Ph.D. Estibaliz Gómez de Mariscal

Postdoc fellowship at Heriques Lab
Optical Cell Biology
Instituto Gulbenkian de Ciência
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0000-0003-2082-3277 (Researcher ID: C-4637-2018)

EDUCATION

2017 – 2021 **PhD student in Mathematical Engineering**
Universidad Carlos III de Madrid, UC3M (Engineering School)
Title: *Insights to the characterization of cell motility and intercellular communication through a bioimage analysis perspective*
Advisors:
Prof. Arrate Muñoz-Barrutia (Universidad Carlos III de Madrid)
Prof. Denis Wirtz (Johns Hopkins University)
Grade: (Sobresaliente) ***Cum laude* – Awarded as outstanding thesis**

2015 – 2016 **MSc in Statistical and Computational Data Processing**
Universidad Complutense de Madrid, UCM (Faculty of Mathematics)
Universidad Politécnica de Madrid, UPM (School of Telecommunications Engineering)
Thesis: Processing of IRT images taken under emotional stress situations. Grade: 9/10,
Average grade: 8.93/10; Ranking: 5/18

2009 – 2014 **BSc + MSc in Mathematics (5-year degree)**
University of the Basque Country (UPV / EHU) (Faculty of Sciences and Technology)
** 2012-2013 Erasmus 11 moths, University of Copenhagen
Average grade: 7.82/10; Ranking: 10/38

PROFESSIONAL EXPERIENCE

2022 **EMBO postdoc fellowship ALTF 174-2022:**
A transformative data-driven live-cell super-resolution microscopy development to elucidate the initial steps of effective viral transmission
Instituto Gulbenkian de Ciência, Portugal
Group leader: Prof. Ricardo Henriques

2021 – 2022 **Postdoc fellowship Project EMBO Installation Grant 4734:**
Unveiling live-cell viral replication at the nanoscale
Instituto Gulbenkian de Ciência, Portugal
Group leader: Prof. Ricardo Henriques

2017 – 2021 **Personal Investigador Pre-doctoral en formación (PIPF scholarship)**
Universidad Carlos III de Madrid, UC3M (Engineering School)

2016 - 2017 **Research support technician**
Dep. of bioengineering and aerospace engineering, Universidad Carlos III Madrid.
Biomedical imaging and instrumentation group (BiiG).
Research supervisor: Prof. Arrate Muñoz Barrutia.

2016 **Biostatistician**
LINICAL SPAIN, S.L. (Internship). Statistical analysis and report preparation of pharmaceutical research and competitiveness studies. SAS Base software programmer.

2014 – 2015 **Financial consultant**
MANAGEMENT SOLUTIONS. Management of financial securitizations and information protocols.

SPECIALIZATION COURSES AND SEMINARS

2018 Machine Learning Summer School, Madrid, Spain (MLSS2018)
2018 International Computer Vision Summer School, Sicily, Italy (ICVSS2018).
34% of acceptance ratio.
2017 Summer School of Masaryk University *"Advanced Methods in Biomedical Image Analysis"*

SUPERVISED STUDENTS

2023 (PhD) (Ongoing) A. González Marfil, "Deep Self-Supervised Learning methods for biomedical image analysis.", Co-supervisor: Ignacio-Arganda Carreras. PhD thesis, Universidad del País Vasco – Euskal Herriko Unibertsitatea.
2023 (MSc) I. Hidalgo Cenalmor, "Deep learning single image super-resolution in microscopy data: distortion error vs perceptual quality", Co-supervisor: Ignacio-Arganda Carreras. MSc Thesis, Universidad del País Vasco – Euskal Herriko Unibertsitatea. Mention: *Cum laude*
2023 (BSc) J. Anton-Arnal, "*Quantitative assessment of phototoxicity during embryo development*", Final BSc report, Instituto Superior Técnico - Universidade De Lisboa and Universidad Carlos III de Madrid.
2020 (BSc) M. Calzada García, "*Automatic segmentation of cells in phase-contrast microscopy images*". Final BSc thesis. Universidad Carlos III de Madrid.
2018 (BSc) T. Pereira, "On the creation of large microscopy image datasets for robust training of deep-learning methods". Summer research lab student from Johns Hopkins University.
2017 (BSc) C. Guzmán García, "Microstructure-mechanical property relation of the extracellular matrix in lung cancer", Co-supervisor: Arrate Muñoz Barrutia. Final BSc tesis, Universidad Carlos III de Madrid.

