

Lígia F. Coelho

CONTACT INFORMATION	Cornell University Department of Astronomy 304 Space Sciences Bldg Ithaca, NY, 14850	Email: lc992@cornell.edu Web: www.ligiacoelho.com Publications: Google Scholar Phone: +1 6073277920
RESEARCH INTERESTS	Astrobiology, Planetary Science, Biosignatures, Icy moons, Exoplanet characterization, Extreme environments, Payload missions	
EDUCATION	Ph.D. in Bioengineering and Astrobiology with Distinction Dissertation: <i>Astrobiology analysis of icy biomes as a proxy for extra-terrestrial life in icy worlds.</i> MIT-Portugal joint program, University of Lisbon, Portugal 2018-2022	
	M.Sc. in Microbiology with Distinction University of Lisbon, Portugal 2015-2017	
	B.Sc. in Biology Honors Thesis: <i>Resistance of microalgae to extreme environments.</i> University of Lisbon, Portugal 2012-2015	
APPOINTMENTS	51 Pegasi b Postdoctoral Fellow Department of Astronomy, Cornell University 2024-present	
	Postdoctoral Associate Department of Astronomy, Cornell University 2023-2024	
	Fulbright Schuman Scholar Department of Astronomy, Microbiology Department, Cornell University 2022-2023	
	MIT Portugal Graduate Fellow Department of Bioengineering, University of Lisbon 2018-2022	
	Undergraduate Researcher University of Lisbon 2013-2017	
GRANTS, FELLOWSHIPS & AWARDS (\$550k+ accepted funds)	<ul style="list-style-type: none">NASA HWO meeting travel award (\$2k) 202551 Pegasi b fellowship (\$430k) <i>Heising-Simons Foundation</i> 2024-2027Lewis and Clark Field in Astrobiology (Fieldwork grant) (PI: Coelho, \$4.5k) <i>American Philosophical Society</i> 2024INTERACT Arctic grant (Fieldwork grant) (PI: Coelho, \$5k) <i>European Union</i> 2024Microbial Diversity training (\$10.3k) <i>Marine Biological Laboratory</i> 2023Fulbright Schuman (PI: Coelho, \$30k) <i>U.S. Department of State and the European Commission</i> 2022	

	<ul style="list-style-type: none"> MIT-Portugal Research Doctorate Fellowship (\$110k) <i>MIT-Portugal Program</i> International Summer School in Astrobiology award (\$2k) <i>European Space Agency</i> International Summer School in Radiation award (\$2k) <i>European Space Agency, Facility for Antiproton and Ion Research in Europe</i> International Arctic Science Committee travel grant (\$1k) <i>International Arctic Science Committee</i> Blue Origin Science Payload Competition (PI:Coelho, \$1k science funds, 10k+ in payload costs). <i>MIT-Portugal Program</i> 	2018-2022 2019 2019 2019 2019
LEADERSHIP IN SPACEFLIGHT & FIELDWORK MISSIONS AS PI	Fieldwork in El Tatio, Atacama Desert, Chile	2025
	Lewis and Clark Field in Astrobiology	2024
	Project: COOLER - Color Catalog of Extremophile Communities in Ice <i>Funding and fieldwork access to Svalbard</i>	
	INTERACT Arctic EU <i>Funding and fieldwork access to Svalbard</i>	2024
	European Rocketry Challenge Project: AstroCloud: Microorganisms in the Stratosphere <i>First place payload project, launch Oct. 2023 in the Portuguese Army base in Constância, Portugal.</i>	2023
	European Rocketry Challenge Project: AstroCup: First Menstrual Cup in Space <i>First place payload project, launch Oct. 2022 in the Portuguese Army base in Constância, Portugal. www.astrocupmission.com</i>	2022
	Blue Origin Competition – MIT-Portugal Program Project: Effect of microgravity on photosynthesis. <i>First place cubesat project to fly on New Shepard rocket, launch Dec. 2019, TX, USA</i>	2019
	European Space Agency Radiation Proposal Competition Project: FROST - Finding the Radioresistant μ Organisms and life Signatures on icy Terrestrial analogues <i>Selected research proposal for Ion beam time.</i>	2019
ADMIN PI AWARDS	Bennett Cullison - President's Scholar Undergraduate Research Grant (\$5k) University of Chicago	2025
RESEARCH MENTORING - GRADUATE	Zoe Gold, Cornell University	2025
	Joana Couceiro, University of Lisbon, Portugal <i>Paper: Coelho, Couceiro et al., 2022</i>	2021-2022
RESEARCH ADVISING – UNDERGRAD	Maria Calderon-Marrero, Biology major, Cornell University	2025
	Bennett Cullison, Geology major, University of Chicago	2025
	Valene McInerney, Biology major, Cornell University	2025
	Iona Leslie, Astronomy major, Cornell University, US	2024
	Doga Dincbas, Astronomy major, Cornell University, US	2024-2025
	Haonan Gong, Astronomy major, Cornell University, US	2023-2025

