Teddy Garcia-Aroca, Ph.D.
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RESEARCH INTERESTS

I am interested in the fungal pathogen diversity and evolution, lifestyle transitions, and biochemical activity, interactions, and resilience across ecosystems, and the direct or indirect impacts of human activity on pathogen evolution. Current research in our lab focuses on elucidating the patterns of host preference in *Rhizoctonia solani*, developing alternative management strategies for fungicide-resistant *Fusarium* spp., elucidating the bioactivity of *Clonostachys* spp. secondary metabolites among different host species, and the genetic diversity of the potato black dot pathogen, *Colletotrichum coccodes*. Additionally, from previous work with *Xylaria necrophora*, we are reconstructing the evolutionary history and population structure of this emerging pathogen of soybean in continental United States.

EDUCATION

2017-2021: Ph.D. in Plant Pathology. Department of Plant Pathology & Crop Physiology, Louisiana State University, Baton Rouge, Louisiana, USA. Co-advisors: Drs. Vinson P. Doyle and Paul "Trey" Price. GPA: 3.7.

2014-2016: M.S. in Plant Pathology. Department of Plant Pathology & Crop Physiology, Louisiana State University, Baton Rouge, Louisiana, USA. Major Professor: Raymond Schneider. GPA: 3.5.

2010-2011: *Erasmus Mundus* (Undergraduate Exchange Program), School of Pharmacy, *Universidad del Pais Vasco* (*UPV/EHU*), Vitoria-Gasteiz, Spain. GPA: 3.5.

2008-2012: B.S. in Agronomy. *Universidad Nacional de Agricultura* (*UNAG*), Catacamas, Olancho, Honduras. GPA: 3.1.

RESEARCH EMPLOYMENT & INTERNSHIPS

Aug 2022 – present: Assistant Professor & Quantitative Fungal Ecologist (60 % Research, 40% Teaching). Department of Plant Pathology, University of Nebraska-Lincoln, Lincoln, NE, USA.

Responsibilities: Building a research program aimed to better understand the ecology of important plant pathogens in the state of Nebraska, the region, and across the globe. Advising undergraduate and graduate students, and postdocs. Serving in graduate committees. Writing state and federal grant proposals. Teaching undergraduate-level

courses in introductory plant pathology and graduate-level courses in ecology and management of plant pathogens. Developing new courses in plant pathology, microbiology, mycology, fungal ecology, and bioinformatics.

Jan 2022 – Aug 2022: Postdoctoral Research Associate. Department of Biological Sciences, University at Albany, State University of New York, Albany, New York, USA. PI: Dr. Cheryl P. Andam.

Responsibilities: Elucidating patterns of evolution, diversity, ecology, and incidence of human, animal, and plant bacterial pathogens, including *Mammaliicoccus sciuri*, *Staphylococcus aureus* and *Streptomyces* spp. from bat caves and other environments. From sampling and handling of isolates to sequencing and analyzing genomes using state-of-the-art bioinformatic tools to address questions about the evolution, main lineages, recombination, selection, and correlations with the associated metadata. Mentoring undergraduate and graduate students. Organizing and judging student research competitions. Teaching bioinformatics to graduate and undergraduate students.

2017 – 2021: Graduate Assistant, Department of Plant Pathology & Crop Physiology, Louisiana State University, Baton Rouge, Louisiana, USA. Dissertation: "Taproot decline of soybean in the southern United States: Origin, evolution, and etiology of an emerging disease". Co-PIs: Drs. Vinson P. Doyle and Paul "Trey" Price.

Responsibilities: Carrying out and communicating research associated with an emerging disease of soybean, taproot decline (TRD), which led to the description of the novel pathogen *Xylaria necrophora*. Reporting emerging fungal pathogens, such as *Curvularia lunata,* in the United States. Building and maintaining a collection of fungal isolates and its associated metadata. Sequencing and analyzing fungal specimens for population genetics studies. Extracting secondary metabolites and testing in greenhouse and *in vitro* experiments. Mentoring undergraduate and graduate students, which led to two honors theses related to the development of a quantitative real-time PCR (qPCR) assay for *X. necrophora* written by undergraduate students and many contributions with graduate students.

2014 – 2016: Graduate Assistant. Department of Plant Pathology & Crop Physiology, Louisiana State University, Baton Rouge, Louisiana, USA. Thesis: "Effects of glyphosate on soybean nutrition, endophytic colonization by *Cercospora* cf. *flagellaris*, and severity of Cercospora leaf blight". PI: Dr. Raymond Schneider.

Responsibilities: Designing, planning, and executing field and laboratory experiments to assess the indirect effects of glyphosate on plant nutrition, disease incidence and severity, and pathogen biomass (using quantitative PCR). Assisting fellow lab mates in field and lab experiments. Training and mentoring of undergraduate students.

2013 (June–Dec): Visiting Scholar/Scientist. Department of Plant Pathology & Crop Physiology, Louisiana State University, Baton Rouge, Louisiana, USA. Research: "Developing a real-time PCR protocol for detection of *Cercospora* cf. *flagellaris*" and

"testing fungigice resistance among *C.* cf. *flagellaris* isolates collected across Louisiana". PI: Dr. Raymond Schneider.

Responsibilities: Collecting and processing plant samples for DNA extraction and real-time PCR targeting *C.* cf. *flagellaris*. Assisting in laboratory protocols and maintenance.

