

Dr. Juan Carlos Cambronero-Heinrichs, Ph.D.

Visiting Scientist, Programa de Investigación en Enfermedades Tropicales (PIET), School of Veterinary Medicine, National University of Costa Rica

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Postdoctoral Researcher, Biology Department, New Mexico State University

Researcher, National Centre for Biotechnological Innovations (CENIBiot, CENAT-CONARE), Costa Rica

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Education

2025	Ph.D. Crop Science, emphasis in Entomology (positivo con lode). University of Padua, Italy.
2017	Licentiate Degree. Microbiology and Clinical Chemistry. University of Costa Rica.
2011	High School Diploma. Costa Rican Scientific High School, San Pedro (Graduated with Honors).

Academic and Professional Positions

2025-present	Postdoctoral Researcher	Biology Department, New Mexico State University
2025-present	Visiting Scientist	Programa de Investigación en Enfermedades Tropicales (PIET), School of Veterinary Medicine, National University of Costa Rica
2025-present	Researcher	National Centre for Biotechnological Innovations (CENIBiot, CENAT-CONARE), Costa Rica
2024-2025	Postdoctoral Researcher	Entomology Laboratory, Department of Agronomy, Food, Natural Resources, Animals, and Environment (DAFNAE), University of Padova, Italy
2021-2024	Ph.D. Candidate	Entomology Laboratory, Department of Agronomy, Food, Natural Resources, Animals, and Environment (DAFNAE), University of Padova, Italy
2021	Clinical Microbiologist	Hospital de San Carlos, Costa Rica
2020-2021	Visiting Scientist	Chair for Forest Entomology and Protection, Albert-Ludwigs-Universität Freiburg, Germany
2019-2020	Researcher	Laboratory for Research in Insect Vectors (LIVE), Center for Research in Tropical Diseases(CIET), Faculty of Microbiology, University of Costa Rica
2018-2019	Clinical Microbiologist	Laboratorios Paez and Hospital Metropolitano, Costa Rica

2017-2019	Researcher	Bioremediation Laboratory, Center for Research in Environmental Pollution (CICA), University of Costa Rica
2016	Intern in Clinical Microbiology	Hospital México, Costa Rica
2015	Intern	Clodomiro Picado Institute, University of Costa Rica
2013-2015	Research Assistant	Research Center for Natural Products (CIPRONA), University of Costa Rica
2012-2016	Research Assistant	Research Center in Microscopic Structures (CIEMic), University of Costa Rica
2012-2016	Research Assistant	Center for Research in Cellular and Molecular Biology (CIBCM), University of Costa Rica

Publications

Google scholar page: <https://scholar.google.com/citations?user=Ex2ZMKsAAAAJ&hl=it>

