Yolanda Larriba

PhD in Mathematics

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Personal information

Born: May 31, 1988 at Palencia (Spain)

Google Scholar: `scholar.google.es/citations?hl=es&user=j8g_HRQAAAAJ`

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ResearchGate: `researchgate.net/profile/Yolanda_Larriba`

Education

2016–2020 **Phd in Mathematics**, University of Valladolid (Spain).
Thesis with international mention: "Statistical methodology and software to analyse oscillatory signals with applications to biology".

2014–2015 **MSc in Mathematical Research**, University of Valladolid (Spain).
MSc Thesis: "A new method for detection of cyclic circadian genes using order restricted inference".

2011–2014 **BSc in Statistics**, University of Valladolid (Spain).
Project: "Análisis Estadístico de la Encuesta sobre las Perspectivas de Futuro de los Alumnos que están cursando Bachillerato, realizada en el distrito UVA durante el curso 2012/2013".

2006–2012 **BSc in Mathematics**, University of Valladolid (Spain).
Project: "Orthonormal Wavelet Basis on $L^2(\mathbb{R})$".

Honors and awards

2019 **Best Young Statisticians Award**, *conceded by the Spanish Biometric Conference.*

2019 **Winning project MySweeetHealth (Diabetes App) in Shark Tank Competition**, *conceded by International Mentoring Foundation for the Advancement of Higher Education (IMFAHE).*

2019 **Spanish representative in the 2019 European Young Statisticians Meeting (EYSM)**, *conceded by the EYSM International Organizing Committee.*

2017 **BIOstatnet young researcher award 2017**, *conceded by the National Biostatistic Network BIOstatnet.*

2016 **Honourable mention by the best communication by a young researcher at BIO APPs 2016**, *conceded by the Galician Society for the Promotion of Statistics and Operational Research (SGAPEIO) and Portuguese Statistic Society (SPE).*

2014 **Finalist project in the EDPR University Challenge 2014**, *conceded by EDP Renováveis.*

Positions and grants. *Competitive calls*

2020–*Present* **Postdoctoral Fellow**, *in the Department of Physiology, University of Murcia.*

2020–Present **Associate Lecturer**, *in the Department of Statistics and OR at the University of Valladolid.*

2016–2020 **Predoctoral FPU (University Professor Formation)**, *given by the Spanish Ministry of Education and Science.*

2019 **Women in STEM research stay grant**, *given by IMFAHE Foundation.*

2019 **Mentee of the International Mentoring Foundation for the Advancement of Higher Education (IMFAHE)**, *given by IMFAHE Foundation.*

2018 **Grant for predoctoral researchers to contribute in conferences**, *given by the University of Valladolid.*

2019 **Grant for predoctoral research stay**, *given by the Spanish Ministry of Education and Science.*

2017 **Grant for predoctoral researchers to contribute in conferences**, *given by the University of Valladolid.*

2016 **Grant for predoctoral researchers to contribute in conferences**, *given by the University of Valladolid.*

2014 **Grant for I+D+i and Internationalization**, *given by the Business Innovation, Financing and Internationalization Agency (ADE).*

2013 **Grant for enterprise training**, *given by Santander Bank.*

2011–2012 **Grant for student department collaboration**, *given by the Spanish Ministry of Education and Science.*

2010–2011 **Erasmus Grant at Versailles Saint-Quentin University (France)**, *given by the Spanish Ministry of Education and Science.*

Research stays

Sept. – Nov., 2020 **Department of Physiology, University of Murcia, Spain**, *postdoctoral researcher under the supervision of Professor Marta Garaulet.*

Sept. – Dec., 2019 **Division of Sleep Medicine, Harvard Medical School, Harvard University, Boston (USA)**, *predoctoral research trainee under the supervision of Professor Frank Scheer.*

Sept. – Dec., 2018 **Department of Biostatistics, Graduate School of Public Health, University of Pittsburgh, Pittsburgh (USA)**, *visiting PhD student under the supervision of Professor Shyamal D. Peddada.*

Publications

Refereed papers

Rueda, C., Rodríguez-Collado, A. and Larriba, Y. (2020). A novel wave decomposition for oscillatory signals. *Under second review in IEEE Transactions on Signal Processing.* *https://arxiv.org/abs/2006.15974*

Rueda, C., Larriba, Y. and Lamela, A. (2020). The hidden waves in the ECG uncovered: A multicomponent model for the Cardiac Rhythm. *Under second review in Scientific Reports.* *https://arxiv.org/abs/2005.10173*

