Lígia F. Coelho

CONTACT INFORMATION

Cornell University
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EDUCATION

Ph.D. in Bioengineering and Astrobiology with Distinction — 2018-2022
Dissertation: *Astrobiology analysis of icy biomes as a proxy for extra-terrestrial life in icy worlds.*
MIT-Portugal joint program, University of Lisbon, Portugal

M.Sc. in Microbiology with Distinction — 2015-2017
University of Lisbon, Portugal

B.Sc. in Biology — 2012-2015
Honors Thesis: *Resistance of microalgae to extreme environments.*
University of Lisbon, Portugal

APPOINTMENTS

51 Pegasi b Fellow — 2024-present
Department of Astronomy, Cornell University

Postdoctoral Associate — 2023-2024
Department of Astronomy, Cornell University

Fulbright Schuman Scholar — 2022-2023
Department of Astronomy, Microbiology Department, Cornell University

MIT Portugal Graduate Fellow — 2018-2022
Department of Bioengineering, University of Lisbon

Undergraduate Researcher — 2013-2017
University of Lisbon

GRANTS, FELLOWSHIPS & AWARDS ($750k+ accepted funds)

NASA HWO meeting travel award ($2k) — 2025

51 Pegasi b fellowship ($600k) — 2024-2027
Heising-Simons Foundation

Lewis and Clark Field in Astrobiology (Fieldwork grant) — 2024
(PI: Coelho, $4.5k)
American Philosophical Society & NASA

INTERACT Arctic grant (Fieldwork grant) — 2024
(PI: Coelho, $6k)
European Union

Microbial Diversity training ($10.3k) — 2023
Marine Biological Laboratory

Fulbright Schuman (PI: Coelho, $30k) — 2022
U.S. Department of State and the European Commission

MIT-Portugal Research Doctorate Fellowship ($110k) — 2018-2022
MIT-Portugal Program

International Summer School in Astrobiology award ($2k) — 2019

	European Space Agency	
	International Summer School in Radiation award ($2k) *European Space Agency, Facility for Antiproton and Ion Research in Europe*	2019
	International Arctic Science Committee travel grant ($1k) *International Arctic Science Committee*	2019
	Blue Origin Science Payload Competition (PI:Coelho, $1k science funds, 10k+ in payload costs). *MIT-Portugal Program*	2019
	MIT Portugal Innovation Workshop travel award ($1k) *MIT-Portugal Program*	2018
	ID-Flow – Entrepreneurship award ($5500) *European Commission*	2016
LEADERSHIP IN GRANTS, FIELDWORK & ROCKET MISSIONS	**Fieldwork:** El Tatio, Atacama Desert, Chile (PI: Coelho) *Unraveling the Colors of Hot Springs in El Tatio (Atacama Desert)*	2025
	Grant: Lewis and Clark Field in Astrobiology (PI: Coelho) *COOLER - Color Catalog of Extremophile Communities in Ice*	2024
	Grant: INTERACT Arctic EU (PI: Coelho) *Colors Extremophile Communities in Ice*	2024
	Fieldwork: Svalbard, Arctic (PI: Coelho) *Spectral references of dark ice albedo*	2024
	Rocket mission: European Rocketry Challenge (PI: Coelho) *AstroCloud: Microorganisms in the Stratosphere* *First place payload project, launch Oct. 2023 in the Portuguese Army base in Constância, Portugal.	2023
	Fieldwork: Great Sippewissett Marsh, USA *Evaluating reflective biosignatures in artificial microbial communities for exoplanet modelling*	2023
	Rocket mission: European Rocketry Challenge (PI: Coelho) *AstroCup: First Menstrual Cup in Space* *First place payload project, launch Oct. 2022 in the Portuguese Army base in Constância, Portugal. www.astrocupmission.com	2022
	Rocket mission: Blue Origin Competition – MIT-Portugal Program (co-PI: Coelho) *Effect of microgravity on photosynthesis.* *First place cubesat project to fly on New Shepard rocket, launch Dec. 2019, TX, USA	2019
	Grant: European Space Agency Radiation Proposal Competition (PI: Coelho) *FROST - Finding the Radioresistant µOrganisms and life Signatures on icy Terrestrial analogues* *Selected research proposal for Ion beam time in Germany	2019
	Fieldwork: Hudson Bay, Canadian Arctic *Astrobiology analysis of icy biomes in Hudson Bay, Canadian Arctic*	2019
ADMIN PI AWARDS	Bennett Cullison - President's Scholar Undergraduate Research Grant ($5k) University of Chicago	2025