H-index= 14

Peer-reviewed journal articles

24. Scabbio, E., Santoiemma, G., Cavaletto, G., Biedermann, P. H., Ranger, C. M., Gugliuzzo, A., **Cambronero-Heinrichs, J. C.**, Rassati, D. (2026). Three-dimensional gallery system reconstruction reveals more frequent intraspecific than interspecific interactions in ambrosia beetles. *Proceedings of the Royal Society B: Biological Sciences*. <https://doi.org/10.1098/rspb.2025.2280>
23. **Cambronero-Heinrichs, J. C.**, Pepori, A. L., Pecori, F., Santoiemma, G., Cavaletto, G., Santini, A., Rassati, D. (2025). Microbial interactions support the role of ambrosia beetles as potential vectors of Dutch elm disease. *Microbial Ecology*. <https://doi.org/10.1007/s00248-025-02624-y>
22. **Cambronero-Heinrichs, J. C.**, Wicki-Emmenegger, D., Rechnitzer, N., Viquez, C., & Chavarría, M. (2025). Draft genome sequences of two *Stenotrophomonas* sp. isolates obtained from the venom of the tarantula *Stichoplosterus elusinus* (Araneae: Theraphosidae). *Microbiology Resource Announcements*. <https://doi.org/10.1128/mra.00077-25>
21. Montiel-Mora, J. R., Lizano-Fallas, V., Méndez-Rivera, M., Marín-González, A., **Cambronero-Heinrichs, J. C.**, & Rodríguez-Rodríguez, C. E. (2025). Individual and mixture effect of selected high-hazard pharmaceuticals on aquatic primary producers. *Ecotoxicology*. <https://doi.org/10.1007/s10646-025-02885-w>
20. **Cambronero-Heinrichs, J. C.**, Biedermann, P. H., Besana, L., Battisti, A., & Rassati, D. (2025). Bacterial communities associated with ambrosia beetles: current knowledge and existing gaps. *Frontiers in Microbiology*. <https://doi.org/10.3389/fmicb.2025.1569105>
19. **Cambronero-Heinrichs, J.C.**, Ranger, C. M., Santoiemma, G., Cavaletto, G., Carloni, F., Battisti, A., Meggio, F., Rassati, D. (2025). Host plant selection and performance of ambrosia beetles in flood-stressed versus ethanol-injected trees provide implications for management strategies. *Journal of Economic Entomology*. <https://doi.org/10.1093/jee/toae301>

- 18. Cambronero-Heinrichs, J.C.,** Santoiemma, G., Battisti, A., Cavaletto, G., Meggio, F., Ranger, C. M., Scabbio, E., Rassati, D. (2024). Simulated flood-stress and X-ray tomography unveil susceptibility of different tree taxa to ambrosia beetles. *Forest Ecology and Management*.
<https://doi.org/10.1016/j.foreco.2024.122106>
- 17. Montiel-Mora, J. R., Méndez-Rivera, M., Ramírez-Morales, D., Cambronero-Heinrichs, J. C., & Rodríguez-Rodríguez, C. E.** (2024). Toxicity of selected pharmaceuticals and their mixtures to the aquatic indicators *Daphnia magna* and *Aliivibrio fischeri*. *Ecotoxicology*.
<https://doi.org/10.1007/s10646-024-02798-0>
- 16. Cambronero-Heinrichs, J. C.,** Rojas-Gätjens, D., Baizán, M., Alvarado-Ocampo, J., Rojas-Jimenez, K., Loaiza, R., Chavarría, M., Calderon-Arguedas, O., & Troyo, A. (2024). Highly abundant bacteria in the gut of *Triatoma dimidiata* (Hemiptera: Reduviidae) can inhibit the growth of *Trypanosoma cruzi* (Kinetoplastea: Trypanosomatidae). *Journal of Medical Entomology*.
<https://doi.org/10.1093/jme/tjae012>
- 15. Cambronero-Heinrichs, J. C.,** Battisti, A., Biedermann, P. H., Cavaletto, G., Castro-Gutierrez, V., Favaro, L., Santoiemma, G., & Rassati, D. (2023). Erwiniaceae bacteria play defensive and nutritional roles in two widespread ambrosia beetles. *FEMS Microbiology Ecology*.
<https://doi.org/10.1093/femsec/fiad144>
- 14. Rodríguez-Rodríguez, C. E., Ramírez-Morales, D., Masis-Mora, M., Montiel-Mora, J. R., Soto-Garita, C., Araya-Valverde, E., Cambronero, J. C., Sánchez-Melsió, A., Briceño-Guevara, S., Mendez-Rivera, M. & Balcázar, J. L.** (2023). Occurrence and risk assessment of pharmaceuticals in hospital wastewater in Costa Rica. *Chemosphere*. <https://doi.org/10.1016/j.chemosphere.2023.139746>
- 13. Arce-Rodríguez, A., Libby, E., Castellón, E., Avendaño, R., Cambronero, J. C., Vargas, M., Pieper, D.H., Bertilsson, S., Chavarría, M., & Puente-Sánchez, F.** (2023). Out of the blue: the independent activity of sulfur-oxidizers and diatoms mediate the sudden color shift of a tropical river. *Environmental Microbiome*. <https://doi.org/10.1186/s40793-023-00464-2>
- 12. Castro-Gutierrez, V. M., Pickering, L., Cambronero-Heinrichs, J. C., Holden, B., Haley, J., Jarvis, P., Jefferson, B., Helgason, T., Moir, J. W., & Hassard, F.** (2022). Bioaugmentation of pilot-scale slow sand filters can achieve compliant levels for the micropollutant metaldehyde in a real water matrix. *Water Research*. <https://doi.org/10.1016/j.watres.2022.118071>
- 11. Ramírez-Morales, D., Masís-Mora, M., Montiel-Mora, J. R., Cambronero-Heinrichs, J. C., Pérez-Rojas, G., Tormo-Budowski, R., Mendez-River, M., Briceño-Guevara, S., Gutierrez-Quiros, J. A., Arias-Mora, V., Brenes-Alfaro, L., Beita-Sandí, W., & Rodríguez-Rodríguez, C. E.** (2021). Multi-residue analysis of pharmaceuticals in water samples by liquid chromatography-mass spectrometry: Quality assessment and application to the risk assessment of urban-influenced surface waters in a metropolitan area of Central America. *Process Safety and Environmental Protection*.
<https://doi.org/10.1016/j.psep.2021.07.025>
- 10. Tormo-Budowski, R., Cambronero-Heinrichs, J. C., Durán, J. E., Masís-Mora, M., Ramírez-Morales, D., Quirós-Fournier, J. P., & Rodríguez-Rodríguez, C. E.** (2021). Removal of pharmaceuticals and ecotoxicological changes in wastewater using *Trametes versicolor*: A comparison of fungal stirred tank and trickle-bed bioreactors. *Chemical Engineering Journal*. <https://doi.org/10.1016/j.cej.2020.128210>

