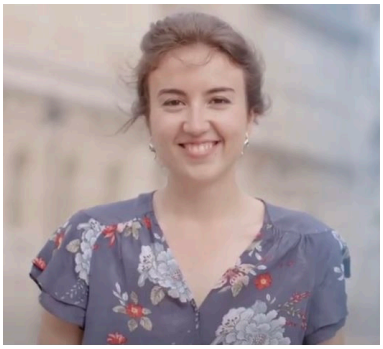
Maitane Muñoz-Basagoiti



Postdoctoral Researcher
Institute of Science and Technology Austria (ISTA)
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Education

- **March 2025:** Qualifiée aux fonctions de Maître de Conferences (Section 28)
  French certification allowing for teaching activities at university level
- **2019–2022:** Ph.D. in Physics, ESPCI Paris, France
- **2017–2019:** M.Sc. in General Physics, Lund University, Sweden
- **2013–2017:** B.Sc. in Physics, University of the Basque Country, Spain

Academic Appointments

- **Mar 2023–now:** Postdoctoral researcher
  Institute of Science and Technology Austria (ISTA), Austria
  Advisor: Andela Šarić
- **Sept 2019–Dec 2022:** Ph.D. candidate
  École de Physique et de Chimie Industrielles de la ville de Paris (ESPCI Paris), France
  Advisors: Zorana Zeravcic and Olivier Rivoire

Scholarships and Awards

Fellowships

- **2023–2025: IST-BRIDGE MSCA independent fellowship**
  (Estimated at 164k €, 12% acceptance)
- **2019–2022: Marie Sklodowska-Curie Actions Ph.D. fellowship** (Estimated at 72k €)
  European Union's Horizon 2020 Research and Innovation UPTO Paris program.

Awards

- **March 2025: ACS Spring Digital Meeting Best Flash Presentation**
  Statistical Mechanics in Physical Chemistry: Theories and Simulations section
- **2025 Berkeley Future in Physics**
- **February 2025: Best poster prize**
  French-German WE-Heraeus-Seminar (Les Houches, France)
- **2024 Rising Star in Soft and Biological Matter**
  (selected by UChicago and UCSD MRSECs)
- **July 2021: Poster Competition,** first prize
  Fundamental Problems in Statistical Physics XV summer school in Bruneck (Italy).
- **March 2021:*"My PhD Thesis in 5 minutes"* outreach competition**, first prize
  Scientific outreach competition during *PC Focus* at ESPCI Paris (France).
- **2013-2017: 11 *"Matrículas de Honor"*** (40% of Bachelor's degrees courses)
  Honors mentions, awarded to a single student per year and per course.

Publication List

1. C. Vanhille-Campos, **M. Muñoz-Basagoiti**, M. Krstic, and A. Šarić, "Bottom-up design of a treadmilling filament" (in preparation, 2025)

2. **M. Muñoz-Basagoiti**, M. Wassermair, A. Amaral, B. Baum and A. Šarić, "Non-reciprocal interactions drive deformations in a coarse-grained model for symbiosis" (arXiv:2506.13299)

3. **M. Muñoz-Basagoiti***, F. Frey*, B. Meadowcroft*, M. Amaral*, A. Prada* and A. Šarić, "A tutorial for mesoscale computer simulations of lipid membranes: tether pulling, tubulation and fluctuation" (arXiv:2502.09798; under review in Soft Matter)

4. Y. Sakref, **M. Muñoz-Basagoiti**, Z. Zeravcic and O. Rivoire, "On Kinetic Constraints That Catalysis Imposes on Elementary Processes", *J. Phys. Chem. B* **127** 10950–10959 (2023)

5. **M. Muñoz-Basagoiti**, O. Rivoire and Z. Zeravcic, "Computational design of a minimal catalyst using colloidal particles with programmable interactions", *Soft Matter* **19** 3933-3939 (2023)

6. A. McMullen*, **M. Muñoz-Basagoiti***, Z. Zeravcic and J. Brujic, "Self-assembly Through Programmable Folding", *Nature* **610** 502-506 (2022)

7. D. Bennet, **M. Muñoz-Basagoiti** and E. Artacho, "Electrostatics and domains in ferroelectric superlattices", *R. Soc. Open Sci.* **7** 201270 (2020)

   Asterisk (*) represents equal contribution.

Teaching and Mentoring Experience

Teaching

- **April 2025:** Lecture on Michaelis-Menten kinetics (1.15 hours, ISTA, Austria)
- **September 2024:** Attendance to workshop *Teaching and didactics* (16 hours, ISTA, Austria)
- **Spring 2024: Introduction to Molecular Dynamics with Python**, main instructor (ISTA, Austria)
  Developed and taught a 6-week course to introduce ISTA PhD students to MD simulations.
- **Autumn 2020: Numerical analysis in Matlab**, Teaching Assistant (ESPCI Paris)
  Guided and supervised exercise sessions for first year ESPCI students.
- **Autumn 2020: Undergraduate Project Assistant** (ESPCI Paris)
  Developed and supervised a 2-day workshop on self-assembly for first year ESPCI students.

