



ANNUAL REPORT

2025

CIIMAR | INTERDISCIPLINARY CENTER OF MARINE AND
ENVIRONMENTAL RESEARCH OF THE UNIVERSITY OF PORTO

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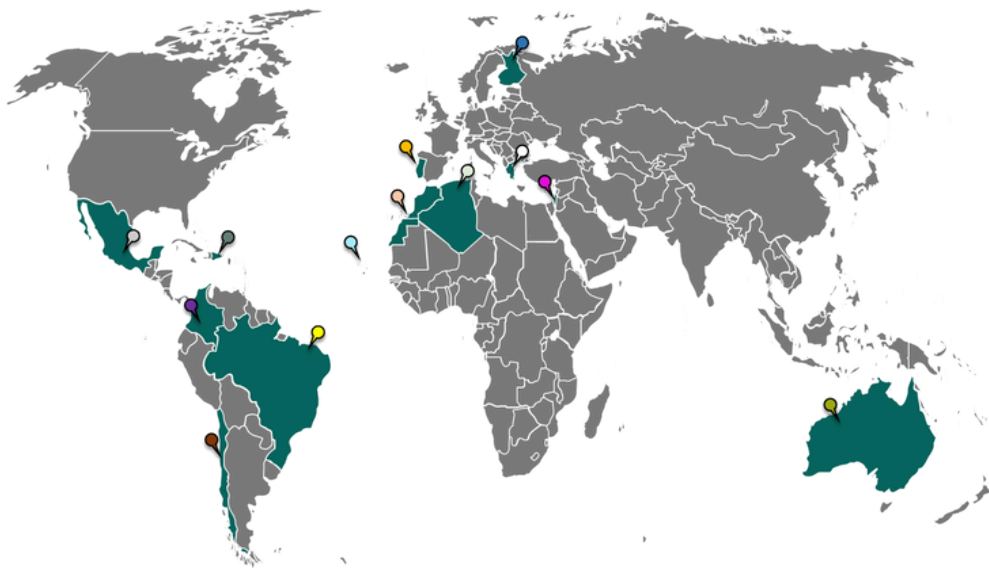
About LEGE-CC

