
Curriculum Vitae
Emilie Lefèvre, Ph.D.

CONTACT INFORMATION

Email: emilie@endofitabiotech.com

<https://www.linkedin.com/in/emilie-lefevre-b1705129/>

https://www.researchgate.net/profile/Emilie_Lefevre2

<https://scholar.google.com/citations?user=fyrnd7sAAAAAJc&hl=es>

<https://endofita272470691.wordpress.com/>

Citizenship: French

Languages: French (native), English (Fluent), Spanish (Fluent)

RESEARCH AREAS

Microbial Ecology, Microbiology, Molecular Biology, Environmental Engineering.

EDUCATION

2007

Ph.D. in Aquatic Microbial Ecology

University Clermont-Ferrand II (France)

Dissertation title: *'Molecular diversity of heterotrophic flagellates in aquatic ecosystems'*

2003

M.S. in Population Biology and Ecosystems, Specialty: Ecology of Continental Aquatic Systems

University Toulouse III - Paul Sabatier (France)

Thesis title: *'Characterization of the functional and taxonomic diversity of lacustrine heterotrophic flagellates using fluorescence in situ hybridization'*

2001

B.S. in Natural Sciences and Biology, Specialty: Marine Biology

University of La Rochelle (France)

RESEARCH APPOINTMENTS

2020-present

Co-founder, CEO & Scientific director

Endófito Biotechnology SAS

- Study of plant-beneficial microbe interactions for the development of alternative microbial fertilizers and organic pesticides

2017-2019

Research Assistant Professor and Max Planck Tandem Group Leader

Facultad de Ciencias, Universidad Nacional de Colombia, sede Bogotá

- Chemical and biological diversity of the endo-microbiome of Colombian medicinal plants: Towards the discovery of novel metabolic pathways of therapeutic interest
- Co-evolution of horizontally transmitted endophytes and their plant hosts in the Colombian Páramos.

2013-2017

Research Associate

Department of Civil and Environmental Engineering, Duke University (USA)

- Dynamics of *Spartina alterniflora* associated communities in relation to PAH pollution in saltmarsh ecosystems
- Microbial degradation of the flame retardant TBBPA in anaerobic wastewater sludge
- Effect of nZVI on biogas production and microbial community dynamics in anaerobic digesters
- Microbial community dynamics in denitrifying bioreactors treating agricultural runoffs
- Microbial community response to silver nanoparticles and Ag⁺ in nitrifying activated sludge

2011-2013

Postdoctoral researcher

Department of Biology, Duke University (USA)

- Spatial scaling of foliar fungal endophytic communities in boreal and temperate forests

2010-2011

Postdoctoral researcher

Department of Chemical and Biological Engineering, Colorado State University (USA)

- Microbial community dynamics in Sulfate-reducing permeable reactive zone treating mine drainage
- Spatial structure of functional microbial guilds related to PAH biodegradation in body LNAPL-impacted soils

2007-2010

Postdoctoral researcher

Department of Biological Sciences, The University of Alabama (USA)

- Seasonal dynamics and taxonomic diversity of zoosporic fungi in lake ecosystems
- Taxonomy and phylogeny of aquatic zoosporic fungi

2003-2007

Doctoral student

Laboratoire Microorganismes: Génome et Environnement, University Clermont-Ferrand II (France)

- Taxonomic diversity and trophic roles of heterotrophic flagellates in lake ecosystems

OTHER RELEVANT APPOINTMENTS

2011-2013

Laboratory manager and safety coordinator

Department of Biology, Duke University (USA)

Tasks: Purchase lab supplies and chemicals, maintain lab compliance with environmental health and safety regulations, train laboratory personnel and students

FUNDING

- Gulf of Mexico Research Initiative grant '*Chemical evolution and plant-microbe degradation of petroleum in saline marshes*' (2016-2019) Pi: Van Bael S, Co-Pi: Gunsch CK, Research Associate: Lefèvre E. \$481,166 (subcontract)
- NIESH Superfund Research Program '*Engineering the Physico-Chemical Environment to Enhance the Bioremediation of Developmental Toxicants in Sediment Fungal-Bacterial Biofilms*' (Active) Pi: Gunsch CK, Research Associate: Lefèvre E. \$1,096,939
- Fondo Francisco José de Caldas, COLCIENCIAS '*Estudio ecológico y Bioprospección de microorganismos Endófitos de Plantas Medicinales en Colombia para el Descubrimiento de Nuevos Compuestos Naturales de Interés Terapéutico*' (Active). Pi: Lefèvre E. \$597,547