Mentoring

- **Summer 2023: Summer internship supervisor of Master student Maja Milas** (ISTA, Austria)
  Developed a coarse-grained computational model of the archaeal S-layer.
- **Spring 2023: Rotation co-supervisor of graduate student Evgeny Zuenko** (ISTA, Austria)
  Analyzed numerical stability of triangulated membrane simulations
- **Fall 2022: Rotation co-supervisor of graduate student Marija Krstic** (ISTA, Austria)
  Designed minimal monomer that treadmills upon polymerization.
  Marija is now affiliated to the Šarić group and is continuing her rotation work.
- **Summer 2022: Summer internship co-supervisor of Master student Michael Wassermair** (ISTA, Austria)
  Coupled TriMem (Siggel et al., 2022) to LAMMPS to simulate triangulated networks.
  The repository is available at github.com/Saric-Group/trimem_sbeady.
  Michael has joined ISTA as a graduate student and will soon join the Šarić group.
- **Spring 2021: L3 Internship supervisor of Adrien Bérard at CIRB** (Collège de France, France)
  Studied the application of the Kramers' escape problem to catalysis.

Conferences & Summer Schools

Invited talks

- **Interdisciplinary Challenges in Non-Equilibrium Physics** (Heidelberg, June 2025)
- **Bio-inspired Soft Matter** Workshop (Edinburgh, June 2025)
- **Berkeley Future in Physics** Workshop (Berkeley, March 2025)
- **Rising Stars in Soft and Biological Matter Symposium** (Online, December 2024)
- **Nanomechanics Group Seminar** (NTNU Norway, Online; October 2021)
- **DMREF meeting** (Stanford, Online; April 2021)

Contributed talks

- **ACS Global Virtual Symposium**
  Statistical Mechanics in Physical Chemistry: Theories and Simulations (Online, Spring 2025)
- **Vienna Soft Matter Days** (Vienna; November 2024)
- **ISTA Think & Drink Sessions** (ISTA Austria; March 2024)
- **7th International Soft Matter Conference** (Osaka; September 2023)
- **APS March Meeting Conference** (Chicago; March 2022)
- **Journées de Physique Statistique** (ENS Paris; January 2022)
- **APS March Meeting Conference** (Online; March 2021)

Posters & Summer Schools

- **From Soft Matter to Biophysics 2025**, poster (Les Houches, France, February 2025)
- **CECAM Flagship Workshop**, poster (Lausanne, Switzerland, July 2024)
- **Vienna Soft Matter Days**, poster (Vienna, December 2023)
- **Max Bergmann Symposium**, poster (Dresde, July 2022)
- **Fundamental Problems in Statistical Physics XV** Summer School, poster (Bruneck, July 2021)
- **CRC 235 Molecular Origins of Life Conference**, poster (Munich, July 2020)
- **TAU-ESPCI Self-Assembly and Self-Organisation** Summer School (Tel-Aviv, 2019)
- **Lorentz Centre Quantum Revolution** Summer School (Leiden, 2015)

Outreach Activities

- **Austrian Chemistry Race** (ISTA, Austria, 2025)
  Volunteer at high-school-level science competition
- **DECLICS (Dialogues Between Researchers and Students) Ambassador** (Lyon, France, 2024)
  Volunteered at outreach event at the *Cité Scolaire Internationale* to discuss scientific research with high-schoolers.
- **Volunteer at "ZOOM a Scientist"** (VISTA, Austria, 2023-2024)
  ZOOM Austrian high-school students to discuss research.
- **Co-organized the "Picture a Scientist" movie screening and round table** (ESPCI, France, 2021)
  Activities organized for the International Women's Day to increase the visibility of women in research.
- **Lead a survey to assess gender inequality in research at ESPCI Paris** (ESPCI Paris, France, 2021)
  Results are being used to elaborate a report on gender equality at ESPCI.
- **Organized stand at the "Fête de la Science"** (Paris, France, 2021)
  Discussed toy models of protein folding and self-assembly with children aged 6-11.
- **Volunteer at DECLICS** (Paris, France, 2019)
  Visited several french high schools to discuss science and research with teenagers.

Community involvement

- 2024 - Present: Organizer of the Soft Matter Journal Club (ISTA, Austria)
- 2020–2022: Organizer of the Molecular Evolution Journal Club (ESPCI Paris, France)
- Contributed to reviews for: *Reviews of Modern Physics*, *PNAS*, *Langmuir*, *Cell press* and *Nano Letters*
- Contributed to grant writing for:
  Frontiers of Life (Université de Bordeaux, 2024) with Laura Alvarez and Andela Šarić – Obtained
  Allen Distinguished Investigator (Allen Institute, 2024) with Andela Šarić, Buzz Baum and Kerstin Goepfrich – Obtained

Languages

- **Programming/Software:** C/C++, Python, LAMMPS, Bash, git/GitHub, Jupyter Notebooks, Matlab, Wolfram Mathematica, Illustrator, OVITO. Extensive experience with HPC clusters and Slurm.
- **Spoken languages:** Spanish (mother tongue), English (fluent), French (fluent), Basque (fluent) and German (basic).

References

- Zorana Zeravcic (ESPCI Paris), zorana.zeravcic@espci.fr
- Andela Šarić (ISTA), andela.saric@ista.ac.at
- Olivier Rivoire (ESPCI Paris), olivier.rivoire@espci.fr
- Jasna Brujic (NYU), jb2929@nyu.edu