2012 (June–Sept): Visiting Scholar/Undergraduate researcher. College of Agricultural and Environmental Sciences (CAES) University of Georgia (UGA), Griffin, Georgia, USA. Thesis: "Developing a baseline of fungicide sensitivity for *Sclerotinia homoecarpa*, causal pathogen of 'dollar spot' on seashore Paspalum". Advisor: Dr. Alfredo Martinez.

Responsibilities: Applying fungicide treatments, rating plots, collecting samples, and obtaining isolates for *in vitro* testing.

PUBLICATIONS & PEER-REVIEWED ARTICLES

Colombo, DN; Rafi, N; Manoj, A; Fakhoury, AM; **Garcia-Aroca, T**; Infantino, A; Leandro, L; Little, CR; Petrovic, , K; Mathew, FM. 2025. A Diagnostic Guide for Fusarium Root Rot of Soybean. Plant Health Progress. https://apsjournals.apsnet.org/doi/pdf/10.1094/PHP-02-25-0075-DG

Garcia-Aroca, T; Kemerait, R; Jimenez Madrid, A. 2025. Genome assembly of *Ramulariopsis pseudoglycines*, a fungal pathogen responsible for areolate mildew on cotton. Microbiology Resource Announcement Vol. 14(3): e01099-24. https://doi.org/10.1128/mra.01099-24

Piper, K.R; Ikhimiukor, O; Souza, S.S.R; **Garcia-Aroca, T;** Andam, C.P. 2024. Evolutionary dynamics of the accessory genomes of *Staphylococcus aureus*. mSphere. Vol. 9(4): e00751-23. https://doi.org/10.1128/msphere.00751-23

Garcia-Aroca, T; Price, P.P; Solórzano, J; Galo, D; Sheffield, S.B; Doyle, V.P. 2022. Secondary metabolites produced by *Xylaria necrophora* are responsible for foliar symptoms associated with taproot decline of soybean. Plant Health Progress 23(4):388–398. https://doi.org/10.1094/PHP-03-22-0021-RS

Garcia-Aroca, **T;** Souza, S.S.R; Ikhimiukor, O; Marcovici, M; Smith, J.T; Amador, S; McGonagle, C.J; Nye, G; Needle, D.B; Gibson, R; and Andam, C.P. 2022. Genome sequencing of methicillin-resistant and methicillin-susceptible *Mammaliicoccus sciuri* from diseased animals. Microbiology Resource Announcements. Vol. 11(10): mra.00714-22. https://journals.asm.org/doi/epdf/10.1128/mra.00714-22

Garcia-Aroca, T; Price, Paul P; Tomaso-Peterson, Maria; Allen, Tom W; Wilkerson, Tessie H; Spurlock, Terry N; Faske, Travis R; Bluhm, Burt; Conner, Kassie; Sikora, Edward; Guyer, Rachel; Kelly, Heather; Squiers, Brooklyn M; Doyle, Vinson P. 2021. *Xylaria necrophora*, sp. nov., is an emerging root-associated pathogen responsible for taproot

decline of soybean in the southern United States. Mycologia 113(2):326-347. https://doi.org/10.1080/00275514.2020.1846965

Guyer R; Pate S; **Garcia-Aroca T**; Doyle VP; Price T; Kelly HM. 2020. First report of taproot decline caused by *Xylaria* sp. on soybean in Tennessee. Plant Disease. PDIS-05-20-0947-PDN. https://doi.org/10.1094/PDIS-05-20-0947-PDN.

Garcia-Aroca, T; Doyle, V; Singh, R; Price, T; Collins, K. 2018. First Report of Curvularia leaf spot of Corn, caused by *Curvularia lunata*, in the United States. Plant Health Progress 19(2): 140-142. https://doi.org/10.1094/PHP-02-18-0008-BR.

EDUCATIONAL PUBLICATIONS

Garcia-Aroca, T. 2024. Undergraduate Instruction in Plant Pathology: In-class Group Activities Improve Teamwork Skills in Semester-long Projects. UNL Digital Commons. https://digitalcommons.unl.edu/prtunl/245/

EXTENSION PUBLICATIONS

Nebraska Soybean Board, Annual Report: **Garcia-Aroca, T**. 2025. Surveying and developing alternative management strategies for seedling pathogens in Nebraska. Page 17. https://www.nebraskasoybeans.org/file/318/NSB%20Annual%20Research%20Report%20-%20FY24.pdf

Brown, C; Matthew, F; **Garcia-Aroca, T**. 2024. Combating Soybean Seedling Diseases from the Inside and Out. Soybean Research and Information Network. https://soybeanresearchinfo.com/research-highlight/combatting-soybean-seedling-diseases-from-inside-and-out/

Doyle, V.P; **Garcia-Aroca, T;** Price, P.P; Solórzano, J. 2022. Building a framework for managing an emerging fungal disease of soybean. Louisiana Agriculture Magazine, Winter 2022.

Garcia-Aroca, T; Price, P.P.; Doyle, V.P. 2021. Taproot Decline of Soybean — *Xylaria necrophora*. 2021. Louisiana Plant Pathology Disease Identification and Management Series. LSU – AgCenter. PUB3802.

FEATURED PRESS ARTICLES

2025: "Omaha-based nonprofit invests in fungi as a 'game-changing' planet solution" by Elise St Clair – Nebraska News Service. https://www.nebraskanewsservice.net/news/agriculture/omaha-based-nonprofit-invests-in-fungi-as-a-game-changing-planet-solution/article_1874ea84-56d7-4cc6-8167-

d2597fb592ef.html#:~:text=Colin%20Averill%20founded%20Funga%20in,boosts%20tree%20growth%20by%2030%25

2021: "LSU student identifies, names new fungus species" by Bruce Shultz. LSU – AgCenter.

