

## Carlos Farkas Pool - Curriculum Vitae

### Contact Information

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### Education

**Elementary and high school at Osorno College, Osorno, Chile. 1994-2009**

**B.Sc. in Bioengineering 2007-2012**

Faculty of Biological Sciences, Universidad de Concepción, Chile.

Dissertation: Characterization of Sall2 transcription factor and its relationship with p53 tumor suppressor

Advisor: Dr. Roxana Pincheira Barrera ([ropincheira@udec.cl](mailto:ropincheira@udec.cl))

**Ph.D in Biological Sciences, mention in Molecular and Cellular Biology 2013-2018**

Faculty of Biological Sciences, Universidad de Concepción, Chile.

Dissertation: Identification of Sall2 transcriptional targets in response to genotoxic stress

Advisor: Dr. Roxana Pincheira Barrera ([ropincheira@udec.cl](mailto:ropincheira@udec.cl))

### Academic Research Experience

**Assistant Professor, Faculty of Medicine, Universidad Católica de la Santísima Concepción, Concepción, Chile. January 2022-Present**

**Postdoctoral fellow, Research Institute in Oncology and Hematology, CancerCare Manitoba, Winnipeg, Canada – February 2020-August 2021**

Advisor: Dr. Jody Jonathan Haigh ([jody.haigh@umanitoba.ca](mailto:jody.haigh@umanitoba.ca))

**Bioinformatician and Research Assistant, Universidad de Concepción, Concepción, Chile - May 2019 - December 2019**

Advisor: Dr. Leonardo Guitierrez, Dr. Roxana Pincheira, Dr. Teresa Caprile.

**Bioinformatician at "GAMBIO" metagenomics project, Research held at Universidad Tecnológica Metropolitana, Santiago de Chile. May 2018 - May 2019**

Advisor: Dr. Danilo Pérez.

**Ph.D in Biological Sciences, mention in Molecular and Cellular Biology, Signal Transduction Laboratory, Department of Molecular Biology, Faculty of Biological**

**Sciences, Universidad de Concepción, Chile** – September 2013 until July 2019

Advisor: Dr. Roxana Pincheira Barrera ([ropincheira@udec.cl](mailto:ropincheira@udec.cl))

**National collaboration, Laboratorio de Regulación Transcripcional, Departamento de Biología Molecular, Universidad de Concepción, Chile** – repeated visits within

September 2015 until December 2018

Supervisor: Dr. José Leonardo Gutierrez ([lgutier@udec.cl](mailto:lgutier@udec.cl))

**International collaboration, Huck Institutes of the Life Sciences - Penn State University Makova Lab**– June 2015 until July 2015

Supervisor: Dr. Kateryna Makova ([kdm16@psu.edu](mailto:kdm16@psu.edu))

**B.Sc. in Bioengineering, Signal Transduction Laboratory, Department of Molecular Biology, Faculty of Biological Sciences, Universidad de Concepción, Chile** – March 2011 until April 2013

Supervisor: Dr. Roxana Pincheira Barrera ([ropincheira@udec.cl](mailto:ropincheira@udec.cl))

### Teaching Experiences

**Assistant teacher in Medical Microbiology for medicine undergraduate students, Universidad Católica de la Santísima Concepción**, March 2022-July 2022, March 2023-July 2023

Responsible professor(s): Dr. Matías Hepp Castro, Carlos Farkas

**Data Science course for Master Students, Universidad Católica de la Santísima Concepción**, August 2022-December 2022, August 2023-December 2023

Responsible professor(s): Carlos Farkas.

**Assistant teacher in Chemistry for undergraduate students, Universidad Católica de la Santísima Concepción**, March 2022-July 2022, March 2023-July 2023

Responsible professor(s): Dr. Matías Hepp Castro, Carlos Farkas.