	<i>Paper: Gong, Coelho, Kaltenegger et al (submitted)</i>	
	Neal Jerome, Astronomy major, Cornell University, US	2023-2025
	<i>Paper: Jerome, Coelho, Kaltenegger et al (submitted)</i>	
	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	Adam Gossen, Lansing High School	2025
ADVISING – HIGH SCHOOL	Esperanza Cylich-Schneider, White Plains High School	2025
CONFERENCE & PLENARY TALKS (*Invited)	*51 Pegasi b Summit 2025 (<i>Half Moon Bay, CA</i>)	2025
	Plenary talk at Towards the Habitable Worlds Observatory (<i>Washington DC</i>)	2025
	*Portuguese Conference for Astrobiology (<i>Portugal</i>)	2025
	Talk at Biennial European Astrobiology Conference (BEACON 25) (<i>Iceland</i>)	2025
	*Carl Sagan Birthday Cornell Conference (<i>Ithaca, NY</i>)	2024
	*51 Pegasi b Summit 2024 (<i>Sausalito, CA</i>)	2024
	*AbSciCon'24 (<i>Providence, RI</i>)	2024
	Talk at Extreme Solar Systems V (<i>Christchurch, New Zealand</i>)	2024
	European Space Agency, Astrobiology Meeting (<i>Webinar</i>)	2023
	Talk in Oxygen in Planetary Biospheres Science (<i>Green Bank, WV</i>)	2023
	*Fulbright Portugal Conference (<i>Online attendance</i>)	2022
	*Europa Clipper Science Meeting (<i>Webinar</i>)	2022
	Talk at COSPAR Scientific Assembly 2022 (<i>Athens, Greece</i>)	2022
	Talk at AbSciCon'22 (<i>Online attendance</i>)	2022
	*Ciência 2020 (<i>Portugal</i>)	2020
	*PT Space - Portuguese Space Agency (<i>Webinar</i>)	2020
COLLOQUIA & SEMINARS	Penn State's Astrobiology Hour	2025
	University of Birmingham, Earth and Environmental Sciences seminar (<i>UK</i>)	2025
	University of Birmingham, Sun, Stars, and Exoplanets group meeting (<i>UK</i>)	2025
	University of Oxford, AOPP Seminar (<i>UK</i>)	2025
	Open University, EEES Seminar (<i>UK</i>)	2025
	University of Leicester, Exoplanets and Solar System Seminar (<i>UK</i>)	2025
	University of Cambridge, LCLU Coffee Discussion (<i>UK</i>)	2025
	University of Chicago, Geosciences Seminar (<i>Chicago, IL</i>)	2025
	University of Notre Dame, Biology Seminar Series (<i>South Bend, IN</i>)	2024
	University of Notre Dame, Physics Seminar Series (<i>South Bend, IN</i>)	2024
	Penn State Center for Exoplanets & Habitable Worlds Seminars (<i>PA</i>)	2024
	UL, Biology seminar (<i>Portugal</i>)	2024
	ITQB Nova Seminar Series (<i>Portugal</i>)	2024
	Cornell University, Planetary Science Seminar (<i>Ithaca, NY</i>)	2024
	Cornell University, Astronomy Colloquium (<i>Ithaca, NY</i>)	2024
	NASA Ames, Space Biology Seminar (<i>Moffett Field, CA</i>)	2024

