

BIENNIAL EUROPEAN ASTROBIOLOGY CONFERENCE, FUENCALIENTE, LA PALMA

BEACON













The European Astrobiology Institute (EAI) is a consortium of European research and higher education institutions and organisations as well as other stakeholders aiming to carry out research, training, outreach and dissemination activities in astrobiology in a comprehensive and coordinated manner and thereby securing a leading role for the European Research Area in the field.

Key Research Areas of EAI:

- Formation and Evolution of Planetary Systems and Detection of Habitable Worlds
- Planetary Environments and Habitability
- Evolution and Traces of Early life and life under extreme conditions
- · The pathway to complexity: From simple molecules to first life
- Biosignatures and the Detection of Life beyond Earth
- · Historical, philosophical, societal and ethical issues in astrobiology

The EAI has 26 participating institutions from 13 countries. EAI engages in a variety of outreach activities, including streamed seminars, conferences and summer schools.

To find out more about EAI, visit our website!





About BEACON

The Biennial European Astrobiology Conference (BEACON) brings scientists and experts in the Astrobiology field from Europe and beyond. BEACON will take place at the La Palma & Teneguia Princess Hotel on Fuencaliente, La Palma Island (Canary Islands, Spain) from May, 8th to 12th 2023.

BEACON Conference Topics are:

- Evolution and Traces of Early Life and Life Under Extreme Conditions
- Biosignatures and the Detection of Life Beyond Earth
- · Historical, Philosophical, Societal and Ethical Issues in Astrobiology
- Tracing Life and Identifying Habitable Environments
- Impacts and their Role in the Evolution of Planets, Moons and Life
- Protoplanetary Disks and their Physical and Chemical Processes
- · Formation and Evolution of Planetary Systems and Detection of Habitable Worlds
- The Pathway to Complexity: From Simple Molecules to First Life
- · Planetary Environments and Habitability

Keynote Speakers



Janice Bishop SETI, USA



Bertram Bitsch MPIA, Germany



Michaël Gillion UoL, Belgium



Keyron Hickman-Lewis *CNRS, France*



Dennis HöningPotsdam-Institute for
Climate Research,
Germany



Lisa Kaltenegger Cornell University, USA



Nancy Kiang NASA Goddard Space Flight Centre, USA



Michel Mayor Geneva University, Switzerland

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For detailed practical information about BEACON, the Hotel or the island, please visit the BEACON webpages by scanning the QR code below.



EAI encourages social media engagement with our conference. If you are posting online, please use the hashtag #EAIBEACON2023.

We will be taking images and video throughout the conference. If you do not wished to be photographed, please inform either Mariette Vandermersch-Desmartin or Courtney Allison.





Hotel Information

For detailed information about the BEACON venue (La Palma & Teneguía Princess) please scan the QR code below to access the official App.



Restaurant Information

Food Market (main restaurant)

Opening Hours:

• Breakfast: 07:30 h - 10: 00 h

• Lunch: 13:00 h - 15:00 h

• Dinner: 18:45 h - 21:45 h

Piano Bar La Palma (close to the Reception)

Opening hours:

• 10:00 h - 00:00 h.

Registration Information

Sunday 7th May:

14:00-17:00 and 20:30-22:00

Monday 8th May:

07:30-11:00

•Next to the Hotel Reception



LA PALMA TENEGUÍA

VITAL & FITNESS



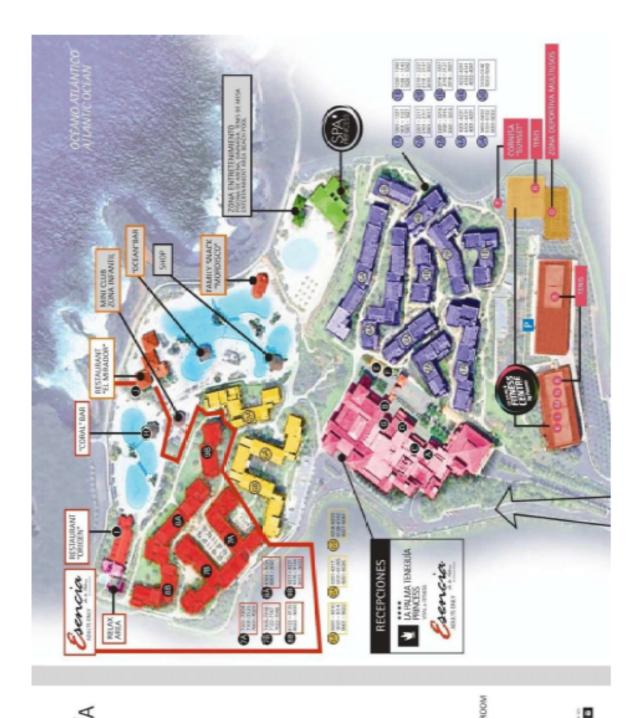
- AGORA" Meetings Area
- "JALEO" Disco
 RESTAJRANT "LA VITA"
 RESTAJRANT "LA TASCA"
- MINI CLUB NOCHE
- B RESTAURANT "FOOD MARKET"
 - ZONA LA PALMA PRINCESS
 - ZONA TENEGUÍA PRINCESS
- FAMILY SNACK "MORDISCO" RESTAURANT "EL MIRADOR" "OCEAN" BAR
- SPA PRINCESS

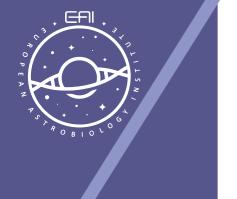


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19:00

BEACON OUTREACH ACTIVITIES

	Thursday 4th May
10:15	Astrobio Tombola in Spanish in School San Antonio
	Friday 5th May
19:00	Astrobio Tombola in English in Agora Hall, Hotel La Palma and Teneguia Princess
	Saturday 6th May
20:00	Astroconcert in CUPALMA, near the Hotel
	Monday 8th May
09:30	Astrobio Tombola in School Fuencaliente
	Tuesday 9th May
09:30	Astrobio Tombola in School Fuencaliente
	Thursday 11th May

Public conference Briones-Caballero Santa Cruz



14:00 - 22:00

19:45

20:00

BEACON 2023 PROGRAMME

17:00	Welcome Ceremony
17:00	Welcome by the EAI Wolf D. Geppert, EAI Chair
17:10	Welcome by the Cabildo Insular of La Palma Mariano Hernández Zapata, President of the Island Authority Cabildo Insular
17:15	Welcome by the Spanish Centre of Astrobiology Victor Parro, Director of Centro de Astrobiología
17:20	Presentation of Gran Telescopio Canarias Romano Corradi, Director of GTC
17:40	Presentation of Telescopio Nazionale Galileo Adriano Ghedina, Director of TNG
18:00	Presentation of Isaac Newton Group of Telescopes Marc Balsells, Director of ING
18:20	Break and cocktail reception
19:00	Public talk: "Change of paradigm during the 20th century - From one to billions of planetary systems" Michel Mayor, University of Geneva, CH

