

FELIPE AGUILERA MILLACURA

Doctor of Philosophy (PhD) ◇ Data Scientist ◇ Santiago, Chile

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[GitHub](#) ◇ [LinkedIn](#) ◇ [Google Scholar](#)

EDUCATION

Doctor of Philosophy (PhD)

2017 - 2021

University of Edinburgh, Edinburgh, United Kingdom

- Carrying out the doctoral thesis "*Modular Cell-based and Cell-free systems with adaptable logic as core processing machinery*", using logic gates of up to 3-bits to generate cell-free transcriptional networks used on the detection of antibiotic and heavy metal combinations.

Dpl. Advanced Data Science

2020 - 2021

Universidad de Concepción, Concepción, Chile

- Carrying out multivariate Susceptible-Exposed-Infected-Recovered-Dead (SEIRD) models for the prediction and modeling of the COVID-19 pandemic in Chile, used by the iCovid committee.

Dpl. Data Analysis

2020

CodeClan, Edinburgh, United Kingdom

- Correlating Productivity and Gross Domestic Product (GDP) of Scotland compared with other nations. Analyzing historical data on exports, growth, labour conditions, education, public services and estimating the GDP/growth factor for coming years.

Master in Biotechnology (Cum Laude Hons)

2013 - 2015

Universidad Andrés Bello & Universidad Técnica Federico Santa María, Valparaíso, Chile.

- Carrying out the thesis "Characterization of the degradation of benzene by the bacterium *Cupriavidus metallidurans* in the presence of Pb^{+2} and Hg^{+2} ", at the Laboratory of Molecular Microbiology and Environmental Biotechnology of the Federico Santa María Técnica.

Biotechnology Engineering (Cum Laude Hons)

2009 - 2014

Universidad Andrés Bello & Universidad Técnica Federico Santa María, Valparaíso, Chile.

- Modeling the metabolic capabilities of environmental strains for the degradation of aromatic compounds, the synthesis of biocompounds, and resistance to heavy metals, at the Center for Nanotechnology and Systems Biology of the Universidad Técnica Federico Santa María.

WORK EXPERIENCE

International PAHO Consultant

2023 - to date

Panamerican Health Organization, Washington D.C, United States

- *Developing and implementing the new surveillance system for vaccine-preventable diseases, VPD-SMART. Modernizing the data Infrastructure of PAHO's Immunization Data Warehouse.*

Lead Data Scientist

2021- 2023

Ministry of Health, Santiago, Chile

- *Leading the Data Science and Analytics team of the "Testing, Tracing and Isolation" national strategy. In charge of maintaining the "National lab testing platform" and developing "DHIS2". Creating and deploying the distributed cloud infrastructure with Kubernetes hosting the systems.*

Data Scientist

2021

Secretaría Regional Ministerial (SEREMI) de Salud Aysén, Coyhaique, Chile

- *Analysing, predicting and improving the data cycle, part of the Testing, Tracing and Isolation regional strategy. Epidemiology department. Región de Aysén.*

Data Analysis Session Lead

2020 - 2021

Talento Digital, Udacity, Chile

- *Leading the "Data Analysis Fundamentals Nanodegree". Designing and carrying out weekly lectures in data science. Supporting students in the development of five biannual projects*

Data Scientist

2020

CodeClan, Edinburgh, United Kingdom

- *Search Engine Optimization (SEO) of the company's web traffic allowing to improve the marketing strategy throughout the United Kingdom.*

Lead UK Waves Blockchain Technology Ambassador

2019 - 2020

Waves platform, Edinburgh & London, United Kingdom

- *Creating smart contracts and decentralised applications (dApps) with the programming language RIDE. Carrying out Blockchain technology dissemination campaigns using Waves.*

Digital Research Services Ambassador

2019 - 2020

University of Edinburgh, Edinburgh, United Kingdom

- *Creating and improving the work between interdisciplinary teams, within the Faculty of Biological Sciences and the Digital Research service department.*