**Responsible for training students for the laboratory, Signal Transduction Laboratory, Department of Molecular Biology, Faculty of Biological Sciences, Universidad de Concepción, Chile** – intermittently from March 2012 until December 2019

Advisor: Dr. Roxana Pincheira Barrera ([ropincheira@udec.cl](mailto:ropincheira@udec.cl))

**Assistant in Molecular and Cell biology Part Time Lecturer, Department of Molecular and Cell Biology, Faculty of Biological Sciences, Universidad de Concepción, Chile**- Intermittently, 2014, 2015, 2016, 2017, 2018.

Advisor: Dr. Marcela Torrejón Quezada ([matorrejon@udec.cl](mailto:matorrejon@udec.cl)), Dr. Violeta Morín Muñoz ([vmorin@udec.cl](mailto:vmorin@udec.cl)) and Dr. Elena Amparo Uribe ([auribe@udec.cl](mailto:auribe@udec.cl))

**Assistant Teacher in Bioinformatics Lecture, Bioinformatics for Master in Biochemistry and Bioinformatics, Department of Molecular and Cell Biology, Faculty of Biological Sciences, Universidad de Concepción, Chile – September-October 2016**  
Advisor: Dr. Danilo Pérez Pantoja ([danilo.perez@utem.cl](mailto:danilo.perez@utem.cl))

## Awards

1. National Call for Subsidy for Installation in the Academy, year 2021, ANID Exempt Resolution No.4794/2021 (SA77210106).
2. Best panel presentation in the fourth internal congress of the Faculty of Biological Sciences, Universidad de Concepción.
3. CONICYT scholarship for national doctoral studies N° 21130230 (2013-2018)
4. CONICYT internship abroad scholarship for PhD students (2016).

## Productivity

### Projects:

1. Principal Investigator:  
National Call for Subsidy for Installation in the Academy, year 2021, ANID Exempt Resolution No.4794/2021 (SA77210106).
2. Principal Investigator:  
Improving Q-RT-PCR screening for COVID-19 by tracking viral variants  
MITACS CANADA  
2020 - 2021
3. Co-investigator:  
625411 FONDECYT Regular 2024 – FONDECYT  
Insights on molecular mechanisms of SALL2 transcription factor in colorectal cancer  
Received at ANID - Date: 28-06-2023 16:09:14
4. Undergraduate thesis:  
CHARACTERIZATION OF SALL2 TRANSCRIPTION FACTOR AND ITS RELATIONSHIP TO P53 TUMOR SUPPRESSOR  
Programa: FONDECYT  
Rol: Tesista | Folio/N°: 1110821 | 2011 - 2015
5. Doctoral Thesis:  
REGULATION AND FUNCTION OF THE SALL2 TRANSCRIPTION FACTOR DURING CELLULAR STRESS  
Programa: FONDECYT  
Rol: Tesista Doctorado | Folio/N°: 1151031 | 2015 – 2019