ACADEMIC TEACHING EXPERIENCE

Universidad del País Vasco – Euskal Herriko Unibertsitatea:

- **Master's Degree in Computational and Intelligent Systems Engineering:**
  Computer Vision course (invited teacher for lecture and practical sessions) 2024

Universidad Carlos III de Madrid:

- **Master's in Information and health engineering:**
  Biomedical image processing (1st semester, teaching assistant) 2019, 2020
- **Bachelor's in biomedical engineering:**
  Medical image processing (2nd semester, teaching assistant) 2018, 2019, 2020
  Biomedical microdevices (2nd semester, teaching assistant) 2018, 2019
  Transport phenomena in biomedical engineering (1st semester, students support) 2017

KTH Royal Institute of Technology, Sweden:

- **MSc:**
  Data-driven Life Sciences course, SK2538 (module biological image analysis – convolutional neural networks, invited teacher for lecture and practical sessions) 2022, 2023, 2024

ITQB NOVA, Portugal:

- **PhD program in Plant Biology:**

BioImage analysis: from visual to quantitative biology, 2023.

Universidad Rey Juan Carlos de Madrid, Spain:

- **Master in Data Science Seminar**
  "Deep learning en imagen biomédica", 2020

INVITED TALKS

2024 "Harnessing AI towards the limits of live-cell microscopy", 7th International Symposium on Image-based Systems Biology, Jena, Germany

2024 "Harnessing AI towards the limits of live-cell microscopy", BIST Symposium on Microscopy, Nanoscopy and Imaging Sciences, Barcelona, Spain

2023 "Harnessing AI towards the limits of live microscopy imaging", Imaging Life : The Future, France

2023 "Deep learning-enabled cellular imaging: making it happen for you", NEUBIAS Symposium, Porto, Portugal.

2022 "Deep learning-enabled cellular imaging: making it happen for you", Crick BioImage Analysis Symposium.

2022 "Breaking the barriers of AI in biomedical research to boost scientific breakthrough", President's Innovation Award, SIB^2 Annial Conference, Boston, USA.

2022 "FAIRy Deep Learning for BioImage Analysis", Open Source Microscopy Symposium, Open Neuroscience, FENS Forum, Paris, France.

FACULTY IN COURSES, SUMMER SCHOOLS, SEMINARS & WORKSHOPS

2024 "BioImage analysis with deep learning", 17th Edition of the Frontiers in Neurophotonics Summer School, CERVO Brain Research Center, Québec City, Canada, 28th May – 7th June 2024.

2024 "AI4Life - General Introduction + Could Service Demo", Deep learning for microscopy image analysis, EMBO Practical Course, Human Technopole, Italy, 8th - 16th May 2024

2024 G. Jacquemet, E. Gómez-de-Mariscal, A. Kreshuk, D. Kutra, W. Ouyang Microscopy data analysis: Machine learning and the BioImage Archive, EBI – EMBL course

2023 "From GitHub to Zero to AI4Life", HT Deep Learning for Microscopy Image Analysis Course, Human Technopole, 16th – 20th October, 2023

2023 "Introduction to image analysis for microscopy. (From theory into practice)", Fundamentals of light microscopy and image processing, ITQB - Nova, Portugal, 18th – 29th September 2023

2023 "Deep learning, principles, pitfalls, and perspectives", Advanced Methods in bioimage analysis, EMBO Practical Course, EMBL, Heidelberg, Germany, 10th - 15th September 2023

2023 "BioImage analysis with deep learning", 16th Edition of the Frontiers in Neurophotonics Summer School, CERVO Brain Research Center, Québec City, Canada, 6th June – 16nd June 2023

2023 G. Jacquemet, E. Gómez-de-Mariscal, A. Kreshuk, D. Kutra, Microscopy data analysis: Machine learning and the BioImage Archive, EBI – EMBL course.

2023 D. Sage, E. Gómez de Mariscal, "Zero code tools for bioimage analysis", NEUBIAS Defragmentation Training School, Porto, Portugal

2023 "FAIRy Deep Learning for Microscopy Image Analysis", Neural Networks in BioImage Analysis, IMCF BIOCEV, Czech Republic, 2023

2023 "Accessible deep learning for microscopy imaging", Intelligent microscopy session, Beyond diffraction: Trends in Nanoscopy, Abbelight Workshop 2023

2022 "Bringing insights into the characterization of 3D cell motility through bioimage analysis", Donostia International Physics Center (DIPC), Spain

2022 "Bringing insights into the characterization of 3D cell motility through bioimage analysis", Instituto Biofisika, Spain. Web site.

2022 "Deep-Learning with ImageJ and Google Colab", Computational optical biology, EMBO Practical Course, Instituto Gulbenkian de Ciência, Portugal, 2nd - 7th October 2022. Web site.

2022 "Deep Learning Community Tools", Deep Learning for Microscopy Image Analysis school, Marine Biological Lab (MBL), Woods Hole, USA, 2022, 26th August – 6th September 2022. Web site.

2022 "Deep learning tools for 3D segmentation…and more", 3D Developmental Imaging, EMBO Practical Course, Instituto Gulbenkian de Ciência, Oeiras, Portugal, 1st July – 9th July 2022. Web site.

2022 "BioImage analysis: from visual to quantitative biology and the other way around", 15th Edition of the Frontiers in Neurophotonics Summer School, CERVO Brain Research Center, Québec City, Canada, 12th June – 22nd June 2022.

