Finanziato dall'Unione europea NextGenerationEU

MUR Ministero dell'Università e della Ricerca

ALMA MATER STUDIORUM UNIVERSITÀ DI BOLOGNA

Purpose: Public comparative procedure for the recruitment of 28 researchers with a full-time fixed-terms employment contract for three years, pursuant to art. 24 paragraph 3 letter a) (junior) of Law no. 240/2010, as part of the National Recovery and Resilience Plan (PNRR), Mission 4 "Education and Research" - Component 2 "From Research to Business.

THE DIRECTOR

WITH REFERENCE TO the Regolamento UE of February 12th, 2021, no. 2021/241, which established the Dispositivo per la Ripresa e la Resilienza;

WITH REFERENCE TO the National Recovery and Resilience Plan (PNRR), presented to the European Commission on April 30th 2021 pursuant to art. 18 of Regulation (EU) no. 2021/241 and approved by decision of the ECOFIN Council of July 13th 2021 notified to Italy by the General Secretariat of the Council with note LT161 / 21 of July 14th 2021, which plan consists of 6 missions and 16 components, and in particular considering the Mission 4 Component 2 (M4C2) "From Research to Business" which aims to support investments in research and development, to promote innovation and the diffusion of technologies, to strengthen skills by promoting the transition to a knowledge-based economy , covering the entire supply chain of the research and innovation process, from basic research to technology transfer;

WITH REFERENCE TO the Projects approved under the PNRR and related to the following notices:
«Public notice for the presentation of intervention proposals for the Strengthening of research structures and creation of "national samples" of R&D on some Key Enabling Technologies to be financed under the National Recovery and Resilience Plan», announced with Directorial Decree n.3138 of 16/12/2021 (so-called National Championships Announcement);
«Notice for the presentation of intervention proposals for the creation and strengthening of innovation ecosystems», announced with Directorial Decree no. 3277 of 12/30/2021 (so-called Innovation Ecosystems Call);
«Public notice for the presentation of project proposals for "Strengthening and creation of Research Infrastructures"» to be funded under the NRP, announced with Directorial Decree no.

WITH REFERENCE TO the notice published in the Official Gazette - 4th special series of October 14th 2022 with which the University of Bologna has

published 28 selection notices for the assignment of fixed-term research contracts of type a), pursuant to law no. 240, art. 24, paragraph 3, letter a) (RTDA) to be applied to PNRR resources

WITH REFERENCE TO the rules referred to in Article 13 of the present call for application;

WITH REFERENCE TO the resolutions and decrees issued in September 2022 by the Departments for which the positions are activated;

WITH REFERENCE TO the resolution of Board of Governors of September 27th, 2022

ORDERS

Art. 1 – Purpose

Procedures of comparative evaluation by qualifications and public discussion are called for the recruitment of 28 researchers with a full-time fixed-term employment contract for three-year pursuant to art. 24 paragraph 3 letter a) (junior) of Law no. 240/2010.

An annual gross salary equal to € 36.675,00 will be corresponded. The annual increase in this amount will be calculated according to the existing procedure for non-contracted personnel.

The contracts are activated with resources from the National Recovery and Resilience Plan (PNRR).

The specific elements of each position are defined in the relative attachment (an attachment to this call for applications has been prepared for each selection).

In the following articles, where there are specific elements of each selection, reference is made to the attachments.

Art. 2 – Activities to be performed

The researchers will have to carry out 350 hours of supplementary teaching and assistance to students, for each academic year covered by the contract.

The hours of frontal teaching on annual basis are indicated in each attachment.

Concerning the provisions of art. 10 of the Reg. regarding fixed term researchers, issued by Rectoral Decree no. 344 of March 29th 2011 and amendments, the project that each winner will have to develop and the scientific productivity objectives are explained in the relative attachment.

Art. 3 – Admission requirements

The selection is also open to those who come from non-EU countries.

Each attachment specifies the necessary requirement to be able to participate in the relative selection.

In particular, either the possession of the PhD or, for the sectors concerned, of a medical specialization diploma may be required.

In any case, applicants must be in possession of qualification at the date of the deadline for the submission of applications to the present selection.
In case of PhD obtained abroad, please include a statement of equipollence with the Italian PhD title pursuant to art. 74 of D.P.R. 382/1980 or the statement of equivalence with the Italian PhD title pursuant to art. 38 of Legislative Decree. N. 165/2001.
In case of High School of Specialization obtained abroad, please include a statement of equivalence with the Italian title pursuant to art. 38 of Legislative Decree. N. 165/2001, or art. 74 of D.P.R. 382/1980.
In both cases, pending the release of the only result of equivalence by the designated offices, it is possible to produce the delivery receipt of the request instance of the same (for the release procedure, see page:
http://www.cimea.it/it/servizi/procedure-di-riconoscimento-dei-titoli/riconoscimento-non-accademico.aspx).
In any case the proof of the equivalence of the foreign qualification must be produced to the administration prior to beginning service.
Applications from professors, associate professors, or researchers with tenure will not be accepted, even if the applicant is not in service.
The selection is not open to any persons who are related by blood up to the fourth degree, to a professor working in the Department that proposed the activation of the single contract, or to the Rector, Director General or a member of the Board of Governors of the University.
Furthermore, the selection is not open to anyone who has had research fellowship or fixed-term researcher contracts at the University of Bologna or any other state-funded, private-funded or distance-learning Italian university pursuant to articles 22 and 24 of Italian Law 240/2010, or with any other body listed in paragraph 1 of Art. 22 of Italian Law 240/2010 for a period which, summed to the foreseen duration of this contract, exceeds a total of 12 years, even if not consecutive. For the purposes of the duration of the above-described periods, in compliance with the laws in force any periods of maternity or sick leave shall not be calculated.
State employees may on unpaid leave for the entire duration of the contract, thus occupying a non-tenure position without pay or social security contributions, in cases where such a position is allowed by the structure of origin, likewise without pay or social security contributions.

Art. 4 – Application procedure

The submission of the applications for participation in the selections must be made exclusively via electronic procedure by accessing the following link:

https://personale.unibo.it

Regarding all procedures, the deadline is the following: November 4th, 2022 at 12:00 (noon, Italian Time).

The application must be submitted at the same time with the insertion of all the attached documentation required.

The following documents shall be enclosed to the electronic application form (preferably files: PDF, other supported files: JPG, BMP, PNG):

1. identification document scanned (10MB max);
2. curriculum vitae with indication of the scientific-professional activity (10MB max);
3. reference letters, if any. Letters can be submitted directly by the candidate uploading it during the application, in case of possession (10MB max), or can be submitted by the referee. In this case candidates should provide the referee e-mail address. When the application is closed, the system will send an automatic request to the referee, referring to the candidate and the procedure. The referee must submit his letter through the link into the e-mail. At this address he/she will upload his/her letter by the application deadline in order to be considered as part of the candidate's application.
4. scientific publications (other supported files are TIFF and PS, 20MB max each document) which are already printed at the date of the call of application deadline, or scientific publications accepted for printed, together with the editor acceptance letter. While uploading each document will be asked to indicate the title, the authors' names, the editor, the year of publication. Optional information are the month, the ISBN code, the DOI code, the booklet number.
   Pursuant to Ministerial Decree 243/11, the PhD thesis is considered a publication, and thus if presented by the candidate it shall be included in the maximum number of publications indicated in each attachment.

While applying, applicants shall declare under their own responsibility:

1. surname and name;
2. place and date of birth;
3. citizenship;
4. residence address;
5. (if Italian citizens) registration to electoral rolls. If any, the reasons why he/she is not registered or cancelled from them;
6. that there have not been any criminal proceeding against them or current criminal proceedings; otherwise, applicants shall specify the proceedings against them (the date of the measure and the judicial authority that issued it) and pending penal proceedings. The existence of a previous criminal conviction is not in itself an impediment to hiring, unless it is a conviction for a crime that prevents the establishment of the employment relationship with the public administration as it derives from the interdiction from public office, o the inability to contract with the public administration, or the termination of the employment relationship (articles 28, 29, 32-ter, 32-quater, 32-quinquies of the Criminal Code, articles 3,4, 5, L . 97 of March 27, 2001). In other cases, the Administration will ascertain the gravity of the criminally relevant facts committed by the person concerned, for the purposes of access to public employment. This check is carried out with the aim of ascertaining the existence of the fiduciary element which constitutes the fundamental prerequisite of the relationship between employer and worker, as well as for the purpose of

assessing the existence of the requisites of moral suitability and aptitude to carry out activities as a public employee;

7. to have or not to have benefited of non-voluntary leave periods due to maternity/paternity compulsory abstention or for serious health reasons, indicating the periods in case
8. possession of the qualification required pursuant to Art. 3 of this call for application and the mark obtained, if any;
9. to be fit to the employment the selection refers to;
10. that they are not, nor have been, professors, associate professors or researchers with tenure, even if not in service;
11. that they are not related by blood up to the fourth degree, to any professor working in the Department that proposed the activation of the single contract, or to the Rector, Director General or a member of the Board of Governors of the University of Bologna;
12. elected e-mail address for the purpose of the participation in this contest;
13. Foreign citizens shall also declare to have a proper knowledge of Italian and to enjoy civil and political rights also in their origin countries or the reasons for loss of enjoyment.

Any modification shall be timely communicated to the Ufficio Ricercatori a tempo determinato.
In case of technical problems, contact the support: assistenza.cesia@unibo.it .

Art. 5 – Applicants' obligations

The penalty of exclusion from the selection shall apply in the following cases:

- Non compliance with the terms and procedures for submitting the application form indicated in article 4 of this call for applications;
- Lack of the qualification required to participate in the selection indicated in each attachment.

All applicants shall be admitted to the contest and the Administration reserves the right to check that they actually are in possession of the requirements necessary to apply for the selections; the Administration may, at any time and even after the exams, order the exclusion from the selection hereto.

