

JORGE MESTRE TOMÁS

Biostatistician

Biostatistician with experience in Bayesian statistics, spatio-temporal modeling, and data-driven applications. Skilled in R, Python, and Shiny and developer of GLOSSA, a user-friendly Shiny app for species distribution modeling, and SQANTI-SIM, a transcript simulator for benchmarking.

✉ jorge.mestre.tomas@gmail.com

📍 Barcelona, Spain

🌐 <https://jmestret.github.io>



EDUCATION

MSc in Biostatistics | University of Valencia Sept. 2022 – Sept. 2024
Received Best Master Thesis Award (Idescat - UAB). GPA: 9.5/10

MSc in Bioinformatics | University of Valencia Sept. 2020 – July 2022
Received Best Master Thesis Award (UV - ADM). GPA: 9.36/10

BSc in Marine Science | University of Alicante Sept. 2016 – July 2020
GPA: 8/10



EXPERIENCE

Biostatistician Research Scientist | ICM – CSIC, iMARES Feb. 2024 – Present

- Applying Bayesian statistics and spatio-temporal modeling to analyze long-term global fishing data, with the goal of uncovering trends to support sustainable policy-making. Working with complex models and clustering methods for compositional data.
- Developed GLOSSA, a user-friendly Shiny app for species distribution modeling, providing accessible analysis for non-coding users.
- Gained experience in developing R packages and publishing on CRAN, building tools for ecological modeling and data visualization.
- Collaborated with colleagues on data processing and statistical modeling projects.

Bioinformatics Research Scientist | I²SysBio (CSIC – UV), Genomics of Gene Expression Lab July. 2021 – Oct 2023

- Developed SQANTI-SIM, the first simulation tool for multi-omics data and novel transcripts in long-read RNA sequencing, improving data accuracy and benchmarking in large-scale studies.
- Built and optimized Python and Linux analysis pipelines, contributing to high-impact projects (LRGASP and SQANTI3).
- Gained expertise in managing and analyzing large datasets, and executing complex workflows on High-Performance Computing (HPC) clusters.

Junior Scientist (Intern) | University of Alicante, Laboratory of Phytopathology Oct. 2020 – July 2021

- Developed methods to modify volatile organic compound profiles in biocontrol fungi for industrial applications.
- Worked with unsupervised learning methods and Bayesian modeling for metabolomics data analysis.



SKILLS

Programming: R, Python, bash, HTML, CSS, R Shiny, BUGS, Nimble, Git, Latex.

Technical skills: Statistical modeling, Bayesian spatio-temporal modeling, machine learning, data visualization.

Soft skills: Collaboration, communication, problem solving, project management.



AWARDS AND HONORS

- **Best Master's Thesis Award** | Idescat - UAB, XXII Concurso Student de Estadística Aplicada, 2024 (500€)
- **Xavier Gómez i Font Awards for the quality of language in master's theses** | University of Valencia, 2022 (500€)
- **Best Master's Thesis in Bioinformatics** | University of Valencia, 2022
- **Finalist, Agrotec-Alumni Hackathon** | University of Valencia, 2021 (250€)
- **Finalist, Bioinformatics Contest 2021** | Bioinformatics Institute, ITMO University, Stepik and Rosalind, 2021
- **Blue Entrepreneurship Award** | Cátedra Interuniversitaria de Economía Azul, University of Alicante, 2020 (500€)

PUBLICATIONS

1. Fuster-Alonso, A., **Mestre-Tomás, J.**, Baez, J. C., Pennino, M. G., Barber, X., Bellido, J. M., Conesa, D., López-Quílez, A., Steenbeek, J., Christensen, V., & Coll, M. (2024). Machine learning applied to global scale species distribution models (SDMs). *PREPRINT (Version 1) available at Research Square*.
2. Pardo-Palacios, Francisco J.; Wang, Dingjie; Reese, Fairlie; Diekhans, Mark; Carbonell-Sala, Sílvia; Williams, Brian; Loveland, Jane E.; María, Maite De; Adams, Matthew S.; Balderrama-Gutierrez, Gabriela; Behera, Amit K.; Martinez, Jose M. Gonzalez; Hunt, Toby; Lagarde, Julien; Liang, Cindy E.; Li, Haoran; Meade, Marcus Jerryd; Amador, David A. Moraga; Prjibelski, Andrey D.; Birol, Inanc; Bostan, Hamed; Brooks, Ashley M.; Çelik, Muhammed Hasan; Chen, Ying; Du, Mei R. M.; Felton, Colette; Göke, Jonathan; Hafezqorani, Saber; Herwig, Ralf; Kawaji, Hideya; Lee, Joseph; Li, Jian-Liang; Lienhard, Matthias; Mikheenko, Alla; Mulligan, Dennis; Nip, Ka Ming; Pertea, Mihaela; Ritchie, Matthew E.; Sim, Andre D.; Tang, Alison D.; Wan, Yuk Kei; Wang, Changqing; Wong, Brandon Y.; Yang, Chen; Barnes, If; Berry, Andrew E.; Capella-Gutierrez, Salvador; Cousineau, Alyssa; Dhillon, Namrita; Fernandez-Gonzalez, Jose M.; Ferrández-Peral, Luis; Garcia-Reyero, Natàlia; Götz, Stefan; Hernández-Ferrer, Carles; Kondratova, Liudmyla; Liu, Tianyuan; Martinez-Martin, Alessandra; Menor, Carlos; **Mestre-Tomás, Jorge**; Mudge, Jonathan M.; Panayotova, Nedka G.; Paniagua, Alejandro; Repchevsky, Dmitry; Ren, Xingjie; Rouchka, Eric; Saint-John, Brandon; Sapena, Enrique; Sheynkman, Leon; Smith, Melissa Laird; Suner, Marie-Marthe; Takahashi, Hazuki; Youngworth, Ingrid A.; Carninci, Piero; Denslow, Nancy D.; Guigó, Roderic; Hunter, Margaret E.; Maehr, Rene; Shen, Yin; Tilgner, Hagen U.; Wold, Barbara J.; Vollmers, Christopher; Frankish, Adam; Au, Kin Fai; Sheynkman, Gloria M.; Mortazavi, Ali; Conesa, Ana; Brooks, Angela N. (2024). Systematic assessment of long-read RNA-seq methods for transcript identification and quantification. *Nature methods*, 1-15.
3. Pardo-Palacios, F. J.; Arzalluz-Luque, A.; Kondratova, L.; Salguero, P., **Mestre-Tomás, J.**, Amorín, R.; Estevan-Morió, E.; Liu, T.; Nanni, A.; McIntyre, L.; Tseng, E., & Conesa, A. (2024). SQANTI3: curation of long-read transcriptomes for accurate identification of known and novel isoforms. *Nature Methods*, 21(5), 793-797.
4. **Mestre-Tomás, J.**, Liu, T., Pardo-Palacios, F., & Conesa, A. (2023). SQANTI-SIM: a simulator of controlled transcript novelty for lrRNA-seq benchmark. *Genome Biology*, 24(1), 286.
5. **Mestre-Tomás, J.**, Esgueva-Vilà, D., Fuster-Alonso, A., Lopez-Moya, F., & Lopez-Llorca, L. V. (2023). Chitosan modulates volatile organic compound emission from the biocontrol fungus *Pochonia chlamydosporia*. *Molecules*, 28(10), 4053.

