

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

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## EDUCATION

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University of Louisville - Louisville, KY Doctor of Philosophy in Biology	2015-2020
University of Louisville - Louisville, KY Master of Science in Biology	2015-2017
Georgetown College - Georgetown, KY Bachelor of Science in Biology / Minor: Business Management	2009-2013

## RESEARCH EXPERIENCE

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### Postdoctoral Research:

NSF Fellow at Utrecht University, NL (PI: Charissa de Bekker, PhD) Characterization of <i>Ophiocordyceps</i> effectors and their neurological targets using <i>C. elegans</i>	2022-current
NSF Fellow at University of Central Florida, US (PI: Charissa de Bekker, PhD) Linking parasite genomes, environmental ques, and host phenomes in <i>Ophiocordyceps</i>	2020-2022

### Dissertation Research:

University of Louisville, US (PI: Michael Perlin, PhD) Molecular analysis of secreted proteins in the <i>Microbotryum</i> genus	2015-2020
Ruhr-Universität Bochum, DE (Dominik Begerow, PhD) Implementation of CRISPR Cas9 transformation systems in <i>Microbotryum</i>	2018-2019
Université Paris-Sud, FR (Tatiana Giraud, PhD) Comparative genomics of species-specific effectors in <i>Microbotryum</i>	2016-2018

### Pedagogical Research:

University of Louisville, US (Deborah Yoder-Himes, PhD) Analyzing the importance of dose-response in active learning environments Analyzing the impact of active learning on different student social personalities	2017-2021
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## FUNDING

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### Extramural Funding and Fellowships (\$147,605):

NSF Postdoctoral Research Fellowship in Biology, US Award number (FAIN): 2109435	(\$138,000)	2021
GSA Fungal Genetics Conference Travel Award, US	(\$250)	2019
DAAD Short Term Research Grant, DE	(\$4,075)	2018
Chateaubriand STEM Fellowship, FR	(\$5,280)	2016

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

Preeminent Postdoctoral Program Co-written with: Dr. Charissa de Bekker	(\$55,000)	2020
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### Intramural Funding, University of Louisville, US (\$3,236):

Biology 1970's Cohort Fund Grant	(\$200)	2019
Graduate Student Council Travel Grant	(\$350)	2019
Graduate Network of Arts and Science Travel Grant	(\$250)	2019
Graduate Student Council Travel Grant	(\$350)	2018

Arts & Science Research & Creative Activities Grant	(\$500)	2018
Biology Graduate Student Association Travel Grant	(\$175)	2018
Joint Arts & Science Research & Creative Activities Grant	(\$1,311)	2016
Co-written with: Venkata S. Kuppireddy		
Graduate Network of Arts and Sciences Research Fund	(\$100)	2016

### Significant Contributions to Other Grants (\$296,889):

NSF Track I International Research Experience for Students (IRES), US	(\$296,889)	2018
Co-written with: (PI) Dr. Michael H. Perlin Award number: I824851		

## PUBLICATIONS

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### Peer Reviewed Articles:

Beckerson WC, Krider C, Mohammad UA, de Bekker C. (2022). 28 Minutes Later: Using Aflatrem to address the role of Aflatrem-like compounds produced by *Ophiocordyceps camponoti-floridani* in the behavioral manipulation of *Camponotus floridanus*. *Animal Behavior*. **- In Preparation**

Beckerson WC, Anderson JO, Kulkarni S, Perpich JD, Yoder-Himes D. (2021). 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*. **- Accepted**

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

### Textbooks: Haelewaters

Beckerson WC, Laraba I, Hajek A, Steinkraus D. (2022). Mechanisms of Host Manipulation and Mimicry in Fungi. In: Haelewaters D (ed.) *Diversity and Evolution of Pathogens and Parasites in the Kingdom Fungi* (pp. xxx-xxx). Amsterdam, Netherlands: Elsevier. **- In Preparation**

Savchenko K, Beckerson WC, Aime C. (2022). Economically Important Plant Parasites: Rusts and smuts. In: Haelewaters D (ed.) *Diversity and Evolution of Pathogens and Parasites in the Kingdom Fungi* (pp. xxx-xxx). Amsterdam, Netherlands: Elsevier. **- In Preparation**