Our Story

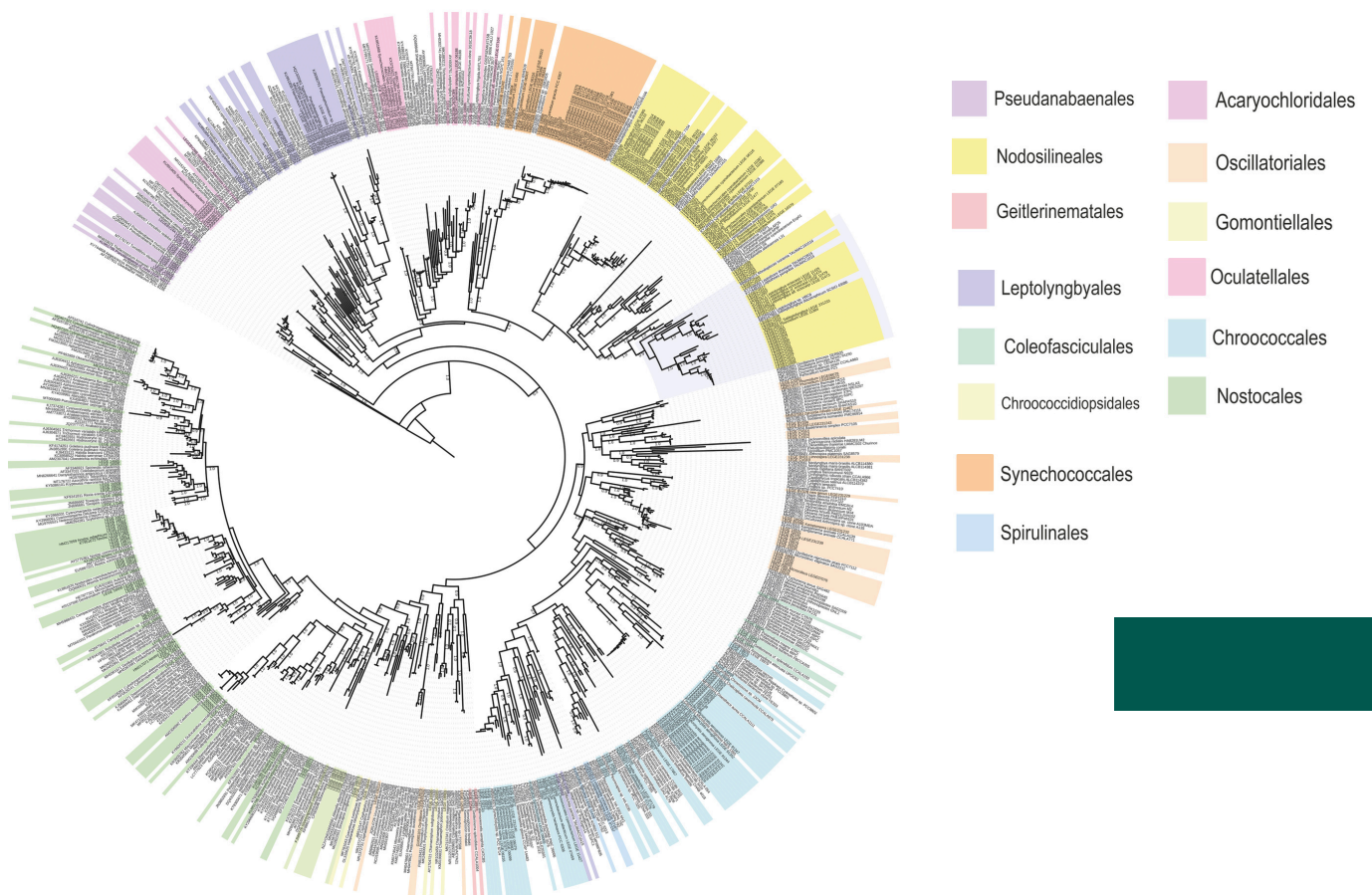
The Blue Biotechnology and Ecotoxicology Culture Collection (LEGE-CC) is a biological resource center located at the Interdisciplinary Center of Marine and Environmental Research (CIIMAR). Established in 1991, LEGE-CC holds the distinction of being Portugal's oldest culture collection of its kind. It started with just 45 strains from Portuguese ecosystems, today, the collection contains over 1 500 different strains of cyanobacteria and microalgae. These invaluable resources have played a pivotal role in the creation of the Portuguese Blue Biobank. LEGE-CC is also affiliated with esteemed organizations like the World Federation for Culture Collections (WFCC) and the European Culture Collections Organization (ECCO), as well as research infrastructures like EMBRC and MIRRI. LEGE-CC has achieved ISO 9001 certification, a mark of quality and excellence in its management and service.

Similar to other biological resource centers around the world, LEGE-CC aims to provide various services, including the distribution of starter cultures for different purposes, isolation and identification of strains, strain deposit, consultancy, and training courses. LEGE-CC serves as the core source for numerous projects and scientific studies, with strains undergoing screening for various purposes such as anti-cancer, anti-biofouling, anti-microbial, anti-biofilm, anti-obesogenic, and related health applications, cosmetics, and food production. LEGE-CC has made concerted efforts to explore both national and international locations, focusing on underexplored environments, isolating diverse microorganisms to increase the availability for biotechnological diversity and providing the collection with a unique geographical and phylogenetic richness.

