LUIS E. CASTAÑEDA

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1. PERSONAL INFORMATION

Birth date:	08 June 1981 (36 years-old)
Nationality:	Chilean
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	CHILE
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2. ACADEMIC FORMATION

Bachelor in Biological Sciences, Pontificia Universidad Católica de Chile (1999 – 2003).
Title dissertation: *Latitudinal variation in thermoregulatory performance in terrestrial isopods*. Advisor: Dr. Francisco Bozinovic.

Ph.D. in Science (Systematics and Ecology), Universidad Austral de Chile (2004 – 2008).
Title dissertation: *Costs on fitness in insect-plant interaction: potentialities and constraints in adaptive evolution of the grain aphid, Sitobion avenae*. Advisor: Dr. Roberto F. Nespolo. Co-advisor: Dr. Christian C. Figueroa.

3. WORK EXPERIENCE

May 2003 – May 2004	Associate researcher. Center of Advanced Studies in Ecology and Bi odiversity, Pontificia Universidad Católica de Chile (Chile).
Jul 2003 – Feb 2004	Assistant researcher. Institute of Ecology and Evolution, Universidad Austral de Chile (Chile).
Jan 2004	Visiting researcher. Department of Biology University of California at Riverside (United States).
Mar 2004 – Aug 2008	Graduate researcher. Institute of Ecology and Evolution, Universidad Austral de Chile (Chile).
Sep 2006 – Nov 2006	Visiting researcher. Institute of Zoology, Zürich Universität (Switzer land).
Nov 2008 – Oct 2010	FONDECYT postdoctoral researcher. Institute of Ecology and Evolution, Universidad Austral de Chile (Chile).
Nov 2010 – Nov 2013	Juan de la Cierva postdoctoral researcher. Department of Genetics and Microbiology, Universitat Autònoma de Barcelona (Spain).
Dic 2013 – Feb 2016	Postdoctoral researcher. Institute of Ecology and Biodiversity (Chile).
Dic 2015	Visiting researcher. Center for Plant Science Innovation, University of Nebraska (United States).
Mar 2016 – Dec 2016	Scientific advisor. EXPLORA Outreach Program, Goverment of Chile.
Jun 2016 – Dec 2016	Young researcher. Nucleus Center of Molecular Ecology and Evolutionary Applications, Universidad de Talca (Chile).
Jan 2017 – Present	Associate researcher. Institute of Environmental and Evolutionary Sciencies, Universidad Austral de Chile (Chile).

4. SKILLS

- Long experience with scientific literature, including searching, critical analysis, writing, publishing and referring (see Publication and Scientific Evaluation section).
- Strong skills statistical analysis ranging from classical statistical tests (t-test, ANOVA, correlation, regression) to multivariate analysis (principal component analysis, multivariate ANOVA, ordination analysis) and mixed-linear models.
- Proficient coding in R for statistical analysis and plotting.
- Long experience planning, performing, and supervising complex experimental designs.
- Strong capability to managing diverse work teams, including undergraduate and graduate students, and laboratory personnel.
- Strong skills on data management related to large-scale experiments.
- Experience with microbiome literature, including searching, critical analysis, writing, publishing (see Publications #25 and #28).
- Knowledge in next-generation sequencing, amplicon secuencing and metabarcoding analysis. Particularly, skills on basic command line knowledge, good manage with QIIME and statistical skills using R-based packages for microbiome analysis.
- Strong experience managing scientific projects.

5. GRANTS

Doctoral CONICYT grant AT-24060132 "*Costs on fitness in insect-plant interaction: potentialities and constraints in adaptive evolution*". Support Program for Doctoral Thesis of Comisión Nacional de Investigación Científica y Tecnológica (CONICYT) - Chile. US$10,300. Principal investigator. Period: 2006 - 2008.

FONDECYT grant 3090056 "*Effects of geographic divergence and environmental ethanol on the G-matrix of morphological, physiological and life-history traits in Drosophila subobscura*". Fondo Nacional de Investigación Científica y Tecnológica (FONDECYT) - Chile. USD$68,500. Principal investigator. Period: 2008 - 2010.

2009-SGR-636 "*Grup de Biologia Evolutiva (GEB)*" grant. Responsible researcher: Dr. Mauro Santos. Agència de Gestió d'Ajusts Universitaris i de Recerca - Generalitat de Catalunya. €78,000. Coinvestigator. Period: 2009 - 2013.

Coinvestigador of BFU2009-07564 "*Biología térmica comparativa en Drosophila subobscura en dos gradientes latitudinales*" grant. Ministerio de Ciencia e Innovación – España. €125,000. Coinvestigator. Period: 2010 – 2012.

FONDECYT Regular 1140066 "*Evolutionary adaptation to extreme environmental temperaturas: direct and correlated responses to artificial selection on heat tolerance*". Fondo Nacional de Investigación Científica y Tecnológica (FONDECYT) – Chile. US$320,000. Principal investigator. Period: 2014 – 2018.

