

# YOUTH & SCIENCE PROGRAM

## CALL FOR RESEARCH PROJECTS – SUMMER 2022

### TABLE OF CONTENTS

This call includes the following sections:

– Introduction to the program .....	1
– Introduction to the call for projects .....	2
– Call for projects for Phase 1 .....	3
– Call for projects for Phase 2 and 3 .....	8
– Annex. Call scheme.....	10

### INTRODUCTION TO THE PROGRAM

The Youth & Science (*Joves i Ciència*) program organized by the Catalunya La Pedrera Foundation aims to promote the scientific and technological vocations of talented young people with a special interest in science and, at the same time, to boost their enthusiasm for research and scientific careers. The program is an opportunity for students to get in touch with scientific research and work with top-notch researchers.

Each year, 50 students from Catalonia are selected to be part of the program, which lasts for three years. The program is structured in different stages as follows:

**1r YEAR**      **MONNATURA PIRINEUS SCIENCE CAMP (PHASE 1):** 50 students in 10<sup>th</sup> grade (*4t d'ESO*) are selected to live a unique scientific research experience in the [MónNatura Pirineus](#) center. The 50 selected students participate in one of the 5 offered projects, each of which hosts a group of 10 students.

The Youth & Science program does not end with the MónNatura Pirineus Science Camp, having a continuity for students during the following two years, with Research Center Stays (Phase 2) and International Research Stays (Phase 3). These two phases aim to continue bringing students closer to science, through stays at local or international research centers, as well as in other science programs. To participate in the second phase of the program, students must write a paper during the first trimester of 11<sup>th</sup> grade (*1r de Batxillerat*). The quality of this work will be decisive to obtain a place in the next phase of the program.

**2nd YEAR**      **RESEARCH CENTER STAYS (PHASE 2):** during the summer between 11<sup>th</sup> and 12<sup>th</sup> grade (*1r i 2n de Batxillerat*), students selected in the first phase of the program can continue to have experiences in scientific research in a local

research center. The objective of this phase is for each student to join a research team, where they can work with top-level professionals and international research groups. Each student chooses a research project to work on during the summer from those offered at this stage. To access this stage of the program, it will be necessary to have written a scientific paper and to have enrolled in the scientific and/or technological baccalaureate.

### 3rd YEAR

**INTERNATIONAL RESEARCH STAYS (PHASE 3):** at this stage students will have to look for a research project on their own that will be developed during the summer after 12<sup>th</sup> grade (*2n de Batxillerat*), preferably in an international research center. The objective of this phase is that the students themselves are the ones who seek a research project in which to work that fits their preferences and scientific interests. Although the purpose of this phase is for students to seek research opportunities at the international level, the possibility of a local stay in a center or institution where the student has a particular interest is also allowed. To facilitate this task for students, the program offers a limited number of places in international research centers.

In phases 2 and 3 of the Youth & Science program, students are also offered a limited number of places reserved to participate in science programs, as well as the possibility of applying for a place and entering the selection process of some recommended international science programs, but where the program does not have reserved places.

---

## INTRODUCTION TO THE CALL FOR PROJECTS

This call is aimed at **scientific institutions and professionals** with an interest in education and scientific dissemination, as well as the will to transmit their knowledge to society and to future generations of young scientists. These are the two categories into which this call is divided:

- **CALL FOR RESEARCH PROJECTS PHASE 1** (page 3): aimed at researchers and scientific professionals interested in creating, developing, and teaching a research project for young people with special motivation for scientific research. The objective of this call is to select the 5 science education projects that will be developed during the first phase of the program, the MónNatura Pirineus Science Camp, which will take place in the summer of 2022.
- **CALL FOR RESEARCH PROJECTS PHASE 2 and 3** (page 7): it is addressed to all research centers, local or international, that wish to host one or more students of the program to develop a scientific stay in one of the laboratories of the institution within the framework of the second or third phase of the program, the Stays in the Research Center (local centers) and / or the International Research Stays (international centers), during the summer of 2022. The goal is for students to join a research team from a research center or institution, where they can work in a real research environment with top-notch professionals.

## CALL PHASE 1

### MONNATURA PIRINEUS SCIENCE CAMP 2022

The Youth & Science program opens this call to select the 5 scientific education projects that will be developed during the first phase of the program, the MónNatura Pirineus Science Camp 2022.

The MónNatura Pirineus Science Camp will take place from June 27<sup>th</sup> to July 9<sup>th</sup>, 2022 in [MónNatura Pirineus](#). The main task of the center is environmental education, but during these days it is used exclusively as a research center and the spaces are adapted to the needs of the stays and each research project in particular. It is located in Son, in the valleys of Aneu, one of the best-preserved regions of the Pyrenees, between the National Park of Aigüestortes and the Estany de Sant Maurici and the Natural Park of Alt Pirineu.