Art. 6 – Selection Board

With regard to each procedure, the Selection Board will be appointed upon administration resolution and is composed of three full or associate professors belonging to the competition Scientific sector or, alternatively, to the same competition macro-sector for which the procedure is announced or of equivalent role in the case of components not coming from national universities, identified by the Department that proposed the activation of the contract.
Two of the members, external to the University, are drawn with the methods provided by the art. 8-bis of the "Regolamento per la disciplina delle chiamate dei Professori di Prima e Seconda fascia" in application of articles 18 and 24 of the Law 240/2010 issued with DR

977/2013 and s.m. A third component is identified by the Department Council among the professors inside or outside the University. As envisaged by art. 57 of Legislative Decree 165/2001, in order to guarantee equal opportunities between men and women for the access to work and work treatment, generally, at least one member is female.
The Commission appoints a president and a recording secretary between their members.
Notice of the appointment of each Commission will be published on Alma Mater Studiorum - University of Bologna website.

Art. 7 – Selection procedure

With regard to each procedure, the selection procedure is carried out by the Board after a preliminary evaluation of each candidate's qualifications, curriculum and scientific production, including the doctoral thesis, according to the criterion identified by the MUIR in D.M. 243/2011.
The candidates chosen in the preliminary evaluation based on their comparative merits - between 10 and 20% of the number of applicants and not less than 6 - will then be called for interview. The interview will consist of a discussion of the candidate's qualifications and scientific production and may take the form of a seminar open to the public. If the total number of candidates is 6 or less all candidates will be interviewed.
Any reference letters produced by the candidates will also be considered.
The discussion will take place in the language indicated in each attachment.
With regard to each procedure, the discussion with the Commission will take place starting from November 21st, 2022, and it will be carried out in public form and electronically using the audio and video teleconferencing tool via the Teams platform (the workstation from which candidates will take do the interview must be equipped with a webcam - essential for the recognition of the candidate - microphone and headphones and/or audio speakers), according with the legislative and regulatory provisions regarding the containment and management of the epidemiological emergency from COVID-19 and also considering the evolution of the health emergency.
With reference to each procedure, the notice of the day and time in which the public discussion will take place will be announced together with the publication of the list of admitted candidates on the University website at: https://bandi.unibo.it/docenti/rtd.
The publication on the University website will constitute official notification to all applicants, without any obligation for any further communication.
The publication will be communicated by e-mail to the address indicated by the candidates in the application.
The Alma Mater Studiorum - University of Bologna does not assume any responsibility for the non-receipt or the not-read of the e-mail.
It is up to candidates to keep themselves informed by consulting the University website page to find necessary information about selection.
Candidates attending the interview must bring a valid identification document with them.

EU citizens shall bring their passport or an identity document issued by their country of origin. Non-EU citizens shall bring their passport.

Art. 8 – Ranking List and recruitment

With regard to each procedure, after the exams, the Board shall prepare the general final list based on the merits.

On equal merits, priority will be allocated according to date of birth and the youngest one shall prevail.

The list based on merits is approved pursuant to the administration resolution and will be published in Alma Mater Studiorum – University of Bologna Official Bulletin.

The terms to raise any appeal shall start from the date of publication of said notice in case the resolution has not been otherwise disclosed.

The use of the final candidate list is strictly bound to study and research needs related to the scientific sector provided for each procedure.

The Department that activated the single position will propose recruitment by a majority vote of the professors and associate professors of the Department and approved by the Board of Governors. The Department will also propose the start date of the employment relationship.

Art. 9 – Employment procedures

Following the conclusion of the recruitment procedure referred to in art. 9, the candidates will be asked to sign a fixed-term contract of full-time or defined-time employment.

The employment relationship is governed by a personal contract, statutory laws and EC regulations.

In the event that the research project is in the medical field and provides for the performance of medical activity, the latter is governed by the national collective agreement for medical staff and by the specific appointment conferred by the hospital facility where the researcher will carry out the activity.

The personal contract shall specify any reasons for which it might be terminated, as well as the relevant periods of notice. In any case the contract will be terminated immediately and without notice in the event of the cancellation of the recruitment procedure to which it is inalienably linked.

The trial period shall last three months. At the end of the period, unless the employment relationship has been terminated by either of the parties, the employee is confirmed for service and the whole period worked from the beginning of the contract shall be calculated for seniority purposes.

Art. 10 – Documentation required for the participation in the public selection and for hiring purposes

For the purposes of participation in the public selection, documents and qualifications in English, French, German and Spanish can be produced in the language of origin. Documents and qualifications written in other languages must be presented in the original language with an Italian or English translation attached. The translation must be true and correct, written by an Italian consular, a qualified diplomatic representative, or an official translator.

Regarding the documentation necessary for hiring purposes, all the documents written in any foreign language shall be accompanied by a true and correct translation into Italian, written by an Italian consular, a qualified diplomatic representative, or an official translator.

Art. 11 – Rights and duties of a researcher with a fixed-term contract of employment

In accordance with the rights and duties of public employees prescribed by the Italian civil code, on signing the contract the researcher will be expected to perform all those activities mentioned for each position in the relative attachment as well as to carry out the research periods in the company and abroad (the latter only where applicable).

In the event that medical assistance services are provided, the researcher will also assume rights and duties related to this activity.

These activities will be carried out in respect of the existing hierarchy and in coordination with existing programmes and research projects.

The researchers will perform the requested activities in person, substitution is not permitted.

Existing Italian laws concerning maternity, injury and illness will be applied.

The researcher undertakes to fulfill the obligations of conduct prescribed by the code of conduct, issued by DPR 62/2013.

Art. 12 – Processing of personal data and person in charge for the contest

Information about the processing of personal data (provided during the application process) are available at the link: www.unibo.it/privacy (Notice for participants in contests and selections published by the University).

The person in charge of the contest is Mr. Gianfranco Raffaeli, Responsabile dell'Ufficio Ricercatori a tempo determinato - Piazza Verdi n. 3 - 40126 Bologna.

For further information, please contact: Ufficio Ricercatori a tempo determinato dell'Alma Mater Studiorum - Università di Bologna – Piazza Verdi n. 3 - Tel. +39 051 2099617 – 2098958 - 2098972, Fax 051 2086163; e-mail: apos.ricercatoritempodeterminato@unibo.it.

Art. 13 – Reference Regulations

The present notice is issued based on the following regulations:

- Art. 24 of Law no. 240 dated December 30th, 2010;
- D.P.R. (Decree of the President of the Republic) no. 445 dated December 28th, 2000;
- Leg. Decree no. 165 dated March 30th, 2001;
- Law 241/1990;
- Regulation for fixed-term researchers of Alma Mater Studiorum – University of Bologna, (link: http://www.normateneo.unibo.it/NormAteneo/Regolamento_ricercatori_a_tempo_determinato.htm).

For the Director of Area del Personale
f.to digitalmente Giovanni Longo

Attached documents:

- Summary table of activated positions;
- Att. 1 – Dept. Industrial Chemistry "Toso Montanari" – CHIMIND, SSD CHIM/02, 1 position;
- Att. 2 – Dept. Civil, Chemical, Environmental, and Materials Engineering – DICAM, SSD CHIM/07, 1 position;
- Att. 3 – Dept. Electrical, Electronic and Information Engineering "Guglielmo Marconi" - DEI, SSD ING-IND/31, 1 position;
- Att. 4 – Dept. Electrical, Electronic and Information Engineering "Guglielmo Marconi" - DEI, SSD ING-IND/32, 1 position;
- Att. 5 – Dept. Electrical, Electronic and Information Engineering "Guglielmo Marconi" - DEI, SSD ING-IND/33, 1 position;
- Att. 6 – Dept. Electrical, Electronic and Information Engineering "Guglielmo Marconi" - DEI – SSD ING-INF/01, Project Eco, 1 position;
- Att. 7 – Dept. Electrical, Electronic and Information Engineering "Guglielmo Marconi" - DEI – SSD ING-INF/01, Project HPC, 1 position;
- Att. 8 – Dept. Electrical, Electronic and Information Engineering "Guglielmo Marconi" - DEI – SSD ING-INF/04, 1 position;
- Att. 9 – Dept. Electrical, Electronic and Information Engineering "Guglielmo Marconi" - DEI – SSD ING-INF/05, 1 position;
- Att. 10 – Dept. Physics and Astronomy "Augusto Righi" – DIFA – SSD FIS/01, 1 position;
- Att. 11 – Dept. Physics and Astronomy "Augusto Righi" – DIFA – SSD FIS/05, Project HPC, 1 position;
- Att. 12 – Dept. Physics and Astronomy "Augusto Righi" – DIFA – SSD FIS/05, Project CTA+, 1 position;
- Att. 13 – Dept. Physics and Astronomy "Augusto Righi" – DIFA – SSD FIS/06, 1 position;
- Att. 14 – Dept. Veterinary Medical Sciences – DIMEVET– SSD AGR/20, 1 position;
- Att. 15 – Dept. Veterinary Medical Sciences – DIMEVET – SSD VET/05, 1 position;
- Att. 16 – Dept. Veterinary Medical Sciences – DIMEVET – SSD VET/10, 1 position;
- Att. 17 – Dept. Industrial Engineering – DIN – SSD ING-IND/04, 1 position;
- Att. 18 – Dept. Industrial Engineering – DIN – SSD ING-IND/08, 1 position;
- Att. 19 – Dept. Industrial Engineering – DIN – SSD ING-IND/14, 1 position;
- Att. 20 – Dept. Industrial Engineering – DIN – SSD ING-IND/15, 1 position;