	MIAPbP Seminar at Excellence Cluster ORIGINS (<i>Germany</i>)	2024
	University of Maryland, Astronomy CTC Seminar (<i>College Park, MD</i>)	2024
	CIIMAR Seminar (<i>Webinar</i>)	2024
	Bard College, Physics Colloquium (<i>Annandale-on-Hudson, NY</i>)	2023
	Cornell University, Microbiology Seminars (<i>Ithaca, NY</i>)	2023
	Cornell University, Planetary Science Seminar (<i>Ithaca, NY</i>)	2022
	Freie Universität Berlin, Planetary Sciences Seminar (<i>Webinar</i>)	2022
	University of Rochester, Astronomy seminar (<i>Webinar</i>)	2022
SELECTED MEDIA COVERAGE	<p>Público, <i>Lígia criou um guia para procurar vida nas nuvens de outros planetas</i></p> <p>The independent, <i>Aliens could be purple and not green, new study claims</i></p> <p>Newsweek, <i>Alien life may not be the color we know it</i></p> <p>Scientific American, <i>Sorry, Little Green Men: Alien Life Might Actually Be Purple</i></p> <p>Nature, <i>Never mind little green men: life on other planets might be purple</i></p> <p>National Geographic, <i>Why Alien Life might Look Purple</i></p> <p>Earthsky, <i>Is alien life purple? Researchers look beyond Earth's green</i></p> <p>Mashable, <i>In deep space, Alien Life Could Be Purple</i></p> <p>Cornell Chronicle, <i>Space-ready menstrual cup a giant leap for womankind</i></p> <p>Forbes, <i>Catalog Of Colorful Microbes Could Help Us Find Life On Icy Planets</i></p>	
TELESCOPE/ MISSIONS INVOLVEMENT	<p>Invited scientist, NASA's HWO Surface Biosignatures working group</p> <p>Invited scientist, LIFE Telescope scientific meetings</p> <p>Consulting to ALFA Mars Mission</p> <p>Invited talk at Europa Clipper Team, Habitability Working Group</p>	<p>2024-2025</p> <p>2024-Present</p> <p>2022-Present</p> <p>2022</p>
INVITED PANELS	<p>Smart Earth Santa Maria Panel – Azorean Space Industry Incubator</p> <p>Fulbright Schuman Program Review Jury Panel</p> <p>4-H Career Explorations - Panel</p> <p>Espaço à Quarta Space Exploration Panel</p> <p>4-H Career Explorations - Panel</p> <p>MIT Portugal Space Research Panel</p>	<p>2025</p> <p>2025</p> <p>2025</p> <p>2024</p> <p>2023</p> <p>2020</p>
PROFESSIONAL SERVICE REVIEWS, CONFERENCES AND JOURNALS	<p>Fulbright Schuman Program Review Jury Panel</p> <p>Search Committee Cornell University for Director of Research</p> <p>Scientific Organizing Committee member, ERES symposium (2024)</p> <p>Reviewer for MNRAS, Astrobiology, Plos One</p>	<p>2025</p> <p>2025</p> <p>2024</p> <p>2021-Present</p>
INDUSTRY	<p>Consulting as a microbiology expert, Homeworld Collective, USA</p> <p>Consulting as a microbiology expert, Mayor of Cabeço de Vide, Portugal</p> <p>Intellectual property course, Portuguese Institute for Intellectual Property</p> <p>Co-founder of Startup ID-flow, Medical Devices Biotec, Portugal</p>	<p>2023</p> <p>2020</p> <p>2019</p> <p>2015</p>
TEACHING & INVITED LECTURES	<p>CEE 4510, <i>Astrobiology and the Environment</i> (Cornell University)</p> <p>Astro 2212, <i>The Solar System: Planets, Small Bodies and New Worlds</i>, (Cornell University)</p>	<p>2025</p> <p>2025</p>