9. Monge-Muñoz, M., Urquiaga, S., Müller, C., **Cambronero-Heinrichs, J. C.**, Zaman, M., Chinchilla-Soto, C., Borzouei, A., Rodríguez-Rodríguez, C. E. & Perez-Castillo A.G. (2021). Nitrapyrin effectiveness in reducing nitrous oxide emissions decreases at low doses of urea in an Andosol. *Pedosphere*. [https://doi.org/10.1016/S1002-0160\(20\)60072-8](https://doi.org/10.1016/S1002-0160(20)60072-8)
8. Ramírez-Morales, D., Masís-Mora, M., Montiel-Mora, J. R., **Cambronero-Heinrichs, J. C.**, Briceño-Guevara, S., Rojas-Sánchez, C. E., Méndez-Rivera, M., Arias-Mora, V., Tormo-Budowski, R., Brenes-Alfaro, L., & Rodríguez-Rodríguez, C. E. (2020). Occurrence of pharmaceuticals, hazard assessment and ecotoxicological evaluation of wastewater treatment plants in Costa Rica. *Science of The Total Environment*. <https://doi.org/10.1016/j.scitotenv.2020.141200>
7. Acosta-Sánchez, A., Soto-Garita, C., Masís-Mora, M., **Cambronero-Heinrichs, J. C.**, & Rodríguez-Rodríguez, C. E. (2020). Impaired pesticide removal and detoxification by biomixtures during the simulated pesticide application cycle of a tropical agricultural system. *Ecotoxicology and Environmental Safety*. <https://doi.org/10.1016/j.ecoenv.2020.110460>
6. Chan-Cheng, M., **Cambronero-Heinrichs, J. C.**, Masís-Mora, M., & Rodríguez-Rodríguez, C. E. (2020). Ecotoxicological test based on inhibition of fungal laccase activity: Application to agrochemicals and the monitoring of pesticide degradation processes. *Ecotoxicology and Environmental Safety*. <https://doi.org/10.1016/j.ecoenv.2020.110419>
5. **Cambronero-Heinrichs, J. C.**, Sánchez-Portilla, L. S., Calderón-Arguedas, Ó., & Troyo, A. (2020). *Cimex lectularius* Linnaeus, 1758 (Hemiptera: Cimicidae) in Costa Rica: First Case Report Confirmed by Molecular Methods in Central America. *Journal of Medical Entomology*. <https://doi.org/10.1093/jme/tjz247>
4. Rodríguez-Castillo, G., Molina-Rodríguez, M., **Cambronero-Heinrichs, J. C.**, Quirós-Fournier, J. P., Lizano-Fallas, V., Jiménez-Rojas, C., Masís-Mora, M., Castro-Gutiérrez, V., Mata-Araya, I., Rodríguez-Rodríguez, C. E. (2019). Simultaneous removal of neonicotinoid insecticides by a microbial degrading consortium: Detoxification at reactor scale. *Chemosphere*. <https://doi.org/10.1016/j.chemosphere.2019.07.004>
3. **Cambronero-Heinrichs, J.C.**, Matarrita-Carranza, B., Murillo-Cruz, C., Araya-Valverde, E., Chavarría, M., Pinto-Tomás, A. (2019). Phylogenetic analyses of antibiotic-producing *Streptomyces* sp. isolates obtained from the stingless bee *Tetragonisca angustula*. *Microbiology*. <https://doi.org/10.1099/mic.0.000754>
2. **Cambronero-Heinrichs, J.C.**, Masís-Mora, M., Quirós-Fournier, J., Lizano-Fallas, V., Mata-Araya, I., Rodríguez-Rodríguez, C.E. (2018). Removal of herbicides in a biopurification system is not negatively affected by oxytetracycline or fungally pretreated oxytetracycline. *Chemosphere*. <https://doi.org/10.1016/j.chemosphere.2018.01.122>
1. Arce-Rodríguez, A., Pueste-Sánchez, F., Avendaño, R., Libby, E., Rojas, L., **Cambronero, J.C.**, Pieper, D., Timmis, K., Chavarría, M. (2017) Pristine but metal-rich Río Sucio (Dirty River) is dominated by *Gallionella* and other iron-sulfur oxidizing microbes. *Extremophiles*. <https://doi.org/10.1007/s00792-016-0898-7>