PUBLICATIONS

In Preparation

- (28) Gardner CM, **Lefèvre E**, Formel SK, Van Bael SA, Gunsch CK. *S. Alterniflora*-associated Prokaryotic Community Response to the 2011 Gulf of Mexico Oil Spill in Salt Marsh Ecosystems.
- (27) **Lefèvre E**, Carpenter AW, Laughton S, Gardner CM, Redfern L, Weisner MR, Gunsch CK. Microbial Community Response to Nano-scale Zero Valent Iron Amendment in Methane Producing Bioreactors.

2022

- (26) Formel SK, Martin AM, Pardue JH, Elango V, Johnson K, Gunsch CK, **Lefèvre E**, Varner PM, Kim YJ, Bernik BM and Van Bael SA. 2022. Decay of oil residues in the soil is enhanced by the presence of *Spartina alterniflora*, with no additional effect from microbiome manipulation. *Frontiers in Soil Science*. 2:949439. doi: 10.3389/fsoil.2022.949439
- (25) Addis SD, Formel SK, Kim YJ, Varner PB, Raudabaugh DB, **Lefèvre E**, Bernik BM, Elango V, Van Bael SA, Pardue JH, Gunsch CK. 2022. Alterations of endophytic microbial community function in *Spartina alterniflora* as a result of crude oil exposure. *Biodegradation* 33(1): 87-98.

2020

- (24) **Lefèvre E**, Gardner CM, Gunsch CK. 2020. A novel PCR clamping assay reducing plant host DNA amplification significantly improves prokaryotic endo-microbiome community characterization. *FEMS Microbiology Ecology* 96(7) doi: 10.1093/femsec/fiaa110.

2019

- (23) **Lefèvre E**, Redfern L, Cooper EM, Stapleton HM, Gunsch CK. 2019. Acetate promotes microbial reductive debromination of tetrabromobisphenol A during the startup phase of anaerobic wastewater sludge bioreactors. *Science of The Total Environment* 656: 959-968.
- (22) Powell J, Letcher PM, Davis, WJ, **Lefèvre E**, Brooks M, Longcore JE, 2019. Taxonomic Summary of *Rhizoclostridium* and Description of Four New *Rhizoclostridium* Species (Chytridiomycotaceae, Chytridiales). *Phytologia* 101 (2): 139-163.
- (21) Grieger K, Carpenter AW, Klaessig F, **Lefèvre E**, Gunsch C, Soratana K, Landis AE, Wickson F, Hristozov D, Hjorth R, Linkov I, 2019. Chapter 9: Sustainable Environmental Remediation using nZVI by Managing Lifecycle Benefit-Risk Tradeoffs in: Lowry G, Phenrat T, Lowry G (Eds.), Nanoscale zerovalent iron particles for environmental restoration: From fundamental science to field scale engineering applications. Springer, New York Book Chapter

2018

- (20) **Lefèvre E**, Bossa N, Gardner CM, Gehrke GE, Cooper EM, Stapleton HM, Hsu-Kim H, Gunsch CK, 2018. Biochar and Activated Carbon as promising amendments for promoting the microbial debromination of tetrabromobisphenol A wastewater treatments. *Water Research* 128: 102-110.
- (19) Gwin CA, **Lefèvre E**, Alito CL, Gunsch CK, 2018. Microbial community response to silver nanoparticles and Ag+ in nitrifying activated sludge revealed by Ion Torrent sequencing. *Science of the Total Environment* 616-617: 1014-1021.

2017

- (18) Oono R, Rassmussen A, **Lefèvre E**, 2017. Distance decay relationships in foliar fungal endophytes are driven by rare taxa. *Environmental Microbiology* 19: 2794–2805.