2020: "Taproot Decline of Soybean: Bridging the Gap Between Applied and Fundamental Research". Louisiana Agricultural Consultants Association Turn Row Talk Spring Volume 29.

2018: "Understanding of soybean taproot decline disease evolution" by Kyle Peveto, Tobie M. Blanchard, and Frances Gould. LSU AgCenter.

SUBMITTED MANUSCRIPTS

Solórzano, J; Kartika, R; Donnarumma, F; Ganiu, M.O; **Garcia-Aroca, T**; Doyle, V.P. 2025. Antimicrobial and phytotoxic secondary metabolites produced by *Xylaria necrophora*, an emerging pathogen of soybean, play key roles in infection biology. Mycological Progress. Submitted: 05/30/2023. Preprint: https://doi.org/10.21203/rs.3.rs-3002498/v1

MANUSCRIPTS IN PREPARATION

Garcia-Aroca, T; Price, P.P; Richards, J.K; Andam, C.P; and Doyle, V.P. 2026. Emergence of mostly clonal lineages of *Xylaria necrophora* in agricultural systems in the southern United States. In preparation. Expected submission: July 2025.

ABSTRACTS (Supervised: *graduate students, **undergraduate students)

Fiore, T**; **Garcia-Aroca, T.** 2025. Effectivity of secondary metabolites produced by Clonostachys spp. as plant growth promoters. (Abs) Mycological Society of America (MSA), Madison, WI. June 2025.

Eisenbraun, R**; Maughan, M; Mullin, P ; Sayer, E; **Garcia-Aroca, T**. 2025. Fungicide Resistance among genetically distinct populations of the potato Black Dot pathogen, *Colletotrichum coccodes*. APS Plant Health annual meeting. Honolulu, HI.

Eisenbraun, R**; Maughan, M; Mullin, P ; Sayer, E; **Garcia-Aroca, T**. 2025. Genetically distinct populations of the potato Black Dot pathogen, *Colletotrichum coccodes*, are resistant to fungicides with multiple modes of action. Mycological Society of America annual meeting. Madison, WI.

Eisenbraun, R**; Maughan, M; Mullin, P ; Sayer, E; **Garcia-Aroca, T**. 2025. Single and multiple site fungicide resistance among genetically distinct populations of the potato

Black Dot pathogen, *Colletotrichum coccodes*. American Society of Plant Biologists Midwest conference. Lincoln, NE.

Muchiri, K.K*; Mangel, D; Broderick, K; Mathew, F; **Garcia-Aroca, T.** 2025. Cryptic diversity of Fusarium spp. from Nebraska soybean roots. Mycological Society of America annual meeting. Madison, WI.

Muchiri, K.K*; Mangel, D; Broderick, K; Mathew, F; **Garcia-Aroca, T.** 2025. Multiple and single-site fungicide resistance in soil-borne fungal pathogens of soybean in Nebraska. APS Plant Health annual meeting. Honolulu, HI.

Garcia-Aroca, T; Price, T; Richards, JK; Doyle, VP. 2025. Population structure and cryptic recombination of *Xylaria necrophora*, an emerging pathogen of soybean in the southern United States. APS Plant Health annual meeting. Honolulu, HI.

Miles, G; Urqia, M; **Garcia-Aroca, T**; Richards, JK; Price, P; Doyle, VP. 2025. Exploring the infection mechanisms of Xylaria necrophora: Histological and genomic approaches

Rush, RJ; Urqia, M; **Garcia-Aroca, T**; Price, P; Richards, JK; Doyle, VP. 2025. Transcriptomic analysis of *Xylaria necrophora* infection in soybean and cotton. . Mycological Society of America annual meeting. Madison, WI.

Solórzano, JE; Drott, MT; Moscou, M; Subbaiah, A; Floyd, C; Kleczewski, NM; Doyle, VP; Plewa, D; **Garcia-Aroca, T**; Jackson-Ziems, T; Goodnight, M; Bish, M; González-Acuña, J; Broders, K; Malvick, DK. 2025. APS Plant Health annual meeting. Honolulu, HI.

Fomba, J.A; Ameen, G; **Garcia-Aroca, T**; Broderick, K; Eskridge, K.M; Frels, K.A; Wegulo, S.N. 2025. Assessing yield loss in winter wheat caused by bacterial leaf streak in Nebraska. APS Plant Health annual meeting. Honolulu, HI.

Muchiri, K.K*; Mangel, D; Broderick, K; **Garcia-Aroca, T**. 2024. Fusarium diversity and distribution in Nebraska. 4th UNL Microbiology Symposium, Lincoln, NE.

Khoo, XZ*; Powers, T; Harveson, B; **Garcia-Aroca, T**. 2024. Reconstructing the evolutionary history of host preference in *Rhizoctonia solani* unveils a shift to specialist in one of its subpopulations. (Abs). Mycological Society of America annual meeting, Markham, ONT, Canada.

Doyle, VP; **Garcia-Aroca, T**; Solorzano, J; Richards, JK; Donnarumma, F; Kartika, R; T. Allen, T. Spurlock; Price, P. 2024. The origin, evolution, and chemical ecology of *Xylaria necrophora*, the causal agent of taproot decline. (Abs). 2024 Southern Soybean Disease Workers, Pensacola Beach, FL.