- Att. 21 – Dept. Industrial Engineering – DIN – SSD ING-IND/16, 1 position;
- Att. 22 – Dept. Industrial Engineering – DIN – SSD ING-IND/21, 1 position;
- Att. 23 – Dept. Pharmacy and Biotechnology – FABIT – SSD BIO/04, 1 position;
- Att. 24 – Dept. Pharmacy and Biotechnology – FABIT – SSD BIO/10, 1 position;
- Att. 25 – Dept. Pharmacy and Biotechnology – FABIT – SSD BIO/11, 1 position;
- Att. 26 – Dept. Pharmacy and Biotechnology – FABIT – SSD BIO/18, 1 position;
- Att. 27 – Dept. Biomedical and Neuromotor Sciences – DIBINEM – SSD BIO/09, 1 position;
- Att. 28 – Dept. Biomedical and Neuromotor Sciences – DIBINEM – SSD MED/50, 1 position;

Dipartimento	Bando	CUP	Progetto	Codice	Settore Concorsuale	Settore Scientifico Disciplinare	n. Posti	Sede Servizio
Industrial Chemistry "Toso Montanari"	ECO	J33C220012 40001	Ecosyster	ECS000000 33	03/A2	CHIM/02	1	Bologna
Pharmacy and Biotechnology	CN	J33C220011 70001	HPC	CN00000013	05/E1	BIO/10	1	Bologna
Pharmacy and Biotechnology	CN	J33C220011 40001	mRNA	CN00000041	05/E2	BIO/11	1	Bologna
Pharmacy and Biotechnology	CN	J33C220011 40001	mRNA	CN00000041	05/I1	BIO/18	1	Bologna
Pharmacy and Biotechnology	CN	J33C220011 50008	AGRI	CN00000022	05/A2	BIO/04	1	Bologna
Physics and Astronomy "Augusto Righi"	CN	J33C220011 70001	HPC	CN00000013	02/C1	FIS/05	1	Bologna
Physics and Astronomy "Augusto Righi"	CN	J33C220011 70001	HPC	CN00000013	02/A1	FIS/01	1	Bologna
Physics and Astronomy "Augusto Righi"	CN	J33C220011 90001	BIODIV	CN00000033	02/C1	FIS/06	1	Bologna
Physics and Astronomy "Augusto Righi"	IR	C53C220004 30006	CTA+	IR0000012	02/C1	FIS/05	1	Bologna
Electrical, Electronic and Information Engineering "Guglielmo Marconi"	ECO	J33C220012 40001	Ecosyster	ECS000000 33	09/E2	ING-IND/33	1	Bologna
Electrical, Electronic and Information Engineering "Guglielmo Marconi"	ECO	J33C220012 40001	Ecosyster	ECS000000 33	09/E3	ING-INF/01	1	Bologna
Electrical, Electronic and Information Engineering "Guglielmo Marconi"	CN	J33C220011 70001	HPC	CN00000013	09/H1	ING-INF/05	1	Bologna
INGEGNERIA DELL' ENERGIA ELETTRICA E DELL'INFORMAZIONE "GUGLIELMO MARCONI"	CN	J33C220011 70001	HPC	CN00000013	09/E3	ING-INF/01	1	Bologna
Electrical, Electronic and Information Engineering "Guglielmo Marconi"	CN	J33C220011 20001	MOBILITY	CN00000023	09/E1	ING-IND/31	1	Bologna
INGEGNERIA DELL' ENERGIA ELETTRICA E DELL'INFORMAZIONE "GUGLIELMO MARCONI"	CN	J33C220011 20001	MOBILITY	CN00000023	09/E2	ING-IND/32	1	Bologna
Electrical, Electronic and Information Engineering "Guglielmo Marconi"	CN	J33C220011 20001	MOBILITY	CN00000023	09/G1	ING-INF/04	1	Bologna
Civil, Chemical, Environmental, and Materials Engineering	CN	J33C220011 50008	AGRI	CN00000022	03/B2	CHIM/07	1	Bologna
Industrial Engineering	ECO	J33C220012 40001	Ecosyster	ECS000000 33	09/B1	ING-IND/16	1	Bologna
Industrial Engineering	CN	J33C220011 20001	MOBILITY	CN00000023	09/A3	ING-IND/21	1	Bologna
INGEGNERIA INDUSTRIALE	CN	J33C220011 20001	MOBILITY	CN00000023	09/A1	ING-IND/04	1	Forlì
Industrial Engineering	CN	J33C220011 20001	MOBILITY	CN00000023	09/C1	ING-IND/08	1	Bologna
Industrial Engineering	CN	J33C220011 20001	MOBILITY	CN00000023	09/A3	ING-IND/15	1	Forlì
Biomedical and Neuromotor Sciences	CN -	J33C220011 20001	MOBILITY	CN00000023	09/A3	ING-IND/14	1	Forlì
SCIENZE BIOMEDICHE E NEUROMOTORIE	CN	J33C220011 40001	mRNA	CN00000041	05/D1	BIO/09	1	Bologna
Biomedical and Neuromotor Sciences	CN	J33C220011 40001	mRNA	CN00000041	06/N1	MED/50	1	Bologna
Veterinary Medical Sciences	CN	J33C220011 90001	BIODIV	CN00000033	07/H3	VET/05	1	Cesena
Veterinary Medical Sciences	CN -	J33C220011 90001	BIODIV	CN00000033	07/G1	AGR/20	1	Cesena
Veterinary Medical Sciences	CN	J33C220011 50008	AGRI	CN00000022	07/H5	VET/10	1	Bologna

ATTACHMENT 1

The specific elements of this procedure are as follows:

- **Department:** Department of Industrial Chemistry “Toso Montanari” – CHIMIND
- **SC:** 03/A2 – Models and Methods For Chemistry
- **SSD:** CHIM/02 – Physical chemistry
- **Number of positions:** 1
- **Main place of employment:** Bologna
- **Number of hours of frontal teaching per year:** 45
- **Medical assistance services, if required:** Not required
- **Costs indication:** 36.675,00 gross euros per year
- **Financial coverage:** PNRR Found (ECO) – Project Ecosyster “Ecosystem for Sustainable Transition in Emilia-Romagna” – Code ECS00000033
- **CUP:** J33C22001240001
- **Project manager:** Marco Garavelli
- **Project title:** Computational spectroscopy, modelling and in silico design of eco-friendly photoactive molecular materials for photocatalysis, molecular electronics, photonics and energy conversion
- **Duration of contract:** 36 months
- **Brief description of the project:** The activity will focus on the development and application of modelling tools for photoactive molecules. It will conjugate i) QM calculations of excited states (energy, photochemical and photocatalytic reaction paths, photoinduced dynamics), including accurate multiconfigurational perturbative methods coupled within classical descriptions of the environment, with ii) simulation of spectroscopic multi-pulse techniques over a broad spectral regime. The aim is to optimize the in silico design of photoresponsive eco-friendly fatigue-resistant molecular materials. The potential technological applications of the investigated materials will be evaluated, with a specific reference to molecular electronics, photochemistry and energy harvesting/conversion/transport including sustainable methods for storing radiative (solar) energy. Skills in software development will be employed to design new modelling tools and facilitate high-level interfaces for fast screening of molecular candidates
- **Objective of the research project:** The requirements of scientific productivity will be the publication of at least 6 papers on international peer-reviewed journals on the topics of the research activity and fully coherent with the scientific sector CHIM/02. The presentation of contributions to at least 3 (national or international) conferences is also required
- **Admission requirement:** Phd

- **Maximum number of publications:** 12
- **Language in which the interview will take place**: Italian
- **Foreign language**: English

ATTACHMENT 2

The specific elements of this procedure are as follows:

- **Department:** Department of ingegneria civile, chimica, ambientale e dei materiali – DICAM
- **SC:** 03/B2 – Principles of chemistry for applied technologies
- **SSD:** CHIM/07 – Principles of chemistry for applied technologies
- **Number of positions:** 1
- **Main place of employment:** Bologna
- **Number of hours of frontal teaching per year:** 60
- **Costs indication:** 36.675,00 euros gross per year
- **Financial coverage:** PNRR found (CN) – Project AGRI "National Research Centre for Agricultural Technologies" – Code CN00000022
- **CUP:** J33C22001150008
- **Project manager:** Nadia Lotti
- **Project title:** Synthesis and characterization of novel bio-based polymers and additives from agricultural waste to reduce wastage and non-renewable resources exploitation and promote circularity in the agricultural supply chain
- **Duration of contract:** 36 months
- **Brief description of the project:** The research activity will concern the synthesis and characterization of novel bio-based polymers obtained from agro-waste for high-added-value applications. The possible use of low molecular weight molecules from the same wastes as additives for polymers will be evaluated. The researches aim to establish structure-property relationship, which are fundamental to design new materials for an intended use.
  The teaching activity, which supports students and the contribution to thesis preparation will be considered within CHIM/07 area. This activity will be carried out within the courses of study offered by the School of Engineering and Architecture
- **Objective of the research project:** The three-year scientific productivity aims to publish at least 6 papers in peer reviewed international journals
- **Admission requirement:** Phd
- **Maximum number of publications:** 12
- **Language in which the interview will take place**: Italian
- **Foreign language**: English

ATTACHMENT 3

The specific elements of this procedure are as follows:

- **Department:** Department of Electrical, Electronic and Information Engineering "Guglielmo Marconi" - DEI
- **SC:** 09/E1 – Electrical engineering
- **SSD:** ING-IND/31 – Electrical engineering
- **Number of positions:** 1
- **Main place of employment:** Bologna
- **Number of hours of frontal teaching per year:** 60
- **Medical assistance services, if required:** Not required
- **Costs indication:** 36.675 gross euros per year
- **Financial coverage:** PNRR Found (CN) – Project Mobility “Sustainable Mobility Center (Centro Nazionale per la Mobilità Sostenibile)” – Code CN00000023
- **CUP:** J33C22001120001
- **Project manager:** Gabriele Grandi
- **Project title:** Development and testing of power electronic converters for battery- and fuel cell-based powertrains and their integration with renewable sources
- **Duration of contract:** 36 months
- **Brief description of the project:** The researcher will be responsible for the implementation of the experimental setup at the constituting Sustainable Mobility Laboratory pertaining to the National Center for Sustainable Mobility (CNMS) at the Forli Engineering campus. The activities will involve the commissioning and integration of the different equipment for the implementation and testing of powertrain stages based on fuel cells and batteries. The realized setup will be used to carry out the electrical characterization of the main components of interest, primarily electrolyzer and fuel cell in relation to their operational use. The study and development of power electronic converter topologies will then be carried out to manage these elements by meeting the requirements of efficiency, compactness, and reliability. The development and control of converters for managing energy flows in the presence of renewable sources as primary sources for battery charging and hydrogen generation will also be specifically addressed
- **Objective of the research project:** Implementation, commissioning, and testing of equipment for the Sustainable Mobility laboratory with respect to the activities under the project. Drafting documents for scientific reporting of the project and dissemination of results with at least 3 scientific papers published in national or international journals or conference proceedings