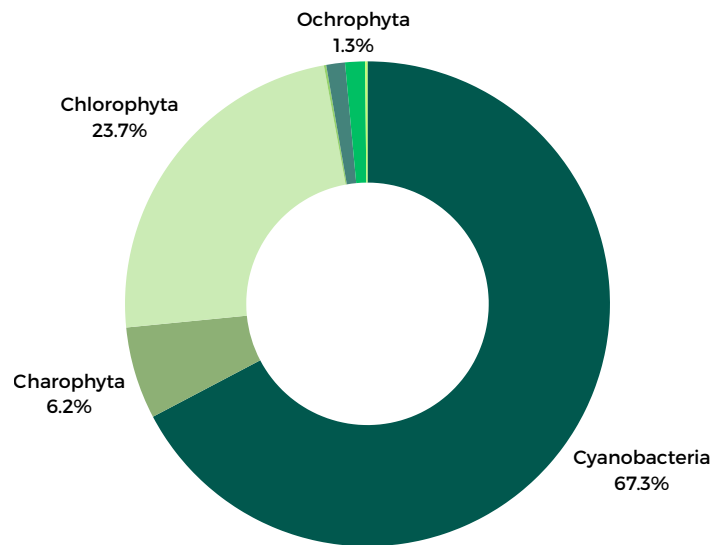




The Culture collection holds strains isolated mainly from Portuguese territory, including the Azores and Madeira archipelagos and incorporates diverse environments such as freshwater, marine, brackish, and terrestrial habitats. In addition to Portugal, strains have been collected from various countries worldwide due to the sampling trips made by the staff team, including Australia, Brazil, Bolivia, Chile, Colombia, Morocco, Mexico, the Dominican Republic, and Cape Verde. LEGE-CC has made concerted efforts to explore both national and international locations, focusing on underexplored environments, isolating diverse microorganisms to increase the availability for biotechnological diversity and providing the collection with a unique geographical and phylogenetic richness.



LEGE-CC strives to be recognized as one of the world's leading culture collections, renowned for its significant scientific and technological contributions. Its mission includes advancing the economic potential of cyanobacteria and microalgae, promoting the preservation of microbial biodiversity, and driving technological innovation and biotechnological applications for these microorganisms.



LEGE-CC has an implemented ISO 9001 certification, demonstrating the quality and efficiency of its management processes and services. This certification reflects the institution's commitment to rigorous standards and continuous improvement, reinforcing its mission to provide excellence in the preservation and distribution of cultures. It strengthens trust and satisfaction among partners and clients and positions LEGE-CC to make greater contributions to marine biotechnology, promoting safety, reliability, and innovation.



LEGE-CC has established and actively maintains its social media channels to strengthen its public presence and enhance communication with the community. Through platforms such as LinkedIn and Facebook, we regularly share updates on our latest discoveries, research achievements, and activities, ensuring that our work reaches a broader audience. These ongoing efforts help sustain visibility, promote engagement, and foster connections within the scientific and broader community.

Team



Director | Vitor Vasconcelos

Director of the Blue Biotechnology and Ecotoxicology Culture Collection (LEGE-CC), with research spanning from pioneering studies on cyanobacterial toxins and their health impacts to the discovery of new bioactive compounds using genomic, proteomic, and bioassay-guided approaches.



Curator | Raquel Silva

Curator of the LEGE Culture Collection, managing the preservation, molecular identification, and quality of cyanobacteria and microalgae strains. Combines expertise in biotechnology, quality management, ISO 9001:2015 implementation, and digital tools for website and database management to ensure excellence in research and collection maintenance.



Taxonomist | Guilherme Scotta Hentschke

Taxonomist at the LEGE Culture Collection, specializing in the identification and classification of cyanobacteria and microalgae. Holds a PhD in Botanic Biodiversity from the Instituto de Botânica de São Paulo, with research focused on cyanobacterial taxonomy, ecology, and bioactive potential.



Technician | Carlos Pinheiro

Technician at the LEGE Culture Collection, providing technical support in the maintenance and development of the collection. Experienced in the isolation and molecular identification of cyanobacteria and microalgae, with research background in cyanotoxins and their environmental effects.

Infrastructures

Culture Collection Room



Our culture collection rooms are categorized into prokaryotes and eukaryotes, specifically housing cyanobacteria and microalgae. Both rooms are maintained under controlled conditions to ensure optimal growth of the microorganisms. Each strain in these rooms is cataloged and identified with a unique LEGE code, accompanied by its specific growth medium, and two copies of each strain are preserved.

Temperature - 19°C

Photoperiod - 12/12h light/dark cycles

Light intensity - 10-30 $\mu\text{mol photons m}^{-2} \text{ s}^{-1}$

Our isolation room houses all environmental strains received at CIIMAR and initiates the isolation process. This room is maintained under specific conditions, distinct from those in the culture collection room, allowing us to sustain cultures that thrive only at higher temperatures. Additionally, it features an incubator designed to support strains that grow at lower temperatures. The strains in this room are organized by sampling site and are identified using user codes rather than LEGE codes.