Khoo, XZ* & **Garcia-Aroca, T**. 2023. Thirty years of data on the global genetic diversity of *Rhizoctonia solani* reveals patterns of host preference. (Abs. North Central-APS annual

meeting, Lafayette, IN. https://apsjournals.apsnet.org/doi/epdf/10.1094/PHYTO-113-9-S2.72

Doyle, VP; **Garcia-Aroca, T**; Solorzano, J; Richards, JK; Donnarumma, F; Kartika, R; Price, PP. 2023. The origin, evolution, and chemical ecology of an emerging fungal pathogen of soybean, *Xylaria necrophora.* European Conference on Fungal Genetics, Innsbruck, AUSTRIA.

Solórzano, JE; Ganiu, MO; Donnarumma, F; **Garcia-Aroca, T**; Kartika, R; Richards, JK; Van Houten, JP; Gremillion, MR; Price, T; Doyle, VP. 2022. *Xylaria necrophora* produces both phytotoxic and antimicrobial secondary metabolites that contribute to taproot decline of soybean. (Abs). American Phytopathological Society (APS) annual meeting, Plant Health 2022, Pittsburgh, PA.

Solórzano, JE; Ganiu, MO; Donnarumma, F; **Garcia-Aroca, T**; Kartika, R; Richards, JK; Van Houten, JP; Gremillion, MR; Doyle, VP. 2022. *Xylaria necrophora*, the causal agent of taproot decline of soybean, produces both phytotoxic and antimicrobial secondary metabolites. (Abs). Mycological Society of America annual meeting, Gainesville, FL.

Garcia-Aroca, T; Price, T; Richards, J.K; Andam, C.P; Doyle, V.P. 2022. Two mostly clonal lineages of *Xylaria necrophora*, an emerging pathogen of soybean, are found in the southern United States with signatures of past sexual recombination. (Abs). American Society for Microbiology annual meeting, Washington DC.

Garcia-Aroca, T; Price, P.P; Solórzano, J; Galo, D; Sheffield, S**; Richards, J. K; Doyle, V.P. 2021. Systemic secondary metabolites produced by *Xylaria necrophora* are responsible for the foliar symptoms associated with taproot decline of soybean. (Abs). Southern Soybean Disease Workers (SSDW) annual meeting, virtual format, 03/2021.

Garcia-Aroca, T; Price, P.P; Solórzano, J; Galo, D; Sheffield, S**; Doyle, V.P. 2021. Foliar symptoms of taproot decline are caused by systemic secondary metabolites produced by *Xylaria necrophora.* (Abs). Phytopathology 111:S1.1. https://doi.org/10.1094/PHYTO-111-9-S1.1

Squiers, B.M**; **Garcia-Aroca, T**; Doyle, V.P. 2020. Developing and evaluating the utility of species-specific primers for the detection of an emerging fungal disease of soybean. (Abs). Louisiana State University Discover Day Undergraduate Research Symposium.

Garcia-Aroca, T; Price,P; Tomaso-Peterson, M; Wilkerson, T; Spurlock, T.N; Faske, T.R; Bluhm, B.H; Conner, K.N; Sikora, E.J; Guyer, R; Kelly, H.M; Allen, T; Doyle, V.P. 2020. Taproot decline of soybean is caused by a novel *Xylaria* sp. That produces phytotoxins associated with foliar symptoms. (Abs). Phytopathology 110:S1.1. https://doi.org/10.1094/PHYTO-110-7-S1.1.

Garcia-Aroca, T; Price,P; Tomaso-Peterson, M; Wilkerson, T; Spurlock, T.N; Faske, T.R; Conner, K.N; Sikora, E.J; Guyer, R; Kelly, H.M; Allen, T; Doyle, V.P. 2019. A Novel

Xylaria sp. Is Capable of Infecting Soybean Roots and Producing Systemic Secondary Metabolites Responsible for Foliar Symptoms. (Abs). Mycological Society of America, annual meeting. MON 31. https://msafungi.org/wp-content/uploads/2019/08/2019-MSA-Meeting-Abstracts-with-Presenting-Author-Index.pdf.

Guyer, R; Pate, S; **Garcia, T.G**; Doyle, V.P; Price, P; Kelly, HM. 2018. Investigation of new soil borne pathogen on soybean (*Glycine max*) in Tennessee. (Abs). Phytopathology. 108:S1.192. https://doi.org/10.1094/PHYTO-108-10-S1.1.

Garcia-Aroca, T; Price, P; Tomaso-Peterson, M: Spurlock, T; Faske, T; Bluhm, B; Conner, K; Sikora, E; Guyer, R; Kelly, H; Allen, T; Doyle, V.P. 2018. A novel lineage of *Xylaria* is responsible for taproot decline of soybean in the southern United States. (Abs). 11th International Mycological Congress, San Juan, Puerto Rico.

Garcia-Aroca, T; Price, P; Tomaso-Peterson, M: Spurlock, T; Faske, T; Bluhm, B; Conner, K; Sikora, E; Guyer, R; Kelly, H; Allen, T; Doyle, V.P. 2018. Taproot Decline of Soybean is Caused by an Undescribed Species in the Genus *Xylaria*. (Abs). Proceedings of the 45th Annual Meeting of the Southern Soybean Disease Workers (SSDW), p. 16.

Garcia, TG; Robertson, C.L; Tubana, E; Ward, B.M; Silva, E.C; Price, P.P; Levy, R; Schneider, R.W. 2017. Effects of Glyphosate on Soybean Nutrition, Endophytic Colonization by *Cercospora* cf. *flagellaris* and Development of Cercospora Leaf Blight. (Abs). Phytopathology 107:S3.1. http://dx.doi.org/10.1094/PHYTO-107-4-S3.1.

