



# Jesús Vélez Santiago

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About me: I am an undergraduate student in Genomic Sciences interested in genomics, ecology, and evolution through computational and mathematical methods. Curious and passionate. Open to new challenges. Lover of programming and software development. Let's be problem solvers.

## ● WORK EXPERIENCE

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24/01/2018 – CURRENT – Cuernavaca, Mexico

**VISITING UNDERGRADUATE STUDENT** – DR. RAFAEL PEÑA-MILLER

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I combine mathematical models with experimental microbiology to understand how exposure to antimicrobial substances triggers bacterial cells' stress responses. I have mainly focused on postulating a mathematical model showing that cell elongation can promote transient resistance to individual bacterial cells by diluting the antibiotic's intracellular concentration.

Professional, scientific and technical activities | <http://www.penamiller.com/lab/>

10/08/2020 – CURRENT – Remote work, Germany

**DEVELOPER OF R SOFTWARE** – SAEZ-RODRIGUEZ GROUP

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Over the years, many different regulatory networks and statistical algorithms have been developed, mostly in a fixed combination of one network and one algorithm. To systematically evaluate both networks and algorithms, we developed **decoupleR**, an R package that allows users to apply efficiently any combination provided.

Systems Biomedicine | Professional, scientific and technical activities | <https://saezlab.org>

<https://saezlab.github.io/decoupleR/>

27/01/2020 – 05/06/2020 – Cuernavaca, Mexico

**TEACHING ASSISTANT OF LINEAL ALGEBRA COURSE** – NATIONAL AUTONOMOUS UNIVERSITY OF MEXICO

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- Monitoring of student performance accompanied by personalized and group tutorials.
- Review of assignments and exams.

23/01/2019 – 17/05/2020 – Cuernavaca, Mexico

**ASSISTANT OF NATIONAL RESEARCHER LEVEL III OR EMERITUS** – DR. PEDRO JULIO COLLADO VIDES

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Perform analysis of collections of massive expression experiments (e.g., RNA-seq) from *E. coli* using uniform bioinformatic pipelines that allowed comparison with the transcriptional regulation network's classical experimental knowledge.

Professional, scientific and technical activities | <https://www.ccg.unam.mx/en/pedro-julio-collado-vides/>

05/06/2019 – 18/08/2019 – Barcelona, Spain

**FELLOWSHIP STUDENT AS BIOINFORMATICS AND GENOMICS** – DR. RODERIC GUIGÓ SERRA (CENTRE DE REGULACIÓ GENÒMICA)

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- Differential expression analysis between the different conditions (e.g. deletions, overexpression, wild type) of transcriptional factors.
- Comparison of the expression profiles of genes regulated by transcriptional factors with the information available in *E. coli* gene regulation databases (e.g. RegulonDB).

Professional, scientific and technical activities | [https://www.crg.eu/roderic\\_guiigo](https://www.crg.eu/roderic_guiigo)

25/01/2018 – 20/11/2018 – Cuernavaca, Mexico

**VISITING UNDERGRADUATE STUDENT** – DR. DANIELA LEDEZMA TEJEDA

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Design of R programs for the study of the topological properties of the *E. coli* transcriptional regulation network.

Professional, scientific and technical activities |

<https://imsb.ethz.ch/research/sauer/people/DanielaLedezmaTejeida.html>

## ● CONFERENCES AND SEMINARS

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15/12/2020 – 19/12/2020 – Virtual Conference  
**European Bioconductor Meeting 2020**

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Here one of my software development projects was featured in the talk: "**Decoupling statistics and networks: a crowdsourced systematic assessment of transcription factor activity estimation from transcriptomics data.**"  
<https://eurobioc2020.bioconductor.org>

01/11/2019 – 05/11/2019 – Center of Mathematical Sciences, UNAM  
**XXI Autumn School of Mathematical Biology**

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In it I present my work titled: "**Filamentation; a bet for survival.**"  
<https://elisadominguezhuettlinger.wordpress.com/2019/06/07/eobm-2019/>

17/06/2019 – 18/06/2019 – Sant Feliu de Guixols, Spain  
**12th ACGT Computational Genomics Workshop 2019**

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22/07/2018 – 02/08/2018 – Center for Genome Sciences, UNAM  
**Summer School in Quantitative Biology 2018**

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Subjects such as Genomics, Synthetic Biology, Image Analysis, Mathematical Models, and Systems Biology were taught.  
<http://www.penamiller.com/qbio18/>

## ● HONOURS AND AWARDS

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13/04/2021  
**Winner of "Olimpiadas Platzi: Data Triathlon" – Platzi**

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One day triathlon that took me through three important stages of an analysis for data science: additional data collection, cleaning and transformation and the same exploratory analysis to generate a storytelling through visualizations and findings on the imports and exports of Colombia throughout his story.  
<https://platzi.com/blog/premiacion-data-triathlon/>

2020  
**Support Program for Research and Technological Innovation Projects (PAPIIT) – National Autonomous University of Mexico**

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2019  
**Program for Special Inter-institutional Cooperation Activities (PAECI) – National Autonomous University of Mexico**

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## ● DIGITAL SKILLS

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### Programming languages

Julia | Python | R | PHP (Basic) | Shell

### Tools or Frameworks

GIT (GitHub) | Conda | R Tidyverse | LaTeX | Visual Studio / Visual Studio Code

## ● EDUCATION AND TRAINING

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08/08/2017 – CURRENT  
**UNDERGRADUATE PROGRAM OF GENOMIC SCIENCES** – Center for Genome Sciences, National Autonomous University of Mexico

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● **HOBBIES AND INTERESTS**

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Take online courses

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Karate (black belt, first dan)

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Scout

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Play guitar, ukulele, piano or saxophone

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