- **Admission requirement:** PhD
- **Maximum number of publications:** 12
- **Language in which the interview will take place**: Italian
- **Foreign language**: English

ATTACHMENT 4

The specific elements of this procedure are as follows:

- **Department:** Department of Electrical, Electronic and Information Engineering "Guglielmo Marconi" - DEI
- **SC:** 09/E2 – Electrical energy engineering
- **SSD:** ING-IND/32 – Power Electronic Converters, Electrical Machines and Drives
- **Number of positions:** 1
- **Main place of employment:** Bologna
- **Number of hours of frontal teaching per year:** 60
- **Medical assistance services, if required:** Not required
- **Costs indication:** 36.675 gross euros per year
- **Financial coverage:** PNRR Found (CN) – Project Mobility “Sustainable Mobility Center (Centro Nazionale per la Mobilità Sostenibile)” – Code CN00000023
- J33C22001120001
- **Project manager:** Claudio Rossi
- **Project title:** High density and reliability three-phase and multiphase electric drives for automotive applications
- **Duration of contract:** 36 months
- **Brief description of the project:** Development of diagnostic techniques integrated with motor control system for identifying faults or pre-failures conditions in electric traction drives. Development of real-time and off-line processing techniques on quantities available within the drive for the definition of indexes representing the State of Health – SOH and State of Safety – SoS of the system. Validation of the developed solutions through extensive laboratory tests carried out on prototypes of electric drives suitable for automotive application
- **Objective of the research project:** The researcher will make an original contribution to the development of innovative diagnostic techniques integrated into control algorithms for high-density and high-speed electrical machines. This original contribution may lead to the filing of patents and therefore to the creation of industrial property rights owned by the University of Bologna, or to publications in qualified editorial journals. It is expected to publish at least two scientific articles per year in Scopus indexed journals with IF > 2
- **Admission requirement:** PhD
- **Maximum number of publications:** 12
- **Language in which the interview will take place**: English
- **Foreign language**: /

ATTACHMENT 5

The specific elements of this procedure are as follows:

- **Department:** Department of Electrical, Electronic and Information Engineering "Guglielmo Marconi" - DEI
- **SC:** 09/E2 – Electrical energy engineering
- **SSD:** ING-IND/33 – Electrical power systems
- **Number of positions:** 1
- **Main place of employment:** Bologna
- **Number of hours of frontal teaching per year:** 60
- **Medical assistance services, if required:** Not required
- **Costs indication:** 36.675,00 gross euros per year
- **Financial coverage:** PNRR Found (ECO) – Project Ecosyster “Ecosystem for Sustainable Transition in Emilia-Romagna” – Code ECS00000033
- **CUP:** J33C22001240001
- **Project manager:** Davide Fabiani
- **Project title:** Development of innovative insulation systems and advanced diagostic methodologies for HVDC cables
- **Duration of contract:** 36 months
- **Brief description of the project:** The candidate will deal with insulation systems for high voltage dc (HVDC) cables, particularly important for the transport of electric energy from renewable sources. Part of the activity will be devoted to the development and characterization of innovative materials, containing nanoadditives in the bulk or through nanostructured coatings to improve the electrical properties of the insulation system. The electrical performances will be evaluated by space charge measurements, polarization/depolarization currents, dielectric spectroscopy, accelerated life tests and physico-chemical tests. In addition, the candidate will contribute to the development of diagnostic methodologies and life and aging models for the evaluation of the degradation status and reliability of these insulating systems
- **Objective of the research project:** At the end of the project, the candidate should have acquired a significant skill on advanced techniques even not presently available at the Bologna University. Moreover he/she should have established significant contacts with international teams and participated at important meetings and conferences of international level. The candidate must also have a documented didactic activity in one of the subjects above. The developed research activity must be documented by publications of at least five papers in international Journals within the three years of the project

- **Admission requirement:** PhD
- **Maximum number of publications:** 12
- **Language in which the interview will take place**: Italian
- **Foreign language**: English

ATTACHMENT 6

The specific elements of this procedure are as follows:

- **Department:** Department of Electrical, Electronic and Information Engineering "Guglielmo Marconi" - DEI
- **SC:** 09/E3 – Electronics
- **SSD:** ING-INF/01 – Electronic Engineering
- **Number of positions:** 1
- **Main place of employment:** Bologna
- **Number of hours of frontal teaching per year:** 60
- **Medical assistance services, if required:** Not required
- **Costs indication:** 36.675 gross euros per year
- **Financial coverage:** PNRR Found (ECO) – Project Ecosyster “Ecosystem for Sustainable Transition in Emilia-Romagna” – Code ECS00000033
- **CUP:** J33C22001240001
- **Project manager:** Alberto Santarelli
- **Project title:** High-Frequency Electronics for energetically-efficient Communications, Control and Monitoring in Connected Industries and Automation
- **Duration of contract:** 36 months
- **Brief description of the project:** The research activity is related to the characterization, modelling, design and testing of microwave and millimetre-wave electron devices, circuits and systems for communications, control and monitoring in Connected Industries and Automation. Activities are oriented toward the exploitation of state-of-the-art semiconductor technologies and characterization/design techniques to optimize the trade-off between high linearity, bandwidth and energy efficiency
- **Objective of the research project:** The research activity will be described by scientific publications in high-impact international journals and presentations at conferences and workshops. In particular, the goal is to publish at least three journal articles and three congress/workshop presentations over the three-year period
- **Admission requirement:** PhD
- **Maximum number of publications:** 12
- **Language in which the interview will take place**: Italian
- **Foreign language**: English

ATTACHMENT 7

The specific elements of this procedure are as follows:

- **Department:** Department of Electrical, Electronic and Information Engineering "Guglielmo Marconi" - DEI
- **SC:** 09/E3 – Electronics
- **SSD:** ING-INF/01 **–** Electronic Engineering
- **Number of positions:** 1
- **Main place of employment:** Bologna
- **Number of hours of frontal teaching per year:** 60
- **Medical assistance services, if required:** Not required
- **Costs indication:** 36.675,00 gross euros per year
- **Financial coverage:** PNRR Found (CN) – Project HPC “National Centre for HPC, Big Data and Quantum Computing” – Code CN00000013
- **CUP:** J33C22001170001
- **Project manager:** Luca Benini
- **Project title:** Design of Energy-Efficient Digital Circuits and Systems for Parallel Computing
- **Duration of contract:** 36 months
- **Brief description of the project:** Design of energy-efficient and reliable open-source parallel processors, memory hierarchies and on-chip interconnects. Design, modeling simulation of heterogeneous computing systems targeting high energy efficiency. Accelerator design based on open ISAs (RISC-V) and disruptive technologies including: chiplets and 3D integraton, in-memory, neuromorphic, computing. Power and energy monitoring and management
- **Objective of the research project:** Design and characterization of digital integrated circuits for parallel computing and integration in prototypes of energy-efficient computing systems. Peer-reviewed publications in leading scientific journals (IEEE Transactions on Computers, IEEE Transactions on Parallel and Distributed Syatems, IEEE Transactions on VLSI Systems, IEEE Journal of Solid-State Circuits, IEEE Transactions on computer-aided-design of circuits and Systems, IEEE transactions on Circuits and Systems), and presentations at the main international congresses in the research area (DAC, DATE, ISSCC, ESSCIRC, CODES-ISSCC, ISCAS)
- **Admission requirement:** PhD
- **Maximum number of publications:** 12
- **Language in which the interview will take place**: Italian
- **Foreign language**: English

ATTACHMENT 8

The specific elements of this procedure are as follows:

- **Department:** Department of Electrical, Electronic and Information Engineering "Guglielmo Marconi" - DEI
- **SC:** 09/G1 – Systems and Control Engineering
- **SSD:** ING-INF/04 – Systems and Control Engineering
- **Number of positions:** 1
- **Main place of employment:** Bologna
- **Number of hours of frontal teaching per year:** 60
- **Medical assistance services, if required:** Not required
- **Costs indication:** 36.675,00 gross euros per year
- **Financial coverage:** PNRR Found (CN) – Project Mobility “Sustainable Mobility Center (Centro Nazionale per la Mobilità Sostenibile)” – Code CN00000023
- **CUP:** J33C22001120001
- **Project manager:** Giuseppe Notarstefano
- **Project title:** Design and development of intelligent systems for autonomous and cooperative mobility
- **Duration of contract:** 36 months
- **Brief description of the project:** Candidates are required to develop research activities, at both theoretical and application level, in the field of control systems and optimization for autonomous driving and for the development of cooperative and distributed mobility systems. In this framework there is an urgent need for the development of novel, optimization-based control and learning methods that can explicitly handle constraints and performance indexes. Due to the system complexity and uncertainty as well as to the availability of massive data, a fundamental requirement is to combine model-based optimal control techniques with new data-driven approaches from other domains as Artificial Intelligence. Candidates will have to show an aptitude for both methodological and applicative research with special focus on the above themes. The technological aspects, for the implementation of the proposed solutions, must be considered to reach a meaningful practical experimentation through suitable laboratory prototypes
- **Objective of the research project:** Candidates are required to publish every year at least one article in international journals with high Impact Factor in the sector (such as IEEE Transactions on Automatic Control, IEEE Transactions on Control of Network Systems, IEEE Transactions on Robotics, IEEE Control Systems Technology, Automatica, IEEE Control Systems Letters, IEEE Robotics and Automation Letters) and at least three on international

conference proceedings relevant to the sector (such as IEEE Conference on Decision and Control, European Control Conference, IEEE International Conference on Robotics and Automation, IFAC World Congress)