Garcia, TG; Silva, E.C; Ward, B.M; Robertson, C.L; Price, P; Schneider, R.W; Levy, R. 2016. Correlating the Effects of Glyphosate on Soybean Nutrition with Cercospora Leaf Blight and Septoria Brown Spot Severity. (Abs). Phytopathology 106:S4.1. https://doi.org/10.1094/PHYTO-106-12-S4.1.

Silva, E; **Garcia, T**; Chanda, A; Robertson, C; Lygin, A; Ward, B; and Schneider, R. 2016. Two symptoms of Cercospora leaf blight of soybean: An indication of two diseases caused by the same pathogen. (Abs). Phytopathology 106:S2.6. http://dx.doi.org/10.1094/PHYTO-106-4-S2.6

Garcia, TG; Silva, E.C; Ward, B.M; Robertson, C.L; Levy, R; and Schneider, R.W. 2015. Glyphosate Affects Cercospora Leaf Blight and Brown Spot of Soybean. (Abs). Southern Soybean Disease Workers (SSDW) 42nd annual meeting, Pensacola, FL. http://www.ssdw.net/images/2015.pdf

Ward, B.M; Robertson, C.L; Silva, E.C; **Garcia, T.G**; and Schneider, R.W. 2015. Minor Element Application as a Management Strategy for Soybean Rust and Cercospora Leaf Blight. (Abs). Southern Soybean Disease Workers (SSDW) 42nd annual meeting, Pensacola, FL. http://www.ssdw.net/images/2015.pdf

Chagas Ferreira Da Silva, E; **Garcia, T.G**; Lygin, A; Chanda, A.K; Robertson, C.L;· Ward, B.M; Schneider, R.W. 2015. Fungal colonization and cercosporin and flavonoid

concentrations for two different symptoms of Cercospora leaf blight in soybean. (Abs). Phytopathology 105(Suppl. 2):S2.1. http://dx.doi.org/10.1094/PHYTO-105-4-S2.1

Silva, E.C.; **Garcia**, **T.G;** Lygin, A.V; Chanda, A.K; Robertson, C.L; Ward, B.M; Schneider, R.W. 2015. A New Perspective on Cercospora Leaf Blight Symptoms on Soybean. (Abs). Southern Soybean Disease Workers (SSDW) 42nd annual meeting, Pensacola, FL.

Ward, B.M; Robertson, C.L; Schneider, R.W; Chagas Ferreira da Silva, E; **Garcia, T.G**. 2015. Foliar applications of minor elements suppress Cercospora leaf blight and rust in soybeans. (Abs). Phytopathology 105(Suppl. 2):S2.1. http://dx.doi.org/10.1094/PHYTO-105-4-S2.1

Chagas Silva, E; Chanda, A.K;·Schneider, R..W;·**Garcia Aroca, TG**;·Robertson, C.L;·Tubana, E.B.S; Ward, B.M. 2014. Influence of iron on soybean leaf infection by *Cercospora kikuchii* and symptom expression. (Abs) Phytopathology 104(Suppl. 2):S2.1. http://dx.doi.org/10.1094/PHYTO-104-5-S2.1

GRANTS

FY2025-2026 (Funded): Teddy Garcia-Aroca (PI). Fungicide efficiency among genetically distinct populations of the potato Black Dot pathogen, *Colletotrichum coccodes*. Nebraska Potato Development Committee (NPDC). Amount: $60,093.

AY2024-2025 (Funded): IANR Graduate Teaching Assistantships: $9,375.00.

FY2024-2026 (Funded): Febina Mathew (PI); Jason Bond, Ahmad Fakhoury, Samuel Markell, Richard Webster, Silvina Arias, Daren Mueller, Arti Singh, Gary Munkvold, Leonor Leandro, Martin Chilvers, Chris Little, John Rupe, Alejandro Rojas, Paul Esker, Damon Smith, Kiersten Wise, Albert Tenuta, Dylan Mangel, Teddy Garcia-Aroca, Ahmed Abdelmagid (co-PIs). Seedling pathogens in soybean: Disease management and farmer education (2311-210-0101). United Soybean Board. Amount requested for UNL: $ 105,000.

FY2024-2026 (Funded): Teddy Garcia-Aroca (PI), Dylan Mangel (co-PI). Surveying and developing alternative management strategies for seedling pathogens in Nebraska. Nebraska Soybean Board. Amount: $ 165,600.

FY2024-2026 (Funded): Dylan Mangel (PI), Teddy Garcia-Aroca (co-PI). Soybean Sclerotinia Stem Rot Fungicide Nursery Validation and Risk Assessment. Nebraska Soybean Board. Amount: $ 83,521

FY2025 (Funded): Thomas Powers (PI), Julie Peterson (co-PI), and Teddy Garcia-Aroca (co-PI). Mapping and monitoring beneficial entomopathogenic nematodes. Nebraska Corn Board. Amount: $69,350

AY2023-2024 (Funded): IANR Graduate Teaching Assistantships: $9,375.00.

2021: Ogden Honors College for Sophie B. Sheffield thesis proposal. Title: "The development and validation of a molecular diagnostic assay for an emerging pathogen of soybean." (U$D 750).

2016: National Science Foundation and the Louisiana Board of Regents. PI: Raymond Schneider and Co-PI: Sebastian Albu. Amount: $10,000. Establishing a multidisciplinary international collaboration between the LSU Agricultural Center, the Brazilian Agricultural Research Corporation (EMBRAPA) in Londrina, Brazil and the Federal University of Viçosa (UFV) in Minas Gerais, Brazil.

2012: Undergraduate research assistantship by UNAG and UGA (U$D 3,000).