2021 A. Kreshuk, W. Ouyang, E. Gómez-de-Mariscal. Microscopy data analysis: Machine learning and the BioImage Archive, EBI – EMBL course. Web site.

2022 "Bioimage Analysis", 13th Course on Optical Microscopy Imaging for Biosciences, i3S, Instituto de Investigação e Inovação em Saúde, 28th March – 1st April 2022. Web site.

2021 "Open-source ecosystems for user-friendly deep learning workflows in bioimage analysis", BioImage Informatics Finland network, Turku Bioimaging, University of Turku, Findland August 2021. Web site.

2021 E. Gómez-de-Mariscal, G. Jacquemet. "User-friendly face of deep learning for bioimage analysis", Collab + ZCDL4M + Model Zoo, Zurich Image and Data Analysis School (ZIDAS), Lausanne, Switzerland. Web site.

2021 A. Kreshuk, W. Ouyang, E. Gómez-de-Mariscal. Microscopy data analysis: Machine learning and the BioImage Archive, EBI – EMBL course. Web site.

2020 I. Arganda-Carreras, R. F. Laine, E. Gómez-de-Mariscal, "WS6: Practical Applications of Deep learning for Bioimage Analysis", Spanish Portuguese Meeting for Advanced Optical Microscopy (SPAOM). Slides and video.

2020 E. Gómez de Mariscal, M. Weigert, "Introduction to Deep Learning", Zurich Image and Data Analysis School (ZIDAS), Lausanne, Switzerland. Materials.

2020 NEUBIAS Bioimage analysts' school 2020, Bordeaux, France. Materials and video.

2019 "New insights on 3D cell migration through the study of cellular protrusions", Seminars on Mechanobiology, CSIC. Video.

2018 I. Arganda-Carreras, E. Gómez de Mariscal, A. Muñoz-Barrutia, S. Tosi, "WS5: Machine Learning - Deep Learning. Applications to Bioimage Analysis", Spanish Portuguese Meeting for Advanced Optical Microscopy (SPAOM). Slides.

ACADEMIC ACTIVITIES AND SERVICES

Reviewer for:

- JCR indexed journals: Cell Reports Methods, GigaScience, Nature Methods, Nature Machine Intelligence, Computers in Biology and Medicine, Bioinformatics, Oxford Academics, BMC Bioinformatics, IEEE Transactions on Medical Imaging, Medical Image Analysis.
- Conferences: Medical Imaging with Deep Learning (MIDL), IEEE International Symposium on Biomedical Imaging (ISBI), International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI).
- International Projects: Natural Sciences and Engineering Research Council of Canada (NSERC).

Jury of Master's degree (MSc):

- 2019: Segmentación y extracción del pulmón dañado por infección causada por Micobacteria Tuberculosis en imágenes de TAC, Carmen Guzmán García, Master en Visión Artificial, Universidad Rey Juan Carlos I.

PhD thesis (PhD):

2024 Deep Learning for Bioimage Analysis: novel user- and developer-oriented approaches
Supervisors: Arrate Muñoz-Barrutia, Ignacio Arganda-Carreras
Dept. of Computer Sciences and Artificial Intelligence, Universidad del País Vasco – Euskal Herriko Unibertsitatea
(Back up committee member)

2023 A Colour Wheel to Rule them All: Analysing Colour & Geometry in Medical Microscopy
Candidate: Laura Nicolás
Supervisors: Arrate Muñoz-Barrutia, Javier Pascau
Dept. of BioMedical and Aeroespacial Engineering, Universidad Carlos III de Madrid
(Spokesperson)

2022 Simplifying the usage and construction of deep image classification models,
Candidate: Adrián Inés Armas
Supervisors: Jónathan Heras y Julio Rubio García
Dept. de Matemáticas y Computación, Universidad de la Rioja
(External reviewer)

2022 Democratizing Deep Learning methods by means of AutoML tools
Candidate: Manuel García Domínguez
Supervisors: Jónathan Heras y César Domínguez Perez
Dept. de Matemáticas y Computación, Universidad de la Rioja
(Substitute)

2019-20 Representative of Mathematical Engineering PhD program (RD 99/2011), UC3M.

2014 First Joint International Meeting RSME-SCM-SEMA-SIMAI-UMI. Organization support.

FELLOWSHIPS, TRAVEL GRANTS AND PRIZES

2023 **FCT CEEC Individual Postdoctoral Fellowship, Portugal**, "SMALS - Smart Microscopy for Adaptative Live Super-resolution imaging to elucidate the initial steps of the HIV viral transmission", Host supervisor: Prof. Ricardo Henriques Lab; Host institution: Instituto Gulbenkian de Ciência, Portugal.

2022 **President Innovation Award**, Annual 2022 of **Society of Biomolecular Imaging and Informatics (SBI2)** (1000 USD $).

2022 **EMBO Postdoctoral Fellowship,** "A transformative data-driven live-cell super-resolution microscopy development to elucidate the initial steps of effective viral transmission", Host supervisor: Prof. Ricardo Henriques Lab; Host institution: Instituto Gulbenkian de Ciência, Portugal.

