

STEFANIA ELIZABETH SHORT ROCHA

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ACADEMIC DEGREES AND PROFESSIONAL STUDIES

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| 2019 | Doctor in Applied Cellular and Molecular Biology , Universidad de La Frontera, Temuco, Chile. |
| 2016 | Master in Applied Cellular and Molecular Biology , Universidad de La Frontera, Temuco, Chile. |
| 2015 | Biotechnology Engineering , Universidad de La Frontera, Temuco, Chile. |
| 2014 | Degree in Engineering Sciences , Universidad de La Frontera, Temuco, Chile. |

COURSES

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| 2019 | Course in Introduction to Graphic Design. Universidad de La Frontera, Temuco, Chile.

Course in Public Procurement Management. Universidad de La Frontera, Temuco, Chile. |
| 2016 | Course in Learning Styles and Teaching Strategies. Dirección Nacional de Capacitación y Educación Continua de Santo Tomás, Temuco, Chile. |
| 2015 | Course in Assessment Instruments in a Competency-based Model. Dirección Nacional de Capacitación y Educación Continua de Santo Tomás, Temuco, Chile.

Course in Evaluation Plan in a Model based on Competences. Dirección Nacional de Capacitación y Educación Continua de Santo Tomás, Temuco, Chile.

Course in Induction and Management of the Educational Project. Dirección Nacional de Capacitación y Educación Continua de Santo Tomás, Temuco, Chile. |

Course in Communication Skills for the Learning Process.
Dirección Nacional de Capacitación y Educación Continua de Santo
Tomás, Temuco, Chile.

2014 **International course of “Soil Microbiology and Enzymes”,**
organized by the Natural Resources Sciences Doctorate Program,
accredited by CNA-Chile (2016-2024), Universidad de La Frontera,
Temuco, Chile.

PUBLICATIONS

1. Jorge F. Beltrán, Lisandra Herrera-Belén, Fernanda Parraguez-Contreras, Jorge G. Farías, Jorge Machuca-Sepúlveda and **Stefania Short**. (2024). MultiToxPred 1.0: a novel comprehensive tool for predicting 27 classes of protein toxins using an ensemble machine learning approach. *BMC Bioinformatics*. 25, 1-12.
2. **Stefania E. Short**, Mauricio Zamorano, Cristian Aranzaez-Ríos, Manuel Lee-Estevez, Rommy Díaz, John Quiñones, Patricio Ulloa-Rodríguez, Elías Figueroa Villalobos, León A. Bravo, Steffen P. Graether and Jorge G. Farías. (2024). Novel Apoplastic Antifreeze Proteins of *Deschampsia antarctica* as Enhancer of Common Cell Freezing Media for Cryobanking of Genetic Resources, a Preliminary Study. *Biomolecules*. 14, 1-15.
3. Maritza Pérez-Atehortúa, **Stefania E. Short**, Cristian Aranzaez-Rios, Jorge Farías, Ricardo Pinheiro S. Oliveira, Wellison Amorim Pereira, Jennie Risopatrón, Iván Valdebenito, Elías Figueroa Villalobos. (2024). Preparation and extraction of chorion proteins from *Salmo salar* embryos at the pigmented eye stage for electrophoresis with SDS-polyacrylamide gel. *MethodsX*. 12, 1-10.
4. Díaz R, Quiñones J, **Short S**, Contreras P, Ulloa-Rodríguez P, Cancino-Baier D, Sepúlveda N, Valdebenito I, Farías JG. (2021). Effect of exogenous lipids on cryotolerance of Atlantic salmon (*Salmo salar*) spermatozoa. *Cryobiology*. 98, 25-32.
5. **Stefania Short**, Rommy Díaz, John Quiñones, Jorge Beltrán, Jorge G Farías, Steffen P Graether, León A Bravo. (2020). Effect of in vitro cold acclimation of *Deschampsia antarctica* on the accumulation of proteins with antifreeze activity. *Journal of Experimental Botany*. <https://doi.org/10.1093/jxb/eraa071>
6. Manuel Lee-Estevez, Lisandra Herrera, Rommy Díaz, Jorge Beltrán, Elías Figueroa, Kelly Dumorné, Patricio Ulloa-Rodríguez, **Stefanía Short**, Jennie Risopatrón, Ivan Valdebenito, Jorge Farías. (2019). Effects of cryopreservation on cAMP-dependent protein kinase and AMP-activated protein kinase in Atlantic salmon (*Salmo salar*) spermatozoa: Relation with post-thaw motility. *Animal Reproduction Science*. 209, 106-133.

