Decree of the Rector n. 879 of 21/09/2023

Competition for awarding 1 research grant at the University of Udine

DISCLAIMER:
The official and legally binding call for applications is in Italian only.
This document cannot be used for legal purposes and is only meant to provide information in English on the call for applications (Decree of the Rector n. 879 of 21/09/2023). Please refer to the official call published on: https://www.uniud.it/it/albo-ufficiale

Any change and integration will be made available on the above mentioned web page. Therefore, no personal written communication regarding the examination date and/or competition results shall be provided to applicants.

Annex 1

Competition announcement for the assignment of 1 research grant at the University of Udine, entitled "Bioinformatics analysis to understand transcriptional regulation" SSD: BIO/18 (principal investigator, Fabio Marroni)

Research grant funded by the resources of the projects: PRIN 2022 - Prot. n. 2022E8NN2N and PRIN 2022 - Prot. n. 20228Z8TXN

Art. 1
A selection procedure is hereby launched for the award of 1 research grant at the University of Udine, as identified in Attachment A which constitutes an integral part of the present announcement. The research grant is linked to the research project and is subject and conditioned upon the relative funding. The fellowship may be renewed, in compliance with Art. 22, Law No. 240 of 30 December 2010 (as in the text in force before the implementation of the Conversion Law of the D.L. 36/2022, L. 79/2022), Law No. 11 of 27 February 2015, and the current regulations of the University of Udine for awarding research grants, issued with the Rector’s Decree No. 182 of 31 March 2021. The renewal is subject to the scientific coordinator’s positive assessment of the researcher’s activities, an adequate scientific rationale, and a corresponding financial covering.

The research fellowship does not give rise to any right with regards to accessing University posts.

Any personal communication to candidates related to this selection will be sent exclusively to the email address indicated when registering for the selection, as mentioned in Art. 5.

Art. 2
The research grant described in this competition announcement and the required qualifications to apply for the position are identified in Attachment A. The lack of the admission requirements leads to the automatic exclusion from the competition procedure.

Possession of a PhD or equivalent degree obtained abroad or, only for the interested areas, of a medical specialization accompanied by an adequate scientific production, constitutes a preferential qualification for awarding the research fellowship of this selection, if it has not been provided as a mandatory requirement.
For the only purpose of the admission to the competition, the Examining Board (Art. 7) shall assess the equivalence of the qualification obtained abroad, except for the evaluation of the medical specialization qualification to which Article 38 of the Legislative Decree 165/2001 and subsequent modifications and additions, and EU regulations on the matter, shall be applied.

The Examining Board will proceed to the evaluation of the qualification obtained abroad according to the documentation attached to the application form. The Examining Board may exclude the candidate if the submitted documentation does not provide sufficient information for the assessment. Therefore, applicants must enclose all the documentation in their possession relating to their qualification in order to provide the Examining Board with sufficient information for assessment.

Candidates holding a qualification issued by a European Research Area country, if successful, must submit, if not already attached to the application form one of the following options:
- Supplement Diploma in English issued by the competent University.
- CIMEA Certificate of comparability of the foreign qualification, issued by CIMEA (Information Centre on Academic Mobility and Equivalence) via the “diplome” service at https://cimea.diplo-me.eu/udine/#/auth/login

Candidates holding a qualification issued by a non-European Research Area country, if successful, must submit, if not already attached to the application form one of the following options:
- Declaration of the on-site value of the qualification and the certificate relating to the degree with examinations and grades. A certificate in a language other than Italian or English must be accompanied by an official translation into one of these languages (certified by the competent diplomatic-consular authority or certified by a court in Italy).
- CIMEA Certificate of comparability of the foreign qualification, issued by CIMEA (Information Centre on Academic Mobility and Equivalence) via the “diplome” service at https://cimea.diplo-me.eu/udine/#/auth/login

If the Supplement Diploma or the statement/attestation of comparability are not available when signing the contract, the applicant must demonstrate that he/she has requested the documentation and submit it as soon as possible.

Any exclusion from the selection procedure due to lack of eligibility requirements, absence of required documents, failure to sign the selection application or submission of the selection application in a manner different from what is provided for in this call for applications will be communicated to applicants exclusively at the email address indicated in the application form.