Book chapters

4. Rodríguez-Rodríguez, C. E., **Cambronero-Heinrichs**, Castro-Gutiérrez, V., & Tortella, G. R. (2021). Biopurification Systems: Current Advances and Future Prospects of On-Farm Biodegradation of Pesticides. In: Pesticides in Soils: Occurrence, Fate, Control and Remediation. Eds: Rodríguez-Cruz, S., Sánchez-Martín, M. J., Springer. https://doi.org/10.1007/698_2021_798
3. Fuller, E., Castro-Gutiérrez, V., **Cambronero-Heinrichs, J. C.**, & Rodríguez-Rodríguez, C. E. (2021). Using Molecular Methods to Identify and Monitor Xenobiotic-Degrading Genes for Bioremediation. In: Biodegradation, Pollutants and Bioremediation Principles. Eds: Bidoia, E., Montagnolli, R., H.H. CRC Press. <https://doi.org/10.1201/9780429293931>
2. Rodríguez-Rodríguez, C. E., **Cambronero-Heinrichs, J. C.**, Fuller, E., & Castro-Gutiérrez, V. (2021). Selective enrichment as a Tool to Obtain Microbial Degrading Consortia for the Remediation of Pesticide Residues. In: Biodegradation, Pollutants and Bioremediation Principles. Eds: Bidoia, E., Montagnolli, R., H.H. CRC Press. <https://doi.org/10.1201/9780429293931>
1. Rodríguez-Rodríguez, C.E., **Cambronero-Heinrichs, J.C.**, Beita-Sandí, W., Durán, E. (2019). Chapter 7: Removal of Emerging Pollutants by Fungi: Elimination of Antibiotics. In: Fungal Bioremediation: Fundamentals and Applications. Eds: Tomasini-Campocoso, A., Leon-Santiesteban, H.H. CRC Press. <https://doi.org/10.1201/9781315205984>