## Publications:

1. **Farkas, C.**, et al., Wild type p53 transcriptionally represses the SALL2 transcription factor under genotoxic stress. *PLoS One*, 2013. 8(9): p. e73817.
2. Escobar, D., et al, Sall2 is required for proapoptotic Noxa expression and genotoxic stress-induced apoptosis by doxorubicin. *Cell Death Dis*, 2015. 6: p. e1816.
3. Hermosilla, V.E., et al, Developmental SALL2 transcription factor: a new player in cancer. *Carcinogenesis*, 2017. 38(7): p. 680-690.
4. Hermosilla, V.E., et al, SALL2 represses cyclins D1 and E1 expression and restrains G1/S cell cycle transition and cancer-related phenotypes. *Mol Oncol*, 2018. 12(7): p. 1026-1046.
5. Hepp, M.I., et al, A Trichostatin A (TSA)/Sp1-mediated mechanism for the regulation of SALL2 tumor suppressor in Jurkat T cells. *Biochim Biophys Acta Gene Regul Mech*, 2018.
6. **Farkas, C.**, et al, Streamlined computational pipeline for genetic background characterization of genetically engineered mice based on next generation sequencing data. *BMC Genomics*, 2019. 20(1): p. 131.
7. Fuentes-Villalobos, F., et al, DISC1 promotes translation maintenance during sodium arsenite-induced oxidative stress. *Biochim Biophys Acta Gene Regul Mech*, 2019. 1862(6): p. 657-669.
8. **Farkas, C.**, et al, Draft Genome Sequences of Two *Pseudomonas* Strains That Are Able To Use Furan Derivatives as Their Sole Carbon Source. *Microbiology Resource Announcements*, 2020. 9(2): p. e01131-19.
9. **Farkas, C.**, et al, Complete Genome Sequence of *Rhodococcus ruber* R1, a Novel Strain Showing a Broad Catabolic Potential toward Lignin-Derived Aromatics. *Microbiology Resource Announcements*, 2020. 9(2): p. e00905-19.
10. **Farkas, C.**, et al, Insights on early mutational events in SARS-CoV-2 virus reveal founder effects across geographical regions. *PeerJ*, 2020. 8: p. e9255.
11. Recabal, A. et al, The FGF2-induced tanyocyte proliferation involves a connexin 43 hemichannel/purinergic-dependent pathway. *J Neurochem*. 2021 Jan;156(2):182-199. doi: 10.1111/jnc.15188. Epub 2020 Oct 19.
12. **Farkas, C.**, et al, Characterization of SALL2 Gene Isoforms and Targets Across Cell Types Reveals Highly Conserved Networks. *Front Genet*. 2021 Feb 22;12:613808. doi: 10.3389/fgene.2021.613808. eCollection 2021.
13. **Farkas, C.** et al. A Novel SARS-CoV-2 Viral Sequence Bioinformatic Pipeline Has Found Genetic Evidence That the Viral 3' Untranslated Region (UTR) Is Evolving and Generating

Increased Viral Diversity. *Front. Microbiol.*, 21 June 2021.

<https://doi.org/10.3389/fmicb.2021.665041>

14. Jueqiong Wang, **Carlos Farkas**, Aissa Benyoucef, Catherine Carmichael, Katharina Haigh, Nick Wong, Danny Huylebroeck, Marc P Stemmler, Simone Brabletz, Thomas Brabletz, Christian M Nefzger, Steven Goossens, Geert Berx, Jose M Polo, Jody J Haigh. Interplay between the EMT transcription factors ZEB1 and ZEB2 regulates hematopoietic stem and progenitor cell differentiation and hematopoietic lineage fidelity *PLOS biology*, 2021.

<https://doi.org/10.1371/journal.pbio.3001394>

15. Roberto Amigo, **Carlos Farkas**, Cristian Gidi, Matias I Hepp, Natalia Cartes, Estefanía Tarifeño, Jerry L Workman, José L Gutiérrez. The linker histone Hho1 modulates the activity of ATP-dependent chromatin remodeling complexes. *Biochimica et Biophysica Acta (BBA) - Gene Regulatory Mechanisms* 1865(1):194781, 2021

16. Oviedo MJ, Ramirez E, Cifuentes M, **Farkas C**, Mella A, Bertinat R, Gajardo R, Ferrada L, Jara N, De Lima I, et al: Is IIIG9 a New Protein with Exclusive Ciliary Function? Analysis of Its Potential Role in Cancer and Other Pathologies. *Cells* 2022, 11.

17. **Farkas C\***, Recabal A, Mella A, Candia-Herrera D, Olivero MG, Haigh JJ, Tarifeno-Saldivia E, Caprile T: annotate\_my\_genomes: an easy-to-use pipeline to improve genome annotation and uncover neglected genes by hybrid RNA sequencing. *Gigascience* 2022, 11.

<https://doi.org/10.1093/gigascience/giac099>

18. **Carlos Farkas**, Eduardo Retamal-Fredes, Ariel Ávila, Michael G. Fehlings, Pia M. Vidal: Degenerative Cervical Myelopathy induces sex-specific dysbiosis in mice. *Front Microbiol*, 2023. 14: p. 1229783.

