

# Eloi Prat Padró

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## Professional Summary

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Undergraduate physics student at UC Santa Barbara, expected to graduate in 2029. Academic interests centre on biophysics, with a particular focus on optical and magnetic tweezers, following a summer research internship in Fèlix Ritort's Small Biosystems Lab at the Universitat de Barcelona, which I presented at the KITP Undergraduate Research Symposium in 09/2026. Undergraduate researcher in Omar Saleh's lab at UCSB since 10/2026. Comfortable moving between experimental work, CAD and 3D printing, and scientific programming, and drawn to projects that put those tools to social use.

## Education

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### University of California, Santa Barbara

*B.S. in Physics*

09/2025 – Expected 06/2029

- RISE for the World Fellow, a Schmidt Futures initiative in partnership with the Rhodes Trust to support promising young people
- GPA: 3.70 (cumulative, through Spring 2026)
- Dean's Honors, College of Letters and Science, Fall 2025
- Coursework: Linear Algebra, Introduction to Mathematical Methods, Differential Equations, Vector Calculus I & II, General Physics I–III, Introductory Programming for Physics, Embedded Systems Prototyping in Physics; currently enrolled in Experimental Physics and Thermodynamics & Upper Division Statistical Physics (Fall 2026)
- Activities: Society of Physics Students, Physics Organization for Innovation in Technology, Physics Circus Club

### The Mahindra United World College of India

*International Baccalaureate*

08/2023 – 05/2025

- Began the IB Diploma Programme at Col·legi Salesians Sarrià (Barcelona) in September 2022; transferred to Mahindra UWC after one year and repeated the first year of the diploma there before graduating in 2025
- Final IB grade: 38/45 (Physics HL 7/7, Computer Science HL 6/7, Math AA HL 5/7, Catalan SSST Literature SL 7/7, Global Politics SL 6/7, English Language & Literature SL 5/7, plus 2/3 points from the Extended Essay and Theory of Knowledge)
- Founder and Coordinator of the school astronomy club (Nisha Creativity), running stargazing sessions and publishing newsletters shared with the school community and surrounding villages
- Elected representative for Infrastructure on the Mahindra UWC College Assembly, 2024–2025
- Fieldwork in Karnataka (KALINGA CRE): studied biologists' field methods in the Western Ghats, one of the world's most biodiverse regions
- Activities: Techraiders, outdoor skills, K-dance (Asian contemporary culture and dance)

### Escola Pia de Granollers

*Spanish Curriculum (primary through ESO)*

2009 – 06/2022

- Final grade: 10/10, with a very high overall ESO average
- Robotics and maker projects throughout this period, including the pollution sensor network and the first ALS communication device (see Projects)

## Honors & Certifications

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- RISE for the World Fellow, Rhodes Trust and Schmidt Futures (2024), awarded for the Nisha digital newspaper project
- Full UWC Spain / Fundació La Caixa scholarship for the two IB years at UWC Mahindra (2023)
- Crimson Education 18 Under 18 Finalist
- First Lego League 2020: Innovation Project Award winner, plus FIRST Global mention
- First Tech Challenge 2021: Connection Award winner
- RoboCat 2022: 3rd prize in category, out of 35 teams (micro:bit)
- RoboCat 2019: reached the final round with a cardboard robot
- SAT: 1480 (790 Math, 690 Reading & Writing)
- Cambridge C2 Proficiency (2022); Duolingo English Test 155 (2024)

## Research

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### Undergraduate Researcher

*Omar Saleh Lab – Materials Department, UC Santa Barbara*

10/2026 – present

- Member of the Saleh group: single-molecule biophysics with magnetic tweezers, and self-assembled DNA materials
- Mentored by Sylvia Green and Ziqi Li
- Lab website: [labs.materials.ucsb.edu/saleh/omar](https://labs.materials.ucsb.edu/saleh/omar)

### Research Intern

*Small Biosystems Lab – Fèlix Ritort, Universitat de Barcelona*

Summer 2026

- Interned at a leading single-molecule biophysics lab
- Learned the operational and technical basics of optical and magnetic tweezers machines and experiments
- Operated the optical tweezers in experimental sessions and built microfluidic chambers for the experiments
- Contributed 3D printed lab equipment and quality of life improvements to the lab
- Worked closely with Isabel Pastor del Campo (UB professor) and Lukas Kühnemann (UB PhD)
- Gained firsthand experience with day-to-day research group dynamics and lab culture