	Lecture: <i>Search for Life in our Solar System</i> - Undergraduate Level	
	Astro 2201, <i>The History of the Universe</i> , (Cornell University)	2025
	Lecture: Use of AI in Research - Undergraduate Level	
	CEE 5510, <i>Microbiology for Environmental Engineering</i> (Cornell University)	2024
	Lecture: <i>Exobiology in Field</i> - Graduate Level	
	Astro 3301, <i>Exoplanets and Planetary Systems</i> (Cornell University)	2024
	Lecture: <i>Exoplanet biosignatures</i> - Undergraduate Level	
	Astro 3301, <i>Exoplanets and Planetary Systems</i> (Cornell University)	2024
	Lecture: <i>Origin of life</i> - Undergraduate Level	
	Astro 3301, <i>Exoplanets and Planetary Systems</i> (Cornell University)	2024
	Lecture: <i>What is life and life detection</i> - Undergraduate Level	
	Astro 2212, <i>The Solar System: Planets, Small Bodies and New Worlds</i> , (Cornell University)	2024
	Lecture: <i>Search for Life in the Icy Moons</i> - Undergraduate Level	
	Astro 7672, <i>Seminar: Topics of Planetary Science</i> (Cornell University)	2023
	Lecture: <i>Exoplanet Characterization</i> - Graduate level	
	BIOMI 2100, <i>Genesis</i> , (Cornell University)	2023
	Lecture: <i>Central Dogma of Molecular Biology</i> - Undergraduate level	
	Astro 3301, <i>Exoplanets and Planetary Systems</i> (Cornell University)	2023
	Lecture: <i>What is life and life detection</i> - Undergraduate Level	
	Astro 3301, <i>Exoplanets and Planetary Systems</i> (Cornell University)	2023
	Lecture: <i>Origin of life</i> - Undergraduate Level	
	<i>Environmental Sampling Course</i> , (University of Lisbon)	2021
	Lecture: <i>Biological Sampling Methodology</i> - Graduate Level	
	<i>Biotechnology</i> , (University of Lisbon)	2019
	Lecture: <i>Space Biotechnology</i> , Undergraduate Level	
	<i>Environmental Sampling Course</i> , (University of Lisbon)	2019
	Lecture: <i>Biological Sampling Methodology</i> - Graduate Level	
SELECTED OUTREACH & CIVIC SCIENCE	Astro no Tap speaker, <i>What Survives Space?</i> , Ithaca, NY	2025
	Co-Founder of AstroCup. <i>First to test a menstrual cup in spaceflight conditions.</i> www.astrocupmission.com	2022-Present
	Invited 4-H Career Panel. <i>NY State 4-H Program</i>	2025
	Lecturer for REU series at Cornell	2023
	EYH instructor. <i>Teaching about astrobiology to high school students</i>	2023
	Invited 4-H Career Panel. <i>NY State 4-H Program</i>	2023
	Invited talk at “Nerd night” at <i>Downstairs bar</i> . Ithaca, NY	2022
	Founder of AstrobioLigia, <i>Education of astrobiology in Portuguese</i>	2022-Present
	Co-lead of “After School”. <i>High-school program to develop a space mission from scratch.</i>	2020-2021
	Pint of Science, Portugal	2020
	Co-founder of “Oh My Science”, <i>Platform to increase business literacy of scientists</i>	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). ApJL. *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. *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). MNRAS. *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

- [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)