

2023 CALLS OF THE CATALAN INITIATIVE OF THE EARTH BIOGENOME PROJECT (CBP)

Introduction

Increasing our understanding of the Earth's biodiversity and responsibly stewarding its resources are among the most crucial scientific and social challenges of this millennium. The Earth Biogenome Project (EBP), organized as an international network of networks, aims to sequence and characterize the genomes of eukaryotic species. This will create a new foundation for biology to drive solutions for preserving biodiversity and sustaining humanity.

Led by the Institut d'Estudis Catalans (IEC), the Catalan Initiative for the Earth Biogenome Project (CBP), funded by the Government of Catalonia, contributes to this global effort by aiming to produce a detailed catalogue of the genome of eukaryotic species in the geographical sphere of influence of IEC.

Following the conclusion of the pilot phase, thanks to the support of the Department of Research and Universities of the Government of Catalonia, the IEC is now launching two calls for CBP research activities in 2023, which are devoted to:

- A. Establishing the appropriate resources and optimized methodologies for high-molecular DNA extraction, biobanking, data analysis and management. Total initial funding available: 175,000€.
- B. Organizing collection of specimen samples. Total initial funding available: 60,000€.

The general and specific terms of these calls, below, were approved on May 25, 2023, by the Standing Council of IEC.

GENERAL TERMS

1. Eligibility for participation

Proposals may be presented by research groups based at universities or by research institutions, academic societies or organisations that conduct research and/or provide support to research, in the geographical sphere of influence of IEC.

2. Application procedure and selection criteria

The application procedure, along with an explanation of Parts 1, 2, and 3 of the application, is defined in the specific terms of each of the two calls, respectively.

Proposals will be assessed and scored based on the following selection criteria:

- Part 1 shall constitute 30% of the total score
- Part 2 shall constitute 50% of the total score
- Part 3 the remaining 20% of the total score

3. Assessment of proposals, notification, resolution and acceptance

A commission appointed by IEC, with assistance from external advisers, will assess the proposals received and prioritize them according to the criteria set out in each specific call.

Notification of resolution of the present calls will take place on the CBP website, www.biogenoma.cat. Applicants whose proposals are selected for funding will be contacted by the Scientific Secretariat and asked to confirm their acceptance.

4. Reporting

Admitted applicants will submit a scientific report summarizing the research activities conducted within the framework of each specific call, as well as any specific deliverables, before December, 18, 2023. In addition, protocols, methodologies and pipelines implemented must be made available to the whole CBP community on the aforementioned website.

5. Payment of eligible expenses

Funding is awarded in the form of payment of expenses deemed eligible, according to the criteria set out in each specific call. Once a proposal, including its corresponding budget, has been accepted for funding, no additional expenses will be accepted beyond the approved total amount.

Eligible expenses accrued must be presented in the form of invoices, sent by the corresponding supplier or provider of services, to IEC, as soon as services are delivered and, under no circumstances, any later than December 15, 2023.

6. Calendar

The present calls shall abide by the following calendar:

Publication of call terms as approved by IEC, opening of submission period	May 30, 2023
Closing of submission period (DEADLINE FOR PROPOSALS)	June 15, 2023 at 12 p.m.
Publication of provisional resolution by IEC commission, opening of period for filing any disputes	June 26, 2023
Closing of period for filing any disputes, publication of final resolution by IEC commission	June 30, 2023
Acceptance by selected applicants	July 7, 2023
Deadline for sending invoices to IEC for eligible expenses	December 15, 2023
Deadline for submitting scientific reports to IEC	December 18, 2023

7. Inquiries, comments and/or disputes

Inquiries, comments and/or disputes regarding the present calls and/or the application procedure may be sent by e-mail to: secretaria.cientifica@iec.cat

SPECIFIC TERMS

A.- Call for methodology and procedures

This call is centred on the establishment of appropriate resources and development and implementation of procedures (both experimental and computational) during 2023, for use by the whole CBP community.

Each proposal shall focus on one of the following areas:

- Development and implementation of high-molecular weight DNA extraction methods for eukaryotic species, which are suitable for long-read sequencing and focused on taxa where extraction for long read sequencing proved challenging. This includes compilation and testing of available methods and assistance to groups working on these species. *Total budget: 75,000 € (indicative number of projects to be funded: 1 to 4).*
- Development and/or implementation of standardized genome assembly and annotation pipelines. *Total budget: 25,000 € (indicative number of projects to be funded: 1).*

Assembly and annotation pipelines shall have the following characteristics:

- a) For assembly, they must be capable of incorporating data from leading platforms (PacBio HiFi and/ or ONT Q20+, and Illumina), including Hi-C data for chromosome-level scaffolding.
 - b) For annotation, they must be capable of incorporating RNA-seq, use protein alignments when available, train/run multiple ab initio gene predictors, and include functional annotation.
 - c) Output should be formatted in a standard format such as GFF3. Additional output can be in FASTA or tabular files.
 - d) They must have a focus on both speed AND accuracy. Benchmarking is a necessary component of this development activity.
 - e) They must be implemented in a standard workflow management system such as Snakemake or NextFlow.
 - f) They must provide support to groups that lack the necessary expertise.
- Development and implementation of an extensive CBP data portal to efficiently manage and analyze the wide range of data generated by the CBP. *Total budget: 25,000 € (indicative number of projects to be funded: 1).*

The data portal must:

- a) adhere to the guidelines set forth by the Earth Biogenome Project and European Reference Genome Atlas, ensuring open-access, interoperability, compatibility, and harmonization of data across projects
 - b) allow synchronization of the CBP with other EBP's related portals and services, such as INSDC, COPO and GoAT, thus ensuring proper coordination within the CBP itself and the EBP's related projects
 - c) support efficient and accurate data and metadata collection under the CBP project respecting Findable, Accessible, Interoperable, and Reusable (FAIR) standards.
- Digitalization of the catalog of species under construction by the ICHN (<https://blogs.iec.cat/ichn/cataleg-de-la-biodiversitat-de-catalunya/>) and integration with catalogs from different institutions (Government of Catalonia and others) and facilitating the link with the CBP data portal. *Total budget: 25,000 € (indicative number of projects to be funded: 1).*
 - Setting up appropriate resources for long-term, high-quality, biobanking support for specimen samples used in the CBP (estimated number of samples to be collected during 2023 may range between 10 and 100). The goal is to preserve samples that will

be later submitted for DNA and RNA extraction and full genome sequencing. *Total budget: 25,000 € (indicative number of projects to be funded: 1 to 5).*

Applicants must be able to ensure that:

- a) They have state-of-art biobanking and cryopreservation capacities with proper backup measures.
- b) There is a digital record of the database including metadata.
- c) They provide all paperwork required by the biobank(s), and that access to the biobank(s), both for depositing and retrieving samples, is guaranteed.

Application procedure

Applications should be uploaded through the Google form:

https://docs.google.com/forms/d/1_YiV6aweR9g9JV4hq7iUQEQEmh9d8remFLYCD0TQOF4/edit

Proposals, written in English, must contain:

- Part 1) One-page description of the team's proven experience with the topic, group members, resources, and main achievements in the specific requested area, including, when relevant, up to three publications
- Part 2) One-page description of purpose, methodologies, plan for quality control and timeline.
- Part 3) Half-page description of the requested budget and justification of expenses.

B. Call for sample collection

This call is centred on funding collection of individual species, as well as field campaigns aimed at collecting as many eukaryotic species as possible during 2023. The goal is to collect specimens of a broad taxonomic range of eukaryotic species that will be later submitted for full genome sequencing.

Proposals should feature an estimated cost per individual species ranging between 50€ and 500 €, depending on factors such as displacement and necessary means, number of samples collected in the campaign, etc. Samples should be stored within biobank facilities until DNA extraction is performed.

Applicants who submit proposals to this call must be able to ensure that:

- They will obtain all necessary permits and authorizations for collecting samples of species.

- The species proposed are not included in GoT (<https://goat.genomehubs.org/>).
- They have the capacity to collect and store (e.g., dry ice, liquid nitrogen, or similar) fresh specimen samples. A voucher and tissue for biobanking should be deposited in a local biobanking repository, if available; applicants are responsible for providing any necessary biobank paperwork and for guaranteeing access to the biobank(s), both for depositing and retrieving samples.
- Specimens must be accompanied by robust and complete metadata of all types. This means that each contributed specimen should be identified to species level by a taxonomic expert and high-quality images should accompany each contributed specimen.

Applicants should agree with the open data and FAIR (Findable, Accessible, Interoperable and Reusable) principles. Also, once obtained, sequences will be immediately published, and the data made publicly available.

EBP guidelines on sample collection and processing standards (<https://www.earthbiogenome.org/sample-collection-processing-standards>) can be of help when writing the proposal. For further information, contact: catbiogenoma@correu.iec.cat

Application procedure

Applications must be written in English. Once completed, they should be uploaded through the Google form:

<https://docs.google.com/forms/d/1n8nJELRA883BvjRj0fyI67KTgrMT-8GWQ7Vefog8xM/edit>

Proposals must contain:

Part 1) One-page description of the team's proven experience with the topic, group members, resources, and main achievements in the specific requested area, including, when relevant, up to three publications.

Part 2) One-page description of the relevance of the species or field campaign, and species collection plan, including timeline and plans for permit acquisition, species collection and biobanking.

Part 3) Half-page description of the requested budget and justification of expenses.