Larriba, Y., Rueda, C., Fernández, M.A. and Peddada, S.D. (2020). Order restricted inference in chronobiology. *Statistics in Medicine, 39(3): 265-278. doi:10.1002/sim.8397 (Q1).*

Rueda, C., Larriba, Y. and Peddada, S.D. (2019). Frequency Modulated Möbius Model (FMM). Accurately Predicts Rhythmic Signals in Biological and Physical Sciences. *Scientific Reports, 9:18701. doi:10.1038/s41598-019-54569-1 (Q1).*

Larriba, Y., Rueda, C., Fernández, M.A. and Peddada, S.D. (2018). A bootstrap based measure robust to the choice of normalization methods for detecting rhythmic features in high dimensional data *Frontiers in Genetics, 9:24. doi:10.3389/fgene.2018.00024 (Q1).*

Larriba, Y., Rueda, C., Fernández, M.A. and Peddada, S.D. (2016). Order Restricted Inference for Oscillatory Systems for Detecting Rhythmic Signals. *Nucleic Acids Research, 44(22):e163. doi:10.1093/nar/gkw771 (Q1).*

Working papers

Larriba, Y., Rueda, C., Saxena, R. and Scheer, F. (2020). Human circadian atlas from GTEx data base.

Lamela, A., Fernández, I., Larriba, Y., Rodríguez-Collado, A. and Rueda, C. The R package FMM: a novel oscillatory signal analysis.

Larriba, Y., Rueda, C. and Fernández, M.A. (2020). A directional proposal to recover cell cycle dynamic using scRNA-Seq gene expression data.

Book chapters

Larriba, Y., Rueda, C., Fernández, M.A. and Peddada, S.D. (2019) Microarray data normalization and robust detection of rhythmic features. *Microarray Bioinformatics: Methods and Protocols. Springer International Publishing AG, part of Springer Nature 2019. Bolón-Canedo, V. and Alonzo-Betanzos, A.(Eds).*

Conference contributions (speaker in *italics*)

Invited talks

2020 *Larriba, Y.* and Rueda, C. "Circular order aggregation as a novel proposal to estimate sampling times in chronobiology". 13th International Conference of the European Research Consortium for Informatics and Mathematics Working Group on Computing & Statistics. Online Conference, 19–21th December *(Pending).*

2020 *Larriba, Y.*, Rueda, C. and Scheer, F. "A directional proposal to estimate sampling times in chronobiology". V Congreso de Jóvenes Investigadores de la RSME. Castellón de la Plana (Spain), 27-31th January.

2019 *Larriba, Y.*, Rueda, C. and Fernández, M.A. "Order Restricted Inference in Chronobiology". 21st Young Statisticians Meeting. Belgrade (Serbia), 29th July-2nd August.

2018 *Larriba, Y.*, Rueda, C. and Fernández, M.A. "A directional proposal to solve a chronobiological problem". 11th International Conference of the European Research Consortium for Informatics and Mathematics Working Group on Computing & Statistics. Pisa (Italy), 14–16th December.

2017 *Larriba, Y.*, Rueda, C. and Fernández, M.A. "Order-restricted inference in chronobiology". 10th International Conference of the European Research Consortium for Informatics and Mathematics Working Group on Computing & Statistics. London (UK), 16–18th December.

Larriba, Y., Rueda, C. and Fernández, M.A. "Analysing biological rhythms using order restricted inference". 1st Spanish Young Statisticians and Operational Researchers Meeting. Granada (Spain), 13–15th November.

2016 *Larriba Y.*, Rueda C., Fernández M.A. and Peddada, S.D. "Influence of microarray normalization strategies and rhythmicity detection algorithms to detect circadian rhythms". 9th International Conference of the European Research Consortium for Informatics and Mathematics Working Group on Computing & Statistics. Seville (Spain), 9-11st December.

Larriba Y., Rueda C., *Fernández M.A.* and Peddada, S.D. "Detection of rhythmic signals in Oscillatory Systems using order Restricted Inference". 9th International Conference of the European Research Consortium for Informatics and Mathematics Working Group on Computing & Statistics. Seville (Spain), 9-11st December.

Regular talks

2019 *Romero, P.*, Larriba, Y. "University consumers' perception of calcium health claims from dairy products. Preliminary results". XXVIII Spanish Nutritionist Meeting. Soria (Spain), 20-22nd June.