Science communication articles

3. **Cambronero-Heinrichs, J. C.** (2025). Stigma did not kill my dream. *Science*. <https://doi.org/10.1126/science.zyl4x3u>
2. **Cambronero-Heinrichs, J.C.**, & Andrade, G. (2024). Reclaiming mariola's wings. *Antenna*.
1. **Cambronero-Heinrichs, J. C.** (2023). Crying and Getting a Ph. D. Position. *American Entomologist*. <https://doi.org/10.1093/ae/tmad005>

Ad hoc reviewer for the following peer-reviewed journals

Antonie van Leeuwenhoek Journal of Microbiology, Cogent Food & Agriculture, Entomologia Generalis, Environmental Microbiology Reports, Frontiers in Microbiology, Frontiers in Plant Science, International Journal of Tropical Insect Science, ISME Journal, Journal of Applied Entomology, Journal of Economic Entomology, MethodsX, Pest Management Science, Science of Total Environment, Scientific Reports

Awards

2026	ESA 2026 International Branch Virtual Symposium Grant
2025	International Branch John Henry Comstock Graduate Student Award, Entomological Society of America
2023	ESA 2023 International Branch Virtual Symposium Grant

	RES Student Science Communication Award 2023, 1 st prize winner. Article title: "Reclaiming mariola's wings"
2022	FEMS Congress Attendance Grant, FEMS 2022, Belgrade, Serbia.
2021	CARIPARO scholarship to study a Ph.D. degree in Crop Science, University of Padova, Italy
2019	FEMS Congress Attendance Grant, FEMS 2019, Glasgow-Scotland.
	DAAD scholarship, University of Freiburg
2011	Silver Medal, Ibero-American Biology Olympiad (OIAB)
	Representative for Costa Rica, Intel's International Science and Engineering Fair (Intel ISEF), project: "Biological control of the <i>Aedes aegypti</i> mosquito through the use of the entomopathogenic fungus <i>Metarhizium anisopliae</i> ."
	Among the first 100 admissions scores at the University of Costa Rica.
2010	Gold Medal, Costa Rican Olympiad of Biological Sciences (OLICOCIBI), category A.
	Winner of the National Science and Technology Fair (Highschool), project: "Biological control of the <i>Aedes aegypti</i> mosquito through the use of the entomopathogenic fungus <i>Metarhizium anisopliae</i> ."
2009	Honorary Mention, Costa Rican Olympiad of Biological Sciences (OLICOCIBI), category B

Conference Participation

2025	Entomology 2025, Entomological Society of America, Portland (Oregon, USA)	Oral presentation: "Microbial interactions support the role of ambrosia beetles as potential vectors of Dutch elm disease". <u>Winner of the International Branch John Henry Comstock Graduate Student Award</u>
	Entomological Society of America 2025 International Branch Virtual Symposium	Oral presentation: "Host plant selection and performance of ambrosia beetles in flood-stressed versus ethanol-injected trees provide implications for management strategies".
2024	Royal Entomological Society Student Forum 2024, Newcastle (UK).	Poster: "Simulated flood-stress and X-ray tomography unveil susceptibility of tree taxa to ambrosia beetles".
	International Congress of Entomology 2024, Kyoto (Japan).	Poster: "Erwiniaceae bacteria play defensive and nutritional roles in two widespread ambrosia beetles".
2023	Entomological Society of America 2023 International Branch Virtual Symposium	Oral presentation: "Interactions in the microbial communities associated with ambrosia beetles: Erwiniaceae bacteria as defensive symbionts of ambrosia beetles". <u>Winner of the participation Grant.</u>
	Congresso Nazionale Italiano di Entomologia 2023, Palermo (Italy)	Oral presentation: "Interaction between bacterial associates and ambrosia beetles".
	Federation of European Microbiological Societies 2023 Conference on Microbiology, Hamburg (Germany)	Poster: "Exploration of the role of microbial associates in ambrosia beetles"
2022	Federation of European Microbiological Societies) 2002	Poster: "Fungal agriculture up to date: what else can we learn from how insects perform farming?". Oral presentation: "Microbes in the gut of triatomine bugs can