7. Rommy Díaz, Manuel Lee-Estevez, John Quiñones, Kelly Dumorné, **Stefania Short**, Patricio Ulloa-Rodríguez, Ivan Valdebenito, Néstor Sepúlveda, Jorge G. Farías. (2019). Changes in Atlantic salmon (*Salmo salar*) sperm morphology and membrane lipid composition related to cold storage and cryopreservation. *Animal Reproduction Science*. 204, 50-59.
8. Patricio Ulloa-Rodríguez, Elías Figueroa, Rommy Díaz, Manuel Lee-Estévez, **Stefania Short**, Jorge G Farías. (2017). Mitochondria in teleost spermatozoa. *Mitochondrion*. 183,132-142.
9. Manuel Lee Estevez, Elías Figueroa, Jacky Cosson, **Stefania E. Short**, Ivan Valdebenito, Jorge G. Farías (2016). Zebrafish as a useful model for immunologic research with potential applications in aquaculture. *Reviews in Aquaculture*. <https://doi.org/10.1111/raq.12156>
10. Emilio A. Herrera, Jorge G. Farías, Alejandro González-Candia, **Stefania E. Short**, Catalina Carrasco-Pozo, Rodrigo L. Castillo. (2015). $\Omega 3$ Supplementation and Intermittent Hypobaric Hypoxia Induce Cardioprotection Enhancing Antioxidant Mechanisms in Adult Rats. *Marine Drugs*, 13 (2): 838-860.
11. Rodrigo L. Castillo, **Stefania E. Short**, Andrea B. Zepeda, Elías Figueroa, Adalberto Pessoa Jr, Jorge G. Farías. (2015). Protective effects of polyunsaturated fatty acids supplementation against testicular damage induced by intermittent hypobaric hypoxia in rats. *Journal of Biomedical Science*, 22:8.
12. Rodrigo Castillo, Jorge G. Farías, Emilio A Herrera, Pedro I Álvarez, **Stefania E Short**, Luis Tapia, Rodrigo Carrasco and Ramón Sotomayor. (2014). Effects of chronic intermittent hypoxia and polyunsaturated fatty acids on infarct size and oxidative stress markers in cardiac ischemia reperfusion. *Experimental & Clinical Cardiology*, 20 (8):3833-3858.

PARTICIPATION IN RESEARCH PROJECTS

Current projects

2023	Responsible – Extension Project EXS23-0272: Discover engineering and biotechnology in a didactic way.
2021	Responsible Researcher - Fondecyt Postdoctorate project 3210633: Nanotechnology applied to the development and analysis of antifreeze proteins to increase the tolerance to freezing of agricultural crops.

Finished projects

2022 - 2022	Responsible – Extension Project EXT21-0056: Role of Engineering and Biotechnology in the Development of Vaccines for Society.
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2021 – 2023	Co-Researcher - FAPESP-UFRO project 2020/07632-6: Bioprospecting of bacteriocin-producer probiotic bacteria from rainbow trout (<i>Oncorhynchus mykiss</i>): antimicrobial activity against <i>Flavobacterium psychrophilum</i> .
2018 - 2021	Research assistant - Fondecyt project 1180387: Study of the Flagellar Dynamic in the Spermatozoa of Fish to improve reproductive efficiency in Chilean Aquaculture.
2015 – 2017	Research assistant – Fondecyt project 1151315: Study of the Mitochondrial Dynamics in the Spermatozoa of Fish for the Optimization of Reproduction in Chilean Aquaculture.
2015 – 2017	Research assistant - Fondecyt project 1151173: How would experimental warming affect freezing tolerance of Antarctic vascular plants?.
2012 – 2014	Research assistant - Production of recombinant antibody fragments from the cultivation of genetically modified <i>Pichia pastoris</i> (FAPESP). International Project with participation of Universidad de Sao Paulo-Brasil and Universidad de La Frontera-Chile. Research assistant – Fondecyt project 11110426: Molecular basis of a novel therapy for cardioprotection through the administration of polyunsaturated fatty acids.

PRESENTATIONS AT NATIONAL/INTERNATIONAL CONGRESSES

1. **Stefania Short** and Cristian Aranzáez.Ríos. **2023**. Liposomal encapsulation of anti-freeze proteins with potential agricultural use. VII Congreso Nacional de Nanotecnología. Pucón, Chile.
2. Bravo L.A., López D., Acuña K., Sáez P., **Short S.**, Herman K., Graether S. **2020**. Lack of nocturnal warming explains the effect of *in situ* warming by OTC on freezing tolerance of Antarctic vascular plants. Plant Biology 2020 Worldwide Summit. Online.
3. **Short S.**, Díaz R., Bravo L.A. and Farías J.G. **2019**. Effect of freezing medium on antifreeze activity in apoplastic extracts of *Deschampsia antarctica* for the cryopreservation of *Salmo salar* spermatozoa. Congreso Latinoamericano Conjunto de Reproducción. Santiago, Chile.
4. **Stefania Short**, Manuel Lee-Estevez, León A. Bravo, Rommy Díaz and Jorge G. Farías. **2019**. Caracterización de proteínas anticongelantes presentes en *Deschampsia antarctica* y su potencial uso en criopreservación de espermatozoides

de *Salmo salar*. I Congreso de Estudiantes y Graduados de Postgrado, Universidad de La Frontera. Temuco, Chile.