19. Poly(dA:dT) Tracts Differentially Modulate Nucleosome Remodeling Activity of RSC and ISW1a Complexes, Exerting Tract Orientation-Dependent and -Independent Effects. Roberto Amigo, Fernanda Raiqueo, Estefanía Tarifeño, **Carlos Farkas** and José L. Gutiérrez. *Int J Mol Sci*, 2023. 24(20).

20. Role of HDAC6-STAT3 in immunomodulatory pathways in Colorectal cancer cells. C. Mardones, C. Navarrete-Munoz, ME Armijo, K. Salgado, F. Rivas-Valdes, V. Gonzalez-Pecchi, **C. Farkas**, A. Villagra, MI Hepp. *Molecular Immunology*, Volume 164, December 2023, Pages 98-111.

21. V. E. Hermosilla, L. Gyenis, A. J. Rabalski, M. E. Armijo, P. Sepúlveda, F. Duprat, D. Benítez-Riquelme, F. Fuentes-Villalobos, A. Quiroz, M. I. Hepp, **C. Farkas**, M. Mastel, I. González-Chavarría, R. Jackstadt, D. W. Litchfield, A. F. Castro & R. Pincheira. Casein kinase 2 phosphorylates and induces the SALL2 tumor suppressor degradation in colon cancer cells. *Cell Death Dis*, 2024. 15(3): p. 223.

22. González M, Maurelia F, Aguayo J, Amigo R, Arrué R, Gutiérrez JL, Torrejón M, **Farkas C\***, Caprile T\*. Uncovering the role of the subcommissural organ in early brain development

through transcriptomic analysis. *Biol Res.* 2024 Jul 27;57(1):49. doi: 10.1186/s40659-024-00524-y. PMID: 39068496; PMCID: PMC11282827.

23. Cuevas, D.; Amigo, R.; Agurto, A.; Heredia, A. A.; Guzmán, C.; Recabal-Beyer, A.; González-Pecchi, V.; Caprile, T.; Haigh, J. J.; **Farkas, C.** Deciphering the Complexities of Acute Myeloid Leukemia: Emerging Roles of Epithelial to Mesenchymal Transition Transcription Factors (EMT-TFs) in Disease Progression. *Preprints* 2024, 2024071231.  
<https://doi.org/10.20944/preprints202407.1231.v1>

### Congresses:

1. "p53 transcriptionally represses the SALL2 transcription factor under genotoxic stress", presented in the Proceedings of the 104th Annual Meeting of the American Association for Cancer Research, Washington, DC, United States, April 2013.
2. "P53 and SP1 transcriptionally regulate the SALL2 transcription factor", presented in the XII Pan American Association for Biochemistry & Molecular Biology (PABMB), Puerto Varas, Chile, November 2013.
3. "The Sall2 transcription factor is involved in cellular stress responses" (co-author), presented in the FEBS-EMBO International Congress, Paris, France, August-Sept. 2014.
4. "Identification of Sall2 transcriptional targets in response to genotoxic stress", presented in the XXXVIII Annual Meeting of Sociedad de Bioquímica y Biología Molecular de Chile (Chilean Society for Biochemistry and Molecular Biology), Puerto Varas, Chile, September 2015.
5. "Role of Sall2 transcription factor under genotoxic stress: A transcriptomic approach", presented in the Fourth AACR International Conference on Frontiers in Basic Cancer Research, Philadelphia, Pennsylvania, United States, October 2015.
6. "Angiogenin controls protein translation in a Sall2- dependent manner", presented in the 16th Genome Informatics conference, Wellcome Genome Campus, Hinxton, Cambridge, United Kingdom, September 2016.
7. "Development of a bioinformatic pipeline for accurate reconstruction of metagenomes from complex microbial consortia", presented in the XXIV latinoamerican congress of microbiology (ALAM) 2018, November 2018.
8. "Metagenómica de la Rizósfera de *Fragaria chiloensis* para la identificación de nuevos genomas bacterianos". Talk presented in IV simposio de Valoración y Conservación de los recursos microbianos, septiembre 2022.
9. "annotate\_my\_genomes: an easy-to-use pipeline to improve genome annotation and uncover neglected genes by hybrid RNA sequencing. The case of radial glia in brain