Founder and Lead Developer

2018 - 2020

Kolin Platform, Edinburgh, United Kingdom

- *Creating the first decentralized translation platform (dApp); carrying out technology dissemination campaigns at international conferences and fundraising over USD\$40,000*

PhD student representative

2017 - 2020

University of Edinburgh, Edinburgh, United Kingdom

- *Member of the "Ethical and Genetic Modification and Biological Safety Committee" of the School of Biological Sciences.*

Research Associate

2015 - 2016

Scientific and Technological Research Centre for Mining, Antofagasta, Chile

- *Carrying out studies on the degradation of aromatic compounds in soil and water samples polluted with heavy metals. Managing the Environmental Microbiology Laboratory via organization, purchase of equipment and reagents, generating projects and supporting the direction of undergraduate thesis.*

Research Assistant

2015

Nuclear Research Centre, SCKCEN, Mol, Belgium

- *Carrying out genomic, transcriptomic and proteomic research on the multiresistant strains *Cupriavidus metallidurans* CH34 and MSR33.*

RELEVANT COURSES & CERTIFICATIONS

Health Informatics specialization dictated by Johns Hopkins University. (In course)**Digital Health specialization** dictated by Imperial College London. [Credential ID TUO0K3IFBC2M](#)**Data Ethics - Ethical considerations on the interpretation and handling of Biomedical Big Data** dictated by the Medizinische Universität Innsbruck & the Network of European Universities in Life Sciences**Leading Digital Transformation** dictated by the Massachusetts Institute of Technology, United States**Google Cybersecurity Professional Certificate** dictated by Google Career Certificates. [Credential ID aacfd203-40e0-451c-8f38-f171b465ce0d](#)**HL7 FHIR Fundamentals** dictated by HL7 International. Credential ID 849C61A38ECA0CCEC3B5B01618F**Health Information Systems and Interoperability** dictated by Centro Nacional en Sistemas de Información en Salud - CENS

Basic Course on Hospital Epidemiological Surveillance dictated by Health Surveillance Secretariat, Brazilian Ministry of Health

Microsoft Azure for Data Engineering dictated by Microsoft. [Credential ID VX2MTCVPBSZM](#)

Cloud Engineering dictated by Google Cloud Skill Boost. [Credential ID 3310239](#)

Kubernetes in Google Cloud dictated by Google Cloud Skill Boost. [Credential ID 3358194](#)

Scrum Essentials dictated by Universidad de Chile. [Credential ID 6e771130b6694c0d885e16415a4848e8](#)

Research Data Management and Sharing dictated by University of North Carolina at Chapel Hill & University of Edinburgh [Credential ID PPDYZX6LXMYT](#)

Machine Learning and Health dictated by the Department of Health Informatics of the Italian Hospital of Buenos Aires and HL7 Argentina

Data, Artificial Intelligence and Health dictated by the Department of Health Informatics of the Italian Hospital of Buenos Aires and HL7 Argentina

Nanotechnology, biotechnology and medical applications dictated by Universidad de Antofagasta

Python for Biologists dictated by Edinburgh Genomics

High Resolution Melting dictated by Thermo Fisher Scientific

Microscopy Course dictated by Wellcome Trust Centre & The University of Edinburgh.

English for Academic Purposes EAP dictated by University of Edinburgh. IELTS 7.0 certification (license 1669001543AGUJ744A)

Mastering Web3.0 and dApps programming with Waves dictated by Ventuary Labs and Waves blockchain platform DevRel department

Professional Certificate in Blockchain Training Alliance (BTA) Certified Blockchain Business Foundation (CBBF) dictated by Linux Foundation & Blockchain Training Alliance