2010: Erasmus Mundus scholarship (€ 13,000).

TEACHING & WORKSHOPS

Spring 2025: PLPT 210: Plant Pathogens and Disease. Two sections. Total Enrolment = 69. Undergraduate level.

Spring 2025: PLPT 802: Ecology and Management of Plant Pathogens. Enrolment = 9. Graduate level.

Spring 2024: PLPT 210: Plant Pathogens and Disease. Enrolment = 39. Undergraduate level.

Spring 2024: PLPT 802: Ecology and Management of Plant Pathogens. Enrolment = 5. Graduate level.

AY2023-2024: Faculty-led Inquiry into Reflective Scholarly Teaching (F.I.R.S.T) Project.

Spring 2023: PLPT 210: Plant Pathogens and Disease. Enrolment = 80. Undergraduate level.

Spring 2023: PLPT 802: Ecology and Management of Plant Pathogens. Enrolment = 14. Graduate level.

2022: Team-leader for the Summer Bioinformatics Fellowship organized by the RNA Institute at University at Albany.

2021: "Genomic approaches to plant pathology: bioinformatics as a powerful tool", organized by Teddy Garcia-Aroca and Hope Becton, APS-SD GSR for the 2021 annual meeting.

2021: "Talk to an expert", organized by Teddy Garcia-Aroca and Hope Becton, APS-SD GSR, and Dr. Rebecca Melanson, for the 2021 annual meeting.

2020: Bioinformatics workshop for the LSU PPCP-GSA Journal Club titled: "Clade- and species-specific internal primer design with the DECIPHER package on RStudio" by Teddy Garcia-Aroca.

2019: Summer Technique Sharing Workshops – Title: "Phylogenetics 101 – methods to perform phylogenetic analyses from raw data to phylo-trees" by Teddy Garcia-Aroca.

2018: Summer Technique Sharing Workshops – Title: "Introduction to R and R-studio for statistical analyses" by Teddy Garcia-Aroca.

2018: Teaching assistant, Introductory Mycology. Instructor: Dr. Vinson P. Doyle.

2018: LSU Agcenter – AgMagic. Teaching elementary school students about plant pathogens.

2017: 2b-RAD for genotyping by sequencing. Workshop organized by Oregon State University, Catalina Island, CA.

2017: Summer Technique Sharing Workshops: "Development of qPCR assays and protocols" by Teddy Garcia-Aroca.

AWARDS

2023: External Mentoring Program, Faculty Affairs, New Faculty Development Program, UNL ($1,995).

2021: C.W. Edgerton Honor Award, Department of Plant Pathology & Crop Physiology ($500).

2021: 1st place student research competition, Southern Soybean Disease Workers (SSDW) annual meeting (U$D 500).

2019: Ray & Dorothy Young Endowed Assistantship in Integrated Pest Management (U$D 10,000).

2019: Mycological Society of America (MSA) Edward E. Butler Mentor-mentee Student Travel Award (U$D 750).

2018: Dr. Weston J. Martin Fellowship award, LSU Department of Plant Pathology & Crop Physiology (U$D 500).

2018: 1st Place at LSU PPCP GSA student research competition. Presentation title: "A novel lineage of *Xylaria* is responsible for taproot decline of soybean in southern USA" (U$D 500).

2018: 2nd Place at graduate student research competition at MAWFGS (Mid-South Association of Wheat and Feed Grain Scientists). Presentation title: "Curvularia leaf spot of corn, a newly found disease in the United States" (U$D 200).

2018: 2nd Place at student paper competition, Southern Soybean Disease Workers (SSDW), Pensacola Beach, FL. Presentation title: "Taproot decline of soybean is caused by an undescribed species in the genus *Xylaria*" (U$D 500).

2017: 1st abstract submission award. American Phytopathological Society Southern Division (APS-SD) annual meeting, College Station, TX.

PROFESSIONAL MEETINGS/CONFERENCES

2024: Mycological Society of America (MSA), Markham, ONT, Canada **- judge**

2023:

- Plant Health 2023 - American Phytopathological Society meeting, Denver, CO - attendee
- Mycological Society of America (MSA) annual meeting, Flagstaff, AZ - **judge**
- North Central American Phytopathological Society meeting - attendee
- Nebraska Plant Sciences Symposium (NPSS), Lincoln, NE – **judge**

2022:

- 2nd UNL Microbiology Research Symposium, Lincoln, NE **– judge**
- American Society for Microbiology 2022 annual meeting, Washington DC.
- First Symposium of UNAG Alumni in the US, Baton Rouge, LA.
- New York State Science and Engineering Fair (NYSSEF), New York, NY**– judge**.
- RNA Institute 2022 symposium, Albany, NY **– judge**
- University at Albany Life Sciences Research Symposium (LSRS), Albany. NY **– judge**

2021:

- LSU ASPIRE Symposium **– panelist**.
- American Phytopathological Society Southern Division (APS-SD) meeting, (virtual).
- Southern Soybean Disease Workers (SSDW) annual meeting (virtual).

2020:

- Mycological Society of America (MSA) annual meeting (virtual).
- American Phytopathological Society annual meeting (virtual).
- American Phytopathological Society Southern Division (APS-SD), Charleston, SC.

2019: Mycological Society of America (MSA) annual meeting, Minneapolis, MN.

2018:

- International Mycological Congress (IMC11), San Juan, Puerto Rico.
- Southern Soybean Disease Workers (SSDW) and NCERA-137, Pensacola, FL.

- Mid-South Association of Wheat and Feed Grain Scientists (MAWFGS), Huntsville, AL.