RESEARCH MENTORING - GRADUATE	Zoë Gold, Cornell University	2025
	Joana Couceiro, University of Lisbon, Portugal *Paper: Coelho, Couceiro et al., 2022, STOTEN*	2021-2022
RESEARCH ADVISING – UNDERGRAD * main advisor	*Ella George, Biology major, Cornell University	2026
	*Thamarie Pinnaduwage, Biology major, Cornell University Project “	2026
	Maria Calderon-Marrero, Biology major, Cornell University	2025
	*Bennett Cullison, Geology major, University of Chicago	2025
	*Valene McInerney, Biology major, Cornell University	2025-2026
	*Iona Leslie, Astronomy major, Cornell University, US	2024
	Doga Dincbas, Astronomy major, Cornell University, US	2024-2025
	Haonan Gong, Astronomy major, Cornell University, US *Paper: Gong, Coelho, Kaltenegger et al (submitted)*	2023-2025
	Neal Jerome, Astronomy major, Cornell University, US *Paper: Jerome, Coelho, Kaltenegger et al (submitted)*	2023-2025
	Connor Rosenthal, Astronomy major, Cornell University, US	2023
	Rita Serra, Biology major, NOVA, Portugal	2021-2022
	Tiago Ramalho, Biology major, University of Lisbon, Portugal	2019
	Joana Carneiro, Biology major, University of Dundee, Scotland	2019
RESEARCH ADVISING – HIGH SCHOOL	Adam Gossen, Lansing High School	2025
	*Esperanza Cylich-Schneider, White Plains High School	2025
TELESCOPE/ MISSIONS INVOLVEMENT	Member of the Extremely Large Telescope working group	2026-Present
	Invited scientist, NASA’s HWO Surface Biosignatures working group	2024-Present
	Invited scientist, LIFE Telescope scientific meetings	2024-Present
	Consulting to ALFA Mars Mission	2022-Present
	Invited talk at Europa Clipper Team, Habitability Working Group	2022
CONFERENCE & PLENARY TALKS (**Invited)*	AASTCS 11 Exoplanet Atmospheres 26’ *(Denver, CO)*	2026
	*Love Data Week Cornell’ 26 *(Ithaca, NY)*	2026
	*51 Pegasi b Summit 2025 *(Half Moon Bay, CA)*	2025
	Plenary talk at Towards the Habitable Worlds Observatory *(Washington DC)* (Recorded).	2025
	*Portuguese Conference for Astrobiology *(Portugal)*	2025
	Talk at Biennial European Astrobiology Conference (BEACON 25) *(Iceland)*	2025
	*Carl Sagan Birthday Cornell Conference *(Ithaca, NY)*	2024
	*51 Pegasi b Summit 2024 *(Sausalito, CA)*	2024
	*AbSciCon’24 *(Providence, RI)*	2024
	Talk at Extreme Solar Systems V *(Christchurch, New Zealand)*	2024
	European Space Agency, Astrobiology Meeting *(Webinar)*	2023
	Talk in Oxygen in Planetary Biospheres Science *(Green Bank, WV)*	2023
	*Fulbright Portugal Conference *(Online attendance)*	2022
	*Europa Clipper Science Meeting *(Webinar)*	2022
	Talk at COSPAR Scientific Assembly 2022 *(Athens, Greece)*	2022