	Conference on Microbiology, Belgrade (Serbia).	negatively affect the growth of <i>Trypanosoma cruzi</i> ." <u>Winner of the FEMS Congress Attendance Grant.</u>
2019	Federation of European Microbiological Societies 2019 Conference on Microbiology, Glasgow (Scotland)	Poster: "Phylogenetic analyses of antibiotic-producing <i>Streptomyces</i> sp. isolates obtained from the stingless-bee <i>Tetragonisca angustula</i> ". <u>Winner of the FEMS Congress Attendance Grant.</u>
2017	III Latin American Biobed workshop, Bento Gonçalves (Brazil)	Oral presentation: "Alteration of herbicides removal in a biomatrix biopurification system, during co-application oxytetracycline-rich wastewater, pretreated with <i>Trametes versicolor</i> ".
2015	Federation of European Microbiological Societies 2015 Conference on Microbiology, Maastricht (Netherlands).	Poster: "Microbial community profile of the Iron-Sulphate rich waters of Río Sucio (Braulio Carrillo National Park, Costa Rica)".

Teaching

2022-2024	Insect Ecology and Management. DAFNAE, University of Padova, Italy	Laboratory Instructor
2019-2020	National Reality Seminar Course: Community Health. Faculty of Microbiology, University of Costa Rica	Coordinator
	Biochemistry for Microbiology. School of Medicine, University of Costa Rica	Laboratory Instructor
	Medical Entomology, Faculty of Microbiology, University of Costa Rica	Instructor
	General Parasitology, Faculty of Microbiology, University of Costa Rica	Instructor
2018-2019	Bioprocesses, School of Chemical Engineering, University of Costa Rica	Coordinator
2017	Microbiology for other careers, Faculty of Microbiology, University of Costa Rica	Instructor
2015	General Biology, School of Biology, University of Costa Rica	Laboratory Instructor

Thesis committee member

2024	Nursah Aslan	M.Sc. Forest Science	University of Padova, Italy
2020	Maria Alejandra Acosta Sanchez	Lic. Microbiology and Clinical Chemistry	University of Costa Rica
	Daniela Ramirez Viales	Lic. Chemical Engineering	University of Costa Rica
	Rebeca Tormo Budowski	Lic. Chemical Engineering	University of Costa Rica
2019	Melissa Chan Cheng	Lic. Microbiology and Clinical Chemistry	University of Costa Rica
2018	Marvin Molina Rodríguez	Lic. Microbiology and Clinical Chemistry	University of Costa Rica

2017	Sergio Murillo Zamora	Lic. Microbiology and Clinical Chemistry	University of Costa Rica
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Languages

Spanish	Native
English	C1
Italian	B1

References

Prof. Davide Rassati, Ph.D. (Mentor and collaborator)	Entomology Laboratory, Department of Agronomy, Food, Natural Resources, Animals, and Environment (DAFNAE), University of Padova, Italy	davide.rassati@unipd.it
Prof. Peter Biedermann, Ph.D. (Mentor and collaborator)	Chair for Forest Entomology and Protection, Albert-Ludwigs-Universität Freiburg, Germany	peter.biedermann@forento.uni-freiburg.de
Prof. Kathryn Hanley, Ph.D. (Mentor and collaborator)	Biology Department, New Mexico State University, United States	khanley@nmsu.edu
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