CURRICULUM VITAE

Emmanuel DEFOSSEZ

1. Personal information

Emmanuel DEFOSSEZ
Present address: Passage Blaise Cendrars,23
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Date/Place of birth: July 31, 1985 in Pithiviers (France)
Citizenship: French
Family status: Relationship, 2 children (born in October 2016 and February 2018)

2. Education

09/2008-03/2012 **PhD** in ecology at INRAE Grenoble FRANCE, **Team:** Mountain Ecosystems
Title: « Biotic interactions effect on tree recruitment along climatic gradient »
Supervisors: Dr. Georges Kunstler & Dr. Benoit Courbaud
Thesis defence: 12.03.2012

2006-2008 **Master of Science:** Biodiversity, Ecology and Environment at Grenoble University FRANCE

2003-2006 **Bachelor's degree:** Life Sciences and Earth at Grenoble University.

3. Employment history including current position

01/2022-Present Lecturer - 50% Institute of Biology of the University of Neuchâtel.

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07/2021-Present Senior scientist - 50% at the COMMONS Lab (Computational Mass spectrometry & open natural products research- Dr. Pierre-Marie Allard) - Department of Biology of the University of Fribourg.

09/2015-Present Post-doctoral fellow at the Institute of Biology of the University of Neuchâtel in the laboratory of functional ecology (LEF, Prof. Sergio Rasmann) - 50% since 07/2021

01/2013-01/2015 Post-doctoral fellow at the Center for Functional and Evolutionary Ecology in Montpellier-France (CEFE) in team FORECAST (forest-climate-adaptation modelisation -experimentation, Dr. Xavier Morin).

4. Supervision of junior researchers at graduate and postgraduate level

PhDs: Vanessa Duthé on Black rhino conservation (2019-2023, co-supervisor with Prof. Sergio Rasmann)

MScs: David Vuigner (2021, main supervisor), Kjelsberg Nadline (2020, co-supervisor), Delavallade Adrien (2019, main supervisor), Emilien Jolidon (2017, co-supervisor), Anais Denardou-Tisserand (2014, main supervisor) ,Melina Gersberg (2013, main supervisor), Olivier Lasbouygues (2010, main supervisor), Jeremy Puissant (2010, co-supervisor), Benjamin Dufils (2009, main supervisor

5. Teaching activities

Lectures:

- Master Biodiversity-Ecology-Environment at Grenoble University: Functional Ecology, the role of interactions between plants and soil biota in the ecosystem functioning
- Master Bio-geosciences at Neuchâtel University: Field methods in ecology, tool for vegetation analysis.
- Bachelor Biology at Neuchâtel University: General ecology, climatology
- Bachelor's degree at Grenoble University: Vegetal biology
- Doctoral Courses at Neuchâtel University: Plant Metabolomics: from plant tissue to molecules

Teaching assistant:

- Master: General ecology, bibliographic project, biostatistics
- Bachelor's degree: Field trip, vegetal biology
- Organization of student bibliography seminar
- Organization of the examination

6. Technical and analytical skills

Field (about 400 days of field work)**:** Settlement of large experiments along elevation gradient, vegetation surveys, dendrometry, tree coring, plant diseases and pests monitoring, abiotic conditions tracking (Ibutton, weather station, Soil moisture sensors-TDR, hemispherical photography)

Laboratory: Gas and liquid chromatography-tandem mass spectrometry, extraction of plant metabolites, DNA extraction, PCR, AFLP, microsatellite, isotopic labeling.

Bioinformatic: Advanced knowledge in R, Python, html code and Shiny app; data mining, multivariate statistics, supervised machine/deep learning, spatio-temporal modelisation, time series forecasting, big data management, genetic and metabolomic data processing, network analysis.