AWARDS AND SCHOLARSHIPS

Machine Learning with TensorFlow	Bertelsmann Technology Scholarship 2022
Leading Digital Transformation	Santander Scholarships 2020 – Santander Bank
Congress Attendance Scholarship	BAC-PhD-2019 81190003 – ANID (ex Conicyt)
Best Poster Presentation award	SBS symposium 2018 – University of Edinburgh
Harry Smith Vacation Studentship	Project grant 2018 – Microbiology Society
Scholarship for PhD studies abroad	Becas Chile 2016 – PhD 72170403 ANID (ex Conicyt)
Best graduated Master in Biotechnology	Generation 2015 – Universidad Andres Bello
Youth Action 2014 Semifinalist	International Youth Foundation

VOLUNTEERING

Data Scientist	Scottish Tech Army	2020-2021
Information Technology Team Lead	International Directed Evolution Competition	2020-2021
Founder and Lead Developer	Konscienco Lingvo (Kolin) Platform	2018-2020

RELEVANT SKILLS

Languages	Spanish (Native), English (Professional fluency)
Programming languages	Python, R, SQL, JavaScript, RIDE
Platforms & Others	Unix, R shiny, Plotly Dash, Tidyverse, Pandas, NumPy, PowerBI, Tableau Git, HTML, CSS, JSON, Gcloud, Azure, AWS, Google Analytics GDPR, Data Security, Data Ethics, Data governance, SnapGene, Blast, ImageJ, LaTeX, MS Office

SCIENTIFIC PUBLICATIONS

Ortiz C., Millacura F.A, Atavillos C., Bravo-Alcántara P., Espinoza J.P., Osorio V., Baeza C., Ojeda P., Revilla F., Pacis C., Broome K., Bobadilla S., Araceli F., Del Medico P., Tejo C., Rossi E., Ordoñez F., Zapata-Bedoya S., Cain E., Tavera P., Magarinos M., Ovelar P., Perez T., Shragai T, García M., Cousirat L., Villalobos N., Rey G., Potter R., Lam E., Velandia-Gonzalez M. (2025).

From Legacy Systems to Real-Time Response: VPD-SMART Implementation and its Impact on Public Health Surveillance in Paraguay and the Americas. SSM - Health Systems (Article in press).

Millacura F.A., Espinoza J.P., Curiqueo G., Fuentes A., Serrano M., Valenzuela P. & Garcia-Calavaro C. (2023). PNTM: An interoperable national platform for SARS-CoV2 and MonkeyPox lab tests in Chile. IFMBE Proceedings.

Alviz-Gazitua P., Durán R. E., Millacura F.A., Cárdenas F., Rojas L.A. & Seeger M. (2022). The model heavy metal resistant bacterium *Cupriavidus metallidurans* CH34 possesses aromatic catabolic versatility and degrades benzene in presence of mercury and cadmium. Frontiers in Microbiology.

Pinilla-Velasquez, M., Millacura, F.A., Molina-Acuña, M., LlanosRivera, A., Tarifeño, E., & Becerra, J. (2022). Role of the alga *Chondracanthus chamissoi* (C. Agardh) Kützinger 1843 in the induction of primary settlement of mytilids larvae. Aquaculture Research .

Millacura, F.A., Li, M., Valenzuela-Ortega, M.A., & French, C. (2021). TXO: Transcription-Only genetic circuits as a novel cell-free approach for Synthetic Biology. NAR Synthetic Biology.

Millacura, F.A., Largey, B., & French, C.E. (2019). ParAlleL: a novel population-based approach to biological logic gates. Frontiers in Bioengineering and Biotechnology, 7, 46.

Millacura, F.A., Janssen, P. J., Monsieurs, P., Janssen, A., Provoost, A., Van Houdt, R., & Rojas, L.A. (2018). Unintentional genomic changes endow *Cupriavidus metallidurans* with an augmented heavy-metal resistance. Genes, 9(11), 551.

Millacura, F.A., Cárdenas, F., Mendez, V., Seeger, M., & Rojas, L.A. (2017). Degradation of benzene by the heavy-metal resistant bacterium *Cupriavidus metallidurans* CH34 reveals its catabolic potential for aromatic compounds. bioRxiv, 164517.