2019 *Larriba, Y.*, Rueda, C., Fernández, M.A. and Peddada, S.D. "ORI: An Order Restricted Inference framework to analyse chronobiological rhythm". XVII Spanish Biometric Conference and VII Ibero-American Biometric Meeting. Valencia (Spain), 19-21th June.

2018 *Larriba, Y.*, Rueda, C., Fernández, M.A. and Peddada, S.D. "Rhythmicity analysis in chronobiology using order restricted inference". III Encontro Luso- Galaico de Biometria. Aveiro (Portugal), 28-30th June.

2018 *Larriba, Y.*, Rueda, C., Fernández, M.A. and Peddada, S.D. "Order restricted inference in chrnobiology". XXXVII Congreso Nacional de Estadística e Investigación Operativa. Oviedo (Spain), 29th May - 1st June.

2017 *Larriba, Y.*, Rueda, C., Fernández, M.A. and Peddada, S.D. "A normalization-robust bootstrap-based rhythmicity measure to detect rhythmic genes in oscillatory systems". IV Congreso de Jóvenes Investigadores en Diseño de Experimentos y Bioestadística. Salamanca (Spain), 20-21st July.

2016 *Larriba Y.*, Rueda C., Fernández M.A. and Peddada, S.D. "Evaluation of microarray normalization strategies to detect cyclic circadian genes". XXXVI Congreso Nacional de Estadística e Investigación Operativa. Toledo (Spain), 5-7th September.

Larriba Y., Rueda C., Fernández M.A. and Peddada, S.D. "Order Restricted Inference for Oscillatory Systems for Detecting Rhythmic Genes". BIO APPs 2016, II Encontro Galaico-Portugués de Biometría. Santiago de Compostela (Spain), 30th June, 1-2nd July.

2015 *Larriba Y.*, Rueda C. and Fernández M.A. "A new method for circadian gene identification using order restricted inference". 8th International Conference of the European Research Consortium for Informatics and Mathematics Working Group on Computing & Statistics. London (UK), 12-14th December.

Posters

2019 *Larriba Y.*, Rueda C., Fernández M.A. and Peddada S.D. "A general framework for the determination and analyses of rhythmic genes in a circadian clock gene expression study". Discover Brigham. Boston (USA), 7th November.

2018 *Larriba Y.*, Rueda C., Fernández M.A. and Peddada S.D. "A general framework for the determination and analyses of rhythmic genes in a circadian clock gene expression study". Center for Sleep and Circadian Science (CSCS) Research Day. Pittsburgh (USA), 15th November.

2017 *Larriba Y.*, Rueda C. and Fernández M.A. "Modelling biological rhythms using order restricted inference". ADISTA17 International Workshop. Rome (Italy), 8-9th June.

2015 *Larriba Y.*, Rueda C. and Fernández M.A. "A new method for identification of cyclic circadian genes using circular isotonic regression". XXXV Congreso Nacional de Estadística e Investigación Operativa. Pamplona (Spain), 26-29th May.

Participation in research projects

2020–*Present* **Impact of melatonin, food timing and receptor variant on type 2 diabetes risk.** *ProjectID: 1R01DK105072-01A1.* National Institute of Health (NIH) of the United States. Main Researchers: Richa Saxena and Frank Scheer.

2020–*Present* **Modelos estadísticos para resolver problemas en Cronobiología, Electrofisiología, Neurociencia y otras disciplinas.** *ProjectID: MTM2019-106363-RB.* Spanish Ministry of Economy and Competitiveness. Main Researcher: Cristina Rueda.

2016–2020 **Diseño e implementación de nuevos procedimientos de Inferencia Estadística con Restricciones para resolver aplicaciones en Biomedicina y otros ámbitos.** *ProjectID: MTM2015-71217-R*. Spanish Ministry of Economy and Competitiveness. Main Researchers: Cristina Rueda and Miguel A. Fernández.

2015 **Contribuciones de la inferencia con restricciones en regresión, clasificación, datos circulares y procedimientos robustos, y aplicaciones a la biomedicina.** *ProjectID: MTM2012-37129*. Spanish Ministry of Science and Innovation. Main Researchers: Cristina Rueda and Miguel A. Fernández.

2013-2014 **Éxito educativo.** Dirección General de Innovación Educativa y Formación del Profesorado de Castilla y León. Junta de Castilla y León. Main Researchers: María Redondo Carretero.

