SEBASTIÁN AYALA-RUANO

I am a young researcher and freelance data scientist. I have worked in **Bioinformatics** and Cheminformatics for five years at various laboratories. My current research interests are devoted to Network Science and Machine Learning to study different biological phenomena. I am part of several research, open-science, and software development communities (ISCBSC, The Carpentries, Streamlit Creators, and Open Life Science). Moreover, I was involved in some initiatives to empower Bioinformatics in Ecuador and Latin America.



CONTACT

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SKILLS







English: Advanced | C1 |

2020	•	Research Intern
 2017		Computational and Theoretical Chemistry Group - USFQ Quito, Ecuador
2017		 Identified binding specificity between repressor proteins and a transcriptional factor associated with the jasmonic acid pathway in <i>Arabidopsis thaliana</i> through molecular dynamics simulations and machine learning algorithms (See details here). Advisor: Miguel Angel Méndez Silva
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2020		Research mern Bio-Chemoinformatics Group - Universidad de Las Américas
2018		 Understood the impact of horizontal gene transfer in the genome of <i>Streptomyces clavuligerus</i> using phylogenetics, and other bioinformatics tools (See details here).
		Proposed molecular mimicry between Zika envelope protein and human neuronal proteins through molecular dynamics and protein-protein interaction networks.
		• Advisors: Vinicio Armijos, Yunierkis Perez
2019	•	Research Intern
		Tumor Metabolism and Therapeutic Oncology Laboratory - Gwangju Institute of Science and Technology © Gwangju, South Korea
		• Performed density functional theory and molecular dynamics simulations to understand the impact of a mutation in the ZN domain of the CRBN protein (See details here).
		Advisors: Miguel Angel Méndez Silva, Steve K. Cho
	-	TEACHING EXPERIENCE
2021		Co-organizer and co-instructor of a Bioinformatics boot camp
		RSG Ecuador and iGEM Ecuador Virtual event
		 I designed and taught the course material. This course covered the basics of Linux, terminal usage, text and file processing command line tools, Bash/AWK scripting with applications in Bioinformatics, and Git/GitHub.
2020		Undergraduate Teaching Assistant
		Learning Center - USFQ Virtual events
		• Provided online mentorship of Biotechnology, Mathematics, and Engineering subjects to undergraduate students.
2018	•	Undergraduate Teaching Assistant
 2016		General Biology Laboratory - USFQ Quito, Ecuador
2010		 Graded reports, tests, and other homework from the course. Provided feedback and guidance to undergraduate students in topics of the course.



Peer reviewed journal articles

- Aguilera-Mendoza, L., **Ayala-Ruano, S.***, Martinez-Rios, F., Chavez, E., García-Jacas, C. R., Brizuela, C. A., & Marrero-Ponce, Y. (2023). *StarPep Toolbox: an open-source software to assist chemical space analysis of bioactive peptides and their functions using complex networks*. **Bioinformatics**, 39 (8), btad506. doi: doi.org/10.1093/bioinformatics/btad506
- Ayala-Ruano S., Marrero-Ponce Y., Aguilera-Mendoza L., Pérez N., Agüero-Chapin G., Antunes A., Aguilar A. (2022). *Network Science and Group Fusion Similarity-Based Searching to Explore the Chemical Space of Antiparasitic Peptides*. ACS omega, 7 (50), 46012-46036. doi: doi.org/10.1021/acsomega.2c03398. Preprint: doi.org/10.26434/chemrxiv-2021-tgv69-v2.
- Oña-Chuquimarca, S., Ayala-Ruano, S., Goossens, Pauwels, L., Goossens, A., Leon-Reyes, A., & Méndez, M. A (2020). *The molecular basis of JAZ-MYC coupling, a protein-protein interface essential for plant response to stressors*. Frontiers in Plant Science, 11, 1139. doi: 10.3389/fpls.2020.01139. This article was included in the Frontiers in Plant Science 2020 highlights e-book. doi: 10.3389/978-2-88966-723-9.
- Ayala-Ruano, S., Santander-Gordón, D., Tejera, E., Perez-Castillo, Y., & Armijos-Jaramillo, V. (2019). A putative antimicrobial peptide from Hymenoptera in the megaplasmid pSCL4 of Streptomyces clavuligerus ATCC 27064 reveals a singular case of horizontal gene transfer with potential applications. Ecology and Evolution, 9 (5), 2602-2614. doi: 10.1002/ece3.4924.

Editorial journal articles

- Osorio-Mogollon C, Grentzinger V, Olguin-Orellana GJ, Ayala-Ruano S., et al. (2023). *ISCB Student Council Symposium 2021, a virtual global venue: challenges and lessons learned*. F1000Research, 12(50). doi: 10.12688/f1000research.129945.1.
- Ayala-Ruano S.*, Hernandez, F., Ortega, A., Infante, D., Carrascal, D., Sánchez-Luquez, K., & Puche-Quiñonez, R. (2022). *Highlights of the 1st Ecuadorian-Venezuelan Symposium of Young Researchers in Bioinformatics (1SEVJIB).* **F1000Research**, 11(1086), 1086. doi: 10.12688/f1000research.125381.1.
- Castillo-Vilcahuaman, C., Valdivia C., Osorio-Mogollón C., Silva-Andrade, C., Puche, R., **Ayala-Ruano, S.**, Cuesta-Astroz, Y., Parra, G (2020). *4th ISCB Latin American Student Council Symposium: a virtual and inclusive experience during COVID19 times.* **F1000Research**, 9. doi: 10.12688/f1000research.28330.1.