**Art. 3**

The research grant referred to in this call for applications cannot be awarded:

a. to employees of Universities and the entities referred to in Article 22, section 1, of Italian Law no. 240 of 30 December 2010 (in the text prior to the reform introduced by Law no. 79 of 29 June 2022);
b. to those who have already been awarded research grants pursuant to Italian Law no. 240 of 30 December 2010 (prior to the reform introduced by Law no. 79 of 29 June 2022) for the maximum period provided by law, even if not continuously, excluding the period in which the grant was used in conjunction with the doctorate, up to the legal term of the relative course;
c. to those who have already benefited from research grants and fixed-term researcher contracts provided for, respectively, in Articles 22 and 24 of Italian Law no. 240 of 30 December 2010 (in the
text prior to the reform introduced by Law no. 79 of 29 June 2022), for a total of 12 years, even if not consecutive;

d. to anyone who has a degree of kinship or affinity, up to and including the fourth degree, with:
   - the Rector, the Director General or a member of the Board of Directors of the University of Udine;
   - the scientific supervisor or a professor/researcher belonging to the department or organisation
     hosting the research grant in question.

The research grant provided for in this call for applications cannot be combined:

a) with scholarships of any kind, except for those granted by Italian or foreign institutions to
   supplement, by means of stays abroad, the fellow's training or research activities;

b) with other research grants;

c) with an employment relationship, even if part-time, without prejudice to the relevant provisions for
   employees of public administrations.

The grant awarded under this call for applications is also incompatible with simultaneous attendance at
university degree courses, either Bachelor's degree or Master’s degree courses, research Doctorates
with scholarships and medical specializations, in Italy or abroad.

Art. 4

Applicants must enclose with their application, under penalty of exclusion, the following documents:

a) their professional scientific CV, highlighting the candidate's aptitude for carrying out and
   implementing the research project (Attachment A);

b) their identity card, their passport or any other identification document¹;

c) (for candidates with a foreign qualification only) certification or self-certification of both the
   academic qualification required for the admission to the selection, and of the exams (with
   evaluation) took during the period of study abroad, and of any other document that can be useful to
   the evaluation of the degree by the Examining Board.

Applicants can attach to the application, publications and any other certification considered useful to

demonstrate the qualification based on the research program (Attachment A) and to certify any
research activity accomplished at public or private institutes (indicating the starting and ending date
and the duration).

The documents and qualifications mentioned above must be submitted in Italian or English. Those that
are not as requested will not be evaluated. Documents originally written in a language other than
Italian or English must come with a translation in Italian or English, that the candidate will do on its own
responsibility. The translation can be an abstract concerning the thesis.

Italian and Community candidates wishing to submit qualifications referring to conditions and facts
attested by Public Administrations must proceed exclusively with self-certification.
Non-EU citizens legally residing in Italy may self-certify only data that can be verified or certified by
Italian public bodies. They may also use declarations in lieu when provided for by an international
convention between Italy and the declarant's country of origin.
Non-EU citizens not residing in Italy cannot self-certify.

Only the qualifications possessed by the candidate on the date the application form is submitted and
submitted in accordance with the procedures set out in Article 5 will be assessed.

¹ Please be aware that the residence permit is not an identification document.
Failure to submit mandatory documents provided for in this article will constitute grounds for exclusion from the selection.

Art. 5
The submission of the applications for the present call starts on September 28, 2023 at 2:00 pm (Italian time) and ends on October 25, 2023 at 2:00 pm (Italian time).

The application to take part in the selection must be completed, under penalty of exclusion, using the appropriate online procedure, available at the link https://pica.cineca.it/
The procedure involves an applicant registration step, for those who do not already have an account, and then an application completion step.

Once completed, the online application must be signed in the manner described in the online procedure (manual signature with attached identity document or digital signature), under penalty of exclusion from selection. The application does not have to be signed if you access the above-mentioned online procedure using your SPID ID.

The qualifications referred to in Article 4 must be attached to the application in .pdf format. Individual .pdf files may not exceed 30MB.

The application for participation in the selection is automatically sent to the University of Udine with the definitive closing of the online procedure.

The University Administration:
- is not responsible if it is impossible to read the submitted documentation in electronic format due to damaged files;
- shall not accept or take into consideration qualifications or documents received in paper form or by any means other than what is specified in this article.

Reference to documents or publications already submitted in connection with other competitions is not allowed.