7. Scientific reviewing activities

Ecology letters, journal of ecology, Proceedings of the Royal Society B, *perspective in plant ecology evolution and systematics, Plos-One, Functional ecology, and others.* Topic editor on eco-metabolomic for the open access journal *Plant- MDPI*

List of publications:

ORCID: 0000-0002-9716-8226
Google Scholar**:** https://scholar.google.com/citations?user=g7WY2mYAAAAJ&hl=fr&oi=ao

Allard, PM., Gaudry, A.,Quirós-Guerrero, LM., Rutz ,A., Dounoue-Kubo, M., Walker, TWN., **Defossez, E.,** Long, C., Grondin, A., David, B & Wolfender, JL. Open and re-usable annotated mass spectrometry dataset of a chemodiverse collection of 1,600 plant extracts. GigaScience (in press).

Wolfender, J. L., Gaudry, A., Rutz, A., Quiros-Guerrero, L. M., Nothias, L. F., Queiroz, E. F., **Defossez, E.,** & Allard, P. M. (2022). Metabolomics in Ecology and Bioactive Natural Products Discovery: Challenges and Prospects for a Comprehensive Study of the Specialised Metabolome. CHIMIA, 76(11), 954-954.

Orine, D., **Defossez, E.,** Vergara, F., Uthe, H., van Dam, N. M., & Rasmann, S. (2022). Arbuscular mycorrhizal fungi prevent the negative effect of drought and modulate the growth-defence trade-off in tomato plants. Journal of Sustainable Agriculture and Environment.

Walker, T. W., Alexander, J. M., Allard, P. M., Baines, O., Baldy, V., Bardgett, R. D., ... & Salguero-Gómez, R. (2022). Functional Traits 2.0: The power of the metabolome for ecology. Journal of Ecology, 110(1), 4-20.

Defossez, E., Bourquin, J., von Reuss, S., Rasmann, S., & Glauser, G. (2021). Eight key rules for successful data-dependent acquisition in mass spectrometry-based metabolomics. Mass Spectrometry Reviews.

†Fernandez-Conradi, P., **†Defossez, E**., Delavallade, A., Descombes, P., Pitteloud, C., Glauser, G., ... & Rasmann, S. (2021). The effect of community-wide phytochemical diversity on herbivory reverses from low to high elevation. Journal of Ecology.

† Shared first co-authorship

Defossez, E., Pitteloud, C., Descombes, P., Glauser, G., Allard, P. M., Walker, T. W., Fernandez-Conradi, P., Wolfender, JL., Pellissier, L.,& Rasmann, S. (2021). Spatial and evolutionary predictability of phytochemical diversity. *Proceedings of the National Academy of Sciences*, 118(3).

Descombes, P., Pitteloud, C., Glauser, G., **Defossez, E.,** Kergunteuil, A., Allard, P. M., Rasmann, S & Pellissier, L. (2020). Novel trophic interactions under climate change promote alpine plant coexistence. *Science*, 370(6523), 1469-1473.

Bakhtiari, M., Glauser, G., **Defossez, E.,** & Rasmann, S. (2020). Ecological convergence of secondary phytochemicals along elevational gradients. *New Phytologist.*

Duthé, V., **Defossez, E**., van der Westhuizen, R., Glauser, G., & Rasmann, S. (2020). Out of scale out of place: Black rhino forage preference across the hierarchical organization of the savanna ecosystem. *Conservation Science and Practice*, 2(5), e191.

M. Pardos, M. del Río, H. Pretzsch, H. Jactel, K. Bielak, F. Bravo, G. Brazaitis, **E. Defossez,** M. Engel, K. Godvod, K. Jacobs, L. Jansone, A. Jansons, X. Morin, A. Nothdurft, L. Oreti, Q. Ponette, M. Pach, J. Riofrío, R. Ruíz-Peinado, A. Tomao, E. Uhl, R. Calama, (2020). The greater

resilience of mixed forests to drought mainly depends on their composition: Analysis along a climate gradient across Europe. *Forest Ecology and Management*, 481, 118687.

Jourdan, M., Piedallu, C., Baudry, J., **Defossez, E.,** & Morin, X. (2020). Tree diversity and the temporal stability of mountain forest productivity: testing the effect of species composition, through asynchrony and overyielding. *European Journal of Forest Research*, 1-14.