In the MónNatura Pirineus Science Camp, students will participate in one of the 5 research projects selected in this call. 50 students will be selected, 10 for each project. The profile of the selected students is as follows:

- Students of 10<sup>th</sup> grade (*4t d'ESO*) that, in June 2022, will have finished the Compulsory Secondary Education (15-16 years).
- Young people who, in addition to having a **good academic record**, have a **special interest in scientific research**.
- With talent, curiosity, and special motivation for science, and with the will to specialize in a **scientific and/or technological baccalaureate**.
- Good level of English.

The tasks planned by the team of researchers presenting the proposal are:

#### – **DEVELOPMENT OF THE PROJECT**

The projects that will be selected for this first phase should be challenging for students and should enhance their enjoyment for scientific research. The projects should comprehend disciplines in theoretical and experimental sciences: physics, chemistry, biology, mathematics, technology, biomedicine, biochemistry, genetics, neurosciences, robotics, nanotechnology, astrophysics, biotechnology, engineering, etc. The project proposals must be a hands-on science experience and they must have a research structure with start and end, so that the students experience all the stages of the scientific method process: from the collection of information, formulation of hypothesis, design of the methodology and development of the experimental part, to obtaining, analyzing and discussing the results. The level of the projects must be high, since the program is demanding; and the vehicular language can be Catalan, Spanish and/or English.

Groups will be of approximately 10 students per project, which will be led by a team of scientists of 2-3 members. At least one of the members of the team should have a PhD. The scientists will oversee the development and well-functioning of the project and will be responsible for guiding the students through their research activities. Their mission is to provide students with the necessary skills to conduct their research with success; giving them the autonomy to learn how to gather information, draw hypothesis and solve problems by themselves, to be critical with the results they obtain, etc. Ultimately, they should teach them how to think like scientists do. Through the project, participants are expected to pose questions, design and develop experiments, critically interpret the results, propose new hypothesis, etc. The project must be attractive, challenging and motivating, and should encourage the students' creativity and curiosity.

The students will work with the scientists for about 6-7 hours a day in their projects, except Sunday July 3<sup>rd</sup> of 2022, which will be dedicated to leisure. The last day of the program, on Saturday July 9<sup>th</sup> of 2022, will have to do a presentation of their project to the rest of the groups as well as to their families attending. Besides the research activities, there will be also shared leisure activities, such as excursions, sport competitions, workshops, cinema, conferences given by invited speakers, etc. Educators of the [MónNatura Pirineus](#) center and leisure professionals of [Descoberta](#) will lead most of these activities. Most of the leisure activities that will be carried out will be directed by educators of the center [MónNatura Pirineus](#) and the leisure team of. The project proposals must fit the following general schedule of the MónNatura Pirineus Science Camp 2022:

	Mon. June 27 <sup>th</sup>	Tue. June 28 <sup>th</sup>	Wed. June 29 <sup>th</sup>	Thu. June 30 <sup>th</sup>	Fri. July 1 <sup>st</sup>	Sat. July 2 <sup>nd</sup>
8:30-9:30	Arrival	Breakfast	Breakfast	Breakfast	Breakfast	Breakfast
9:30-13:00		Project	Project	Project	Project	Project
13:30-15:00	Lunch	Lunch	Lunch	Lunch	Lunch	Lunch
15:00-18:00	Welcome	Project	Project	Project	Project	Project
18:00-18:30	Snack	Snack	Snack	Snack	Snack	Snack
18:30-20:00	Leisure/free	Leisure/free	Leisure/free	Leisure/free	Leisure/free	Leisure/free
20:30-21:30	Dinner	Dinner	Dinner	Dinner	Dinner	Dinner
21:30-23:00	Leisure/free	Leisure/free	Leisure/free	Leisure/free	Leisure/free	Leisure/free

	Sun. July 3 <sup>d</sup>	Mon. July 4 <sup>th</sup>	Tue. July 5 <sup>th</sup>	Wed. July 6 <sup>th</sup>	Thu. July 7 <sup>th</sup>	Fri. July 8 <sup>th</sup>	Sat. July 9 <sup>th</sup>
8:30-9:30	Breakfast	Breakfast	Breakfast	Breakfast	Breakfast	Breakfast	Breakfast
9:30-13:00	Hike	Project	Project	Project	Project	Project	Presentation
13:30-15:00	Lunch	Lunch	Lunch	Lunch	Lunch	Lunch	Lunch
15:00-18:00	Hike	Project	Project	Project	Project	Project	Farewell
18:00-18:30	Snack	Snack	Snack	Snack	Snack	Snack	
18:30-20:00	Leisure/free	Leisure/free	Leisure/free	Leisure/free	Leisure/free	Leisure/free	
20:30-21:30	Dinner	Dinner	Dinner	Dinner	Dinner	Dinner	
21:30-23:00	Leisure/free	Leisure/free	Leisure/free	Leisure/free	Leisure/free	Leisure/free	

## — SELECTION OF CANDIDATES

To become a participant of the Youth & Science program, students must pass through a selection process. Every year the program receives about 800 applications from secondary schools (both public and private), and each center can nominate a maximum of 3 candidates.