2016

- (17) Sime-Ngando T, Gerphagnon M, Colombet J, Jobard M, **Lefèvre E**, Monchy S, Rasconi S, Latour D, Carrias J-F, Amblard C, 2016. Molecular diversity studies in Lake Pavin reveal the ecological importance of parasitic true fungi in the plankton, in: Sime-Ngando T, Boivin P, Chapron E, Jezequel D, Meybeck M (Eds.), Lake Pavin: History, geology, biogeochemistry, and sedimentology of a deep meromictic maar lake. Springer International Publishing AG Switzerland, p 335-349. Book Chapter.

- (16) **Lefèvre E**, Cooper E, Stapleton HM, Gunsch CK, 2016. Characterization and adaptation of anaerobic sludge microbial communities exposed to tetrabromobisphenol A. *PLoS ONE* 11(7): e0157622.
- (15) **Lefèvre E**, Bossa N, Wiesner MR, Gunsch CK, 2016. A review of the environmental implications of in situ remediation by nanoscale zero valent iron (nZVI): Behavior, transport and impacts on microbial communities. *Science of The Total Environment* 565: 889-901.
- (14) Irianni-Renno M, Akhbari D, Olson MR, Byrne AP, **Lefèvre E**, Zimbron J, Lyverse M, Sale TC, De Long SK, 2016. Comparison of bacterial and archaeal communities in depth-resolved zones in an LNAPL body. *Applied Microbiology and Biotechnology* 100(7): 3347-3360.

2015

- (13) Oono R, **Lefèvre E**, Simha A, Lutzoni F, 2015. A comparison of the community diversity of foliar fungal endophytes between seedling and adult loblolly pines (*Pinus taeda*). *Fungal Biology* 119(10): 917-928.

2014

- (12) Akinwale PO, **Lefèvre E**, Powell MJ, Findlay RH, 2014. Unique odd-chain polyenoic phospholipid fatty acids present in chytrid fungi. *Lipids* 49: 933-942.

2013

- (11) Vélez CG, Letcher PM, Schultz S, Mataloni G, **Lefèvre E**, Powell MJ, 2013. Three new genera in Chytridiales from aquatic habitats in Argentina. *Mycologia* 105(5): 1251-1265.
- (10) **Lefèvre E**, Pereyra LP, Hiibel SR, Perrault EM, DeLong SK, Reardon KF, Pruden A, 2013. Molecular assessment of the sensitivity of sulfate-reducing microbial communities remediating mine drainage to aerobic stress. *Water Research* 47(14): 5316-5325.

2012

- (9) **Lefèvre E**, Letcher PM, Powell MJ, 2012. Temporal variation of the small eukaryotic community in two freshwater lakes: emphasis on zoosporic fungi. *Aquatic Microbial Ecology* 67: 91-105. [Feature article](#)

2011

- (8) Sime-Ngando T, **Lefèvre E**, Gleason HF, 2011. Hidden diversity among aquatic heterotrophic flagellates: Ecological potentials of zoosporic Fungi. *Hydrobiologia* 659: 5-22.

2010

- (7) **Lefèvre E**, Jobard M, Venisse J-S, Bec A, Kagami M, Amblard C, Sime-Ngando T, 2010. Development of a real-time PCR assay for quantitative assessment of uncultured freshwater zoosporic fungi. *Journal of Microbiological methods* 81(1): 69-76.

2008

- (6) **Lefèvre E**, Letcher P, Powell M, 2008. Ecological roles of chytrids in aquatic systems: use of a new molecular technique, the qPCR. *Inoculum* 59 (4): 41-42.
- (5) **Lefèvre E**, Roussel B, Amblard C, Sime-Ngando T, 2008. The molecular diversity of freshwater picoeukaryotes reveals high occurrence of putative parasitoids in the plankton. *PLoS ONE* 3(6): e2324.
- (4) Gleason HF., Kagami M., **Lefèvre E**, Sime-Ngando T, 2008. The ecology of chytrids in aquatic ecosystems: roles in food web dynamics. *Fungal Biology Reviews* 22: 17-25.