CONFERENCES, TALKS, POSTERS, AND PRESENTATIONS

Talks

1. SQANTI-SIM: a simulator of controlled novelty and degradation of transcripts sequenced by long-reads. *7th European Student Council Symposium (ESCS), Sitges, Spain, 2022*.

Posters

1. Analyzing the Evolution of Fishing Catch Composition in Large Marine Ecosystems (1950-2019). *International Statistical Ecology Conference (ISEC), Swansea, Wales, 2024*.
2. GLOSSA: A User-Friendly Shiny App for Machine Learning Global Scale Marine Species Distribution Models (SMDs). *International Statistical Ecology Conference (ISEC), Swansea, Wales, 2024*.
3. GLOSSA: A User-Friendly Shiny App for Machine Learning Global Scale Marine Species Distribution Models (SMDs). *Climate-Inclusive Ecosystem Modeling (CIEM-24), Centre de Recerca Matemàtica (CRM), Spain, 2024*.
4. SQANTI-SIM: a simulator of controlled novelty and degradation of transcripts sequenced by long-reads. *21st European Conference on Computational Biology (ECCB2022), Sitges, Spain, 2022*.

Workshops and seminars

1. Towards Uniform Seas: Analyzing Convergence in Large Marine Ecosystem Catch Composition (1950-2019). *Biostatistics for the XXI Century, Valencia, Spain, 2024*.
2. GLOSSA Shiny app and fishing catch convergence. *ProOceans Final Meeting, Elche, Spain, 2024*.

Attendance (not presenting)

1. VII Jornadas Científicas de Estudiantes de la Sociedad Española de Bioestadística. *Sociedad Española de Biostatística (SEB), 2024.*
2. VII International Symposium on Marine Sciences (ISMS 2020). *Barcelona, Spain, 2020.*
3. I Jornada de divulgación científica sobre planificación y prevención de riesgo en Playas de El Campello. *Ayuntamiento de El Campello, 2018.*

TEACHING

Course instructor

1. User-Friendly Tools for Bayesian Spatio-Temporal Species Distribution Models. (30 h) *ProOceans Project, Barcelona, Spainm 2024.*
2. Git and GitHub: From Zero to Hero in One Commit. (2h) *ProOceans Project, Barcelona, Spainm 2024.*

GRANTS AND FELLOWSHIPS

1. Predoctoral fellowship contract (FPI) Spanish Ministry of Science, Innovation and Universities (2021)

CERTIFICATES

1. Adobe Illustrator CS5. *Consejo Superior de Investigaciones Científicas (CSIC), 2024.*
2. Scientific Article Writing Course. *Asociación Española de Ecología Terrestre (AEET), 2024.*
3. Joint Species Distribution Modelling with the R-package Hmsc. *University of Jyväskylä, ISEC24, 2024.*
4. Review of Machine Learning Models for Survival Analyses. *Universidad Politécnica de Cataluña (UPC), CIEM-24, 2024.*
5. Valencia International Bayesian Analysis Summer School (VIBASS4). *Universitat de València (UV), 2021.*
6. Python for Everybody (5 Courses). *University of Michigan - Coursera, 2020.*
7. Systematic Conservation Planning with MARXAN for Marine Environments. *ISMS, 2020.*
8. Introduction to Web Development II. *Google Actívate, 2020.*
9. Introduction to Web Development I. *Google Actívate, 2020.*
10. Introduction to Omics Data Analysis. *Universidad de Alicante - BioBam, 2020.*
11. Microbiome: Sequencing Techniques, Library Preparation, and Analysis of Results. *Universidad de Alicante - Microomics Systems S.L., 2020.*
12. UA-MUSA Workshop: Bioactive Compounds - Effect of Chitosan on Plants and Microbes. *Universidad de Alicante, 2019.*