2021 **Outstanding PhD thesis award** of the PhD program in Mathematical Engineering, Universidad Carlos III de Madrid.

2019 **Short Term Scientific Mission, NEUBIAS Cost Action CA15124.** Biomedical Imaging Group, EPFL, Lausanne, Switzerland.

2018 **Ayudas para la movilidad de investigadores de la Universidad Carlos III de Madrid en centros de investigación nacionales o extranjeros.**

PhD mobility scholarship.

2017 **Personal Investigador Pre-doctoral en Formación (PIPF)**
PhD scholarship of the Universidad Carlos III de Madrid.

2017 **Best Poster Award (2nd place) in the Summer School of Masaryk University** *"Advanced Methods in Biomedical Image Analysis" for the work Infrared Thermography Processing to Characterize Emotional Stress: A Pilot Study.* E. Gómez de Mariscal, *A. Muñoz-Barrutia, J. de Frutos, A. P. González-Marcos, A. M. Ugena Martínez.*

2015 **Excellence Scholarship**
Master's degree funding, Universidad Complutense de Madrid.

2015 **Master degree scholarship from the Faculty of Mathematics**
Master's degree funding, Universidad Complutense de Madrid.

2014 **Introduction to Mathematical Research scholarship.**
University of the Basque Country, *Riemannian geometry.*

2014 **Partner of Bizkaia-Talent: Best tests of records.**

2012 **Erasmus Scholarship.** Copenhagen University (KU).

SCIENTIFIC EVENT ORGANISATION

2024 **AI4Life pre-symposium workshop&hackathon: Trends in AI for super-resolution microscopy**

SCIENTIFIC DIVULGATION ACTIVITIES

2019 International day of women and girls in science, February 11
"*Filtros de instagram y computer vision contra el cáncer*", Colegio Madre de Dios, Bilbao. 11 de Febrero

2019 International day of women and girls in science, February 11
"*El papel de una tecnóloga en un entorno quirúrgico: soluciones de realidad virtual y aumentada*", IES Julio Verne, Leganés, Madrid. 11 de Febrero

2018 International day of women and girls in science, February 11
"*Ciencia el confeti de la fiesta*", IES Julio Verne, Leganés, Madrid. 11 de Febrero

2018 Week of science activities, UC3M. VisualStem

2014 Divulgation summer course: Cultura con M de Matemáticas, UPV/EHU (Attendance)

RESEARCH STAYS AND VISITS

2024 Cell migration lab – Guillaume Jacquemet, Turku Bioscience Center – Abo Akademi University (40 days)

2023 Intelligent Nanoscopy Group – Flavie Lavoie Cardinal Lab, CERVO Brain Research Institute, Université Laval, Quebec City, Canada (10 days)

2019 Biomedical Imaging Group (Prof. Michael Unser). Ecole Polytechnique Fédérale de Lausanne (EPFL), Switzerland (15 days)

2018 Computer Vision Group (Prof. Thomas Brox). University of Freiburg, Germany. (3 months)

2017 Wirtz lab (Prof. Denis Wirtz). Johns Hopkins University, E.E.U.U. (9 days)

PUBLICATIONS AND CONTRIBUTIONS

JCR JOURNAL PAPERS AND PREPRINTS

[1] I. Hidalgo-Cenalmor, J. W Pylvänäinen, M. G. Ferreira, C. T Russell, A. Saguy, I. Arganda-Carreras, Y. Shechtman, G. Jacquemet, R. Henriques, E. Gómez-de-Mariscal, DL4MicEverywhere: Deep learning for microscopy made flexible, shareable, and reproducible, Nature Methods 2024