- **Admission requirement:** PhD
- **Maximum number of publications:** 12
- **Language in which the interview will take place**: English
- **Foreign language**: /

ATTACHMENT 9

The specific elements of this procedure are as follows:

- **Department:** Department of Electrical, Electronic and Information Engineering "Guglielmo Marconi" - DEI
- **SC:** 09/H1 – Information Processing Systems
- **SSD:** ING-INF/05 **-** Information Processing Systems
- **Number of positions:** 1
- **Main place of employment:** Bologna
- **Number of hours of frontal teaching per year:** 60
- **Medical assistance services, if required:** Not required
- **Costs indication:** 36.675 gross euros per year
- **Financial coverage:** PNRR Found (CN) – Project HPC “National Centre for HPC, Big Data and Quantum Computing” – Code CN00000013
- **CUP:** J33C22001170001
- **Project manager:** Andrea Acquaviva
- **Project title:** Machine learning/AI methodologies and tools for code optimization on HPC architectures
- **Duration of contract:** 36 months
- **Brief description of the project:** The activities will focus on the development of methodologies and software tools for the optimization of algorithms and their mapping on HPC architectures, also using artificial intelligence and machine learning techniques for the analysis of the source code. The research will have to develop advanced tools to support the toolchain and the compiler for the efficient use of computing resources. These techniques should be applicable to workloads and data structures typical of HPC systems, such as graphs, n-body simulation and training acceleration and inference for neural networks. Part of the activities must also be dedicated to the development of methods to improve code security through the compiler's exploitation of crypto accelerators and HW / SW techniques for secure execution and code verification (TPM / TEE)
- **Objective of the research project:** The research project will have to produce innovative methodologies and tools for the analysis and optimization of code for high performance processors. The research will produce scientific articles published in journals and conferences in the field of computer and systems engineering. A productivity of at least 1 article in a relevant industry magazine can be estimated each year. Furthermore, since the research will be based and will produce open-source tools, it is desirable to release stable versions of the tools developed to the community of developers

- **Admission requirement:** PhD
- **Maximum number of publications:** 12
- **Language in which the interview will take place**: Italian
- **Foreign language**: English

ATTACHMENT 10

The specific elements of this procedure are as follows:

- **Department:** Department of Physics and Astronomy "Augusto Righi" - DIFA
- **SC:** 02/A1 – Experimental Physics of Fundamental Interactions
- **SSD:** FIS/01 – Experimental Physics
- **Number of positions:** 1
- **Main place of employment:** Bologna
- **Number of hours of frontal teaching per year:** 60
- **Medical assistance services, if required:** Not required
- **Costs indication:** 36.675,00 gross euros per year
- **Financial coverage:** PNRR Found – Project HCP "National Centre for HPC, Big Data and Quantum Computing"
- **CUP:** J33C22001170001
- **Project manager:** Daniele Bonacorsi
- **Project title:** High-performance implementation of innovative algorithms and computational techniques on Big Data in High-Energy Physics
- **Duration of contract:** 36 months
- **Brief description of the project:** The research activity will be conducted within the spoke 2"Fundamental Research and Space Economy" of the "National Center for HPC, Big Data and Quantum Computing". The project covers the design and test of innovative algorithms and their optimized implementation on large-scale HPC-based infrastructures, aimed at data selection, reduction, simulation, reconstruction, time cross-correlation and pattern recognition, to primarily serve use-cases of high-energy physics experiments, with a focus on machine/deep learning techniques, and use-cases ranging from innovative triggers to distributed analysis techniques. The project also covers the study of the computational performances of the algorithms, porting applications to heterogeneous multi-architecture (CPU, GPU, FPGA) many-core clusters, and on national data-lake distributed infrastructure and efficient data streaming in a large-scale multi-domain distributed environment.
- **Objective of the research project:** The objectives of scientific productivity will be finalized, over the three-year period, to the presentation of the research results to at least two conferences of recognized prestige inherent in the themes of high-energy physics or computing, and publication (as co-author) of three paper/year in international indexed journals (Scopus/WOS)
- **Admission requirement:** PhD
- **Maximum number of publications:** 12

- **Language in which the interview will take place**: Italian
- **Foreign language**: English

ATTACHMENT 11

The specific elements of this procedure are as follows:

- **Department:** Department of Physics and Astronomy "Augusto Righi" - DIFA
- **SC:** 02/C1 – Earth and Planetary Physics
- **SSD:** FIS/05 – Astronomy and Astrophysics
- **Number of positions:** 1
- **Main place of employment:** Bologna
- **Number of hours of frontal teaching per year:** 60
- **Medical assistance services, if required:** Not required
- **Costs indication:** 36.675,00 gross euros per year
- **Financial coverage:** PNRR Found (CN) – Project HPC “National Centre for HPC, Big Data and Quantum Computing” – Code CN00000013
- **CUP:** J33C22001170001
- **Project manager:** Lauro Moscardini
- **Project title:** Next-generation HPC for numerical simulations and Big Data in Astrophysics and Cosmology
- **Duration of contract:** 36 months
- **Brief description of the project:** The planned research activities fall within the scope of the projects carried out by the Spoke 2-Fundamental research and Space Economy of the National Champion "HPC, Big Data and Quantum Computing". In particular, the objective of the project is related to the development and scientific use of numerical codes for state-of-the art simulations in Astrophysics and Cosmology and /or for an efficient statistical analysis of large volumes of astrophysical data. The codes will be optimized for their use on next generation, massively parallel high-performance computing infrastructures
- **Objective of the research project:** Within the 3-year period of the contract, the researcher is expected to publish at least six papers on refereed international journals relevant for the area of activity (FIS/05), and to participate to at least 2 international conferences
- **Admission requirement:** PhD
- **Maximum number of publications:** 12
- **Language in which the interview will take place**: English
- **Foreign language**: /

ATTACHMENT 12

The specific elements of this procedure are as follows:

- **Department:** Department of Physics and Astronomy "Augusto Righi" - DIFA
- **SC:** 02/C1 – Earth and Planetary Physics
- **SSD:** FIS/05 – Astronomy and Astrophysics
- **Number of positions:** 1
- **Main place of employment:** Bologna
- **Number of hours of frontal teaching per year:** 60
- **Medical assistance services, if required:** Not required
- **Costs indication:** 36.675 gross euros per year
- **Financial coverage:** PNRR Found (IR) – Project CTA+ “Cherenkov Telescope Array Plus” – Code IR0000012
- **CUP:** C53C22000430006
- **Project manager:** Cristian Vignali
- **Project title:** CTA Astrophysics of very-high energy gamma rays: the path towards the scientific exploitation of the upcoming CTA observatory
- **Duration of contract:** 36 months
- **Brief description of the project:** The project objective is to study very-high energy gamma-ray emitting sources that act as probes of physics in the most extreme environments currently known, such as in supernova explosions, and around or after the merging of black holes and neutron stars. In particular, the project will cover three different aspects: 1) simulations of one of the foreseen CTAO surveys and detailed preparation of the corresponding key science project management plan. This task will start with the analysis of the CTAO science data challenge; 2) analysis of the commissioning data of the large-sized telescopes at the CTAO Northern array site, with focus on transient phenomena; 3) development of analysis algorithms for performance optimization. Training of young scientists is also part of the project objectives, both in terms of student tutorship and PhD schools preparation
- **Objective of the research project:** The candidate is expected to be publishing at least six papers in international peer-reviewed journals and participating in at least three international conferences with oral contribution. It is envisaged that she/he will play a coordinating role within the Italian and, possibly, the international CTA community in the process of preparing at least one key science project. In addition, the candidate is foreseen to co-tutor a PhD student that should be defending the thesis by the time her/his contract expires, and at least one/two master students. She/he will actively participate into the organization of international schools of gamma-ray astronomy for PhD students

- **Admission requirement:** PhD
- **Maximum number of publications:** 12
- **Language in which the interview will take place**: English
- **Foreign language**: /

ATTACHMENT 13

The specific elements of this procedure are as follows:

- **Department:** Department of Physics and Astronomy "Augusto Righi" - DIFA
- **SC:** 02/C1 – Earth and Planetary Physics
- **SSD:** FIS/06 – Physics of The Earth and of The Circumterrestrial Medium
- **Number of positions:** 1
- **Main place of employment:** Bologna
- **Number of hours of frontal teaching per year:** 60
- **Medical assistance services, if required:** Not required
- **Costs indication:** 36.675 gross euros per year
- **Financial coverage:** PNRR Found (CN) – Project BIODIV "National Biodiversity Future Centre" – Code CN00000033
- **CUP:** J33C22001190001
- **Project manager:** Silvana Di Sabatino
- **Project title:** Development of methodologies to evaluate the effectiveness and transferability of nature-based solutions (NBS) for adaptation to climate change with emphasis on the Italian territory
- **Duration of contract:** 36 months
- **Brief description of the project:** Starting from already existing international databases, and expanding them through a screening action, the research involves the development, verification and implementation of a methodology designed to evaluate the performance of different types of NBS in national extra-urban contexts on based on multi-dimensional indicators and co-assisted by multi-scale numerical modeling and geo-spatial analysis. The research project also foresees the parameterization of green-blue-hybrid solutions in numerical modeling chains calibrated according to the scale or explicitly in small-scale models and through box-models in larger-scale models. The numerical models will be validated using measurements from existing databases and from the results of experiments designed ad-hoc both in the field and in the laboratory. At the end, the project foresees the production of suitability maps (NBS suitability maps) and an NBS catalog capable of providing useful information for the effective planning of NBS interventions to adapt to climate change and promote biodiversity in the Italian territory
- **Objective of the research project:** The productive purposes are to write scientific papers in high impact journals (at least 2 per year) and to contribute to the research activities related to the role of NBS on climate and climate change already ongoing within the atmospheric physics group