Temperature - 22-24°C

Incubator - 3-70°C

Photoperiod - 14/10h light/dark cycles

Light intensity - 10-30 $\mu\text{mol photons m}^{-2} \text{ s}^{-1}$

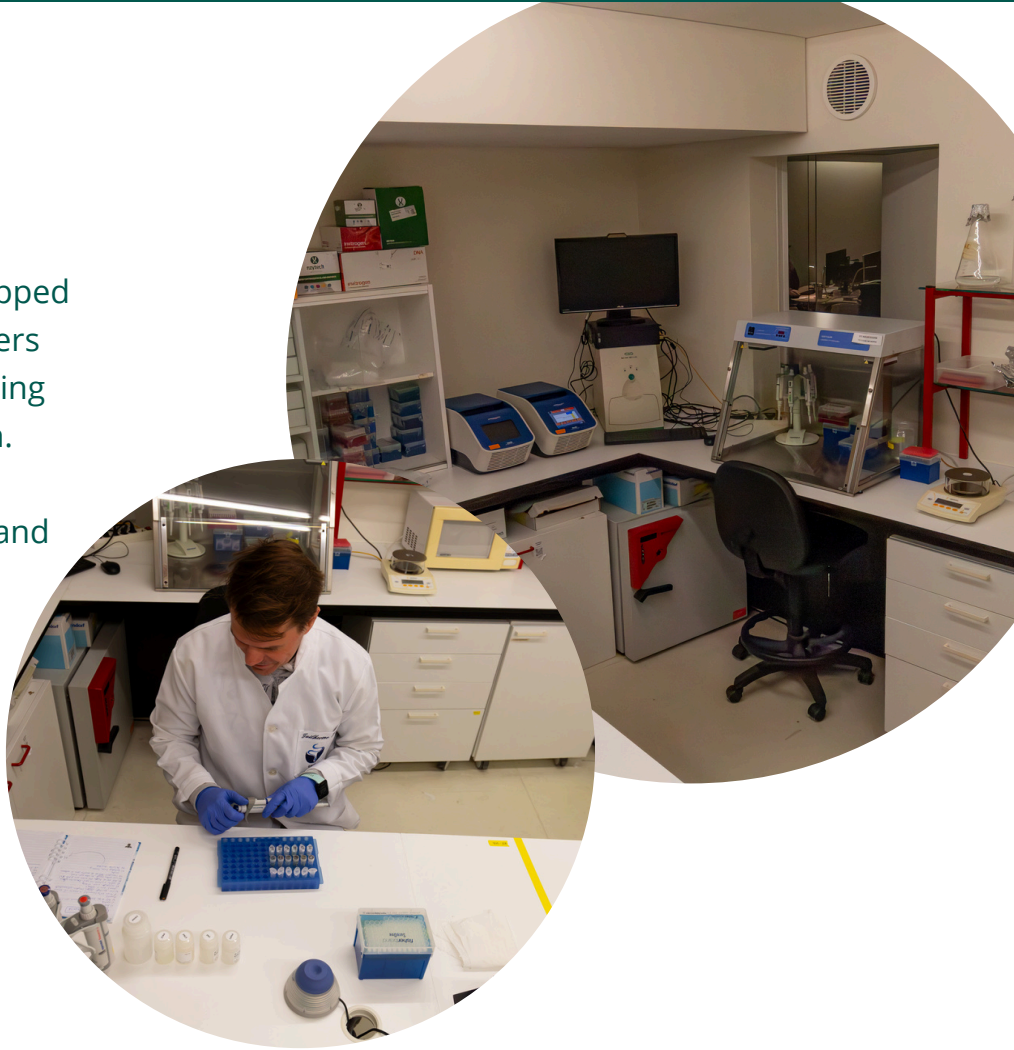


Isolation Room

Infrastructures

Genetics Room

Specialized genetics room equipped with thermocyclers and chambers for sensitive procedures, including DNA extraction and purification. Maintained under controlled conditions to ensure precision and contamination-free analysis.