[2] M. Del Rosario*, E. Gómez-de-Mariscal*, L. Morgado, R. Portela, G. Jacquemet, P. M Pereira, R. Henriques. PhotoFiTT: A Quantitative Framework for Assessing Phototoxicity in Live-Cell Microscopy Experiments, bioRxiv 2024
[3] L. Sorensen, A. Humenick, S. SB Poon, M. Noe Han, N. S Mahdavian, M. C Rowe, R. Hamnett, E. Gómez-de-Mariscal, P. H Neckel, A. Saito, K. Mutunduwe, C. Glennan, R. Haase, R. M McQuade, J. PP Foong, S. JH Brookes, J. A Kaltschmidt, A. Muñoz-Barrutia, S. K King, Nicholas A Veldhuis, S. E Carbone, D. P Poole, P. Rajasekhar. "Gut Analysis Toolbox: Automating quantitative analysis of enteric neurons" Journal of Cell Science 2024
[4] E. Gómez-de-Mariscal*, H. Grobe*, J. W Pylvänäinen*, L. Xénard, R. Henriques, JY. Tinevez, G. Jacquemet. "CellTracksColab - A platform for compiling, analyzing, and exploring tracking data", PLOS Computational Biology, 2024
[5] A. Sneider, Y. Liu, B. Starich, W. Du, P. R Nair, C. Marar, N. Faqih, G. Ciotti, J. Ho Kim, S. Krishnan, S. Ibrahim, M. Igboko, A. Locke, D. Lewis, H. Hong, M. Karl, R. Vij, G. Russo, E. Gómez-de-Mariscal, M. Habibi, A. Muñoz-Barrutia, L. Gu, T.S. K. Eisinger, D. Wirtz, "Small extracellular vesicles promote stiffness-mediated metastasis", Cancer research communications, 2024
[6] P. R. Nair, L. Danilova, E. Gómez-de-Mariscal, D. Kim, R. Fan, A. MuñozBarrutia, E. J. Fertig, D. Wirtz, "MLL1 regulates cytokine-driven cell migration and metastasis", Science Advances, 2024
[7] L Morgado, E Gómez-de-Mariscal, HS Heil, R Henriques, "The rise of data-driven microscopy powered by machine learning", Journal of Microscopy 2024
[8] E Gómez-de-Mariscal*, M Del Rosario*, JW Pylvänäinen, G Jacquemet, R Henriques, "Harnessing artificial intelligence to reduce phototoxicity in live imaging", Journal of Cell Science, 2024
[9] C Fuster-Barcelo, C Garcia Lopez de Haro, E. Gómez-de-Mariscal, W Ouyang, JC Olivo-Marin, D Sage, A Munoz-Barrutia, "Bridging the Gap: Integrating Cutting-edge Techniques into Biological Imaging with deepImageJ", Biological Imaging (accepted) 2024
[10] JW Pylvänäinen, E Gómez-de-Mariscal, R Henriques, G Jacquemet, "Live-cell imaging in the deep learning era", Current Opinion in Cell Biology, 2024
[11] C Spahn, S Middlemiss, E Gómez-de-Mariscal, R Henriques, HB Bode, S Holden, M. Heilemann, "Transertion and cell geometry organize the Escherichia coli nucleoid during rapid growth", bioRxiv 2024
[12] A. Saguy, T. Nahimov, M. Lehrman, E. Gómez-de-Mariscal, I. Hidalgo-Cenalmor, O. Alalouf, R. Henriques, Y. Shechtman, "This microtubule does not exist: Super-resolution microscopy image generation by a diffusion model", bioRxiv 2024
[13] C. García-López-de-Haro, S. Dallongeville , T. Musset , E. Gómez-de-Mariscal , D. Sage , W. Ouyang , A. Munoz-Barrutia, J.Y. Tinevez, J.C. Olivo-Marin, "JDLL: A library to run Deep Learning models on Java bioimage informatics platforms", Nature Methods 2024
[14] M. Maška*, V. Ulman*, P. Delgado-Rodriguez, E. Gómez-de-Mariscal, T. Nečasová, F.A. Guerrero Peña, T. Ing Ren, E.M. Meyerowitz, T. Scherr, K. Löffler, R. Mikut, T. Guo, Y. Wang, J.P. Allebach, R. Bao, N.M. Al-Shakarji, G. Rahmon, I. Eddine Toubal, K. Palaniappan, F. Lux, P. Matula, K. Sugawara, K.E.G. Magnusson, L. Aho, A.R. Cohen, A. Arbelle, T. Ben-Haim, T. Riklin Raviv, F. Isensee, P.F. Jäger, K. H. Maier-Hein, Y. Zhu, C. Ederra, A. Urbiola, E. Meijering, A. Cunha, A. Muñoz-Barrutia, M. Kozubek*, C. Ortiz-de-Solórzano*, "The Cell Tracking Challenge:10 years of objective benchmarking". Nature Methods 20, 1010–1020, 2023
[15] E. Gómez-de-Mariscal, D. Sage and A. Muñoz-Barrutia, "DeepImageJ" from G Volpe, C Wählby, L Tian, M Hecht, A Yakimovich, et al., "Roadmap on deep learning for microscopy" arXiv 2023
[16] C. Spahn, E. Gómez de Mariscal, R. F. Laine, P. Matos Pereira, L. von Chamier, M. Conduit, M. Gomes de Pinho, G. Jacquemet, S. Holden, M. Heilemann, R. Henriques, "DeepBacs for multi-

task bacterial image analysis using open-source deep learning approaches", Communications Biology, 2022

[17] W. Ouyang*, F. Beuttenmueller*, E. Gómez-de-Mariscal*, C. Pape*, T. Burke, C. Garcia-López-de-Haro, C. Russell, L. Moya-Sans, C. de-la-Torre-Gutiérrez, D. Schmidt, Dominik Kutra, M. Novikov, M. Weigert, U. Schmidt, P. Bankhead, G. Jacquemet, D. Sage, R. Henriques, A. Muñoz-Barrutia, E. Lundberg, F. Jug, A. Kreshuk, "BioImage Model Zoo: A Community-Driven Resource for Accessible Deep Learning in BioImage Anlaysis", bioRxiv 2022