2013-2014 **Evaluacción Diagnóstica.** Dirección General de Innovación Educativa y Formación del Profesorado de Castilla y León. Junta de Castilla y León. Main Researchers: María Redondo Carretero.

2013-2014 **Evaluacción de la Formación Permanente del Profesorado de Castilla y León.** Dirección General de Innovación Educativa y Formación del Profesorado de Castilla y León. Junta de Castilla y León. Main Researchers: María Redondo Carretero.

Seminars

2019 "How to recover cell cycle dynamic in chronobiology using scRNA-seq data?". Mathematics Research Institute of the University of Valladolid (imUVa), University of Valladolid.

2018 "Statistical framework to analyse rhythmicity in chronobiology". Mathematics Research Institute of the University of Valladolid (imUVa), University of Valladolid.

2017 "A bootstrap based gene rhythmicity measure is highly robust to the choice of normalization methods to detect circadian rhythmic genes". Mathematics Research Institute of the University of Valladolid (imUVa), University of Valladolid.

2016 "ORIOS: Order Restricted Inference for Oscillatory Systems for Detecting Rhythmic Genes". Mathematics Research Institute of the University of Valladolid (imUVa), University of Valladolid.

Knowledge Transfer and Innovation

2020-2021 Participant as PDI mentor of the area of Engineering in the International Mentoring Program of IMFAHE Foundation, promoted by the University of Valladolid.

2019 Participant in IMFAHE's Big Brother Session", IMFAHE Foundation, Boston, USA.

Symposium: "A directional proposal to estimate sampling times in chronobiology: Building a human circadian atlas from GTEx data base". Sleep Medicine Division, Harvard Medical School.

Dissertation Conference: "Hey genes: shall we dance?". Ciclo Conferencias de Divulgación de la Facultad de Estadística de la Universidad Complutense de Madrid.

2018 Symposium: "ORI: A framework based on Order Restricted Inference to analyze data in chronobiology". Graduate School of Public Health, University of Pittsburgh.

Dissertation Conference: "¡Qué ritmo tienen los genes!". Pint of Science Festival.

Organization and evaluation committee member

2020 Member of the Evaluation Committee of the "56 Mathematical Olympiad", University of Valladolid.

2019 Member of the Organizing Committee of "2019 Mathematical PhD students seminars", University of Valladolid.

Member of the Organizing Committee of "7th Iberoamerican Congress on Geometry", University of Valladolid.

2017 Member of the Evaluation Committee of the "53 Mathematical Olympiad", University of Valladolid.

Refereeing

- Nature Biology (1)
- PLOS ONE (1)
- PeerJ (1)

Teaching

2020-2021 **Graduate teaching assistant in Mechanical Engineering**, *Department of Statistics and Operational Research*, University of Valladolid.

2019-2020 **Codirector of the final degree project:**, *"Métodos para ordenar observaciones de señales oscilatorias. Aplicación a la ordenación de expresiones de genes". Proposed to Honourable Mention*, Department of Statistics and Operational Research,University of Valladolid.

2019-2020 **Graduate teaching assistant in Mechanical Engineering**, *Department of Statistics and Operational Research*, University of Valladolid.

2018-2019 **Graduate teaching assistant in Industrial Organisation Engineering**, *Department of Statistics and Operational Research*, University of Valladolid.

2018-2019 **Graduate teaching assistant in Mechanical Engineering**, *Department of Statistics and Operational Research*, University of Valladolid.

2017-2018 **Graduate teaching assistant in Mechanical Engineering**, *Department of Statistics and Operational Research*, University of Valladolid.

Teaching resources

2019-2020 **Online Statistics Lessons in Mechanical Engineering. Confidence Intervals and Linear Regression**, *Kaltura. Campus Virtual UVa*, University of Valladolid. `https://2624862.kaf.kaltura.com/media/1_mbh4iox3;1_m6xe4qgz;1_kf4c2hfz;1_rgs5gblb;1_if956jy5;1_yzeqznzr;1_1x6pu6vu`

Work experience

2020–*Present* **Self-worker**, *Trainer in advanced education.*

2013–2014 **Data Scientist**, *MCV Consulting Network Group. Experience in data modelling for Education and Teaching* (12 months).

Specialization courses and seminars

2020 Diseña tu asignatura online *(in progress)*, given by the University of Valladolid.

2019 Online Quarter Course: Innovation, Leadership & Entrepreneurship, given by the IMFAHE Foundation.

2018 Biometry with compositional data, given by the University of Aveiro.

2017 Análisis espacial de datos de área: aplicaciones en epidemiología, given by the Mathematics Research Institute of the University of Valladolid (imUVa), University of Valladolid.