Culture Growth Room

Large-scale culture room for growing up to 80 liters of cultures. Equipped with bioreactors for optimized conditions, ideal for large-scale cultivation and optimization of cyanobacteria and microalgae.

Temperature - 20 - 23°C

Photoperiod - 16h/8h light/dark cycles

Light intensity - 10-30 $\mu\text{mol photons m}^{-2} \text{s}^{-1}$



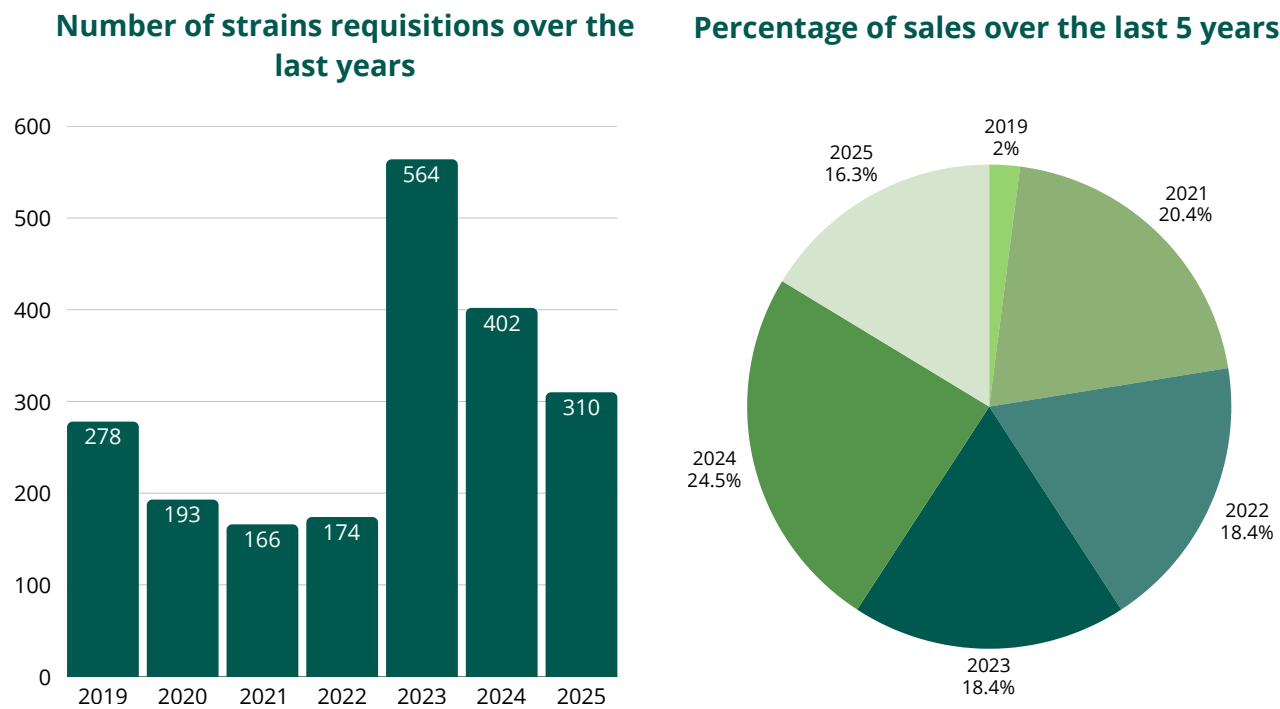
Services



LEGE-CC offers a variety of services, leveraging the diversity of our collection, our expertise, and certified processes. Our team of specialists has a strong background in molecular biology and genetics, complemented by a taxonomist with expertise primarily in cyanobacteria and microalgae.