[18] E. Gómez-de-Mariscal, H. Jayatilaka, O. Çiçek, T. Brox, D. Wirtz, A. Muñoz-Barrutia, Search for temporal cell segmentation robustness in phase-contrast microscopy videos, arXiv 2021

[19] E. Gómez de Mariscal, A. Sneider, H. Jayatilaka, J.M. Phillip, D. Wirtz, A. Muñoz-Barrutia "Use of the p-value as a size-dependent function to address practical differences when analyzing large datasets", Scientific Reports, 2021

[20] E. Gómez-de-Mariscal, C. García-López-de-Haro, W. Ouyang, L. Donati, E., Lundberg, M. Unser, A. Muñoz-Barrutia, D. Sage, "DeepImageJ: A user-friendly environment to run deep learning models in ImageJ", Nature Methods, 2021

[21] P. Martín-Gonzalez, E. Gómez de Mariscal, M. E Martino, P. M. Gordaliza, I. Peligros, J. L. Carreras, F. A. Calvo, J. Pascau, M. Desco, A. Muñoz-Barrutia, "Association of visual and quantitative heterogeneity of 18F-FDG PET images with treatment response in locally advanced rectal cancer: A feasibility study", PloS one, 2020

[22] E. Gómez-de-Mariscal, M. Maška, A. Kotrbová, V. Pospíchalová, P. Matula, A. Muñoz-Barrutia, "Deep-Learning-Based Segmentation of Small Extracellular Vesicles in Transmission Electron Microscopy Images", Scientific Reports, 2019

PEER-REVIEWED CONFERENCE PROCEEDINGS

[1] E. Gómez-de-Mariscal, H. Jayatilaka, O. Çiçek, T. Brox, D. Wirtz, A. Muñoz-Barrutia, Search for temporal cell segmentation robustness in phase-contrast microscopy videos, (Short paper) MIDL 2022

[2] P. Martín-González, E. Gómez de Mariscal, M. E. Martino, P. M. Gordaliza, J. L. Carreras, F. A. Calvo, J. Pascau, M. Desco, A. Muñoz-Barrutia, "PET Texture Analysis: Dois it Have Clinical Significance in Locally Advanced Rectal Cancer?," XXXV Congreso Anual de la Sociedad Española de Ingeniería Biomédica (CASEIB'17), 29, 30 Noviembre y 1 Diciembre 2017, Bilbao, Spain (15 minutes talk)

[3] E. Gómez de Mariscal, A. Muñoz-Barrutia, J. Frutos Vaquerizo, A. P. Gonzalez-Marcos, A. M. Ugena Martinez, "Semi-Automatic Processing of Infrared Thermography to Characterize Emotional Stress: A Pilot Study," 8th International Conference of Pattern Recognition Systems (ICPRS'17), 11-13 July, 2017, Madrid, Spain (15 minutes talk)

CONFERENCE ABSTRACTS

[1] I. Hidalgo-Cenalmor, J. W Pylvänäinen, M. G. Ferreira, C. T Russell, A. Saguy, I. Arganda-Carreras, Y. Shechtman, G. Jacquemet, R. Henriques, E. Gómez-de-Mariscal, DL4MicEverywhere: Deep learning for microscopy made flexible, shareable, and reproducible, Single Molecule Localization Microscopy Symposium (SMLMS), 2024 (Poster)

[2] M. del Rosario*, E. Gómez-de-Mariscal*, L. Morgado, J. W. Pylvänäinen, G. Jacquemet, P. M. Pereira, R. Henriques, " A roadmap towards deep learning enabled low-photodamage live microscopy" , Single Molecule Localization Microscopy Symposium (SMLMS), 2024 (Talk)

[3] I. Hidalgo-Cenalmor, J. W Pylvänäinen, M. G. Ferreira, C. T Russell, A. Saguy, I. Arganda-Carreras, Y. Shechtman, G. Jacquemet, R. Henriques, E. Gómez-de-Mariscal, DL4MicEverywhere: Deep learning for microscopy made flexible, shareable, and reproducible, European Light Microscopy Innitiative (ELMI), 2024 (Poster)

[4] M. del Rosario*, E. Gómez-de-Mariscal*, L. Morgado, J. W. Pylvänäinen, G. Jacquemet, P. M. Pereira, R. Henriques, " A roadmap towards deep learning enabled low-photodamage live microscopy" , Imaging Cell Dynamics, Journal of Cell Science, 2023 (Poster).

[5] W. Ouyang*, F. Beuttenmueller*, E. Gómez-de-Mariscal*, C. Pape*, T. Burke, C. García-López-de-Haro, C. Russell, L. Moya-Sans, C. de-la-Torre-Gutiérrez, D. Schmidt, Dominik Kutra, M. Novikov, M. Weigert, U. Schmidt, P. Bankhead, G. Jacquemet, D. Sage, R. Henriques, A. Muñoz-Barrutia, E. Lundberg, F. Jug, A. Kreshuk, "BioImage Model Zoo: Accessible AI models for microscopy image analysis in one-click" , Imaging Cell Dynamics, Journal of Cell Science, 2023 (Poster).