Questions and discussions

Dinner

Sunday 7th May 2023

Registration of participants at Hotel Le Palma & Teneguina

	Monday 8th May
07:30 - 08:30	Registration of participants at Hotel Le Palma & Teneguina
08:30 - 08:45	Welcome address and organizational matters Wolf Geppert, Stockholm University, SE
08:45 - 10:30	Session I: "Formation and Evolution of Planetary Systems and Detection of Habitable Worlds" Chair: Guiseppe Murante, INAF, IT
08:45 - 09:20	Doppler cross-correlation spectroscopy as a path to the detection of Earth-like planets (Invited talk) Michel Mayor, University of Geneva, CH
09:20 - 09:30	Discussion
09:30 - 10:05	Planet formation around stars with different composition (Invited talk) Bertram Bitsch, MPI for Astronomy, DE
10:05 - 10:15	Discussion
10:15 - 10:30	Habitable Worlds: Formation, evolution, detection, and characterization Ewa Szuszkiewicz, University of Szczecin, PL
10:30 - 11:00	Coffee break
11:00 - 13:00	Session I (continued): "Formation and Evolution of Planetary Systems and Detection of Habitable Worlds" Chair: Ewa Szuszkiewicz, University of Szczecin, PL
11:00 - 11:15	The effect of galactic kinematics on exoplanet systems and their potential habitability Scarlett Royle, Liverpool John Moore University, UK
11:15 - 11:30	Forming wide-orbit planets via pebble accretion Nerea Gurrutxaga, Lund University, SE
11:30 - 11:45	The composition of the dust particles of comet 67P/Churyumov-Gerasimenko suggests a pre-accretionary irradiated surface composition of their minerals and organics Hervé Cottin, Institut Pierre-Simon Laplace, PR
11:45 - 12:00	Protoplanet Collisions: Second Generation Scaling Laws Samuele Crespi, University of New York at Abu Dhbi, UAE
12:00 - 12:15	Formation of giant planets in protoplanetary discs Olja Panic, Leeds University, UK
12:15 - 12:30	The unusual case of Delorme 1 (AB)b: characterising accretion at the 40-Myr old super-Jovian protoplanet using resolved near-UV hydrogen emission lines Gayathri Viswanath, Stockholm University, SE
12:30 - 12:45	A Comprehensive and Self-consistent Model of the Formation of Earth as a Habitable Planet Nader Haghighipour, University of Hawai'i, US
12:45 - 13:00	Dehydration of phyllosilicates at the origin of the Galilean moons' density gradient Olivier Mousis, University of Aix-Marseilles, FR
13:00 - 14:30	Lunch break
14:30 - 16:30	Session I (continued): "Formation and Evolution of Planetary Systems and Detection of Habitable Worlds" Chair: Ewa Szuszkiewicz, University of Szczecin, PL
14:30 - 15:05	Life under a small red sun: observational insights into the potential habitability of terrestrial planets orbiting low-mass red dwarfs (Invited talk) Michaël Gillon, University of Liège, BE

	Monday 8th May
15:05 - 15:15	Discussion
15:15 - 15:30	Dynamics and heat budget in the Trappist-1 system Alexandre Revol, University of Geneva, CH
15:30 - 15:45	The History and Habitability of the LP 890-9 Planetary System Rory Barnes, University of Washongton, US
15:45 - 16:00	Thermal Emission from the Earth-sized Exoplanet TRAPPIST-1 b using the JWST Elsa Ducrot, CEA, FR
16:00 - 16:15	Is it raining lava in the evening on 55 Cancri e ? Alexis Brandeker, Stockholm University, SE
16:15 - 16:30	Enabling Comparative Exobiology with a Large Interferometer For Exoplanets: the LIFE mission concept Daniel Angerhausen, ETH Zürich, CH
16:30 - 17:00	Coffee break
17:00 - 19:15	Session II "Planetary Environments and Habitability" Chair: Dennis Höning, Potsdam-Institute for Climate Impact Research, DE
17:00 - 17:35	Characterizing Habitable Worlds Lisa Kaltenegger, Cornell University, US
17:35 - 17:45	Discussion
17:45 - 18:00	Hot Jupiters and their surroundings Judith Korth, Lund University, SE
18:00 - 18:15	Post-formation H/He budgets in mini-Neptunes and super-Earths Marit Mol, University of Zürich, CH
18:15 – 18:30	Feasibility of Photosynthesis around Red Dwarf Stars: A Thermodynamic Model Samir Chitnavis, Queen Mary University, UK
18:30 - 18:45	Ceres: A high priority astrobiological target Cristina de Sanctis, INAF, IT
18:45 – 19:00	Role of polyols in creating microhabitable environments during ice formation on Enceladus Charity Phillips Lander. South West Research Institute, US
19:00 – 19:15	Detection of phosphates in Enceladus' ocean by Cassini CDA: implications for habitability in the outer solar system Frank Postberg, Free University Berlin, DE
19:15 - 20:45	Dinner break
20:45	Poster session 1