Others

Ayala-Ruano, S.*, & Zurita, J. (2021). *HerrCompBioinfo: un recurso educativo de código abierto de herramientas computacionales para entusiastas de la Bioinformática*. doi: doi.org/10.5281/zenodo.5748335

*co-first author



- Contributing Guidelines and Codes of Conduct for Open Projects. (2022). Expert talk. 6th cohort of Open Life Science (See details here).
- Exploring the chemical space of antiparasitic peptides and discovery of new promising leads through a novel approach based on network science and similarity searching. (2022). Oral presentation. International Society for Computational Biology Student Council Webinar series (See details here).
- *HerrCompBioinfo: An open-source educational resource of computational tools for Bioinformatics enthusiasts written in Spanish.* (2022). Oral presentation. **4th cohort of Open Life Science Graduation** (See details here).
- The molecular basis of JAZ-MYC coupling, a protein-protein interface essential for plant response to stressors. (2021). Oral presentation. 6th Brazilian Student Council Symposium: Omics and Data Science (See details here).
- In silico detection of horizontal gene transfer in Streptomyces clavuligerus. (2020). Oral presentation. International Society for Computational Biology Student Council Webinar series (See details here).
- Structural changes due to a mutation in Cereblon might be a cause for intellectual disability. (2019). Poster presentation. Global Intern Program Gwangju Institute of Science and Technology (See details here).

HONORS AND AWARDS

2024	•	MaCSBio Thesis Award
		Maastricht University Quatricht, the Netherlands
		• MaCSBio selects one of the graduating MSc System Biology students based on thesis defense quality, quality of the written thesis, scientific merit of the written thesis, and academic records.
2024	•	Visit Grant
		Danish Data Science Academy Ocpenhagen, Denmark
		• This grant covered the travel and accomodation expenses for my MSc thesis internship.
2024	•	Cum Laude Graduation Distinction
 2022		Maastricht University Q Maatricht, the Netherlands
		• This award recognizes students who have a GPA of 8/10 or higher.
2022	•	UM Holland-High Potential Scholarship
		Maastricht University Q Maatricht, the Netherlands
		• The UM Holland-High Potential Scholarship programme offers 24 full scholarships of € 30,000 (including tuition fee waiver and monthly stipend) each academic year for highly talented students from outside the European Union (EU) who have been admitted to a master's programme at UM.
2021		Best oral presentation award
		6th Brazilian Student Council Symposium: Omics and Data Science Virtual event

2021	•	"For more data on labor informality" Innovation Challenge Award
		Datalat, PNUD Ecuador, UN Women Ecuador, and the International Labour Organization
		• This competition searched for a technological solution to collect labor informality data in Ecuador. There were 39 proposals from 80 interdisciplinary teams (See details about the challenge here).
2020	•	Chancellor's Honor List and Magna Cum Laude Graduation Distinction
 2016		Universidad San Francisco de Quito
2020		• These awards recognize students who have a GPA of 3.7/4 or higher.
2020	•	Third HPC Summer School Colombia: Bio and Data Science scholarship
		CyberColombia Virtual event
		• The scholarship covered registration expenses for the event.
2019		2nd RSG-Colombia Symposium travel award
		RSG Colombia 🗣 Ibagué, Colombia
		• This award covered the travel expenses to attend the event.
2019		Global Intern Program Scholarship
		Gwangju Institute of Science and Technology Qwangju, South Korea
		• The GIP awarded students with accommodation and a monthly stipend to cover living expenses for eight weeks. During this time, we were involved in a research project and received valuable training and mentoring.
		LEADERSHIP AND SERVICE
Current	•	Streamlit creators program
ا 2022		Streamlit Virtual
		• I have created several web applications with the Streamlit Python package and became part of the community of creators.
Current	•	Open Life Science (OLS) program
 2021		Open Life Science ♥ Virtual
		• Leader of the HerrCompBioinfo project during the 4th cohort of the OLS program. We created an open-source educational resource of computational tools for Bioinformatics enthusiasts written in Spanish. Also, I learned how to create and manage open science and open source projects.
		• I mentored a group in the 5th cohort of the OLS program to create a computer vision-based tool to improve cancer
		 diagnosis in Cameroon. See details about this project here. I gave a talk about contributing guidelines and codes of conduct for open projects in the 6th cohort of OLS program.
		Degianal Student Crown (DSC) Equador
2023	Ī	International Society for Computational Biology Student Council
2020		• Co-founder and current president of the RSG Ecuador. This group aims to create a long-lasting community of students
		and researchers residing in Ecuador that work on Bioinformatics.
		Co-chair of the 1st Ecuadorian-Venezuelan Symposium of Young Bioinformatics Researchers.
		 Periodship committee chair of the 17th Student Council Symposium. Contributed to the program and fellowships committees of the 4th ISCB Latin American Student Council Symposium.
2024		Saturdays AI Quito 2021
ZUZI	Ĭ	Saturdays.AI Ouito
		 Led my group project, which was an early plant disease detector based on convolutional neural networks, trained to recognize two types of maize infectious diseases. (See details here).

Note: I have developed other personal projects related to data science, machine learning, bioinformatics, and other topics (See details here).