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

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

## HONORS AND AWARDS

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UCF Today: Stories of Impact + Innovation Spotlight, UCF <a href="https://www.ucf.edu/news/ucf-doctoral-scholar-named-national-science-foundation-biology-fellow/">https://www.ucf.edu/news/ucf-doctoral-scholar-named-national-science-foundation-biology-fellow/</a>	2021
Graduate Dean's Citation, UofL	2020
Graduate Student Publication Award, UofL	2020
Graduate School of Arts and Sciences Student Spotlight, UofL <a href="https://louisville.edu/graduate/student-spotlight/student-spotlight-february-2020">https://louisville.edu/graduate/student-spotlight/student-spotlight-february-2020</a>	2020
Introductory Biology Lab Development Award, UofL	2019
Graduate Student Research Presentation Award, UofL	2019
Biology Department Service Award, UofL	2019
College of Arts and Science Student Profile, UofL <a href="https://louisville.edu/artsandsciences/academics/graduate-education/student-profiles/beckerson">https://louisville.edu/artsandsciences/academics/graduate-education/student-profiles/beckerson</a>	2016

## CONFERENCE PRESENTATIONS

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### Oral Presentations:

Gordon Research Seminar: Cellular and Molecular Fungal Biology 28 Minutes Later: Analyzing the role of aflatoxin-like effectors in the behavioral manipulation of Zombie Ants	2022
Animal Behavior Society Online Conference, ONLINE 28 Minutes Later: The role of secreted effectors in the behavioral manipulation of zombie ants	2021
Ruhr-Universität Bochum <i>Microbotryum</i> Symposium, DE An Unorthodox CRISPR Approach for an Unorthodox Fungus	2019
Asilomar Fungal Genetics Conference: Smut Convergence, US Cause and Effectors: Secretome comparison of members from the anther-smut pathogen species complex, <i>Microbotryum violaceum</i>	2019
Gordon Research Seminar on Cellular and Molecular Fungal Biology, US The First Cut is the Deepest: Implementing CRISPR Cas9 as a transformation system for site specific gene disruptions in the fungal pathogen species complex <i>Microbotryum violaceum</i>	2018
Kentucky Academy of Science Conference, US Identifying unique small secreted proteins in divergent species of the fungal pathogen complex <i>Microbotryum violaceum</i>	2016
Ruhr-Universität Bochum <i>Microbotryum</i> Symposium, DE Analyzing the role of protein-protein interactions in host/pathogen co-evolution	2016

### Poster Presentations:

Gordon Research Conference: Cellular and Molecular Fungal Biology 28 Minutes Later: Analyzing the role of aflatoxin-like effectors in the behavioral manipulation of Zombie Ants	2022
National Association of Biology Teachers: Professional Development Conference, US It's About Time: Exploring the dose-dependent effects of active learning on student social personality in an upper-level biology course	2021
National Association of Biology Teachers: Professional Development Conference, US The Zombie Fungus Foray: Community science outreach using iNaturalist to discover Zombie Ants	2021
National Association of Biology Teachers: Professional Development Conference, US An Introvert's Perspective: Analyzing the impact of active learning on multiple levels of class social personalities in an upper-level biology course	2019
Asilomar Fungal Genetics Conference, US Cause and Effectors: Secretome comparison of members from the anther-smut pathogen species complex, <i>Microbotryum violaceum</i>	2019
Gordon Research Conference on Cellular and Molecular Fungal Biology, US The First Cut is the Deepest: Implementing CRISPR Cas9 as a transformation system for site specific gene disruptions in the fungal pathogen species complex <i>Microbotryum violaceum</i>	2018