FONDECYT Regular 1170943 "*Functional simbiosis as tool for pest control in cereal crops*". F ondo Nacional de Investigación Científica y Tecnológica (FONDECYT) – Chile. Coinvestig ator. Period: 2017 – 2021.

FONDECYT Regular 1170017 "*Forecasting the impacto of climate change in Chilean drosophi lids: physiological, ecological and evolutionary responses*". Fondo Nacional de Investigació n Científica y Tecnológica (FONDECYT) – Chile. Coinvestigator. Periodo: 2017 – 2021.

6. PUBLICATIONS

Total impact factor = 73.75 puntos (Web of Science 2016). Cites = 593 & H index = 14 (Googl e Scholar).

1. **Castañeda, L.E.**, Lardies, M.A. & Bozinovic, F. 2004. Adaptive latitudinal shifts in the thermal physiology of a terrestrial isopod. *Evolutionary Ecology Research* 6: 579 - 593.

2. Nespolo, R.F., **Castañeda, L.E.** & Roff, D.A. 2005. The effect of fasting on activity and resting metabolism in the sand cricket, *Grillus firmus*: a multivariate approach. *Journal of Insect Physiology* 51: 61 - 66.

3. Artacho, P., **Castañeda, L.E.** & Nespolo, R.F. 2005. The role of quantitative genetic studies in animal physiological ecology. *Revista Chilena de Historia Natural* 78: 161 - 167.

4. Nespolo, R.F., **Castañeda, L.E.** & Roff, D.A. 2005. Dissecting the variance-covariance structure in insect physiology: the multivariate association between metabolism and morphology in the nymphs of the sand cricket (*Gryllus firmus*). *Journal of Insect Physiology* 51: 913 - 921.

5. **Castañeda, L.E.**, Lardies, M.A. & Bozinovic, F. 2005.Interpopulational variation in recovery time from chill coma along a geographic gradient: a study in the common woodlouse, *Porcellio laevis*. *Journal of Insect Physiology* 51: 1346 - 1351.

6. **Castañeda, L.E.**, Sabat, P., González, S.P. & Nespolo, R.F. 2006. Digestive plasticity in tadpoles of the Chilean giant frog (*Caudiverbera caudiverbera*): Factorial effects of diet and temperature. *Physiological and Biochemical Zoology* 79: 919 - 926.

7. Nespolo, R.F., Artacho, P. & **Castañeda, L.E.** 2007. Cyclic gas-exchange in the Chilean red cricket: inter-individual variation and thermal dependence. *Journal of Experimental Biology* 210: 668 - 675.

8. Nespolo, R.F., **Castañeda, L.E.** & Roff, D.A. 2007. Genetic variance of metabolic rate and morphology in nymphs of the sand-cricket, *Gryllus firmus*, estimated from inbred line analysis. *Biological Research* 40: 5 - 12.

9. Nespolo, R.F., Artacho, P., Verdugo, C. & **Castañeda, L.E.** 2008. Short-term thermoregulatory adjustments in a South American anseriform, the black-necked swan (*Cygnus melanocoryphus*). *Comparative Biochemistry and Physiology Part A* 150: 366 - 368.

10. **Castañeda, L.E.**, Figueroa, C.C., Niemeyer, H.M., Fuentes-Contras, E. & Nespolo, R.F. 2009. Energy costs of detoxification systems in herbivores feeding on chemically defended host-plants: a correlation study in the grain aphid, *Sitobion avenae*. *Journal of Experimental Biology* 212: 1185 - 1190.

11. Vorburger, C., Sandrock, C., Gouskov, A. **Castañeda, L.E.** & Ferrari, J. 2009. Genotypic variation and the role of defensive endosymbionts in all-parthenogenetic host-parasitoids interaction. *Evolution* 63: 1439 - 1450.

12. **Castañeda, L.E.**, Sandrock, S. & Vorburger, C. 2010. Variation and covariation of life history traits in aphids are related to infection with the facultative bacterial endosymbiont *Hamiltonella defensa*. *Biological Journal of the Linnean Society* 100: 237 - 247.

13. **Castañeda, L.E.**, Figueroa, C.C., Niemeyer, H.M., Fuentes-Contras, E. & Nespolo, R.F. 2010. Physiological approach to explain the ecological success of the grain aphid, *Sitobion avenae*: interplay between detoxification enzymes, metabolism and fitness. *Journal Insect Physiology* 56: 1058 - 1064.

14. **Castañeda, L.E.**, Figueroa, C.C. & Nespolo, R.F. 2010. Do insect pests perform better on highly defended plants? Costs and benefits of induced detoxification defences in the aphid *Sitobion avenae*. *Journal of Evolutionary Biology* 23: 2474 - 2483.

15. **Castañeda, L.E.**, Figueroa, C.C., Bacigalupe, L.D. & Nespolo, R.F. 2010. Effects of wind polyphenism, aphid genotype and host plant chemistry on energy metabolism of the grain aphid *Sitobion avenae*. *Journal Insect Physiology* 56: 1920-1924.