### Cepheid Variable Stars and the Period–Luminosity Relation

*IB Internal Assessment, Physics (2,978 words)*

04/2025

- Investigated the correlation between the period of classical Cepheid variables and their absolute magnitude
- Used Large Magellanic Cloud data calibrated against Gaia parallax measurements, validating Leavitt's relation through regression analysis

### Fracture Behaviour of FDM 3D-Printed PLA

*IB Extended Essay, Physics (3,936 words)*

09/2024 – 01/2025

- Studied how layer height and printing temperature affect the tensile fracture point of 3D-printed plastic
- Tensile-tested 180 printed samples and developed models for predicting structural integrity

### Modelling Solar Transit Light Curves

*IB Internal Assessment, Mathematics AA HL*

09/2024 – 01/2025

- Developed analytical functions describing solar transits using only the star's occulted area
- Applied calculus and integration to the 2012 Venus transit, comparing predictions against observational data

## Talk: Measuring the Free Energy of a Single Molecule with Optical Tweezers

Undergraduate Research Symposium, KITP – UC Santa Barbara

09/2026

- 10-minute talk on the Ritort lab internship, mentored by Isabel Pastor del Campo and Lukas Kühnemann
- Recording: <https://online.kitp.ucsb.edu/online/undergrad26/pratpadro/>

## Experience

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### Volunteer Coordinator

The Mahindra United World College of India – Paud, Pune Rural, Maharashtra, India

08/2024 – 05/2025

- Coordinated volunteer schedules to optimize participation and engagement
- Developed training materials for new volunteers, improving the onboarding experience
- Assisted in planning community events, ensuring smooth execution and volunteer involvement
- Collaborated with local organizations to expand volunteer opportunities and outreach
- Coordinated a group of up to 25 students for weekly science and astronomy club meetings

### Intern

RMedia – Granollers, Barcelona, Spain

07/2024 – 08/2024

- Assisted in the practical management of equipment and assembly of complex hardware
- Conducted market research to identify trends and audience preferences
- Collaborated with team members on project planning and execution
- Created written materials for promotional purposes

## Projects

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### Nisha Digital Newspaper

Project Manager, UWC Mahindra College

09/2023 – 05/2025

- Designed and ran a digital newspaper written in Marathi by students from the valley schools, shaped around their own interests
- Aimed at the diglossia of Marathi, at civilian journalism, and at giving students resources to explore topics beyond their school syllabus
- This project was the basis for the RISE for the World fellowship awarded in 2024

### WebSight

Co-founder – started as the Equitech Futures Entrepreneurship Lab team project

Summer 2026

- Browser extension acting as an AI companion for blind users, aiming to let them navigate the web as they would with a sighted person beside them
- Built with a five-person international team; first version and an accompanying accessibility survey are public on GitHub

ant it named

### ALS Communication Device

Personal project, built for Mercè

2020 – 2026

- Built a communication app for Mercè, a nonverbal ALS patient using residual hand movement as input
- Originally built with MIT App Inventor in 2021, this project was part of my application to UWC
- Rebuilt in 2026 as a native Android app, developed with Claude Code, after Mercè's condition worsened, adding word prediction and a lower-effort interface
- Open-sourced on GitHub under GPLv3, available in Catalan, Spanish, and English

## Pollution Sensor Network

*Personal project with team CiberEdu, Granollers*

2019 – 2021; 2026

- Built around 30 air quality sensors and distributed them to schools across Granollers so students could learn about PM particles in a heavily polluted city
- Began in the First Lego League competition group, where it won the Innovation Project Award, and continued to grow independently afterwards
- Revived in 2026 as part of an embedded systems prototyping class, exploring an open-source map for shared sensor data; currently dormant

## Anti-Doomscrolling App

*Personal project*

Summer 2026

- Android app built with Claude Code; Android only for now
- Privacy-focused content blocker that lets the user block short-form content without losing access to friends' posts or messages
- Open-sourced on GitHub under GPLv3

## Family NAS

*Personal project, built for family use*

07/2026

- Built a NAS using a Raspberry Pi 5 and open source software
- Running Immich, Nextcloud, and Tailscale
- Keeps my family's photos safe in cheap, remotely accessible storage, and also stores important files and notes

## Volunteering & Community

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### Physics Teacher

*UWC Mahindra College – Swami Vivekanand Vidyalay, Asade, India*

08/2023 – 05/2025

- Taught physics in rural village schools using innovative teaching methods, over nearly two years