Pilar, F. C., Loïc, M., **Defossez, E**., & Rasmann, S. (2020). Seasonal changes in arthropod diversity patterns along an Alpine elevation gradient. *Ecological Entomology.*

Robert, C. A., Pellissier, L., Moreira, X., **Defossez, E.,** Pfander, M., Guyer, A., ... & Rasmann, S. (2019). Correlated Induction of Phytohormones and Glucosinolates Shapes Insect Herbivore Resistance of Cardamine Species Along Elevational Gradients. *Journal of chemical ecology*, 1-11.

Xiao, Z., Jiang, L., Chen, X., Zhang, Y., **Defossez, E.,** Hu, F., ... & Rasmann, S. (2019). Earthworms suppress thrips attack on tomato plants by concomitantly modulating soil properties and plant chemistry. *Soil Biology and Biochemistry*, 130, 23-32.

Defossez, E., Pellissier, L., & Rasmann, S. (2018). The unfolding of plant growth form-defence syndromes along elevation gradients. *Ecology letters*, 21(5), 609-618.

Pellissier, L., Descombes, P., Hagen, O., Chalmandrier, L., Glauser, G., Kergunteuil, A., **Defossez, E**., & Rasmann, S. 2018. Growth-competition-herbivore resistance trade-offs and the responses of alpine plant communities to climate change. *Functional ecology*, 32(7), 1693-1703.

Callis-Duehl, K., Vittoz, P., **Defossez, E**., & Rasmann, S. (2017). Community-level relaxation of plant defenses against herbivores at high elevation. *Plant Ecology,* 218(3), 291-304.

Kergunteuil, A., Bakhtiari, M., Formenti, L., Xiao, Z., **Defossez, E.,** & Rasmann, S. (2016). Biological control beneath the Feet: A review of crop protection against insect root herbivores. *Insects*, 7(4), 70.

Defossez, E., Courbaud, B., Lasbouygues, O., Schiffers, K., & Kunstler, G. (2016). Are variations of direct and indirect plant interactions along a climatic gradient dependent on species' strategies? An experiment on tree seedlings. *Oikos*, 125(5), 708-717.

Rasmann, S., Pellissier, L., **Defossez, E**., Jactel, H., & Kunstler, G. (2014). Climate-driven change in plant–insect interactions along elevation gradients. *Functional Ecology*, 28(1), 46-54.

Coince, A., Cordier, T., Lengellé, J., **Defossez, E**., Vacher, C., Robin, C., ... & Marçais, B. (2014). Leaf and root-associated fungal assemblages do not follow similar elevational diversity patterns. *PloS one*, 9(6).

Defossez, E., Courbaud, B., Marcais, B., Thuiller, W., Granda, E., & Kunstler, G. (2011). Do interactions between plant and soil biota change with elevation? A study on Fagus sylvatica. *Biology letters*, 7(5), 699-701.

Defossez, E., Djiéto-Lordon, C., McKey, D., Selosse, M. A., & Blatrix, R. (2011). Plant-ants feed their host plant, but above all a fungal symbiont to recycle nitrogen. *Proceedings of the Royal Society B: Biological Sciences*, 278(1710), 1419-1426.

Defossez, E., Selosse, M. A., Dubois, M. P., Mondolot, L., Faccio, A., Djieto-Lordon, C., ... & Blatrix, R. (2009). Ant-plants and fungi: a new threeway symbiosis. *New Phytologist*, 182(4), 942-949.

*Picture on the cover + Editorial

†**Defossez, E**., †Leotard, G., Debain, C., McKey, D., Kjellberg, F., & Blatrix, R. (2008). Local Genetic Co-Structuring of the Ant Petalomyrmex phylax and its Host Plant Leonardoxa a. africana: No Role for a Sixty Meter River Width in SeparatingSocial Forms. *Sociobiology*, 51(2), 363-372.

† Shared first co-authorship