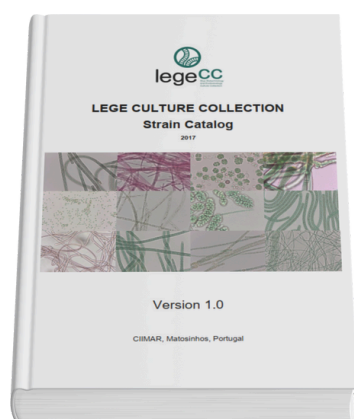
Our primary focus is the supply of cultures, and our team excels in essential techniques such as the isolation and identification of cyanobacteria and microalgae. We also offer consultancy services for external projects as well as for our in-house researchers.

If you wish to entrust your strains to our care, we provide a strain deposit service.

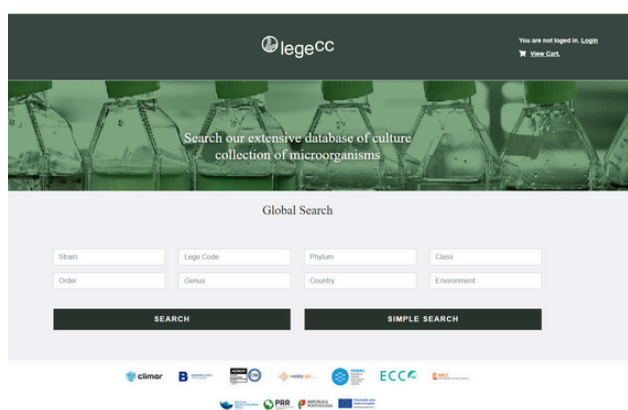


Website and database

Since 2017, we have maintained an online catalog featuring 400 cyanobacteria strains. This was the first stage of our collection's digitalization and remains an essential tool for researchers selecting strains that best fit their projects.



Building on this foundation, we have expanded the digitalization process to include the entire collection. This ensures broader accessibility and improved data management, allowing researchers worldwide to explore the collection remotely.