Bibliometría en la evaluación de los resultados en investigación, given by the University of Valladolid.

Big Data: How to learn on massive data sets, given by the Mathematics Research Institute of the University of Valladolid (imUVa), University of Valladolid.

El gestor de referencias Endnote, given by the Spanish Foundation for Science and Technology, FECYT.

Novedades en la Web Of Science (Nuevas versiones JCR y ESI), given by the Spanish Foundation for Science and Technology, FECYT.

Introduction to Cluster Analysis, given by the Mathematics Research Institute of the University of Valladolid (imUVa), University of Valladolid.

2016 Data Analysis and Hypothesis testing Using the Python Ecosystem, given by the University of Valladolid.

Python Data Structures, given by Johns Hopkins University (Coursera).

Formación Online Scopus, Nivel Avanzado, given by the Spanish Foundation for Science and Technology, FECYT.

Formación Online Scopus, Nivel Básico, given by the Spanish Foundation for Science and Technology, FECYT.

Survival Analysis, given by the University of Santiago de Compostela.

Movilidad Investigadora, given by the University of Valladolid.

Búsqueda de información científica interuniversitario, given by the University of León.

Cómo Escribir Abstracts y Artículos en Inglés, given by the University of Valladolid.

2015 Bioconductor for Genomic Data Science, given by Johns Hopkins University (Coursera).

Introducción al Análisis de Datos Funcionales, given by the Mathematics Research Institute of the University of Valladolid (imUVa), University of Valladolid.

Statistical Analysis of fMRI Data, given by Johns Hopkins University (Coursera).

2014 Biología del Cáncer: Rasgos Biomédicos y su Formulación Matemática y Estadística, given by the University of Valladolid.

Big Data y Hadoop, given by the Mathematics Research Institute of the University of Valladolid (imUVa), University of Valladolid.

2014-*Present* Weekly Seminars and Conferences, given by the Mathematics Research Institute of the University of Valladolid (imUVa), University of Valladolid.

Languages

Spanish **Native.**

English **Advanced.** CAE certificate (level C1 in the CEFR.)

Developed software

- ORIOS algorithm R-code, `https://www.niehs.nih.gov/research/resources/software/biostatistics/orios/index.cfm`
- Microarray simulator R-code, `www.eio.uva.es/~miguel/robustdetectionprocedure.html`

Computer skills

Interpreted languages: R, Python, MATLAB, Mathematica, HTML.

Compiled languages: FORTRAN, C, C++, TEX.

Specific software: SPSS, Statgraphics Centurion XVII, Adobe Acrobat Pro, GitHub, JabRef, Machine NX, Netbeans, Notepad++, RStudio, TeXstudio.

Professional affiliations and memberships

- Member of the Research Group Statistical Inference with Restrictions of the University of Valladolid, the the Institute of Mathematical Research of the University of Valladolid (imUVa), the Spanish Society of Statistics and Operational Research (SEIO), International Biometric Society (IBS) and the American Association for the Advancement of Science (AAAS), Eastern North American Region (ENAR) of IBS.

Miscellaneous

2020 Participation in 2nd CRUP – CRUE Open Science Seminar, Online.

2018 Participation in Magee-Womens Research Summit at the University of Pittsburgh, Pittsburgh, (USA).

2018 Participation in the Symposium Big data and data science for learning in the digital world at the University Carlos III of Madrid, Madrid, (Spain).

2018 Participation in the 7th Iberoamerican Congress on Geometry at the University of Valladolid, Valladolid, (Spain).

2017 Participation in the Annual meeting of the SEIO Working Group on Multivariate Analysis and Classification (AMyC) at the University of Valladolid, Valladolid, (Spain).

2016 Participation in the IV Jornadas de R en Galicia at the University of Santiago de Compostela, Santiago de Compostela, (Spain).

2015–2016 Member of the Commission on Quality in the MSc in Mathematical Research at the University of Valladolid, Valladolid, (Spain).

2015 Participation in the Workshop Methodological Advances in Statistic related to Big Data at International Center for Mathematical Meetings (CIEM), Castro-Urdiales, (Spain).

2014-2015 Student representative in the MSc in Mathematical Research at the University of Valladolid, Valladolid, (Spain).

2014 Participation in the III Jornadas de R en Galicia at the University of Santiago de Compostela, Santiago de Compostela, (Spain).