	Tuesday 9th May
08:30 - 12:45	Session II "Planetary Environments and Habitability" (continued) Chair: Vinciane Debaille, Universite Libre de Bruxelles, BE
08:30 - 09:05	Earth-Like Exoplanets: Feedback Mechanisms, Habitability, and Life (Invited talk) Dennis Höning, Potsdam-Institute for Climate Impact Research, DE
09:05 - 09:15	Discussion
09:15 - 09:30	A minimum variability of rocky exoplanet oxygen fugacities Claire Guimond, Cambridge University, UK
09:30 - 09:45	Constraining cloud properties of exoplanets with polarization spectra and phase curves: the case of Earth Giulia Roccetti, ESO, Chile
09:45 - 10:00	Strongly reducing atmospheres for rocky super-Earths? Lena Noack, Free University Berlin, DE
10:00 - 10:15	Reconsidering the habitability of planets in the light of climate multistability Siddharth Bhatnagar, University of Geneva, CH
10:15 - 10:30	First exploration of the entire runaway greenhouse transition with a 3D global climate mode" Guillaume Chaverot, University of Geneva, CH
10:30 – 10:45	Impact of vegetation on the habitability of Earth-like exoplanets Erica Bisesi, INAF, IT
10:45 – 11:15	Coffee break
11:15 - 11:30	Interbedded clay and sulfate deposits in Meridiani Planum, Mars: a valuable insight on the planet's ancient climate at the Noachian-Hesperian boundary Beatrice Baschetti, INAF, IT
11:30 - 11:45	Sedimentary infill of marine-target impact craters reveals target water depth and, thus, the paleoenvironment: Implications for Mars? Jens Ormö, Centro de Astrobiología, ES
11:45 - 12:00	Orbital evidence of ferrihydrite in the Martian dust: implications for the ancient climate on Mars Adomas Valantinas, Université Bern, CH
12:00 - 12:15	Paleolakes on Mars – Martian Time Capsules Nadia Boppart, The University of Hong Kong SAR, CN
12:15 - 12:30	Unveiling the subsurface structure of the most recent lava flows in Echus Chasma region, Mars Federico Mansilla, Centro de Astrobiología, ES
12:30 - 12:45	Planning for a Mars long-lived weather network Daniel Paardekooper, ESA
12:45 - 14:15	Lunch break
14:15 - 15:15	Session III: History, Philosophy and Public Engagement Chair: Muriel Gargaud, University of Bordeaux, FR
14:15 – 14:30	Our Earthly Perspective: History and Effects on Exoplanet Science and Astrobiology Emma Puranen, University of St. Andrews, UK
14:30 – 14:45	Molecular Shadows: Explaining the Molecular Make-Up of Life Philipp Spillmann, Cambridge University, UK
14:45 – 15:00	Beyond Permits: Standards in Field Site Ethics Aaron Gronstal, NASA, US
15:00 – 15:15	Life Beyond Us: Communicating science via science-fictional narratives Julie Novaková, Charles University, Prague, CZ

15:15 - 16:15	Break with possibility to have snacks
16:00	Excursion to Teneguia Lava field
16:15	EAI General Assembly
18:30	Information about EAI
19:00 - 20:30	Dinner break
20:30	Poster session II
	Wednesday 10th May
6:30	Breakfast
07:15	Excursion to Caldera de Taburiente and Observatorio del Roque de Los Muchachos
20:30	Dinner
	Thursday 11th May
08:30 - 11:30	Session IV: "The Pathway to Complexity: From Simple Molecules to First Life" Chair: Carlos Briones, Centro de Astrobiología, ES
08:30 - 08:45	Towards Molecular Complexity Thomas Henning, MPI for Astrophysics, DE
08:45 - 09:00	A theoretical approach to the complex chemical evolution of phosphorus in the interstellar medium Marina Fernandez-Ruz, Centro de Astrobiología, ES
09:00 - 09:15	Formation of peptides in the interstellar medium by condensation of C atoms Serge Krasnokutski, University of Jena, DE
09:15 - 09:30	Can interstellar asymmetric photochemistry of isovaline explain its chiral excess in carbonaceous chondrites? Jana Bocková, University of Côte d'Azur, FR
09:30 - 09:45	Astrophysical ices as a source of molecular diversity in planetary systems Gregoire Danger, University of Aix-Marseille, FR
09:45 - 10:00	The role of minerals surfaces on the path to molecular complexity Eva Mateo-Marti, Centro de Astrobiología, ES
10:00 – 10:15	Metal/ADP complexes promote phosphorylation of ribonucleotides Silvana Pinna, CNRS and University of Strasbourg, FR
10:15 – 10:30	Evolution of organic matter on the surface of Jovian satellites: experimental investigation of the possible formation of organosulfurs by ion implantation into water-alkane ices Alexis Bouquet, Université Aix-Marseille, FR
10:30 - 11:00	Coffee Break
11:00 – 11:15	Oxygen ion irradiation of Titan aerosol analogues Veronique Vuitton, University Grenoble-Alpes, FR
11:15 – 11:30	Meteorites and the RNA World: Synthesis of Nucleobases and Ribose in Carbonaceous Planetesimals and the Role of Initial Volatile Content Klaus Paschek, MPI for Astronomy, DE