	Talk at AbSciCon'22 *(Online attendance)*	2022
	*Ciência 2020 *(Portugal)*	2020
	*PT Space - Portuguese Space Agency *(Webinar)*	2020
COLLOQUIA & SEMINARS	University of California, Santa Cruz Astrobiology Colloquium *(CA)*	2026
	Centre for Astrophysics of the University of Porto Seminar (Portugal)	2026
	University of Michigan Astronomy Colloquium *(MI)*	2026
	Penn State's Astrobiology Hour *(PA)*	2025
	University of Birmingham, Earth and Environmental Sciences seminar *(UK)*	2025
	University of Birmingham, Sun, Stars, and Exoplanets group meeting *(UK)*	2025
	University of Oxford, AOPP Seminar *(UK)*	2025
	Open University, EEES Seminar *(UK)*	2025
	University of Leicester, Exoplanets and Solar System Seminar *(UK)*	2025
	University of Cambridge, LCLU Coffee Discussion *(UK)*	2025
	University of Chicago, Geosciences Seminar *(Chicago, IL)*	2025
	University of Notre Dame, Biology Seminar Series *(South Bend, IN)*	2024
	University of Notre Dame, Physics Seminar Series *(South Bend, IN)*	2024
	Penn State Center for Exoplanets & Habitable Worlds Seminars *(PA)*	2024
	UL, Biology seminar *(Portugal)*	2024
	ITQB Nova Seminar Series *(Portugal)*	2024
	Cornell University, Planetary Science Seminar *(Ithaca, NY)*	2024
	Cornell University, Astronomy Colloquium *(Ithaca, NY)*	2024
	NASA Ames, Space Biology Seminar *(Moffett Field, CA)*	2024
	MIAPbP Seminar at Excellence Cluster ORIGINS *(Germany)*	2024
	University of Maryland, Astronomy CTC Seminar *(College Park, MD)*	2024
	CIIMAR Seminar *(Webinar)*	2024
	Bard College, Physics Colloquium *(Annandale-on-Hudson, NY)*	2023
	Cornell University, Microbiology Seminars *(Ithaca, NY)*	2023
	Cornell University, Planetary Science Seminar *(Ithaca, NY)*	2022
	Freie Universität Berlin, Planetary Sciences Seminar *(Webinar)*	2022
	University of Rochester, Astronomy seminar *(Webinar)*	2022

SELECTED MEDIA COVERAGE

CBC, *One small step for periods in space, one giant leap for research in long-term space missions*

NIT, *Um grande passo para a humanidade*

Público, *Lígia criou um guia para procurar vida nas nuvens de outros planetas*

The independent, *Aliens could be purple and not green, new study claims*

Newsweek, *Alien life may not be the color we know it*

Scientific American, Sorry, Little Green Men: Alien Life Might Actually Be Purple

Nature, *Never mind little green men: life on other planets might be purple*

National Geographic, *Why Alien Life might Look Purple*

Earthsky, *Is alien life purple? Researchers look beyond Earth's green*

Mashable, In deep space, *Alien Life Could Be Purple*

Cornell Chronicle, *Space-ready menstrual cup a giant leap for womankind*
Forbes, *Catalog Of Colorful Microbes Could Help Us Find Life On Icy Planets*

INVITED PANELS	Moderator/Presenter of Fulbright Portugal @65 Talks	2026
	Smart Earth Santa Maria Panel – Azorean Space Industry Incubator	2025
	Fulbright Schuman Program Review Jury Panel	2025
	4-H Career Explorations - Panel	2025
	Espaço à Quarta Space Exploration Panel	2024
	4-H Career Explorations - Panel	2023
	MIT Portugal Space Research Panel	2020
PROFESSIONAL SERVICE REVIEWS, CONFERENCES AND JOURNALS	• Co-convener AbSciCon26 "Interpreting Signs of Life on Evolving Oxic and Anoxic Worlds"	2026
	• Co-convener AbSciCon26 "Exoplanet Surface Biosignatures"	2026
	• Fulbright Schuman Program Review Jury Panel	2025
	• Search Committee Cornell University for Director of Research	2025
	• Scientific Organizing Committee member, ERES symposium (2024)	2024
	• Reviewer for MNRAS, Astrobiology, Plos One	2021-Present
INDUSTRY	Consultant as astrobiologist expert, Operation period, USA	2025-Present
	Consulting as a microbiology expert, Homeworld Collective, USA	2023
	Consulting as a microbiology expert, Mayor of Cabeço de Vide, Portugal	2020
	Intellectual property course, Portuguese Institute for Intellectual Property	2019
	Co-founder of Startup ID-flow, Medical Devices Biotec, Portugal	2015
TEACHING & INVITED LECTURES	Astro 2299, *Search for life in the Universe* (Cornell University) • Lecture: *Search for Life in our Solar System* - Undergraduate Level	2026
	CEE 4510, *Astrobiology and the Environment* (Cornell University) • Lecture: *Fieldwork methods for Astrobiology* - Undergraduate Level	2025
	Astro 2212*, The Solar System: Planets, Small Bodies and New Worlds,* (Cornell University) • Lecture: *Search for Life in our Solar System* - Undergraduate Level	2025
	Astro 2201, *The History of the Universe*, (Cornell University) • Lecture: *Use of AI in Research* - Undergraduate Level	2025
	CEE 5510, *Microbiology for Environmental Engineering* (Cornell University) • Lecture: *Exobiology in Field* - Graduate Level	2024
	Astro 3301, *Exoplanets and Planetary Systems* (Cornell University) • Lecture*: Exoplanet biosignatures* - Undergraduate Level	2024
	Astro 3301, *Exoplanets and Planetary Systems* (Cornell University) • Lecture: *Origin of life* - Undergraduate Level	2024
	Astro 3301, *Exoplanets and Planetary Systems* (Cornell University) • Lecture: *What is life and life detection* - Undergraduate Level	2024
	Astro 2212*, The Solar System: Planets, Small Bodies and New Worlds,* (Cornell University)	2024

