Curriculum Vitae

Dr. David Castro, Postdoctoral Researcher

Swedish University of agricultural Sciences
Umeå Plant Science Centre
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Research interest

The main goal of my research is to understand how plants adapt to their environment, with a focus in plant-microbiome interactions under sub-optimal conditions and how these interactions fit in the ecosystem. To achieve this goal, I apply a combination of plant physiology, soil ecology and biochemistry with molecular biology methods such as amplicon and RNA sequencing to reveal the functional changes occurring between the plant and its associated soil microbiome in the plant-microbiome-soil continuum.

My current projects include the analysis of the changes in the root-associated fungal community of Norway spruce after changes in nutrient optimization through root transcriptomic and fungal metatranscriptomic and metagenomic analyses. Future projects include the effects of long-term fertilization on conifers transcriptome and the effects of intensive fertilization on the soil microbiome.

Scientific experience

2022 to present	**Postdoctoral researcher**, Umeå Plant Science Centre, Department of Forest Genetics and Plant Physiology. Swedish University of Agricultural Sciences, Sweden. PI: Prof. Vaughan Hurry
2016 to 2022	**PhD student**, Umeå Plant Science Centre, Department of Forest Genetics and Plant Physiology. Swedish University of Agricultural Sciences, Sweden. PI: Prof. Vaughan Hurry
March 2015	**Internship**, Umeå Plant Science Centre, Department of Plant Physiology. Umeå University, Sweden. Host: Maria E. Eriksson
2013 to 2015	**Master student**, Department of Biology, La Serena University, La Serena, Chile. PI: Cristian Ibañez
2012 to 2014	**Teaching assistant**, Department of Biomedical Sciences, Northern Catholic University, Coquimbo, Chile. Director: Prof. Fernando Moraga
2012 to 2014	**Teaching assistant**, Health Faculty, Saint Tomas University, La Serena, Chile. Director: Prof. Fernando Moraga
2008 to 2010	**Laboratory assistant** Department of Biology, La Serena University, La Serena, Chile. Director: Sergio Zepeda

Education

May 2022	**Dr. in Biology**, Department of Forest Genetics and Plant Physiology. Swedish University of Agricultural Sciences, Umeå, Sweden Dissertation: "Who comes first? Implications of the plant-microbiome-soil continuum feedback on plant performance" (Opponent: Prof. Barbara Hawkins)
2016 to 2022	**PhD student** in Biology, Department of Forest Genetics and Plant Physiology. Swedish University of Agricultural Sciences, Sweden.
October 2015	**MSc in Ecology**, Department of Biology, La Serena University, La Serena, Chile. Dissertation: "Respuesta Fisiológica, Bioquímica y Molecular de Plántulas de Algarrobo (*Prosopis chilensis* (Mol.) Stuntz) frente a Estrés Hídrico" (In Spanish) (Committee: Dr. Angéline Bertin, Dr. Nicolas Gouin and Dr. Carlos Figueroa)
2013 to 2015	**Master student** in Ecology, Department of Biology, La Serena University, La Serena, Chile.
2007- 2011	**Undergraduate studies** in Biology and Natural sciences teacher, Department of Biology, La Serena University, La Serena, Chile

Academic prizes and awards

2015	Comisión Nacional de Ciencia y Tecnología (CONICYT) scholarship "BecasChile" for PhD studies number 72160239.
2013	Comisión Nacional de Ciencia y Tecnología (CONICYT) scholarship for national master studies number 22130455.

Peer-reviewed publications

Castro D, Concha C, Jamett F, et al. (2022). Soil Microbiome Influences on Seedling Establishment and Growth of *Prosopis chilensis* and *Prosopis tamarugo* from Northern Chile. *Plants*. https://doi.org/10.3390/plants11202717

Law SR, Serrano A, Daguerre Y, et al. (2022). Metatranscriptomics captures dynamic shifts in mycorrhizal coordination in boreal forests. *PNAS*. https://doi.org/10.1073/pnas.2118852119

Castro D*, Schneider AN*, Holmlund M, et al. (2021) Effects of Early, Small-Scale Nitrogen Addition on Germination and Early Growth of Scots Pine (*Pinus sylvestris*) Seedlings and on the Recruitment of the Root-Associated Fungal Community. *Forests*. https://doi.org/10.3390/f12111589

Bonner MT, **Castro D**, Schneider AN, et al. (2019) Why does nitrogen addition to forest soils inhibit decomposition? *Soil Biol Biochem*. https://doi.org/10.1016/j.soilbio.2019.107570

Castro D*, Urzúa J*, Rodriguez-Malebran M, et al. (2017) Woody leguminous trees: New uses for sustainable development of drylands. *J Sustain For*. https://doi.org/10.1080/10549811.2017.1359098

International conferences

Castro D, Campbell C, Serrano A, Street N, Näsholm T, Hurry V. 2019. *Direct N-status modification through vascular transpiration stream effects on root-associated fungal community composition and function*. Scandinavian Plant Physiology Society (SPPS2022), Svalbard, Norway.

Castro D, Campbell C, Street N, Näsholm T, Hurry V. 2019. *Effect of Plant nitrogen status on the root-associated fungal community*. Scandinavian Plant Physiology Society (SPPS2019), Umeå, Sweden, poster presentation at excursion site.

Castro D, Schneider A, Holmlund M, Näsholm T, Street N, Hurry V. 2019. *Fungal community responses to clear-cutting and addition of nitrogen to seedlings.* KBC days 2019, Umeå University, Umeå, Sweden, short talk.

Castro D, Schneider A, Holmlund M, Näsholm T, Street N, Hurry V. 2019. *Fungal community responses to clear-cutting and addition of nitrogen to seedlings.* KBC days 2019, Umeå University, Umeå, Sweden, poster presentation.

Castro D, Näsholm T, Street N, Hurry V. 2018. *Effect of Medium- and Long-Term Fertilization on Needles and Roots Gene Expression of Adult Norway Spruce (Picea abies) Trees*. 10th Meeting of the International Society of Root Research, Tel-Aviv, Israel, poster presentation.

Popular science

April 2015	Online press of La Serena University: *Científicos de la ULS y Suecia investigan el mecanismo molecular utilizado por las plantas para tolerar al estrés por sequía y salinidad* (In Spanish) https://userena.cl/actualidad/1094-cientificos-de-la-uls-y-suecia-investigan-el-mecanismo-molecular-utilizado-por-las-plantas-para-tolerar-al-estres-por-sequia-y-salinidad.html

References

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Prof Torgny Näsholm	Department of Forest Ecology and Management Skogsmarksgränd 17, 901 83 Umeå, Sweden Phone: +46 (0)90 786 8205 Email: torgny.nasholm@slu.se
Assoc Prof Nathaniel Street	Umeå Plant Science Centre - Department of Plant Physiology Artedigränd 7, Fysiologisk botanik, Umeå universitet, 901 87 Umeå, Sweden

	Phone: +46 (0)90 786 5473 Email: nathaniel.street@umu.se
Assoc Prof Cristian Ibañez	Departamento de Biología, Facultad de Ciencias Avenida Raúl Bitrán Nachary 1305, Universidad de La Serena, 1720256, La Serena, Chile Phone: +56 (51)22 04 322 Email: cibanez@userena.cl

Last updated: April 2023