2017: American Phytopathological Society Southern Division (APS-SD), College Station, TX.

2016: American Phytopathological Society (APS) annual meeting, Tampa, FL.

2013: American Phytopathological Society (APS) annual meeting, Austin, TX.

PRESENTATIONS & SEMINARS

March 2025: Invited seminar, Department of Plant Pathology, UGA. Title: **"**Diversity and evolution of *Xylaria necrophora*, an emerging pathogen of soybean in southern United S"ates"

September 2024: UNL Faculty Slam.

March 2023: Invited seminar, Department of Entomology, UNL. Title: "Emerging threats to US agriculture."

June 2022: Oral presentation. Title: "Two mostly-clonal lineages of *Xylaria necrophora,* an emerging pathogen of soybean, are found in the southern United States with signatures of past sexual recombination". ASM Microbe 2022, Washington DC.

March 2022: Oral presentation: Title: "*Xylaria necrophora*, an emerging pathogen of soybean, came from the forest and two mostly-clonal lineages are found in the southern USA". First Symposium of UNAG Alumni in the US. Baton Rouge, LA.

September 2021: Exit seminar. Title: "Taproot decline of soybean in the southern United States: origin, evolution, and etiology of an emerging disease". Department of Plant Pathology & Crop Physiology, Louisiana State University, Baton Rouge, LA 70803.

March 2021: Oral presentation. Title: "Systemic secondary metabolites produced by *Xylaria necrophora* are responsible for the foliar symptoms associated with taproot decline of soybean". Southern Soybean Disease Workers (SSDW) annual meeting. Virtual format.

February 2021: Oral presentation. Title: "Foliar symptoms of taproot decline are caused by systemic secondary metabolites produced by *Xylaria necrophora*". 98th Southern Division American Phytopathological Society (SD-APS) annual meeting. Virtual format.

April 2020: Oral presentation. Title: "Emerging diseases in the age of genomics: using big data to 'solve' big problems". Seminar at the Department of Plant Pathology & Crop Physiology, LSU.

February 2020: Oral presentation. Title: "Taproot Decline of Soybean is caused by a novel species of *Xylaria* that produces systemic secondary metabolites responsible for foliar symptoms". 97th Southern Division American Phytopathological Society (SD-APS) annual meeting, Charleston, SC, Charleston, SC.

2019: Oral presentation. Title: "A novel lineage of *Xylaria* is responsible for taproot decline of soybean in the southern United States". Mycological Society of America (MSA) annual meeting, Minneapolis, MN.

2018: Oral presentation. Title: "Curvularia leaf spot of corn, a newly found disease in the United States". Student paper competition at Mid-South Association of Wheat and Feed Grain Scientists (MAWFGS), Madison, Alabama.

2018: Poster presentation. Title: "A novel lineage of *Xylaria* is responsible for taproot decline of soybean in the southern United States". 11th International Mycological Congress, San Juan, Puerto Rico.

2018: Oral presentation. Title: "Taproot decline of soybean is caused by an undescribed species in the genus *Xylaria*". Southern Soybean Disease Workers (SSDW) annual meeting, Pensacola, FL

2018: Oral presentation. Title: "Taproot decline update: new species of *Xylaria*?". Invited talk at the Soybean Diseases Technical Committee Meeting (NCERA-137), Pensacola Beach, FL.

2016: Oral presentation. Title: "Glyphosate affects Cercospora leaf blight and brown spot of soybean". Federal University of Uberlandia and Federal University of Vicosa, Brazil.

2016: Oral presentation. Title: "Research on soybean diseases in the Schneider laboratory". Estación Experimental Agroindustrial Obispo Colombres (EEAOC), Tucuman, Argentina.

SERVICE & LEADERSHIP ROLES

2025-present: Vice-President of the Southern Soybean Disease Workers (SSDW).

2024-present: Member of the Department of Plant Pathology's Vision Committee.

2024: Journal article reviewer. Number of reviews: 2.

2024: USDA-NIFA ad-hoc reviewer. Number of proposal summaries: 240.

2024: NSF Ad-hoc reviewer. Number of proposals: 1.

2024: Plant Pathology Journal Club Faculty Advisor.

2024: USDA-NIFA panelist for proposal review.

2024: Southern Integrated Pest Management Center (SIPMC) panel reviewer.

https://southernipm.org/

2023: Journal article reviewer. Number of articles: 4.

2023: Facilitator at the MARVEL workshop for UNL Microbiology club.

2023-present: Curriculum Committee, Department of Plant Pathology, University of Nebraska-Lincoln.

2021: LSU College of Agriculture Diversity and Inclusion Champion, Department of Plant Pathology & Crop Physiology, Louisiana State University.

2020-2022: Founding member of UNAG Alumni Association in the US (UAA-US). Role in executive committee (website administrator and board member).

Accomplishments:

- Creating and maintaining the organization website (https://www.uaa-us.org).
- Organizing the first symposium of UAA-US in Baton Rouge, LA.

2021: Vice-President (and Interim President) of "UNAs at LSU", a student organization focused on helping former UNAG students attending LSU.

Accomplishments:

- Organized the first mentorship program.

2019-2021: American Phytopathological Society Southern Division (APS-SD) graduate student representative (GSR).

2019-2020: PPCP-GSA chair of the "Website Committee". Roles: administrator of virtual platforms, maintaining the PPCP-GSA website, and releasing information to social media.

2019: Founding member UNAs at LSU. Major role writing the constitution of this student organization.

2018-2019: President of the Plant Pathology & Crop Physiology Graduate Student Association (PPCP GSA).