A panel chosen by the Catalunya La Pedrera Foundation does the first selection of candidates based on: the science teacher recommendation, the tutor recommendation, the student's motivation letter and academic results. In this first selection, around 125 students (25 per project) are called for a personal interview.

The personal interview is the last phase of the selection process. The research team in charge of each project will interview the final candidates and select the 10 participants (50 in total for the 5 projects). The interviews will take place on April 22<sup>nd</sup> and 23<sup>rd</sup> of 2022 at La Pedrera-Casa Milà, headquarters of the Catalunya La Pedrera Foundation, or by videoconference (if the situation requires it).

## — FOLLOW-UP OF THE SCIENTIFIC PAPERS

Once the MónNatura Pirineus Science Camp has finished, students must write a scientific paper as a requirement for admission to the second phase of the Youth & Science program, the Stays in the Research Center. Students begin working on the paper in September 2022 and must submit it by mid-January 2023. Researchers in charge of the project must supervise it and do the follow up of the students' papers, acting as mentors during the whole process. This task can be carried out online.

## TEMPLATE PROJECT PROPOSAL SUBMISSION

The projects submitted must include:

1. **Project title.**
2. **Description of the project, including:**
  - General and specific **objectives** of the project.
  - Description of the **activities** that will be carried out within the project.
  - **Calendar** detailed by time slots (morning and afternoon) of the activities that will be carried out in the framework of the project during the 13 days that the program lasts, including the presentation of the project by the research team on the first day (June 27<sup>th</sup>, 2022) and the final presentation given by the students on the last day (July 9<sup>th</sup>, 2022).
3. **Consumables necessary for the realization of the project (\*).**
4. ***Hardware* and *software* necessary for the realization of the project (\*).**
5. **Infrastructure and equipment necessary for the implementation of the project (\*).**
6. **Detailed budget** with items corresponding to the material, consumables, *hardware*, *software*, and other requirements with cost, as well as expenses associated with excursions or visits. The maximum amount for each project is € 1,500.
7. **Contact details, picture and short bio** of the scientists who are in charge of the project (summarized in approximately 120 words).
8. **Brief summary of the project** (maximum 80 words). The summary should be sufficiently clear describing the project, as it will be the basis for the publication of the diffusion campaign when the program's applications are open.
9. **The most extensive summary of the project will be included on the website** (maximum 500 words), where the contents that will be covered in the project and the aptitudes that the participants will develop should be explained (for example, the project contents are related to biology, mathematics, engineering; it is a project for students interested in informatics, engineering and biology; the experimental part of the project will be based on computer programming, laboratory techniques, fieldwork, etc.). A clear explanation of the project facilitates the selection of the preferred project by the students, since they have more information to make the choice based on their interests and abilities. An equally rigorous and attractive description.
10. **3 questions related to the project (and their respective answers).** One of the three related questions that you have proposed will be randomly included in the application

form of students applying to your project. Students must argue their response so that we perceive their capacity for scientific reasoning. These questions should not have a single valid answer, since the student's knowledge in the subject will not be assessed, but only the justification and reasoning they make without the help of Internet or another person.

11. **Proposal of activity in collaboration with other projects** (maximum 500 words). One of the key values of the program is teamwork. That is why we ask you to design a participatory activity within the framework of your project that you believe may interest students of other projects, regardless of their field of scientific research. We want you to think about what the students of your project could share with the other participants that may also be of interest to their training. It should include the description of the activity, the objectives, the duration, the methodology and the possible necessary materials.

(\*) If the project proposal is selected, the Youth & Science program will check the availability of the equipment, *hardware* or *software* or material required by the research team and, if they do not have it, their acquisition or rental will be valued. The [MónNatura Pirineus](#) center is equipped with a laboratory with tools for biology, molecular biology, and chemistry. It also has an observatory, a CCD camera, some telescopes (4 Meade 10" and 1 Meade 16") and computers with internet connection. All spaces will be equipped as laboratories with the necessary material, depending on the requirements of the projects that are developed in the context of the MónNatura Pirineus Science Camp. The maximum budget for the acquisition of the material is € 1,500 per project.