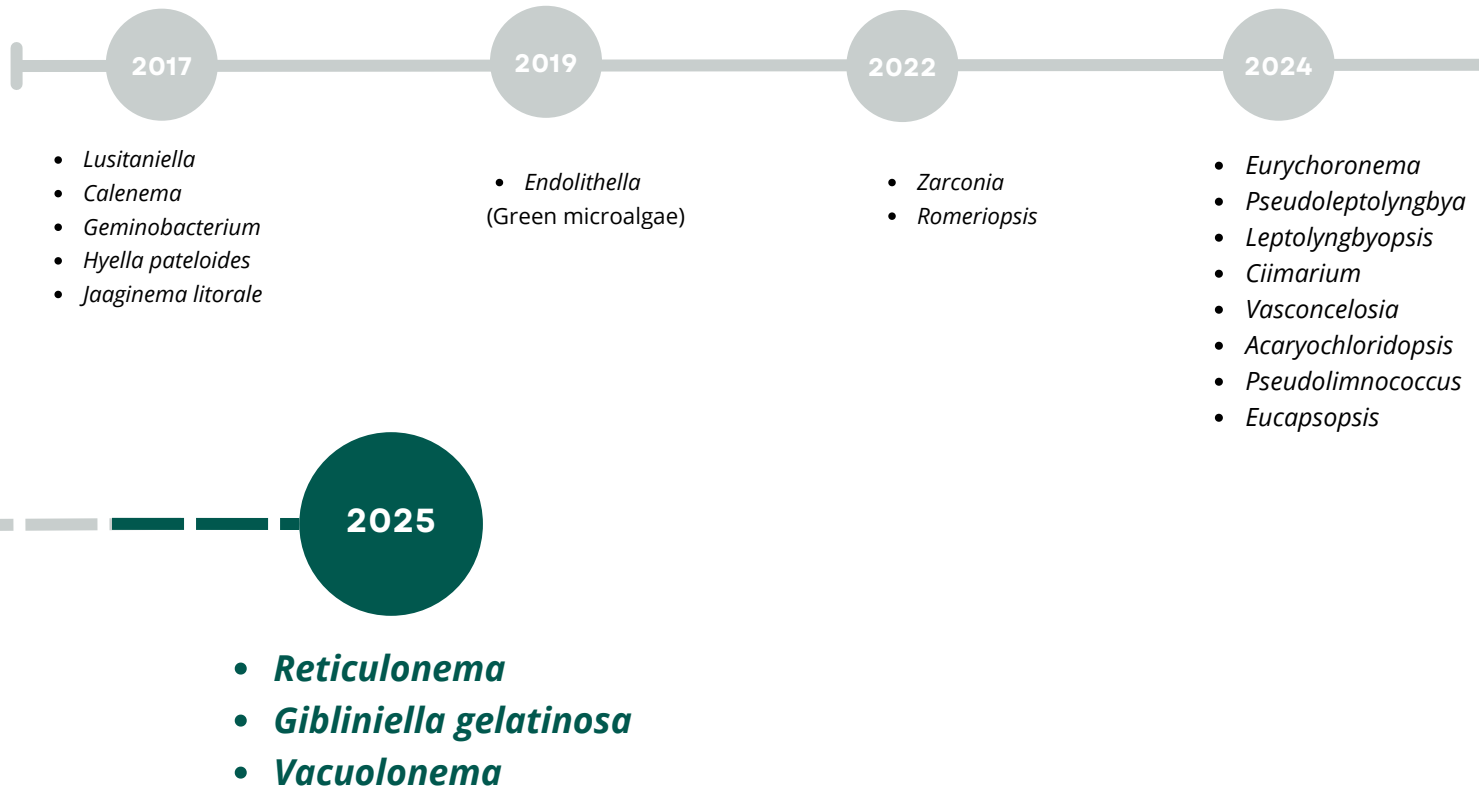


Empowering research through digital access to knowledge and biological diversity.

Our interactive website now features a searchable database that allows users to explore and filter strains by criteria such as environment, habitat, morphology, genera, color, and pH. In addition, the platform provides an integrated portal with detailed information on services, pricing, and ordering procedures, as well as access to a curated collection of documents and laboratory protocols that promote best practices in the study and handling of microorganisms.

Highlights of 2025

New taxa



Throughout the years, the LEGE-CC has contributed substantially to cyanobacterial systematics by identifying and characterizing 15 new genera of cyanobacteria isolated from three different continents. In 2025, this effort continued with the description of three additional genera — *Reticulonema*, *Gibliniella gelatinosa*, and *Vacuolonema* — further enriching the phylogenetic and ecological diversity represented within the LEGE-CC collection.

Dissimination and Events

LEGE-CC actively connects science with the public through exhibitions, events, outreach initiatives, and guided visits to the collection for groups visiting CIIMAR, promoting awareness and engagement with ongoing research and scientific discoveries.



LEGE-CC took part in several programs and reports broadcast on major national television channels, including the **CNN Inovação** program, **Mar do Nosso Futuro** (RTP), and **Grande Reportagem** (SIC), helping to inform the community about the latest scientific discoveries and ongoing projects.

Scientific Communication

The LEGE-CC team participated in several international scientific events, including the ICTC13 | 13th International Conference on Toxic Cyanobacteria, the 43rd Annual Meeting of the European Culture Collections' Organization and MICROBiotec'25.

During these conferences, the team presented their work on the preservation and provision of high-quality strains.



They emphasized the importance of cyanobacteria as sustainable biological resources, their potential for biotechnological applications, and recent discoveries of new cyanobacterial genera. Through presentations and workshops, the team highlighted advancements in taxonomy, genomics, and biotechnological applications, fostering interdisciplinary collaboration. Their presence also facilitated networking, strengthening partnerships with researchers, industry, and promoting the collection as a critical resource for the global scientific community.

In the past year, LEGE-CC achieved the publication of several papers in prestigious scientific journals. These publications played a crucial role in sharing groundbreaking advancements in the taxonomy and identification of cyanobacteria with the broader scientific community. The primary objective of these publications is to identify as many cyanobacteria as possible, ensuring their availability to our researchers for further study and application

Publications 2025

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Publications 2025

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TECHNICAL INFORMATION

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Writer: Raquel Silva

Photos: Fábio Faria and Raquel Silva

Phylogenetic tree: Guilherme Scotta Hentschke

Revisor: Vitor Vasconcelos

Coordinator: Vitor Vasconcelos

Contact:

Email: legeculturecollection@gmail.com

Website: <https://lege.ciimar.up.pt>



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