- **Admission requirement:** PhD
- **Maximum number of publications:** 12
- **Language in which the interview will take place**: English
- **Foreign language**: /

ATTACHMENT 14

The specific elements of this procedure are as follows:

- **Department:** Department of Veterinary Medical Sciences - DIMEVET
- **SC:** 07/G1 – Animal Science and Technology
- **SSD:** AGR/20 – Aquaculture, Poultry and Rabbit Science
- **Number of positions:** 1
- **Main place of employment:** Cesena
- **Number of hours of frontal teaching per year:** 30
- **Medical assistance services, if required:** Not required
- **Costs indication:** 36.675,00 gross euros per year
- **Financial coverage:** PNRR Found (CN) – Project "BIODIV - National Biodiversity Future Center" – Code: CN00000033
- **CUP:** J33C22001190001
- **Project manager:** Alessio Bonaldo
- **Project title:** Valorization of innovative circular ingredients for biodiversity-friendly feeds with low/zero carbon footprint in Mediterranean aquaculture
- **Duration of contract:** 36 months
- **Brief description of the project:** The activities of the researcher aim to develop innovative and tailor-made biodiversity-friendly feeds for marine aquaculture according to a "carbon neutrality" and circularity approach (agricultural and ani-mal products, insects, worms, algae, etc.) capable of determining a low organic impact (e.g. release of phosphorus and nitrogen), allowing the protection/restoration of ecosystems and marine biodiversity, guaranteeing the performance and well-being of farmed fish.
  The activities are divided into three tasks over a 36-month project period.
  Task 1 Evaluate, characterize and enhance innovative ingredients for low / zero carbon footprint feed for their use in aquaculture (Month 1 - Month 6)
  Task 2 Formulation, production and validation of biodiversity-friendly feeds (Month 7- Month 30)
  Task 3 Quality of the fish product (Month 31 - Month 36).
- **Objective of the research project:** At least 6 papers in WOS / SCOPUS Q1 / Q2 indexed scientific journals, of which at least 3 as first or last name
- **Admission requirement:** PhD
- **Maximum number of publications:** 12
- **Language in which the interview will take place**: Italian
- **Foreign language**: English

ATTACHMENT 15

The specific elements of this procedure are as follows:

- **Department:** Department of Veterinary Medical Sciences -DIMEVET
- **SC:** 07/H3 – Infectious and Parasitic Animal Diseases
- **SSD:** VET05 – Infectious Diseases of Domestic Animals
- **Number of positions:** 1
- **Main place of employment:** Cesena
- **Number of hours of frontal teaching per year:** 30
- **Medical assistance services, if required:** Not required
- **Costs indication:** 36.675,00 gross euros per year
- **Financial coverage:** PNRR Found (CN) – Project "BIODIV - National Biodiversity Future Center" – CODE CN00000033
- **CUP:** J33C22001190001
- **Project manager:** Sara Ciulli
- **Project title:** Improved and innovative solutions for fish health management
- **Duration of contract:** 36 months
- **Brief description of the project:** Diagnostic monitoring to identify and characterize the pathogens circulating in fish farmed in different aquaculture systems to identify the most relevant pathogens in the related ecosystems will be carried out. In particular, regarding open farming systems, such as cages and integrated multi-trophic aquaculture systems, viral pathogens will be investigated in both finfish and other biotic components such as invertebrates and fish-feeding birds frequently involved in the transmission of infectious diseases. Recently developed diagnostic tools will be implemented to set up early warning systems to improve prevention and biosecurity measures. In vitro tests will be performed to assess the effect of natural/synthetic biocides on transmissible pathogens detected during the diagnostic monitoring. In vitro and/or in vivo tests will be carried out to evaluate the ability of feed supplements to boost immune response and infectious disease resistance
- **Objective of the research project:** At least 6 papers in WOS / SCOPUS Q1 / Q2 indexed scientific journals, of which at least 3 as first or last author
- **Admission requirement:** PhD
- **Maximum number of publications:** 12
- **Language in which the interview will take place**: Italian
- **Foreign language**: English

ATTACHMENT 16

The specific elements of this procedure are as follows:

- **Department:** Department of Veterinary Medical Sciences -DIMEVET
- **SC:** 07/H5 – Veterinary Clinical Surgery and Veterinary Obstetrics
- **SSD:** VET/10 – Veterinary Clinical Obstetrics and Gynecology
- **Number of positions:** 1
- **Main place of employment:** Bologna
- **Number of hours of frontal teaching per year:** 30
- **Medical assistance services, if required:** Specialized activities in the field of animal reproduction (andrology, assisted reproduction, gynecology-obstetrics, neonatology), in ordinary and first aid regime, at the "Giuseppe Gentile" University Veterinary Hospital, the Didactic Stable and AUB-INFA
- **Costs indication:** 36.675,00 gross euros per year
- **Financial coverage:** PNRR Found (CN) – Project AGRI “National Research Centre for Agricultural Technologies” – Code CN00000022
- **CUP:** J33C22001150008
- **Project manager:** Gaetano Mari
- **Project title:** Integrated and sustainable management to improve reproductive efficiency in ruminants
- **Duration of contract:** 36 months
- **Brief description of the project:** As part of the activities of spoke 5 of the National Agritech Centre; in particular of task where UNIBO provides an involvement of research and reproductive activities (task 5.2.2; 5.3.2), this project is aimed at identifying nutritional and reproductive strategies with the purpose to increase the efficiency of the selection of animals in ruminants. With regard to the male, studies are planned to improve the semen quality and identify new techniques for preserving and freezing it with the purpose of ensure greater longevity. In the female, on the other hand, the objective is to improve the knowledge regards the physiological and pathological state of the puerperium in order to improve normal postpartum recovery, considering the possibility of reducing the use of antibiotics. In addition, in small ruminant, the aim is to identify new techniques that allow a transcervical intrauterine artificial insemination, instead of laparoscopically, in respect of animal welfare
- **Objective of the research project:** At least 6 papers in WOS / SCOPUS Q1 / Q2 indexed scientific journals, of which at least 3 as first or last name
- **Admission requirement:** PhD
- **Maximum number of publications:** 12

- **Language in which the interview will take place**: Italian
- **Foreign language**: English

ATTACHMENT 17

The specific elements of this procedure are as follows:

- **Department:** Department of Industrial Engineering - DIN
- **SC:** 09/A1 – Aeronautical and Aerospace Engineering and Naval Architecture
- **SSD:** ING-IND/04 – Aerospace Structures and Design
- **Number of positions:** 1
- **Main place of employment:** Forlì
- **Number of hours of frontal teaching per year:** 60
- **Medical assistance services, if required:** Not required
- **Costs indication:** 36.675,00 gross euros per year
- **Financial coverage:** PNRR Found (CN) – Project Mobility “Sustainable Mobility Center (Centro Nazionale per la Mobilità Sostenibile)” – Code CN00000023
- **CUP:** J33C22001120001
- **Project manager:** Enrico Troiani
- **Project title:** Enabling tecnologies for next generation air mobility with demonstrator
- **Duration of contract:** 36 months
- **Brief description of the project:** - Development of instruments and infrastructures to investigate the environmental impact (fuel consumption, sustainability) of next generation Air Mobility. - Definition and experimental verification of suitable numerical schemes for modeling fluid dynamic and structural dynamics in next generation Air Mobility. - Investigation on advanced shape and materials deployable in the next generation aircraft
- **Objective of the research project:** The requirements of scientific productivity will be the publication of at least 4 papers on international journals on the topics of the research activity. The presentation of contributions to at least 3 (national or international) conferences is also required
- **Admission requirement:** PhD
- **Maximum number of publications:** 12
- **Language in which the interview will take place**: Italian
- **Foreign language**: English

ATTACHMENT 18

The specific elements of this procedure are as follows:

- **Department:** Department of Industrial Engineering - DIN
- **SC:** 09/C1 – Fluid Machinery, Energy Systems and Power Generation
- **SSD:** ING-IND/08 – Fluid Machinery
- **Number of positions:** 1
- **Main place of employment:** Bologna
- **Number of hours of frontal teaching per year:** 60
- **Medical assistance services, if required:** Not required
- **Costs indication:** 36.675,00 gross euros per year
- **Financial coverage:** PNRR Found (CN) – Project Mobility "Sustainable Mobility Center (Centro Nazionale per la Mobilità Sostenibile)" – Code CN00000023
- **CUP:** J33C22001120001
- **Project manager:** Gian Marco Bianchi
- **Project title:** Development of High Efficiency, zero-emission powertrain
- **Duration of contract:** 36 months
- **Brief description of the project:** According to the tasks of project "Development of High Efficiency, zero-emission powertrain", the researcher will have to perform activities in one or more of the followings topics:
  - Laboratory setup and deployment in order to provide the test, characterization and optimization of the fuel cell based powertrain under real operation thanks to development and implementation of HiL models.
  - Development and validation of a virtual dynamic powertrain model aimed to perform the virtual Optimization of the H2 powertrain systems with particular emphasis of cooling subsystem and air and hydrogen supplying systems.
  - Investigation and development of optimal hardware and control strategies for the management of both torque and energy sources onboard.
  - Characterization and optimization of fuel-cell based powertrains subsystems to achieve modularity for different powertrain scale application
- **Objective of the research project:** The requirement of the scientific productivity during the three years of research activity will be the publication on international journals, or international conferences, of at least six (6) papers on the topics of the project.
- **Admission requirement:** PhD
- **Maximum number of publications:** 12
- **Language in which the interview will take place**: Italian