## REMUNERATIONS

- **SELECTION INTERVIEWS:** will take place on April 22<sup>nd</sup> and 23<sup>rd</sup>, 2022. Remuneration of € 600 gross to be distributed among the project's team in charge of the interviews.
- **MONNATURA PIRINEUS SCIENCE CAMP:** will take place from June 27<sup>th</sup> to July 9<sup>th</sup>, 2022. Remuneration of € 5,000 gross to be distributed among the research team in charge of the project. During the science camp, the expenses of accommodation and meals of the research team, as well as the travel expenses to and from [MónNatura Pirineus](#) will be covered by the Youth & Science program. Other trips made during your stay will not be included.
- **TUTORING OF THE SCIENTIFIC PAPERS:** task carried out approximately from September 2022 to January 2023. The remuneration is € 150 gross per paper tutored.



## DEADLINE FOR SUBMISSION

All proposals should be submitted by **November 8, 2021**, to the following email address: [jovesiencia@fcatalunyalapedrera.com](mailto:jovesiencia@fcatalunyalapedrera.com).

## SELECTION AND RESOLUTION OF PROPOSALS

The Youth & Science program will select the 5 project proposals that will be developed at the MónNatura Pirineus Science Camp 2022. All proposals will be analyzed and evaluated in accordance with the needs and nature of the program, ensuring a good representation of a wide range of scientific disciplines across all projects. **The resolution of the selected projects will be communicated via email by the end of November 2021.**

## CALL PHASE 2 AND 3

### RESEARCH CENTER STAYS AND INTERNATIONAL RESEARCH STAYS

The Youth & Science program does not end with the MónNatura Pirineus Science Camp, having a continuity for students during the following two years, with the **Research Center Stay** and the **International Research Stay**. These two phases aim to continue bringing students closer to science, through research stays at local or international research centers, as well as in other science programs.

The Youth & Science program opens this call to **all research centers, local and international, that wish to host one or more students of the program to develop a stay in one of its laboratories** within the framework of the second or third phase of the program, the Research Center Stay and/or the International Research Stay 2022.

The students that are in the second phase of the program (11<sup>th</sup> grade, *1r Batxillerat*, 16-17 years old) will be candidates to apply for the places in the local centers (in Catalonia or Spain). This group of participants already had the opportunity to work in research during the first phase of the program (at the MónNatura Pirineus Science Camp), and the goal of this phase is to keep their motivation for research by offering them experiences in a more real environment.

The students that are in the third phase of the program (12<sup>th</sup> grade, *2n de Batxillerat*, 17-18 years old) will be candidates to apply for the places in the international centers (abroad). This group of participants have more experience, since all of them already had done an internship in a local research center. The goal of this phase is to give them the opportunity to work in an international research environment and get to know scientific teams from other parts of the world, with different ways of working and approaching scientific questions. Added to this challenge is the fact of having to stay and live abroad for time.



To be able to adapt the stays to the school calendar of the students, the stays should be held during the **summer of 2022**, from the end of June (school's ending) to the beginning of September, for a period from 2 weeks (minimum) to 8 weeks (maximum).

## PROJECT PROPOSAL SUBMISSION TEMPLATE

The projects submitted by the various research centers must include:

1. **Name of the research center** (include a link to the website of the institution).
2. **Laboratory or research group** from which the research stay is proposed.
3. **Dates** in which the student/s could carry out the research stay (approximately, from 2 weeks -minimum- to 8 weeks -maximum-).
4. **Number of students** that could be hosted.
5. **Contact details of the researcher/s** responsible for the project.
6. **Project title**.
7. **Brief description** of the research project (such as an abstract).
8. **Types of tasks** that the student/s will have to perform during the stay (experimental work, theoretical study, participation in conferences and/or debates, etc.).
9. **Knowledge** that the student/s will have acquired at the end of the stay.
10. **Specific skills required** by student/s interested in the project or recommended readings (if applicable).
11. **Budget** of the material to be used by the student/s, if necessary (maximum budget: 500€ per hosted student).

## DEADLINE FOR SUBMISSION

All proposals should be received by **November 8, 2021**, to the following email address: [jovesiencia@fcatalunya.lapedrera.com](mailto:jovesiencia@fcatalunya.lapedrera.com)

## CALL SCHEME

### DOING RESEARCH AND WILLING TO SHARE YOUR PASSION FOR SCIENCE?

Choose your option!

#### Create a science education project for young students!

##### Step 1



Set up  
your team

##### Step 2



Design the science  
education project

##### Step 3



Develop  
your proposal  
in summer 2022

#### Share your research hosting a student!

##### Step 1



Propose it  
to your center

##### Step 2



Tell us which  
Tasks the student  
will develop

##### Step 3



Host a student  
in summer 2022

You have time until **November 8<sup>th</sup>, 2021** to send us your proposal to the following email address: [jovesiencia@fundaciocatalunya-lapedrera.com](mailto:jovesiencia@fundaciocatalunya-lapedrera.com)

For more information visit the website:

[www.fundaciocatalunya-lapedrera.com/en/youth-and-science](http://www.fundaciocatalunya-lapedrera.com/en/youth-and-science)