5. **Short, S.**, Farías, J.G., Díaz, R., Bravo, L.A. **2018**. Study of the potential use of antifreeze proteins of *Deschampsia antarctica* in the cryopreservation of *Salmo salar* spermatozoa. 20th Global Congress on Biotechnology. London, England.
6. **Short, S.**, Bravo, L.A., Farías, J.G. **2018**. Characterization of antifreeze activity in apoplastic extract of *Deschampsia Antarctica*. 20th Global Congress on Biotechnology. London, England.
7. **Short SE**, Bravo LA, Díaz R, Lee-Estevez M, Zepeda AB and Farías JG. **2018**. Apoplastic extracts with antifreeze activity of *Deschampsia antarctica* as a cryoprotectant of *Salmo salar* spermatozoa. XXIX Reunión anual de la Sociedad Chilena de Reproducción y Desarrollo. Concón, Chile.
8. León A. Bravo, **Stefania Short**, Angela Sierra-Almeida, José J. Hinostroza, Claudia Mella, Karina Acuña and Steffen Graether. **2017**. Impact of in situ warming on antarctic vascular plants. The 23rd International Symposium on Polar Sciences (ISPS). Incheon, Korea.
9. **Short SE**, Bravo LA, Díaz R, Lee-Estevez M, Figueroa E, Zepeda AB and Farías JG. **2017**. Effect of barley dehydrin (p-80) on post-thawing sperm quality of atlantic salmon (*Salmo salar*). XXVIII Reunión anual de la Sociedad Chilena de Reproducción y Desarrollo. Concón, Chile.
10. **Short, S.**, Graether, S.3, Farias, J.G.2 and Bravo, L.A. **2017**. Caracterización de proteínas anticongelante putativas de *Deschampsia antarctica*. IX Congreso Latinoamericano de Ciencia Antártica. Punta Arenas, Chile.
11. **Short, S.** **2017**. Characterization of antifreeze activity in apoplastic extract of *Deschampsia antarctica*. 6th International Workshop Advances in Science and Technology of Bioresources. Pucón, Chile.
12. **2015**. Pharmacological strategies for the prevention of the effect of intermittent hypobaric hypoxia in rat testis. XXVII Congreso anual de la Sociedad de Farmacología de Chile.
13. **Stefania E. Short**, León A. Bravo and Jorge G. Farías. **2015**. Study of the potential use of barley dehydrin (P-80) in sperm cryopreservation of Atlantic salmon (*Salmo salar*). 5th International Workshop Advances in Science and technology of Bioresources. Pucón, Chile.
14. Farías J.G., **Short S.**, Zepeda A., Figueroa C, Llanquinao V., Castillo R.L. **2014**. Efecto de la Suplementación con Omega 3 en el Estado Redox de Testículos de

Ratas Sometidos a Hipoxia Hipobárica Intermitente. XXXVI Congreso Anual de la Sociedad de Farmacología de Chile. Chillán, Chile.

15. **2014.** 2^{do} Workshop “Desafíos para la producción de alimentos: Aplicaciones Biotecnológicas en la Producción de Agropecuaria”, Universidad de La Frontera, Temuco.

16. **2013.** 4th International Workshop Advances in science and technology of bioresources, Universidad de La Frontera, Temuco.

17. **2009.** Primer Congreso de Ingeniería del Sur. Facultad de Ingeniería, Ciencia y Administración; Universidad de La Frontera, Temuco, Chile.

PROFESSIONAL EXPERIENCE

2021 Review Editor on the Editorial Board of Environmental, Aviation and Space Physiology (specialty section of Frontiers in Physiology).

Undergraduate level courses

2019-2020 Unit Operation I. Department of Chemical Engineering, Universidad de La Frontera.

2019-Present Protein separation and purification operation. Department of Chemical Engineering, Universidad de La Frontera.

2019-Present Immunology. Department of Chemical Engineering, Universidad de La Frontera.

2019-Present Enzymology and Protein Structure. Department of Chemical Engineering, Universidad de La Frontera.

2019 Biochemistry in Centro de Aprendizaje, Universidad Santo Tomás, Temuco, Chile.

2015 – 2016 Biochemistry in Centro de Aprendizaje, Universidad Santo Tomás, Temuco, Chile.

Industry experience

2015 Production assistant in Procesos Naturales Vilkun S.A., Gral. López Km 7, Vilcún.

ACADEMIC DESIGNATIONS

2022 - 2024	Director - Civil Engineering in Biotechnology, Faculty of Engineering and Sciences, Universidad de La Frontera, Temuco, Chile.
2020-Present	Member of the Academic Council of Biotechnology Engineering, Faculty of Engineering and Sciences, Universidad de La Frontera.

SCHOLARSHIP AND AWARDS

2019	First place in oral presentations, I Congreso de Estudiantes y Graduados de Postgrado, Universidad de La Frontera.
2016	Canada-Chile Leadership Exchange Scholarships Program, given by the Canadian Government for research development at the University of Guelph, Guelph, ON. Internship scholarship to improve the English language, for Doctoral students associated with CD FRO1204, given by the Scientific and Technological Bioresources Nucleus (BIOREN) of the University of La Frontera.
2015	Doctoral CONICYT fellowship, No. 21150278.