- **Foreign language**: English

ATTACHMENT 19

The specific elements of this procedure are as follows:

- **Department:** Department of Industrial Engineering - DIN
- **SC:** 09/A3 – Industrial Design, Machine Construction and Metallurgy
- **SSD:** ING-IND/14 – Mechanical Design and Machine Construction
- **Number of positions:** 1
- **Main place of employment:** Forlì
- **Number of hours of frontal teaching per year:** 60
- **Medical assistance services, if required:** Not required
- **Costs indication:** 36.675,00 gross euros per year
- **Financial coverage:** PNRR Found (CN) – Project Mobility "Sustainable Mobility Center (Centro Nazionale per la Mobilità Sostenibile)" – Code CN00000023
- **CUP:** J33C22001120001
- **Project manager:** Dario Croccolo
- **Project title:** Design for Additive Manufacturing of lightweight components
- **Duration of contract:** 36 months
- **Brief description of the project:**
  - Characterization of the static, fatigue and tribological behavior of lightweight materials,including those obtained by additive manufacturing, for application in lightweight constructions,primarily vehicles. Effects of heat- and surface- treatments as well as impact of new or recycled (or featuring particular properties) powders for AM.
  - Definition and optimization of efficient and sustainable joining technologies, suitable for application to the materials, including those obtained by additive manufacturing technologies.
  - Development of design criteria suitable for metallic materials with a view to lightening vehicles, which guarantee high standards of safety and reliability, with a focus on sustainability andrecyclability. Application of "Design for Assembly" policies to achieve component number reduction.
- **Objective of the research project:**
  - At least 4 articles in indexed magazines SCOPUS/WOS
  - At least 3 articles presented at international or national conferences
- **Admission requirement:** PhD
- **Maximum number of publications:** 12
- **Language in which the interview will take place**: Italian
- **Foreign language**: English

ATTACHMENT 20

The specific elements of this procedure are as follows:

- **Department:** Department of Industrial Engineering - DIN
- **SC:** 09/A3 – Industrial Design, Machine Construction and Metallurgy
- **SSD:** ING-IND/15 – Design Methods for Industrial Engineering
- **Number of positions:** 1
- **Main place of employment:** Forlì
- **Number of hours of frontal teaching per year:** 60
- **Medical assistance services, if required:** Not required
- **Costs indication:** 36.675,00 gross euros per year
- **Financial coverage:** PNRR Found (CN) – Project Mobility "Sustainable Mobility Center (Centro Nazionale per la Mobilità Sostenibile)" – Code CN00000023
- **CUP:** J33C22001120001
- **Project manager:** Alfredo Liverani
- **Project title:** Advanced methodologies based on cyber-physical techniques for the development of the new generation of aircraft and vehicles
- **Duration of contract:** 36 months
- **Brief description of the project:** The RTD will carry out research activities in the field of advanced methodologies based on cyber-physical techniques, with particular attention to the design tools of complex structures resulting from topological optimization, lattice structure, generative design, CAD automations. Furthermore, the techniques for the processing of geometric models will be studied using complex algorithms such as 3D and 2.5D Voxel-based approaches that will allow the development of highly efficient structures in the aeronautical field and, at the same time, guarantee the optimal solution also from the fluid-dynamic point of view. The RTD will also develop the combined study of the industrial applications of the Additive Manufacturing, as a production method particularly indicated when dealing with lattice and voxel-based structures. The development of numerical codes, the use of software based on finite element analysis or topological optimization, and experimental tests will support the research. The results of these studies will be published in international scientific journals, and presented at scientific conferences. The ultimate goal of the research is the development of methodologies to optimize the structural mass of means of transport, thus reducing the energy consumption with benefits for the environment
- **Objective of the research project:** The scientific productivity goals for the RTD-A over the three years are the publication of at least two papers in an international scientific journal indexed in the SCOPUS or Web Of Science databases (or at least their acceptance) and the

submission of at least two papers to international congresses where the publication of the proceedings is expected. The topic of the articles must be related to the topics envisaged for the RTD-A research program

- **Admission requirement:** PhD
- **Maximum number of publications:** 12
- **Language in which the interview will take place**: Italian
- **Foreign language**: English

ATTACHMENT 21

The specific elements of this procedure are as follows:

- **Department:** Department of Industrial Engineering - DIN
- **SC:** 09/B1 – Manufacturing Technology and Systems
- **SSD:** ING-IND/16 – Manufacturing Technology and Systems
- **Number of positions:** 1
- **Main place of employment:** Bologna
- **Number of hours of frontal teaching per year:** 60
- **Medical assistance services, if required:** Not required
- **Costs indication:** 36.675,00 gross euros per year
- **Financial coverage:** PNRR Found (ECO) – Project Ecosyster "Ecosystem for Sustainable Transition in Emilia-Romagna" – Code ECS00000033
- **CUP:** J33C22001240001
- **Project manager:** Lorenzo Donati
- **Project title:** Development of Digital Twin models for composite materials process chains involving also renewable and recycled fibers for high production volumes
- **Duration of contract:** 36 months
- **Brief description of the project:**
  o Definition of experimental campaigns for the characterization of sustainable polymer matrix composite materials.
  o Production of specimens with different combinations of fibers (primary or recycled, carbon or fibers by natural sources) and resins by means of high productivity systems. Monitoring of process conditions for the correlation of production parameters with the final physical-mechanical characteristics of the components.
  o Characterization of the specimens through unified or innovative tests for the definition of the 'material cards' of different simulation codes. Development and implementation of Process Digital Twin Models.
  o Production of industrial components with the same materials and their static and dynamic characterization. Comparison of the results of the experimental tests with the results obtained from the implemented Digital Twin models and their validation. Determination of advantages and disadvantages, systemic comparison in terms of precision, stability, versatility and calculation time.
  o Study of multi-material components (metal and polymeric) and hybrid junctions
- **Objective of the research project:** The requirements of scientific productivity will be the publication of at least 4 papers on international journals indexed on SCOPUS/WOS

databases on the topics of the research activity. The presentation of contributions to at least 3 (national or international) conferences is also expected

- **Admission requirement:** PhD
- **Maximum number of publications:** 12
- **Language in which the interview will take place**: Italian
- **Foreign language**: English

ATTACHMENT 22

The specific elements of this procedure are as follows:

- **Department:** Department of Industrial Engineering - DIN
- **SC:** 09/A3 – Industrial Design, Machine Construction and Metallurgy
- **SSD:** ING-IND/ 21 – Metallurgy
- **Number of positions:** 1
- **Main place of employment:** Bologna
- **Number of hours of frontal teaching per year:** 60
- **Medical assistance services, if required:** Not required
- **Costs indication:** 36.675,00 gross euros per year
- **Financial coverage:** PNRR Found (CN) – Project Mobility "Sustainable Mobility Center (Centro Nazionale per la Mobilità Sostenibile)" – Code CN00000023
- **CUP:** J33C22001120001
- **Project manager:** Lorella Ceschini
- **Project title:** Innovative metals for structural lightweighting
- **Duration of contract:** 36 months
- **Brief description of the project:** Development and optimization of metallic alloys for vehicles lightweighting, ensuring high standard of safety and reliability, considering sustainability, recyclability and recovery; - Identification of efficient and sustainable manufacturing/remanufacturing routes, including additive manufacturing technologies, for the above mentioned materials; - Definition of tailored heat treatment and surface modification strategies for increased mechanical, tribological, and durability performance
- **Objective of the research project:** The requirements of scientific productivity will be the publication of at least 4 papers on international journals on the topics of the research activity. The presentation of contributions to at least 3 (national or international) conferences is also required
- **Admission requirement:** PhD
- **Maximum number of publications:** 12
- **Language in which the interview will take place**: Italian
- **Foreign language**: English

ATTACHMENT 23

The specific elements of this procedure are as follows:

- **Department:** Department of Pharmacy and Biotechnology - FaBiT
- **SC:** 05/A2 – Plant Physiology
- **SSD:** BIO/04 – Plant Physiology
- **Number of positions:** 1
- **Main place of employment:** Bologna
- **Number of hours of frontal teaching per year:** 48
- **Medical assistance services, if required:** Not required
- **Costs indication:** 36.675,00 gross euros per year
- **Financial coverage:** PNRR Found (CN) – Project AGRI - "National Research Centre for Agricultural Technologies" – Code CN00000022
- **CUP:** J33C22001150008
- **Project manager:** Paolo Bernardo Trost
- **Project title:** Reorganization of primary carbon metabolism in photosynthetic organisms exposed to drought stress
- **Duration of contract:** 36 months
- **Brief description of the project:** The photosynthetic fixation of CO2 is the main consuming metabolism of ATP and NADPH produced by the photosynthetic electron transport chain and is responsible for the production of all the organic molecules necessary for the development and maintenance of plants. Since sessile organisms, the response to environmental stress by plants influences their primary metabolism which is re-organized in order to adapt the plant to new and adverse conditions. Even now, the stress that most threatens crop productivity is water stress. The research activity carried out will aim at identifying the pathways most involved in the response to osmotic stress, how these are activated or deactivated in response to stress and through which signaling mechanisms this occurs
- **Objective of the research project:** a minimum of 3 publications in journals surveyed by Clarivate
- **Admission requirement:** PhD
- **Maximum number of publications:** 12
- **Language in which the interview will take place**: Italian
- **Foreign language**: English

ATTACHMENT 24

The specific elements of this procedure are as follows:

- **Department:** Department of Pharmacy and Biotechnology - FABIT
- **SC:** 05/E1 – General Biochemistry
- **SSD:** BIO/10 – Biochemistry
- **Number of positions:** 1
- **Main place of employment:** Bologna
- **Number of hours of frontal teaching per year:** 60
- **Medical assistance services, if required:** Not required
- **Costs indication:** 36.675,00 gross euros per year
- **Financial coverage:** PNRR Found (CN) – Project AGRI "National Research Centre for Agricultural Technologies" – Code CN00000022
- **CUP:** J33C22001170001
- **Project manager:** Pier Luigi Martelli
- **Project title:** Development of tools for the integrated analysis of omics data and the structural/functional characterization of biological macromolecules
- **Duration of contract:** 36 months
- **Brief description of the project:** The researcher will develop bioinformatic tools for integrating and analysing omics data produced with modern high-throughput techniques. In particular, the scientific activity will focus on the development of computational methods and models, also based on approaches out of artificial intelligence, machine and deep learning, for i) the annotation of structural and functional features of genes, proteins and their variants; ii) the modelling of complex biological processes through the integration of heterogeneous data, deriving from genomics, transcriptomics, proteomics, metabolomics, and metagenomics experiments; iii) the characterization of the association between genetic variants and diseases. The bioinformatics tools will be deployed on next-generation hardware, including GPU computing. Tools will be also integrated within the tool ecosystem of the ELIXIR European Infrastructure. They will comply with the ELIXIR guidelines for Interoperability
- **Objective of the research project:** publication of at least 4 scientific papers on peer reviewed international journals and participation to at least 2 national or international meetings
- **Admission requirement:** PhD
- **Maximum number of publications:** 12
- **Language in which the interview will take place**: Italian
- **Foreign language**: English

ATTACHMENT 25

The specific elements of this procedure are as follows:

- **Department:** Department of Pharmacy and Biotechnology - FaBiT
- **SC:** 05/E2 – Molecular Biology
- **SSD:** BIO/11 – Molecular Biology
- **Number of positions:** 1
- **Main place of employment:** Bologna
- **Number of hours of frontal teaching per year:** 30
- **Medical assistance services, if required:** Not required
- **Costs indication:** 36.675,00 gross euros per year
- **Financial coverage:** PNRR Found (CN) – Project "mRNA "National Center for Gene Therapy and Drugs based on RNA Technology"" – Code CN00000041
- **CUP:** J33C22001140001
- **Project manager:** Giovanni Capranico
- **Project title:** Small molecules and RNAs that bind non-B DNA/RNA structures to make immune-unresponsive tumors immunologically sensitive
- **Duration of contract:** 36 months
- **Brief description of the project:** Non-canonical nucleic acid structures can act as modulators of innate immune genes in cancer cells. In particular, structures as G-quadruplex, DNA:RNA hybrids, etc., are involved in the immune gene response of cancer cells, which is activated by cytoplasmic nucleic acids (non-self RNA and DNA) originated from genome instability processes. The activity of the newly recruited RTDa will aim at establishing the relevant genetic and molecular mechanisms and at developing specific RNAs as immunomodulators for innovative anticancer therapy. Specifically, the new RTDa will:
  - establish the mechanisms of immune gene activation in cancer cells by external and internal agents (non-canonical DNA/RNA, gene mutations, chemicals, etc.)
  - discover RNA-based chemicals and/or small molecules with efficient ability to trigger immune gene response in cancer cells and in animals.

  The methodologies will include NGS, bioinformatics, proteomics, cellular and molecular wet techniques
- **Objective of the research project:** Over the 36 months of the contract, the objectives related to the scientific productivity are: 1) production of at least two original full-length publications in international "peer-reviewed" journals; 2) communication of the obtained results and participation to at least three international and/or national congresses; 3) participation in activities of the CN03 and in international or national project activities connected to it,

contributing to the achievement of the deliverables; 4) training of young scientists on topics coherent with the objectives of CN03 with the supervision of degree, master's and doctoral theses, as co-tutor/tutor

- **Admission requirement:** PhD
- **Maximum number of publications:** 12
- **Language in which the interview will take place**: Italian
- **Foreign language**: English

ATTACHMENT 26

The specific elements of this procedure are as follows:

- **Department:** Department of Pharmacy and Biotechnology – FABIT
- **SC:** 05/I1 – Genetics
- **SSD:** BIO/18 – Genetics
- **Number of positions:** 1
- **Main place of employment:** Bologna
- **Number of hours of frontal teaching per year:** 30
- **Medical assistance services, if required:** Not required
- **Costs indication:** 36.675,00 gross euros per year
- **Financial coverage:** PNRR Found (CN) – Project "mRNA "National Center for Gene Therapy and Drugs based on RNA Technology"" – Code CN00000041
- **CUP:** J33C22001140001
- **Project manager:** Elena Maestrini
- **Project title:** Genomics approaches and patient-derived cellular models for precision medicine of complex neurodevelopmental disorders
- **Duration of contract:** 36 months
- **Brief description of the project:** Autism Spectrum Disorders (ASD) are heterogeneous neurodevelopmental disorders with a complex genetic architecture, characterized by the interactions of a variety of rare and common alleles, including rare de novo copy number variants (CNVs), highly penetrant sequence variants, and common polygenic risk.
  Genomics approaches have recently allowed the identification of several hundred genes associated with ASD risk, but understanding the molecular disease mechanisms is not possible in most cases. To account for this complexity, additional parameters must be collected, and patient-specific cell models (iPSCs) represent a powerful approach to investigate molecular and cellular disease mechanisms.
  This project will involve exome and/or whole genome sequencing of ASD families to identify rare highly penetrant variants and new candidate genes, and the functional characterization of the top interesting genes by generation of iPSC disease models from ASD individuals
- **Objective of the research project:** During the three-year contract the future candidate is expected to: a) publish at least two articles in international peer-reviewed scientific journals; b) participate to at national/international conferences/meeting regarding the subject of the present research project; c) be involved in establishing scientific collaborations and networks aimed at participating in national and international calls for project funding; d) be engaged in

scientific dissemination events; e) collaborate in the supervision and training of undergraduate and PhD students

- **Admission requirement:** PhD
- **Maximum number of publications:** 12
- **Language in which the interview will take place**: Italian
- **Foreign language**: English

ATTACHMENT 27

The specific elements of this procedure are as follows:

- **Department:** Department of Biomedical and Neuromotor Sciences – DIBINEM
- **SC:** 05/D1 – Physiology
- **SSD:** BIO/09 – Physiology
- **Number of positions:** 1
- **Main place of employment:** Bologna
- **Number of hours of frontal teaching per year:** 24
- **Medical assistance services, if required:** Not required
- **Costs indication:** 36.675,00 gross euros per year
- **Financial coverage:** PNRR Found (CN) – Project "mRNA - National Center for Gene Therapy and Drugs based on RNA Technology" – Code CN00000041
- **CUP:** J33C22001140001
- **Project manager:** Elisabetta Ciani
- **Project title:** Validation of an innovative gene therapy approach in restoring brain development and mitochondrial activity in a neurodevelopmental disorder characterized by metabolic alterations
- **Duration of contract:** 36 months
- **Brief description of the project:** CDKL5 deficiency disorder (CDD) is a severely disabling neurodevelopmental disorder caused by mutations in the X-linked cyclin-dependent kinase-like 5 (CDKL5) gene. Patients with CDD show early-onset intractable epileptic seizures, severe intellectual disabilities, autism, and gross motor dysfunctions. Studies on different models of CDD have shown the presence of mitochondrial abnormalities that may contribute to the CDD pathology. No cure for CDD exists. This research activity aims to develop and validate new therapeutic approaches with the objective of restoring the function of the CDKL5 protein in the brain of CDD patients. The experimental activity will include: i) in vitro studies using different types of cell cultures (iPSC, primary cultures); ii) in vivo studies on mouse models of CDD, including molecular, neuroanatomical, and behavioral analysis
- **Objective of the research project:** During the project the researcher must publish at least 2 articles in peer-reviewed journals and attend at least 2 national or international meetings relevant for the subject of the project, or to demonstrate on the basis of original data and laboratory protocols that he/she have produced sufficient data to support the publication of at least three articles meeting the criteria defined above
- **Admission requirement:** PhD
- **Maximum number of publications:** 14

- **Language in which the interview will take place**: Italian
- **Foreign language**: English

ATTACHMENT 28

The specific elements of this procedure are as follows:

- **Department:** Department of Biomedical and Neuromotor Sciences – DIBINEM
- **SC:** 06/N1 – Technology and Methodology In Medicine and Nursing Sciences
- **SSD:** MED/50 – Applied Medical Technology and Methodology
- **Number of positions:** 1
- **Main place of employment:** Bologna
- **Number of hours of frontal teaching per year:** 24
- **Medical assistance services, if required:** Not required
- **Costs indication:** 36.675,00 gross euros per year
- **Financial coverage:** PNRR Found (CN) – Project "mRNA - National Center for Gene Therapy and Drugs based on RNA Technology" – Code CN00000041
- **CUP:** J33C22001140001
- **Project manager:** Nicola Baldini
- **Project title:** Validation of molecular targets and development of preclinical models based on 3D cultures (spheroids, organoids), microfluidics, and bioimaging for the screening of mRNA drugs targeting musculoskeletal sarcomas
- **Duration of contract:** 36 months
- **Brief description of the project:** The aim of the project is the identification and validation of molecular targets of pathogenetic relavance in musculoskeletal sarcomas (in particular, osteosarcoma, Ewing's sarcoma, and rhabdomyosarcoma), also related to cancer metabolism, and the development of a reliable platform for preclinical assessment that exceeds the conventional 2D in vitro models and prevents the use of experimental animals. To this purpose, 3D in vitro culture models at different stages of complexity, from spheroids to organoids with vascular supply, mimicking the microenvironmental conditions within the bone tissue, taking advantage also from microfluidics and advanced bioimaging (multispectrum confocal microscopy), will be evaluated and utilized. Furthermore, for at least one molecular target identified in the different histotypes, the therapeutic activity of mRNA drugs will be assessed
- **Objective of the research project:** During the project the researcher must publish at least 4 articles in peer-reviewed journals and attend at least 6 national or international meetings relevant for the subject of the project
- **Admission requirement:** PhD
- **Maximum number of publications:** 12
- **Language in which the interview will take place**: Italian
- **Foreign language**: English