## PROFESSIONAL PRESENTATIONS

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<b>University of Oxford, GB</b>	2022
28 Minutes Later: The role of secreted effectors in the behavioral manipulation of zombie ants	
<b>University of Louisville Invited Speaker Series, US</b>	2020
Comparative secretomics and functional analysis of effectors utilized by the <i>Microbotryum</i> genus of anther-smut fungal pathogens, and their role in host-specificity	
<b>University of Central Florida Invited Speaker Series, US</b>	2020
Comparative secretomics and functional analysis of effectors utilized by the <i>Microbotryum</i> genus of anther-smut fungal pathogens, and their role in host-specificity	
<b>Georgetown College Invited Speaker Seminar, US</b>	2019
Cause and Effectors: How rapidly evolving effectors lead to host-specificity between <i>Microbotryum</i> and Caryophyllaceae	
<b>Belknap Academic Building Anniversary Event, US</b>	2019
An Introvert's Perspective: Analyzing the impact of active learning on multiple levels of class social personalities in an upper-level biology course	
<b>Ruhr-Universität Bochum Invited Speaker, DE</b>	2019
The History and Future of CRISPR Cas9	
<b>Ruhr-Universität Bochum Invited Speaker, DE</b>	2018
The First Cut is the Deepest: CRISPR Cas9 and how to get started	
<b>Georgetown College Invited Speaker Seminar, US</b>	2016
Here and Back Again: A GCPALS tale	
<b>Université du Paris Sud Invited Speaker for Chateaubriand Fellowship, FR</b>	2016
Identification of Small-Secreted Proteins in the <i>Microbotryum</i> genus	

## TEACHING EXPERIENCE

<b>NSF Postdoctoral Research Fellowship</b>	2021-2022
Concurrent teaching for the duration of a PRFB fellowship is prohibited and outlined on pg. 15 of the Administrative Guide for the Postdoctoral Research Fellowships in Biology Program: <a href="https://www.nsf.gov/pubs/2021/nsf21081/nsf21081.pdf">https://www.nsf.gov/pubs/2021/nsf21081/nsf21081.pdf</a>	
<b>Adjunct Faculty of Record, Georgetown College</b>	2019-2020
BIO 100: Introductory Biology for Non-Majors (100% Remote Learning)	
I section	75 min/class 24 students Four/week Summer 2020
BIO III: Introductory Biology for Majors	
I section	75 min/class 24 students Twice/week Fall 2019
BIOL III: Introductory Biology Lab	
I section	110 min/class 24 students Once/week Fall 2019
<b>Invited Group Lecturer for Biotechnology Methods, University of Louisville</b>	2018
BIOL 416: Biotechnology Methods	
2 sections	240 min/class 4 students Twice/week Fall 2018
<b>Teaching Innovation Learning Lab for Microbiology, University of Louisville</b>	2017-2019
BIO 357: General Microbiology	
I section	75 min/class 64 students Eight/Semester Fall 2019
BIO 357: General Microbiology	
I section	75 min/class 49 students Four/Semester Fall 2018
BIO 357: General Microbiology	
I section	75 min/class 43 students Four/Semester Spring 2018
BIO 357: General Microbiology	
I section	75 min/class 65 students Four/Semester Fall 2017
<b>Graduate Teaching Assistant, University of Louisville</b>	2015-2020
BIOL 331: Genetics and Molecular Biology	
2 sections	110 min/class 20 & 20 students Twice/week Spring 2020
BIOL 331: Genetics and Molecular Biology	
2 sections	110 min/class 20 & 22 students Twice/week Fall 2019

BIOL 33I: Genetics and Molecular Biology	2 sections	110 min/class	20 & 22 students	Twice/week	Spring 2019
BIOL 33I: Genetics and Molecular Biology	1 section	110 min/class	19 students	Twice/week	Fall 2018
BIOL 104: introduction to Biological Systems	2 sections	110 min/class	14 students	Three/week	Summer 2018
BIOL 33I: Genetics and Molecular Biology	2 sections	110 min/class	20 & 21 students	Twice/week	Spring 2018
BIOL 33I: Genetics and Molecular Biology	1 section	110 min/class	8 students	Twice/week	Fall 2017
BIOL 258: Microbiology	2 sections	90 min/class	15 & 6 students	Four Days/week	Summer 2017
BIOL 33I: Genetics and Molecular Biology	2 sections	110 min/class	17 & 21 students	Twice/week	Spring 2017
BIOL 33I: Genetics and Molecular Biology	1 section	110 min/class	16 students	Twice/week	Fall 2016
BIOL 244: Principles of Biology	2 sections	110 min/class	27 & 28 students	Twice/week	Spring 2016
BIOL 104: introduction to Biological Systems	3 sections	110 min/class	33, 33, & 33 students	Once/week	Fall 2015