Accomplishments:

- Registered the GSA to the LSU campus for the first time in its history, becoming an official LSU organization, allowing the GSA to participate in all on-campus activities. Organized LSU greening day and stadium cleanups.

MENTORING

Aug 2022 - Present: Department of Plant Pathology, University of Nebraska-Lincoln.

Graduate Students:

- Kelvin Muchiri, M. Sc. in Plant Pathology. Research: "Diversity and evolution of *Fusarium* spp. associated with soybean in Nebraska".
- Xin Zhi Khoo, M. Sc. in Plant Pathology. Research: "Global diversity and host transitions in *Rhizoctonia solani*".
    - Awards:
        - 2024: APS Travel Award for the annual conference in Memphis, TN.
        - 2024 Travel Grant from the Collective Research Organization of Plant Scientists (CROPS).
        - 2024: UNL Plant Pathology GSA Travel Award.

Undergraduate Students:

- **Tessa Fiore**, senior in Environmental and Sustainability Studies. Research: "Bioactivity of secondary metabolites produced by *Clonostachys* spp. found in Nebraska".
    - UCARE proposal (Funded): Amount: $3,600.
- **Riley Eisenbraun,** senior in Cellular Biochemistry (*BIOC 098: Biochem Research Experience Intern*)**:** Research: "Genetic diversity and environmental factors influencing the prevalence of the potato black dot pathogen, *Colletotrichum coccodes*, in Nebraska and the Midwest"
    - Awards:
        - 1st place at the poster competition of the 2025 American Society of Plant Biologists Midwest conference, Lincoln, NE.
- **Ellie Greisen (former)**, junior in Agronomy. Research: "Characterization of populations of the potato black dot pathogen, *Colletotrichum coccodes*, in Nebraska and the Midwest"
    - UCARE proposal (Funded): Amount: $3,600.

Graduate Advisory Committees

- Kelvin Muchiri, M. Sc. in Plant Pathology. Research: "Genetic diversity and distribution of four major soilborne pathogens of soybean in Nebraska".

- Xin Zhi Khoo, M. Sc. in Plant Pathology. Research: "Global diversity and host preference of *Rhizoctonia solani*".

- Nawaraj Dulal, Ph. D. in Plant Pathology. Research: "Mechanisms of *Magnaporthe oryzae* biotrophic growth, membrane integrity and secretion"

- Chris Termunde, M. Sc. in Plant Pathology. Research: "Investigating the cause of crown rot of corn in the Midwest."

- Talon Mues, M.Sc. in Plant Pathology. Research: "Management of Tar Spot of Corn in Nebraska."

- David Sirengo, Ph.D. in Plant Pathology. Research: "Detection and diversity of Nepoviruses transmitted by *Xiphinema americanus*".

- (**External)** Manuela Montoya-Giraldo, Ph. D. in Biology at University at Albany. Research: "Genome evolution of *Streptomyces* bacteria from insectivorous bats"

Jan - Aug 2022: Department of Biological Sciences, University at Albany.

Graduate students:

- Kathryn Piper, Ph.D. in Evolutionary Bacterial Genomics. Research: "Evolution of core and accessory genes in ESKAPE pathogens".

- Teresa Hnin, Ph.D. student in Molecular, Cellular, Developmental, and Neural Sciences. Research: "Detection and characterization of effector and antibiotic resistance genes in bacterial species found in human oral cavities".

- Gabrielle Roosevelt, M.Sc. student in Public Health. Research: "Global distribution of five *Escherichia coli* pandemic lineages causing urinary tract infections".

Undergraduate students:

- Marven Belus, Farwah Narjis, Lucas Hooker, and Sydney Robertson. Research: "Incidence of infectious bacterial species, such as *Staphylococcus aureus* in shared public spaces".

2014 - 2021: Department of Plant Pathology, Louisiana State University

Graduate Students (Informal advisor):

- Kensy Rodríguez. M.S. research: "Phylogenetics of *Rhizoctonia solani* AG1".

- David Galo. M.S. research: "Fungal diversity and pathogenicity on *Phragmites americanus* and *P. australis*"

- José Solórzano. M.S. research: "Description of the specific molecules found as secondary metabolites associated with the pathogenicity of *Xylaria necrophora*"

Undergraduate Students (formal advisor):

- Sophie B. Sheffield. Undergraduate research: "Developing a sensitive assay for the detection of the taproot decline of soybean pathogen, *Xylaria necrophora*, and its closely related species".

- Brooklyn M. Squiers. Undergraduate research and honors thesis: “Designing and evaluating the utility of novel primers for the detection of an emerging fungal disease of soybean”.

- Tess Brown, intern from Southern University. Undergraduate research: “Colonization of soybean tissue by a known ‘saprophytic’ *Xylaria necrophora*”.

- Sara Berrezueta. Undegraduate student, Zamorano University, Honduras-LSU. Visiting scholar in the Doyle Mycology Lab working with early extractions of secondary metabolites from *Xylaria necrophora.*

- Elaisa Tubana, Emily Rolfes, and Justin King. Undergraduate researchers assisting in my research on the effects of glyphosate on soybean nutrition and disease development.

PUBLIC REPOSITORIES & WEBSITES

GitHub
https://github.com/teddyaroca/Summer_2022_bioinformatics
https://github.com/bioted/X.necrophora.secondaryMetabolites
https://github.com/vinsondoyle/GarciaArocaMycologia2020

Websites
https://www.fungalecology.com/
https://teddyaroca.github.io/online-cv/
https://www.linkedin.com/in/teddy-garcia-aroca-228437245/