	• Lecture: *Search for Life in the Icy Moons* - Undergraduate Level	
	Astro 7672, *Seminar: Topics of Planetary Science* (Cornell University)	2023
	• Lecture: *Exoplanet Characterization* - Graduate level	
	Astro 3301, *Exoplanets and Planetary Systems* (Cornell University)	2023
	• Lecture: *What is life and life detection* - Undergraduate Level	
	Astro 3301, *Exoplanets and Planetary Systems* (Cornell University)	2023
	• Lecture: *Origin of life* - Undergraduate Level	
	Environmental Sampling Course, (University of Lisbon)	2021
	• Lecture: *Biological Sampling Methodology* - Graduate Level	
	Biotechnology, (University of Lisbon)	2019
	• Lecture: *Space Biotechnology*, Undergraduate Level	
	Environmental Sampling Course, (University of Lisbon)	2019
	• Lecture: *Biological Sampling Methodology* - Graduate Level	
SELECTED OUTREACH & CIVIC SCIENCE	• Astro no Tap speaker, *What Survives Space?*, Ithaca, NY	2025
	• Co-Founder of AstroCup. *First to test a menstrual cup in spaceflight conditions.* www.astrocupmission.com	2022-Present
	• Invited 4-H Career Panel. *NY State 4-H Program*	2025
	• Lecturer for REU series at Cornell	2023
	• EYH instructor. *Teaching about astrobiology to high school students*	2023
	• Invited 4-H Career Panel. NY State 4-H Program	2023
	• Invited talk at "Nerd night" *at Downstairs bar.* Ithaca, NY	2022
	• Founder of AstrobioLigia, *Education of astrobiology in Portuguese*	2022-Present
	• Co-lead of "After School". *High-school program to develop a space mission from scratch.*	2020-2021
	• Pint of Science**,** Portugal	2020
	• Co-founder of "Oh My Science", *Platform to increase business literacy of scientists*	2018-2024
PODCASTS	Guest at "AAS Journal Author Series"	2025
	Guest at "NASA's Ask An Astrobiologist"	2025
	Guest at "Dr. Miles Podcast"	2024
	Guest at Notre Dame's Rust Belt Science Podcast	2024
	Co-host of Nau Espacial, n1 Podcast of its genre in Portugal	2023-2025

LIST OF PUBLICATIONS

First author

[8] **Coelho, L. F.,** Kaltenegger, L., Zinder, S., Philpot, W., et al.,(2025). The Astrophysical Journal Letters, 994 L2. *Colors of Life in the Clouds: Biopigments of atmospheric microorganisms as a new signature to detect life on planets like Earth*. (10.3847/2041-8213/ae129a).

[7] **Coelho, L. F.,** Miranda, C., Canas, J., Morgado, M., et al., (2025). npj Women's Health, 3(64). *One Giant Leap for Womankind: First Menstrual Cups Tested in Space Flight Conditions*. (10.1038/s44294-025-00112-9).