16. Nespolo, R.F., Sepúlveda, R.D., **Castañeda, L.E.** & Roff, D.A. 2011. Effects of shape variation on energy metabolism of the sand cricket *Grillus firmus*: a geometric morphometric analysis. *Biological Research* 44: 67 - 72.

17. **Castañeda, L.E.**, Barrientos, K., Cortes, P.A., Figueroa, C.C., Fuentes-Contreras, E., Luna-Rudloff, M., Silva, A.X. & Bacigalupe, L.D. 2011 Evaluating fitness and metabolic costs for insecticide resistance in *Myzus persicae* from Chile. *Physiological Entomology* 36: 253 - 260.

18. Santos, M., **Castañeda, L.E.** & Rezende, E.L. 2011. Making sense of heat tolerance estimates in ectotherms: lessons from *Drosophila*. *Functional Ecology* 25: 1169 - 1180.

19. Calabria, G., Dolgova, O., Rego, C., **Castañeda, L.E.**, Rezende, E.L., Balanyà, J., Pascual, M., Sørensen, Loeschcke, V. & Santos. M. 2012. Hsp70 protein levels and thermotolerance in *Drosophila subobscura*: a reassessment of the thermal co-adaptation hypothesis. *Journal of Evolutionary* Biology 25: 691 - 700.

20. **Castañeda, L.E.**, Calabria, G., Betancourt, L.A., Rezende, E.L. & Santos, M. 2012. Measurement error in heat tolerance assays. *Journal of Thermal Biology* 37: 432 - 437.

21. Santos, M., **Castañeda, L.E.** & Rezende, E.L. 2012. Keeping pace with climate change: what is wrong with the evolutionary potential for upper thermal limits? *Ecology and Evolution* 2: 2866 - 2880.

22. **Castañeda, L.E.** & Nespolo, R.F. 2013. Phenotypic and genetic effects of contrasting ethanol environments on developmental and physiological traits of *Drosophila melanogaster*. *PLoS One* 8: e58920.

23. **Castañeda, L.E.**, Balanyà, J., Rezende, E.L. & Santos, M. 2013. Vanishing chromosomal inversion cline in Drosophila subobscura from Chile: is behavioral thermoregulation to blame? *American Naturalist* 182: 249 – 259.

24. Rezende, E.L., **Castañeda, L.E.** & Santos, M. 2014. Tolerance landscapes in thermal ecology. *Functional Ecology* 28: 789-809.

25. **Castañeda, L.E.**, Manzano, M., Godoy, K., Marquet, P.A. & Barbosa, O. 2015. Comparati ve study between soil microbial structure communities from vineyards and sclerophyllous f orest in Central Chile. *Ecology and Evolution* 5: 3857 - 3868.

26. **Castañeda, L.E.**, Rezende, E.L. & Santos, M. 2015. Heat tolerance in *Drosophila subobsc ura* along a latitudinal gradient: contrasting patterns between plastic and genetic responses . *Evolution* 69: 2721 - 2734.12757.

27. Foucaud, J., Moreno, C. Gibert, P., Pascual, M., Rezende, E.L., **Castañeda, L.E.** & Mery, F. 2016. Introduced *Drosophila suboscura* populations perform better than native populatio ns during an ovoposition choice task due to increased fecundity but similar learning ability**.** *Ecology and Evolution* 6: 1725 - 1736.

28. **Castañeda, L.E.** & Barbosa, O. 2017. Metagenomic analysis exploring taxonomic and fun ctional diversity of soil microbial communities in Chilean vineyards and surrounding native f orests. *PeerJ* 5: e3098.

7. SCIENTIFIC EVALUATIONS

Scientific evaluations

Scientific reviewer for ISI journals

Journal of Insect Science - Evolutionary Ecology - Bulletin of Entomological Research - Comparative Biochemistry and Physiology Part-A - Functional Ecology - Oikos - Phytoparasitica - European Journal of Entomology - Physiology & Behavior – Ciencia e Investigación Agraria – Physiological Entomology – Ecology and Evolution – Journal of Insect Physiology – Nature Communications – Journal of Pest Science – Journal of Thermal Biology – PLoS One.

External reviewer for research grants

Fondo Nacional de Investigación Científia y Tecnológica (FONDECYT) - Chile.
Fondo para la Investigación Científica y Tecnológica (FONCYT) - Argentina.
Israel Science Foundation (ISF) - Israel.
BiodivERsA program - European Union Framework Programme for Research.

8. AWARDS & FELLOWSHIPS

Awards

Award for academic performance during the Graduate Program in Science, mention Systematics and Ecology, Universidad Austral de Chile (2008).

Honours mention in the Doctoral Thesis Prize of the Academia Chilena de Ciencias - Chile (2009).

Selected doctoral thesis fort the book "18 Tesis Doctorales Destacadas: Periodo 2009 - 2010". Red Universitaria Cruz del Sur. Chile (2009).

Evolutionary and Ecological Physiology Prize for talk at the Annual Meeting of the Society of Experimental Biology. Prague, Czech Republic (2010).

9. REFERENCES

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