chicken". Poster presented in PRIMER ENCUENTRO DEL CLUB DE LA GLÍA CONO SUR, 19-21 de octubre de 2022 en Facultad de Farmacia y Bioquímica -UBA.

10. Targeting Zeb1 and Zeb2 Transcription Factors for Leukemic Stem Cell Inhibition and Novel AML Therapeutic Discovery. Carlos Farkas, Roberto Amigo, Andrew Cuddihy, Diego Cuevas, Adolfo Agurto, Antonia Recabal, Karina Oyarce, Joel Pearson, Katharina Haigh and Jody Haigh. Oral presentation at XLVI Annual Meeting Chilean Society for Biochemistry and Molecular Biology, October 3-6, 2023.

### **Code Developing:**

<https://github.com/cfarkas/Genotype-variants>

<https://github.com/cfarkas/variants2genes>

[https://github.com/cfarkas/SARS-CoV-2\\_illumina\\_analysis](https://github.com/cfarkas/SARS-CoV-2_illumina_analysis)

<https://github.com/cfarkas/SARS-CoV-2-freebayes>

[https://github.com/cfarkas/annotate\\_my\\_genomes](https://github.com/cfarkas/annotate_my_genomes)

### **Diplomas and courses**

#### Diplomas:

1. "Diploma en Inteligencia Artificial" Facultad de Ingeniería, Universidad de Concepción (Mayo-Septiembre 2021)

#### Courses:

1. "Multivariate Statistical Analysis Techniques with SPSS" Universidad Católica de la Santísima Concepción (January 2023)
2. "Design of webpages using WordPress", Universidad Católica de la Santísima Concepción (May-June 2022)
3. "University of Manitoba Generic Biosafety Training" University of Manitoba, Winnipeg, Canada (April 2020)
4. "Work Hazardous Material Information System Training" University of Manitoba, Winnipeg, Canada (April 2020)
5. "Strategies for Understanding Mechanisms behind the Hallmarks of Cancer", Faculty of Biological Sciences, Universidad de Concepción. Chile (January 2017)
6. "2nd Workshop in Cancer Genomics and Bioinformatics", Faculty of Medicine, Universidad de Chile. Chile (November 2015)
7. "Cancer Biology: From Basic to Clinic". Faculty of Biological Sciences, Universidad de Concepción. Chile (January 2014)
8. "Genomic diversity in Chile and future challenges for personalized medicine in cancer". Faculty of Medicine, Universidad de Chile. Chile (November 2013)

## Leadership/Community Outreach and Volunteering

1. Organization and participation in the first Scientific Coffee open to the community to Preserve the local Wetlands in collaboration with the Municipality of San Pedro de la Paz, Concepción, Chile (August 2019). Reference: Carla Pereira ([carlaapereirap@gmail.com](mailto:carlaapereirap@gmail.com)) Municipality's journalist
2. Participation in Foldscope Project (Folding Microscopes) "One Hundred Years, One Hundred Microscopes, One Hundred Children" organized by teachers of the Faculty of Biological Sciences (August 2019). Reference: Prof. Barbara Inzunza ([binzunza@udec.cl](mailto:binzunza@udec.cl))
3. Member of the Non-Governmental Organization "Preguntate" (Ask Yourself), a non-profit organization whose mission is to be supportive of the community in some aspects that are not covered by the Government. Reference: Dr. Francisco Fuentes ([frfuentes@udec.cl](mailto:frfuentes@udec.cl))