	Thursday 11th May
11:30 - 15:15	Session V: "Evolution and Traces of Early Life and Life under Extreme Conditions" Chair: Emmanuelle Javaux, University of Liège, BE
11:30 - 12:05	The earliest traces of life on Earth and their utility in the search for life on Mars (Invited talk) Keyron Hickman-Lewis, Natural History Museum, UK
12:05 - 12:15	Discussion
12:15 - 12:30	Hell and heaven on the early Earth: environments for early life Frances Westall, CNRS, FR, presented by Keyron Hickman-Lewis
12:30 - 12:45	Experimental fossilisation of methanogens in phosphates, carbonates, and silicates Sigrid Huld, Uppsala University, SE
12:45 - 13:00	Polysphaeroides filiformis, a Proterozoic cyanobacterial microfossil and implications for the evolution of heterocytous cyanobacteria Catherine Demoulin, University of Liège, BE
13:00 – 14:30	Lunch break
14:30 - 14:45	Microfossil taphonomy in clay-rich rocks in Proterozoic environments analogue to the Noachian on Mars. Brooke Johnson, University of Liège, BE
14:45 - 15:00	Effect of hypobaric pressure, low temperature and CO2 atmosphere on fatty acid composition in plasma membrane of extremophiles from smouldering coal waste dumps. Agnieszka Bylina, University of Silesia in Katowice, PL
15:00 - 15:15	Viability of Bacterial Spores under Ocean World Icy Surface Conditions Edith Fayolle, JPL, US
15:15	Poster Logo Award Ceremony and break
16:00	Excursion to Teneguia Lava Field
19:00 - 20:30	Dinner break
20:30	Poster session III
	Friday 12th May
08:30 - 09:45	Session V (cont.): "Evolution and Traces of Early Life and Life under Extreme Conditions" Chair: Emmanuelle Javaux, University of Liège, BE
08:30 - 08:45	Blue biotopes in Icelandic lava tubes: an analog to subsurface life on the Red Planet? Nina Kopacz, Utrecht University, NL
08:45 - 09:00	Survivability of Xanthoria parietina in simulated Mars conditions for 30 days Christian Lorenz, INAF, Italy
09:00 - 09:15	Volcanic glaciers harbor microbial life: Differences and similarity between Hemispheres Victor Muñoz Hisado, Centro de Astrobiología, ES
09:15 - 09:30	They Transcribe by Night: Investigating the diel cycles of a hypersaline saltern Maggie Weng, Georgetown University, US
09:30 - 09:45	Archean carbonates and oxygen oasis: a window for ancient life on Mars? Fuencisla Cañadas, Centro de Astrobiología, ES
09:45 – 13:00	Session VI: Biosignatures and the Detection of Life beyond Earth VI a: Biosignatures; Strategies and Methods Chair: Jean-Pierre de Vera, German Aerospace Centre, DE