[6] **Coelho, L.F.,** Kaltenegger, L. Zinder, S., et al. (2024). Monthly Notices of the Royal Astronomical Society, 530(2). *Purple is the New Green - Biopigments and Spectra of Earth-like Purple Worlds*. (10.1093/mnras/stae601).

[5] **Coelho, L.F.,** Madden, J., Kaltenegger, L. et al. (2022). Astrobiology, 22(3). *Color Catalogue of Life in Ice: Surface Biosignatures on Icy Worlds*. Selected for the journal's Cover (10.1089/ast.2021.0008).

[4] **Coelho, L.F.,** Couceiro, J.F., Keller-Costa, T. et al. (2022). Science of The Total Environment, 827, 154286. *Structural shifts in sea ice prokaryotic communities across a salinity gradient in the subarctic*. (10.1016/j.scitotenv.2022.154286).

[3] **Coelho, L.F.,** Blais, MA., Matveev, A., et al. (2022). Scientific Reports, 12 (1), 1-13. *Contamination analysis of Arctic ice samples as planetary field analogues and implications for future life-detection missions to Europa and Enceladus*. (10.1038/s41598-022-16370-5).

[2] **Coelho, L.F.** & Martins, Z. (2021). In Encyclopedia of Geology, 2nd Edition, Elsevier. *The Geochemistry of Icy Moons*. (10.1016/B978-0-08- 102908-4.00123-5).

[1] **Coelho, L.F.,** Bernardes, N., Fialho, A. (2017). *Prospective Therapeutic Applications of Bacteriocins as Anticancer Agents". Microbial Infections and Cancer Therapy*. Ch. 10, pp. 340-365, 1st ed. Singapore: Pan Stanford Publishing. (10.1201/9781351041904-10).

Co-author:

[5] Parenteau, N., Ulses, A. G., Metz, C., Kiang, N. Y., **Coelho, L. F**., Schwieterman, E., ... & Arney, G. (2026). Habitable Worlds Observatory Living Worlds Working Group: Surface Biosignatures on Potentially Habitable Exoplanets. arXiv preprint (arXiv:2601.08883).

[4] Parenteau , N., Arney, G.,.(…), **Coelho, L.F.,** et al., (2026). NASA Decadal Astrobiology Research and Exploration Strategy (NASA-DARES 2025) White Paper -- Habitable Worlds Observatory Living Worlds Science Cases: Research Gaps and Needs. (10.48550/arXiv.2601.06386).

[3] Glauser, A.M., Sascha S.P.,(…) **Coelho, L.F.**, (2024). SPIE 13095. The Large Interferometer For Exoplanets (LIFE): a space mission for mid-infrared nulling interferometry. (10.1117/12.3019090).

[2] Blais, M.A., (...) **Coelho, L.F.** et al. (2024). Microbiology Spectrum, e04160-23. *Diverse winter communities and biogeochemical cycling potential in the under-ice microbial plankton of a subarctic river-to-sea continuum*. (10.1128/spectrum.04160-23).

[1] Garizo, A.R., **Coelho, L.F.,** Pinto, S., Dias, T.P., Fernandes, F., Bernardes, N., Fialho, A.M. (2021). Biomedicines, 9, 1194. *The Azurin-Derived Peptide CT-p19LC Exhibits Membrane-Active Properties and Induces Cancer Cell Death*. (10.3390/biomedicines9091194).

Datasets:

[4] Coelho et al., (2025) Publisher: Zenodo. Data from: One Giant Leap for Womankind: First Menstrual Cups Tested in Spaceflight Conditions. (10.5281/zenodo.17187910).

[3] Coelho et al., (2025) Publisher: Zenodo. Data for 'Colors of Life in the Clouds: Biopigments of atmospheric microorganisms as a new signature to detect life on planets like Earth'. (10.5281/zenodo.17196858).

[2] Coelho et al., (2025) Publisher: Zenodo. Data for Coelho et al., (2025) Publisher: Zenodo. Data for 'Colors of Life in the Clouds: Biopigments of atmospheric

microorganisms as a new signature to detect life on planets like Earth'. (10.5281/zenodo.10697546).

[1] Coelho et al., (2025) Publisher: Zenodo. Data for Coelho et al., (2025) Publisher: Zenodo. Data for Color Catalogue of Life in Ice: Surface Biosignatures on Icy Worlds'. (10.5281/zenodo.5779493).