## PROFESSIONAL DEVELOPMENT / SERVICES

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### Training/Workshops/Conferences:

NSF Improving Undergraduate STEM Education Program	2022	The Inclusive STEM Teaching Project	2022
Collaborative Institutional Training Initiative, US	2021	Human Subjects Research – Group 2	2021
	2021	Social/Behavioral Research Investigators and Key Personnel	
	2021	Communicating Research Findings	
	2021	Conflict of Interest	
Preparing Tomorrow's Faculty Program, US			2021
NIH Grant Writing Virtual Conference, US			2020
Training with Remote Options for COVID-19, US			2020
Research Academy RUHR: Open Access Science Workshop, DE			2019
Faculty Search Committee: Diversity Training, US			2019

### Professional Societies/Organizations:

Animal Behavior Society			2021-current
National Association of Biology Teachers			2019-current
	2021-2022	Justices, Equity, Diversity, and Inclusion Committee	
	2019-2020	Community Science Committee	
Genetics Society of America			2018-current
	2022	Science Communication Virtual Networking Moderator for the 31 <sup>st</sup> FGC	
Kentucky Academy of Science			2014-2020

### University Services:

UofL Biology Alumni Advice Panel, UofL			2021
Invited Speaker Series Committee, UCF			2021-2022
Diversity, Equity, and Inclusion: Classroom Isolation Subcommittee, UCF			2021
Biology Undergraduate Student Association: Graduate Student Panel, UofL			2019
Biology Faculty Search Committee – Graduate Student Representative, UofL			2019
German Club, UofL			2018-2019
	2018-2019	Member	
Student Grievance & Discipline Committee, UofL			2016-2017
	2016-2017	Natural Science Division Representative	

<b>Graduate Network of Arts &amp; Sciences, UofL</b>		2016-2018
2017-2018	Vice President	
2017	Natural Science Rep. for Grant Review Committee	
2016-2018	Department of Biology Representative	
<b>Biology Graduate Student Association, UofL</b>		2015-2020
2019-2020	President	
2018-2019	Graduate Student Rep.	
2016-2017	Social Chair	
2016 & 2020	Webmaster	
2016-2020	Member	

**Community Services:**

Florida Undergraduate Research Conference (FURC) Abstract Reviewer	2021
UCF Student Scholar Symposium for Undergraduate Research (SURE) Judge	2021
DuPont Manual Regional Science Fair Judge, Louisville KY	2019
DuPont Manual Regional Science Fair Judge, Louisville KY	2018
Louisville Regional Science & Engineering Fair Judge, KY	2018

**Peer Review Services:**

CourseSource	2 papers	2020-2021
Society for Molecular Plant-Microbe Interactions	1 paper	2020

**COMMUNITY INVOLVEMENT / OUTREACH**

**Community Science Initiative: the Zombie Fungus Foray, Orlando US**

**-Creator-**

\*hyperlinks imbedded in the logos\*

Website: <https://thezombiefungusforay.com>  
 Twitter <https://twitter.com/ZombieANTics>  
 iNaturalist: <https://www.inaturalist.org/projects/the-zombie-fungus-foray>



K-12 Classroom Outreach

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



iNaturalist Curator

2020-current	Website curator for the <i>Ophiocordyceps unilateralis</i> species complex
2020	The Zombie Fungus Foray Project Creator



Seminole County Parks Partnership:

2021	Chuluota Wilderness Area Guided Hike for Zombie Ants – Geneva, FL
2021	Eco Camp: Grossology Week Guide to Zombie Ants – Geneva, FL
2021	Eco Camp: Biology Bootcamp Guide to Zombie Ants – Geneva, FL





Orlando Science Center Partnership:

2022	Otronicon: 3-day Alpha testing of ZombieAntVR with kids – Orlando, FL
2021	Pumpkins and Protons Halloween Party Exhibit: Real-Life Zombie Ants! – Orlando, FL
2019	Spooky Science Week Exhibit: Real-life Zombie Ants! – Orlando, FL




stemCONNECT Partnership:

2021	Spooky Themed Month Virtual Presentation– Orlando, FL
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	2021	Real-life Zombies and Where to Find Them EARTH DAY Virtual Presentation – Orlando, FL Real-life Zombies and Where to Find Them
	TikTok	
	2021	@TheZombieFungusForay <a href="https://www.tiktok.com/@thezombiefungusforay?lang=en">https://www.tiktok.com/@thezombiefungusforay?lang=en</a>
	ZombieAntVR	
	2022	UCF Gains in the Education of Mathematics and Science Summer Camp – Orlando, FL VR project demo for Weeks 1-2, 4-5: grades 5 <sup>th</sup> – 8 <sup>th</sup>
	2020-2022	A virtual reality video game about the <i>Ophiocordyceps</i> life cycle. Project coordinator, story designer, voice director.

### Other Outreach:

<b>Orlando MegaCon Panelist</b>	2022	
Braaaains or No Braaaains: Examining the science behind zombie movies		
<b>Orlando Taste of Science - Science Festival, Scientists Inc.</b>	2022	
Real-life Zombies and Where to Find Them		
	TikTok:	
		@aBitofBiology <a href="https://www.tiktok.com/@abitofbiology">https://www.tiktok.com/@abitofbiology</a>
<b>Orlando MegaCon Panelist</b>	2021	
The Last Damn Zombie Science Panel You'll Ever Need!		
<b>Interview a Biologist, Vermont US</b>	2021	
with Stacey Grimaldo Garcia of Middlebury College		
<b>Skype a Scientist Live, Orlando US</b>	2021	
Spooky Science: Real Life Zombies and Where to Find Them <a href="https://www.youtube.com/watch?v=7WGJZG4DjjQ">https://www.youtube.com/watch?v=7WGJZG4DjjQ</a>		
<b>Beer with a Scientist – Monnik Beer Company, Louisville US</b>	2020	
Our Friends the Fungi: The many types of fungi and the history of how we've used them		
<b>Skype a Scientist</b>	2019-2021	
2020 Creekside Middle School: Sixth Grade Class – Bentonville, AR		
2019 Marie Curie Institute: Fourth and Fifth Grade Class – Amsterdam, NY		
Corry Area High School: Ninth Grade Class – Corry, PA		
Newark Central: Second Grade Class – Newark, NY		
E.K. Powe Elementary School: First Grade Class (AKA the Sea Crew) – Durham, NC		
Annunciation Catholic School: Seventh Grade Class – Denver, CO		
<b>Guest Speaker at University of Louisville: Meet the Professor</b>	2019	
Science Information Literacy & Oral Communication		
<b>Guest Speaker at Lexington Christian Academy High School</b>	2018	
The history of genetic modification of our food		
<b>Guest Speaker at Lexington Christian Academy High School</b>	2016	
What is a GMO?		
<b>ExBEERiment – Socialize with Science at the Louisville Science Center</b>	2016	
The science of brewing beer		

## LANGUAGE PROFICIENCIES

### English

ILR level 5 – Native Proficiency

### Dutch

ILR level 2 – Limited Working Proficiency

### German

ILR level 2 – Limited Working Proficiency

## REFERENCES

**Dr. Charissa de Bekker** University of Central Florida, US/ PI

[Charissa.debekker@ucf.edu](mailto:Charissa.debekker@ucf.edu)

<b>Dr. Michael Perlin</b>	University of Louisville, US/ PI	<a href="mailto:Michael.perlin@louisville.edu"><u>Michael.perlin@louisville.edu</u></a>
<b>Dr. Tatiana Giraud</b>	Université Paris-Sud, FR/ Collaborator	<a href="mailto:Tatiana.giraud@u-psud.fr"><u>Tatiana.giraud@u-psud.fr</u></a>
<b>Dr. Dominik Begerow</b>	Ruhr-Universität Bochum, DE/ Collaborator	<a href="mailto:Dominik.begrow@rub.de"><u>Dominik.begrow@rub.de</u></a>
<b>Dr. Scott Gold</b>	USDA Georgia, US/ Committee Member	<a href="mailto:Scott.gold@ARS.USDA.Gov"><u>Scott.gold@ARS.USDA.Gov</u></a>