2 different research articles.

Diversity metrics:
6 students identify as female and 5 identify as male.
5 students identify as white, 5 identify as black, 1 identifies as middle eastern.
11 students were born in the United States of America.
11 students were taught in the United States of America.

HONORS & AWARDS

I have been fortunate over the years to receive formal recognition for various aspects of my work. Here are some of the honors and awards that I have received in addition to those awarded from granting agencies or in the form of fellowships:

European Worm Meeting 2024 – 2nd Place for outstanding poster (link) - Utrecht, NL	03/2023
UU News: MSCA fellowships for five Utrecht researchers (link) - Utrecht, NL	03/2023
UCF Today: Stories of impact + innovation (link) - Florida, USA	02/2021
Graduate Dean's Citation (link) - Kentucky, USA	12/2020
Graduate Student Publication Award - Kentucky, USA	04/2020
Graduate School of Arts and Sciences Student Spotlight (link) - Kentucky, USA	03/2020
Introductory Biology Lab Development Award - Kentucky, USA	07/2019
Graduate Student Research Presentation Award - Kentucky, USA	04/2019
Biology Department Service Award - Kentucky, USA	04/2019
College of Arts and Science Student Profile (link) - Kentucky, USA	02/2016

REFERENCES

Collaborative efforts in scientific teaching and research have formed the cornerstone of my career. The exchange of ideas, expertise, and perspectives from a diverse group of colleagues and students has enriched my understanding and undoubtedly aided in my success with addressing complex scientific problems. While a complete list of collaborators would be much too long to include here, the following are individuals who have been particularly important in helping to shape my career in science.

Dr. Pauline Krijgsheld	Universiteit Utrecht, NL/ Teaching Mentor	*P.Krijgsheld@uu.nl*
Dr. Steffen Werner	Wageningen University, NL/ Collaborator	*Steffen.Werner@wur.nl*
Dr. Sander van den Heuvel	Universiteit Utrecht, NL/ PI	*S.J.L.vandenHeuvel@uu.nl*
Dr. Charissa de Bekker	University of Central Florida, USA/ PI	*A.M.deBekker@uu.nl*
Dr. Michael Perlin	University of Louisville, USA/ PI	*Michael.Perlin@louisville.edu*
Dr. Tatiana Giraud	Université Paris-Sud, FR/ Collaborator	*Tatiana.Giraud@u-psud.fr*
Dr. Dominik Begerow	Universität Hamburg, DE/ Collaborator	*Dominik.Begrow@uni-hamburg.de*
Dr. Scott Gold	USDA Georgia, USA/ Advisor	*Scott.Gold@ARS.USDA.Gov*