	Friday 12th May
09:45 - 10:20	Photosynthetic biosignatures: The long wavelength limit (Invited talk) Nancy Kiang, NASA Goddard Space Flight Centre, US
10:20 - 10:30	Discussion
10:30 - 11:00	Coffee break
11:00 - 11:15	On biosignatures and tracers of life Inge Loes ten Kate, Utrecht University. NL
11:15 - 11:30	Raman Spectroscopy for the Detection of Organics: Advances in Spectral Interpretation and Instrumentation Jason Hafner, Rice University, US
11:30 - 11:45	Cryo-Raman spectroscopy for the detection of biosignatures on icy samples Juelene Aramendia, University of the Basque Country, ES
11:45 - 12:00	Detection of biosignatures on Mars using Raman spectroscopy: expectations and limits Mickael Baque, German Aerospace Centre, DE
12:00 – 12:15	Lipids and Amino Acids as biosignatures – the need for quantitative and comparative studies to avoid false positives Ruth-Sophie Taubner, Austrian Academy of Sciences, AT
12:15 – 12:30	Molecular and isotopic analysis of lipid biomarkers to reconstruct the paleo- ecology of a polar lake in Greenland: Implications for astrobiology Pablo Finkel, Centro de Astrobiología, ES
12:30 - 12:45	Understanding the ecology of serpentinizing environments with analogy to early Earth through molecular and isotopic analysis of lipid biomarkers Laura Sanchez-Garcia, Centro de Astrobiología, ES
12:45 - 13:00	Multiscale textural assessment of the morphogenesis of lenticular microstructures from Archean cherts of the Pilbara Craton Maxime Coutant, University of Liège, BE
13:00 - 14:30	Lunch
14:30 - 17:00	Session VI: Biosignatures and the Detection of Life beyond Earth Session VIb: Search for life on other planets Chair: Lena Noack, Free University Berlin, DE
14:30 - 14:45	The Strategy to search for Life beyond Earth Jean-Pierre de Vera, German Aerospace Centre, DE
14:45 - 15:00	Simulation, Analysis and Verification of Aerial Capture System for Morning Star Missions to Venus laroslav lakubivskyi, MIT, US
15:00 - 15:15	Towards Detecting Signatures of Life with the Future LIFE Telescope Björn Konrad, ETH Zürich, CH
15:15 - 15:30	Could the mid-infrared space interferometer LIFE find biosignatures in the spectrum of the Earth in time? Eleonora Alei, ETH Zürich, CH
15:30 - 15:45	Identifying Cell Material in Individual µm-sized Ice Grains Emitted from Enceladus or Europa Maryse Napoleoni, Free University Berlin, DE
15:45 - 16:00	Dark microbiome and extremely low organics in an Atacama fossil river delta unveil the limits for life detection on Mars Armando Azua-Bustos, Centro de Astrobiología, ES
16:00 - 16:15	Degradation of biosignatures in natural samples under simulated Martian radiation Anais Roussel, Georgetown University, US
16:15 - 16:30	Organic matter preservation potential at the ExoMars 2028 landing site: a preliminary assessment John Carter, University Paris- Sud, FR

	Friday 12th May
16:30 - 16:45	The Absolute Configuration of Hydrocarbons as Molecular Fossils: Implications for the Search of Extinct Life on Mars Guillaume Leseigneur, University of Côte d'Azur, FR
16:45 - 17:00	Towards Detecting Molecular Biomarkers in Mars' Subsurface Environments: Insights from the Biogeochemical Studies of Terrestrial Lava Tubes as Analogs for Mars Maëva Millan, Institut Pierre-Simon-Laplace, FR
17:00 – 17:30	Coffee break
17:30 - 19:30	Session VI: Biosignatures and the Detection of Life beyond Earth Session VIc: Special Session: Mars Sample Return Chair: Inge Loes ten Kate, University of Utrecht, NL
17:30 - 18:05	Remote Characterization of Minerals on Mars to Uncover Past Aqueous Processes and Potentially Habitable Regions Janice Bishop, SETI, USA
18:05 - 18:15	Discussion
18:15 – 18:30	Mars Sample Return Science Management Gerhard Kminek, ESA
18:30 -18:45	Mars Sample Return: Planning the Search for Biosignatures in Samples from Mars Gerhard Kminek on behalf of Brandi Carrier, JPL, US
18:45 – 19:00	Inspecting the astrobiological relevance of samples collected at Jezero Crater on Mars by the NASA Mars 2020 Perseverance rover for future return to Earth John Brucato, INAF, Italy
19:00 – 19:15	Sampling Jezero Crater, Mars for future Mars Sample Return Sandra Siljeström, RISE, SE
19:15 – 19:30	Mars sample return: scientific objectives and implication for the crater floor campaign Vinciane Debaille, Université Libre de Bruxelles, BE
19:30	Open Discussion
20:30	Conference Banquet
	Saturday 13th May
07:30	After-conference walk "Ruta de los Volcanes"
	Sunday 14th May
07:30	Breakfast and departure



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