2007

- (3) **Lefèvre E**, 2007. Ph.D. Dissertation: Molecular diversity of heterotrophic flagellates in aquatic ecosystems, Sime-Ngando T, Lefèvre E (Eds.), Editions Universitaires Européennes 2010, 125 pp.
- (2) **Lefèvre E**, Bardot C, Noël C, Carrias J-F, Viscogliosi E, Amblard C, Sime-Ngando T, 2006. Unveiling fungal zooflagellates as members of freshwater picoeukaryotes: evidence from a molecular diversity study in a deep meromictic lake. *Environmental Microbiology* 9(1): 61-71.

2005

- (1) **Lefèvre E**, Carrias J-F, Bardot C, Sime-Ngando T, Amblard C, 2005. A preliminary study of heterotrophic picoflagellates using oligonucleotidic probes in Lake Pavin. *Hydrobiologia* 55(1): 61-67.

TEACHING EXPERIENCE

- 2016** **Course:** Integrative Bioinformatics for Microbial Engineering
Teaching area: Environmental Engineering
Level: Graduate
Institution: Duke University (USA)
- 2014** **Course:** Environmental Biotechnology
Teaching area: Environmental Engineering
Level: Graduate
Institution: Duke University (USA)
- 2012-2013** **Course:** Fungal Endophyte Diversity workshop
Teaching area: Microbial Ecology
Level: High school
Institution: North Carolina School of Science and Mathematics (USA)
- 2011** **Course:** Applied and Environmental Molecular Biology
Teaching area: Environmental Engineering
Level: Graduate
Institution: Colorado State University (USA)
- 2003-2006** **Course:** Terrestrial Ecology
Teaching area: Ecology
Level: Graduate
Institution: University Clermont-Ferrand II (France)
- Course:** Animal Physiology
Teaching area: Biology
Level: Graduate
Institution: University Clermont-Ferrand II (France)
- Course:** Embryology
Teaching area: Biology
Level: Undergraduate
Institution: University Clermont-Ferrand II (France)
- Course:** Animal anatomy
Teaching area: Biology
Level: Undergraduate
Institution: University Clermont-Ferrand II (France)

CONFERENCE PRESENTATIONS

2021

- **Lefèvre E**, Bossa N, Weisner MR, Gunsch CK. A look at the potential effects of nZVI on indigenous microbial communities. Invited speaker, Groundwater Remediation using Nano/biotechnology with focus on the Contaminated Resources in Brazil (GRUN), Virtual, June 2021

2018

- **Lefèvre E**. Estudio Ecológico y Bioprospección de Microorganismos Endófitos de Plantas Medicinales en Colombia para el Descubrimiento de Nuevos Compuestos Naturales de Interés Terapéutico. Invited Speaker, Universidad de Antioquia, Medellin, Colombia, November 2018

- Gardner CM, **Lefèvre E**, Gunsch CK. Characterization and Manipulation of *S. Alterniflora* Microbiomes for increasing Oil Remediation Efficiency. Poster presentation and Contributed talk, Atlanta, GA, USA, June 2018
- **Lefèvre E**. Exploring the Untapped Biological and Chemical Diversity of the Endo-microbiome of Colombian Medicinal Plants. Contributed talk, First Meeting of the Colombian Max Planck Tandem Groups, University of Los Andes, Bogotá, Colombia, June 2018
- Gardner CM, **Lefèvre E**, Gunsch CK. Characterization and Manipulation of *S. Alterniflora* Microbiomes for increasing Oil Remediation Efficiency. Poster presentation, Hannah Cole, NC, USA, May 2018

2017

- **Lefèvre E**. Exploring the Untapped Biological and Chemical Diversity of the Endo-microbiome of Colombian Medicinal Plants: Towards the discovery of Novel Metabolic Pathways of Therapeutic Interest. Invited Speaker, Max Planck Tandem Group Leader Selection symposium, The Colombian National University, Bogotá, Colombia, September 2017
- **Lefèvre E**, Matsumoto A, Gardner CM, Gehrke GE, Cooper E, Stapleton HM, Hsu-Kim H, Gunsch CK. Effect of biochar and activated carbon on anaerobic sludge microbial communities degrading tetrabromobisphenol A. Contributed talk, AEESP Research and Education Conference, Ann Arbor, MI, USA, June 2017

2015

- **Lefèvre E**, Cooper E, Stapleton HM, Gunsch CK. Anaerobic sludge microbial community adaptation to TBBPA and identification of taxa responsible for its degradation. Poster presentation, Superfund Research Program Annual Meeting, San Juan, PR, USA, November 2015.
- **Lefèvre E**, Petersen, G, Gunsch CK. Characterization of TBBPA biodegradation pathway and microbial community responsible in wastewater sludge anaerobic digesters. Contributed talk, AEESP Research and Education Conference, New Haven, CT, USA, June 2015.