[6] W. Ouyang*, F. Beuttenmueller*, E. Gómez-de-Mariscal*, C. Pape*, T. Burke, C. García-López-de-Haro, C. Russell, L. Moya-Sans, C. de-la-Torre-Gutiérrez, D. Schmidt, Dominik Kutra, M. Novikov, M. Weigert, U. Schmidt, P. Bankhead, G. Jacquemet, D. Sage, R. Henriques, A. Muñoz-Barrutia, E. Lundberg, F. Jug, A. Kreshuk, "BioImage Model Zoo: Accessible AI models for microscopy image analysis in one-click" , Focus on Microscopy, 2023 (15 minutes talk).

[7] E. Gómez-de-Mariscal, C. García-López-de-Haro, C. de-la-Torre-Gutiérrez, R.F. Laine, G. Jacquemet, R. Henriques, D. Sage, A. Muñoz-Barrutia, "Reproducible user-friendly deep learning workflows for microscopy image analysis with deepImageJ", Focus on Microscopy, 2022 (15 minutes talk)

[8] E. Gómez-de-Mariscal, C. García-López-de-Haro, A. Muñoz-Barrutia, D. Sage, "Deep Learning-based bioimage processing in one click with deepImageJ", Bioimage informatics, Institut Pasteur, 2021 (25 minutes talk)

[9] E. Gómez-de-Mariscal, C. García-López-de-Haro, A. Muñoz-Barrutia, D. Sage, "Deep Learning prediction for microscopy imaging with ImageJ", Crick BioImage Analysis Symposium (CBIA), 2021 (Poster)

[10] E. Gómez-de-Mariscal, C. García-López-de-Haro, A. Muñoz-Barrutia, D. Sage, "DeepImageJ: Bridging Deep Learning to ImageJ", European Light Microscopy Initiative, (ELMI), 2021 (15 minutes talk)

[11] E. Gómez de Mariscal, A. Sneider, H. Jayatilaka, J.M. Phillip, D. Wirtz, A. Muñoz-Barrutia "Use of the p-value as a size-dependent function: model and applications", Spanish & Portuguese Advanced Optical Microscopy Meeting (SPAOM), 2020 (poster)

[12] E. Gómez de Mariscal, A. Sneider, H. Jayatilaka, J.M. Phillip, D. Wirtz, A. Muñoz-Barrutia "Use of the p-value as a size-dependent function: model and applications", NEUBIAS Symposium Bordeaux, 2020 (poster)

[13] E. Gómez-de-Mariscal, C. García-López-de-Haro, L. Donati, M. Unser, A. Muñoz-Barrutia, D. Sage, "DeepImageJ: Bridging Deep Learning to ImageJ", 2020 IEEE International Symposium on Biomedical Imaging (ISBI), 2020 (15 minutes talk)

[14] E. Gómez-de-Mariscal, M. Maška, A. Kotrbová, V. Pospíchalová, P. Matula, A. Muñoz-Barrutia, "Universal extracellular vesicle segmentation method in TEM images", Spanish & Portuguese Advanced Optical Microscopy Meeting (SPAOM), 2019 (poster)

[15] E. Gómez-de-Mariscal, C. Guzmán-García, I. Andreu, M. Santiago, M.J. Pajares, C.J. Conti, C. Ortiz de Solorzano, M.R. Elizalde, and A. Muñoz-Barrutia, "Quantification of Collagen I degradation in lung cancer biopsies", 18th European Light Microscopy Initiative Meeting (ELMI), 2018 (poster)

[16] E. Gómez-de-Mariscal, M. Maška, A. Kotrbová, V. Pospíchalová, P. Matula, A. Muñoz-Barrutia, "Fully automatic exosomes segmentation in transmission electron microscopy images", Spanish & Portuguese Advanced Optical Microscopy Meeting (SPAOM), 2018 (poster)

[17] E. Gómez-de-Mariscal, H. Jayatilaka, H. J. Kim, P. Tyle, M. Matsuda, D. Wirtz, A. Munoz-Barrutia, "Automatic segmentation of cell protrusions in low magnification phase contrast microscopy videos", 2018 IEEE International Symposium on Biomedical Imaging (ISBI), 2018 (poster)

[18] P. Martín-González, E. Martino, P. M. Gordaliza, E. Gómez de Mariscal, J. L. Carreras, F. A. Calvo, J. Pascau, M. Desco, A. Muñoz-Barrutia, "Heterogeneity Analysis in ^{18}F-FDG FET/CT: Does it Have Clinical Significance for Evaluating the Response to Chemoradiotherapy in Locally Advanced Rectal Cancer?," Prediction and Modeling of Response to Molecular and External Beam Radiotherapies, Workshop of the European Association for Cancer Research, 20-23 September 2017, Le Bono, France (15 minutes talk)

BOOK CHAPTERS

[1] E. Gómez de Mariscal, D. Franco, A. Muñoz-Barrutia, I. Arganda-Carreras. "Building a Bioimage Analysis Workflow using Deep Learning", NEUBIAS Bioimage Analysis Series, Springer, 2022