### Co-Founder, Astroblancs

*Colla dels Blancs de Granollers*

05/2021 – 08/2023

- Created, designed, and ran a new annual astronomy activity within the city's festival programme
- The activity grew into Astroblancs, a year-round astronomy group in Granollers; covered on local television

### Social Media Manager

*Agrupació Astronòmica de Sabadell (JovAAS)*

02/2019 – 10/2021

- Joined the youth group and later became part of the coordinating team
- Ran regular Instagram output profiling figures from the history and present of astronomy, a role that became especially important during the pandemic

### Project Manager

*CiberEdu – Granollers*

09/2022 – 11/2022

- 3D-printed anatomical models for reproductive health education, delivered to the health department of the Granollers City Council

### Cooking Workshop for Young Men (16–25)

*Restaurant Cuynes, Granollers; associated with UWC*

08/2022 – 11/2022

- Organised a free cooking workshop aimed at the inequality that starts in the kitchen, for young men who had grown up watching others cook for them

## Student Volunteer

*Fundació Mona*

10/2022 – 02/2023

- Maintenance and animal welfare work at a primate rescue and rehabilitation centre

## Programs & Short Courses

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### Equitech Futures Institute

*AI entrepreneurship, communication, and ethics; online*

06/2026 – 08/2026

- Graduated an 8-week programme running four parallel courses, three hours every weekday
- Courses: Applied AI, Communicating Innovation, Entrepreneurship Lab, and Societal & Ethical Perspectives
- Entrepreneurship Lab team project became WebSight (see Projects)
- Fully funded by Equitech Futures

### RISE Residential Summit

*Rhodes House & Brasenose College, Oxford*

08/2025

- Mandatory curriculum component for RISE for the World fellows; met the other 94 fellows from the 2024 cohort in a collaborative environment focused on learning and problem-solving
- Interacted with NGOs, changemakers, Oxford professors, and Rhodes Scholars to discuss sustainability, education, and inequality

### Yale Young Global Scholars

*Solving Global Challenges track*

07/2024

- Focused on navigating AI, connecting inequality, education, and conflict to innovative solutions
- Capstone project: proposed an international, unbiased institute to gather objective data on the effects and dangers of AI as it develops
- Awarded a financial aid scholarship covering the majority of the cost

### Barcelona Supercomputing Center

*“Bojos per la Ciència” / Fundació Catalunya La Pedrera*

10/2022 – 06/2023

- Attended the BSC every Saturday, learning the basics of supercomputing research across fields from biology and geology to aerospace engineering
- Ran simulations on MareNostrum 4, and saw the installation of MareNostrum 5 first-hand
- Joined the Science Fellows Community through the programme

### NewSpace Summer Program

*Small satellites to change the world*

08/2023

- Designed a satellite, its parachute, its programming, and its mission for launch on a weather balloon, gaining experience in experimental research, Python, and teamwork

### Education USA – American Embassy Competitive College Club

*U.S. college application preparation*

2022 – 2023

- Participated in the programme’s guidance on U.S. university applications; left in 2023 upon transferring to Mahindra UWC

### UWC Short Courses

*(RE)defining Equality (Austria) and Action for Peace (Spain)*

2022

- (RE)defining Equality brought together 40 international participants in Imst, Tyrol, for two weeks of workshops and self-initiated projects; a first experience abroad and first contact with UWC

- Action for Peace introduced the fundamentals of conflict management, later applied both personally and in IB Global Politics
- Awarded a scholarship covering the cost of the (RE)defining Equality programme

## Skills

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**Programming:** Python, Java

**AI-assisted development:** Android apps, websites and tools (Kotlin, TypeScript, JavaScript) designed, built and shipped with AI coding agents (Claude Code), eloiprat.com included

**Tools & hardware:** CAD, 3D printing (FDM and resin), Raspberry Pi, microcontrollers, Git, self-hosted services (Immich, Nextcloud, Tailscale)

**Research:** Experimental design, data modelling, computational simulation, supercomputing (MareNostrum)

**Languages:** Catalan and Spanish (native, bilingual); English (Cambridge C2); basic French.

## Interests

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- Biophysics and the physics of soft and living matter
- Artificial intelligence and machine learning
- Robotics
- Designing and printing 3D models
- Cultural exchange programs and homestays
- Outdoor exploration and physical activity