2013

- **Lefèvre E**, Arendt K, Ball B, Miadlikowska J, Picard KT, U'Ren JM, Arnold AE, Lutzoni F. Understanding the spatial scaling of boreal endophytic fungal communities using environmental cloning and Ion Torrent targeted amplicon sequencing. Contributed talk, ESA meeting, Minneapolis, MN, USA, August 2013.

2012

- **Lefèvre E**, Pereyra LP, DeLong SK, Pruden A, Reardon KF. Response of sulfate-reducing bioreactor microbial communities to aerobic stress: a functional gene-based approach. Poster presentation, Keystone Symposia, Breckenridge, CO, USA, March 2011.

2010

- **Lefèvre E**. Planktonic Fungi in lakes: Potential roles in food webs – Molecular approaches for their study. Invited speaker, Duke University, Durham, NC, USA, March 2010.

2009

- Akinwale PO, **Lefèvre E**, Powell MJ, Findlay RH. Phospholipid Fatty Acid Analysis of the Euphotic Microbial Community of Lake Tuscaloosa. Poster presentation, 13th International Symposium on Phototrophic Prokaryotes, Montreal, Canada, August 2009.
- **Lefèvre E**, Brook MC, Blackwell WH, Powell, MJ. Genotypic variation among isolates of the aquatic chytrids *Rhizoglossium globosum* and *Chytrium hyalinus*. Poster presentation, MSA meeting, Snowbird, UT, USA, July 2009.

2008

- **Lefèvre E**, Letcher P, Powell M. Ecological roles of chytrids in aquatic systems: use of a new molecular technique, the qPCR. Contributed talk, MSA meeting, State College, PA, USA, August 2008.

2006

- **Lefèvre E**, Jobard M., Noël C, Carrias J-F, Viscogliosi E, Amblard C, Sime-Ngando T. Molecular characterization of picoeukaryotes in Lake Pavin : High contribution of Fungi. Poster presentation, 11th International Symposium on Microbial Ecology - ISME - 11, Vienna, Austria, August 2006.

2005

- **Lefèvre E**, Bardot C, Noël C, Carrias J-F, Sime-Ngando T, Amblard C. Small Heterotrophic flagellates in lakes: molecular and phylogenetic approaches. Poster presentation, ASLO Meeting, Santiago de la Compostella, Spain, June 2005.

2004

- **Lefèvre E**, Carrias J-F, Sime-Ngando T, Amblard C. Heterotrophic picoflagellates in lakes: use of oligonucleotide probes for identification and quantification. Poster presentation, 29th Congress of SIL, Lahti, Finland, August 2004.

INVITATION TO PEER-REVIEWED JOURNALS

Hydrobiologia - Annales Zoologici Fennici - The ISME Journal - Fungal Ecology - Mycologia - Aquatic Microbial Ecology - Plos One - Environmental Science and Pollution Research - Bioremediation - Applied Microbiology and Biotechnology - Water Research - Environmental Science and Technology - The Science of the Total Environment - Frontiers in Microbiology - Archaea - Journal of Environmental Engineering - Journal of Hazardous Materials - Chemosphere - FEMS Microbiology Ecology - Ecohydrology & Hydrobiology

Ph.D. EXAMINER

Ph.D. candidate: Linda E. Henderson

Research: Effect of toxic metals on Chytrids isolated from soils of NSW, Australia

Institution: School of Life and Environmental Sciences, The University of Sydney, NSW, Australia

Defense date: April 2, 2018

AFFILIATION TO PROFESSIONAL SOCIETIES

2008-2010 *Mycological Society of America (MSA)*
2013-2014 *Ecological Society of America (ESA)*
2015-2018 *Association of Environmental Engineering and Science Professors (AEESP)*
2017-2018 *American Society for Microbiology (ASM)*
2017-2020 *South American Mycorrhizal Research Network*