SCIENTIFIC COMMUNICATION BLOG ENTRIES

[1] E. Gómez de Mariscal, C. de-La-Torre-Gutiérrez, A. Muñoz-Barrutia, D. Sage, DeepImageJ: Deep learning in bioimage analysis for dummies, FocalPlane 2021

[2] Daniel Sage, E. Gómez-de-Mariscal, Laurène Donati, Michael Unser, A. Muñoz-Barrutia, Deep Learning for Bio-Image Analysis in one Click, Behind the paper, Nature Methods, Springer Nature Protocols and Methods Community, 2021

CONTRIBUTIONS TO OPEN-SOURCE SCIENCE

[1] DL4MicEverywhere (software tool). Major contribution associated with a publication.

[2] CellTracksColab (software tool). Major contribution associated with a publication.

[3] DeepBacs (software tool). Major contribution associated with a publication.

[4] DeepImageJ (software tool). Major contribution associated with a publication. Web site and access to the code.

[5] BioImage Model Zoo (collaborative initiative). Major contribution. Web site.

[6] ZeroCostDL4Mic (software tool). Minor contribution to build software connections with other tools (deepImageJ and the BioImage Model Zoo). Web site and access to the code.

[7] DeepBacs (software tool). Minor contribution to adapt existing software to bacteria microscopy imaging. Web site and access to the code.

[8] Cell Tracking Challenge (challenge). Minor contribution to support the reproducibility and reusability of submissions. Web site.

[9] pMoSS (software tool). Major contribution associated with a publication. Access to the code.

[10] FRU-Net exosome segmentation (software tool). Major contribution associated with a publication. Access to the code.

PARTICIPATION IN FUNDED PROJECTS

09/2022 - 09/2024 A transformative data-driven live-cell super-resolution microscopy development to elucidate the initial steps of effective viral transmission (Ref: EMBO-ALTF 174-2022), European Molecular Biology Organization (EMBO), Instituto Gulbenkian de Ciencia,
Postdoc: Estibaliz Gómez de Mariscal, 52.000€ (yearly variable)

09/2022 - 09/2026 Artificial Intelligence for Image Data Analysis in the Life Sciences (AI4Life) (Ref: HORIZON-INFRA-2021-SERV-01, ID: 101057970-AI4Life), European Commission through the Horizon Europe program,
PI: Anna Kreshuk, Co-PI: Florian Jug

Granted groups: R. Henriques (Instituto Gulbenkian de Ciëncia)

10/2021 - 08/2022 Unveiling live-cell viral replication at the nanoscale (Ref: EMBO Installation Grant 4734), European Molecular Biology Organization (EMBO), Instituto Gulbenkian de Ciencia
PI: Ricardo Henriques, 400.000€

06/2020 - 05/2023 Plataforma de imagen multi-escala para acelerar el desarrollo de fármacos contra infecciones pulmonares (Ref: PID2019-109820RB-I00), Ministerio de Ciencia e Innovación, Universidad Carlos III de Madrid
Lead-PI: Arrate Muñoz Barrutia, Co-PI: Juan José Vaquero López, 210.298€

09/2017 - 03/2019 Plataforma computacional para la caracterización de la dinámica espacio-temporal de las protrusiones celulares, BBVA Foundation – LEONARDO Program, Universidad Carlos III de Madrid
Lead-PI: Arrate Muñoz Barrutia, 35.000€

12/2016 - 12/2019 Imagen paramétrica del cerebro embrionario: Una nueva propuesta de instrumentación biomédica de altas prestaciones (Ref: TEC2016-78052-R), Spanish Ministry of Economy and Competitiveness, Universidad Carlos III de Madrid
Lead-PI: Arrate Muñoz Barrutia, Co-PI: Juan José Vaquero López, 158.510€

05/2017 – 04/2018 Descifrando la estructura y la función de las protrusiones celulares en la migración tridimensional (TEC2015-73064-EXP), Spanish Ministry of Economy and Competitiveness, Universidad Carlos III de Madrid
Lead-PI: Arrate Muñoz Barrutia, 40.000€

01/2014 – 12/2016 Imaging and measuring cancer cell mechanics (Ref.: TEC2013-48552-C2), Spanish Ministry of Science and Innovation, Fundación para la Investigación Médica Aplicada (FIMA), Centro de Estudios e Investigaciones Técnicas (IK4-CEIT)
Lead-PI: Arrate Muñoz Barrutia, 133.000€

LANGUAGES

English **Advanced writing and speaking level:**
IELTS October, 2014: 7.00

Basque C1 Level

Danish: Beginners level 1.

Portuguese: intermediate writing and speaking**.**

COMPUTER SKILLS

Statistical analysis: R, SAS Base, SAS Enterprise Guide, SPSS

Programming: Python, Matlab, Wolfram Mathematica

Deep Learning and Big Data: Keras, TensorFlow, SAS Enterprise Miner