CONFERENCE PRESENTATIONS

Felipe A. Millacura, Juan Pablo Espinoza, Silvana Zapata Bedoya, Enzo Rossi, Marko Garcia, Fabian Ordoñez, Martha Velandia (2024). Enhancing Epidemiological Surveillance of Vaccine-Preventable Diseases with VPD-SMART: A DHIS2-Based Information System. Presented at *Fifth United Nations World Data Forum*. 2024. Nov 12-15; Medellin, Colombia.

Talya Shragai, Felipe A. Millacura, Claudia Ortiz, Christian Atavillos, Pamela Bravo, Paola Ojeda, Victor Osorio, Juan Espinoza, Susana Bobadilla, Neris Villalobos, Teresa Perez, Luis Cousirat, Eugene Lam, Martha Velandia (2024). Modernizing vaccine-preventable disease surveillance in the Americas: Progress on the transition to a DHIS2 regional information system and implementation lessons learned from Paraguay. Presented at *DHIS2 Annual Conference*. 2024. Jun 10-13; Oslo, Norway.

Millacura F.A., Corral M., Espinoza J.P., Serrano M. Curiqueo G., Rubio M., Valenzuela P., Salazar C. & Garcia-Calavaro C. (2023). Design and implementation of a high-availability Dhis2 cloud infrastructure based in Kubernetes. Presented at *DHIS2 Annual Conference*. 2023. Jun 12-15; Oslo, Norway.

Millacura F.A., Espinoza J.P., Curiqueo G., Fuentes A., Serrano M., Valenzuela P. & Garcia-Calavaro C. (2022). Implementation of a single national web platform for exams associated to SARS-CoV2 in Chile. Presented at *5th International Conference on Biomedical and Health Informatics ICBHI*. 2022. Nov 24-26; Concepción, Chile.

Millacura F.A., Fuentes A., Espinoza J.P., Curiqueo G., Serrano M. Análisis y categorización de riesgo de Equinococosis Quística/Hidatidosis por comuna en Chile (2017 – 2022). Presented at *Avances y desafíos en el control de la equinococosis quística/hidatidosis en Chile, enfoque desde la medicina humana, veterinaria y el ambiente*. 2022. Oct 25-26; Santiago, Chile.

Millacura, F.A., Chen, N., Valenzuela-Ortega, M.A., Abramczyk, D., & French, C. Cell-free processing machinery as a tool for Synthetic Biology. Presented at *Graduate School*. 2018 Oct 10; Edinburgh, UK. (Winner of best presentation award)

Millacura, F.A., Chen, N., Valenzuela-Ortega, M.A., & French, C. CH34 cell-free Tx/Tl system as a tool for Synthetic Biology. Presented at *SynBioBeta: The Global Synthetic Biology Summit*; 2018. Oct 1-3; San Francisco CA, USA.

Cajas, D.R., Millacura, F.A., Monsieurs, P., Van Houdt, R., Janssen, P. J., & Rojas, L.A. The effect of plasmid pTP6 on *Cupriavidus metallidurans* MSR33 genome and its capability to be transferred to native soil bacteria. Presented at *XXIII Congreso Latinoamericano de Microbiología*; 2016. Sep 26-30; Rosario, Argentina.

Millacura, F.A., Mendez, V., Cárdenas, F., Montero, F., Rojas, L.A. & Seeger, M. Catabolismo de benceno por la bacteria *Cupriavidus metallidurans*. Presented at *XXXVI Congreso Chileno de Microbiología*; 2014. Dec 2-5; La Serena, Chile.

Millacura, F.A., Mendez, V., Montero, F., Cárdenas, F., Rojas, L.A. & Seeger, M. Benzene catabolism by the bacterium *Cupriavidus metallidurans* CH34. Presented at *XXII Congreso Latinoamericano de Microbiología*; 2014. Nov 5-8; Cartagena de Indias, Colombia.