The Administration is not responsible for any missing document or communication because of inaccurate indication of residence and/or address submitted by the candidate during the application. Also, the Administration is not responsible if the candidate has not communicated changes in this information, or has communicated them too late. The Administration is also not responsible for any postal or telegraphic problems not attributable to the Administration itself.

Applicants are advised not to wait until the last few days before the closing date to submit their application. The University accepts no responsibility for any malfunctions due to technical problems and/or overloading of the communication line and/or application systems.

Art. 6
The selection procedure is held in accordance with the modality indicated in Attachment A.

The test will aim to assess the general preparation, experience and aptitude for research of the candidate. It will consist in the evaluation of the professional scientific curriculum, of the publications and qualifications presented, and of the interview, where foreseen.
Art. 7
The Examining board for the competition is identified in Attachment A of the present competition announcement, of which it is an integral part.

At its first meeting, the Examining board shall appoint its President and Secretary, and establish the criteria and methods for evaluating the qualifications and the interview, where foreseen.

The results of the qualifications assessment must be disclosed to applicants during the interview, where foreseen.

The Examining board can award a maximum of 100 points (one hundred out of one hundred) to the selection.

At the end of the evaluation procedure, the Examining board shall formulate the general merit list based on the overall score of each candidate, and draw up the minutes of the whole competition procedure.

Based on the ranking list, the assignment is awarded to candidates who have obtained a minimum overall score of 70/100 (seventy out of one hundred).

The Examining board's judgement is final.

The ranking list will be made public exclusively through publication on the University's official website.

Applicants will not be notified of the outcome of the evaluation.

Those who do not declare their acceptance of the research grant and do not present themselves at the research centre within the deadline communicated by the latter, even if not formally, shall lose the right to receive it. Exceptions to this term will only be granted in cases of documented force majeure.

Art. 8
The activity covered by the research grant must have the following characteristics:

a) it must be carried out as part of the research programme covered by the grant and not be a merely technical support to it;
b) it must have a close connection with the realization of the research program for which the winner of the grant has been awarded the contract;
c) it must be continuous and, in any case, temporally defined, not merely occasional, and in coordination with the overall activity of the University;
d) it must be carried out autonomously, solely within the limits of the programme prepared by the programme supervisor, without predetermined working hours.

The researcher is required to submit a detailed written report on the work carried out and the results achieved, accompanied by the opinion of the scientific supervisor, to the reference organisation at the intervals set out in the contract. The researcher must also submit interim reports and timesheets, if requested by the reference organisation.

Either the fellow or the reference organisation may withdraw from the contract.
The reference organisation may terminate the contract not only in the cases referred to in Article 9, sections 2 and 3, of the "Internal rules for awarding research grants pursuant to law 240 of 30 December 2010" of the University of Udine, but also in the event the research project and therefore the financial coverage on which the research grant is based cease to exist.

Art. 9

The following legal dispositions shall apply to the grant referred to in this call for applications:
- for tax matters, the provisions of Article 4 of Italian Law no. 476 of 13 August 1984, as subsequently amended and supplemented;
- for social security matters, the provisions of Article 2(26) et seq. of Italian Law no. 335 of 8 August 1995, as subsequently amended and supplemented;
- for mandatory maternity leave, the provisions of the Italian Ministerial Decree of 12 July 2007;
- with regard to sick leave, the provisions of Article 1(788) of Italian Law no. 296 of 27 December 2006 and subsequent amendments.

During the period of mandatory maternity leave, the allowance paid by INPS according to Art. 5 of the Italian Ministerial Decree of 12 July 2007 is supplemented by the University up to the full amount of the research grant.

The grant will be paid in monthly instalments.

Art. 10

The data collected as part of the procedure referred to in Art. 5 are necessary to properly manage the selection procedure, for any subsequent management of the research grant and for purposes related to managing services provided by the University. The University of Udine is the Data Controller. At any time, the data subject may request access, rectification and, depending on the University's institutional purposes, cancellation and restriction of processing or oppose the processing of their data. The data subject can always lodge a complaint with the Italian Data Protection Authority. The complete disclosure is available on the University of Udine website in the "Privacy" section, accessible from the home page www.uniud.it Direct Link: https://www.uniud.it/it/pagine-speciali/guida/privacy

Art. 11

For all matters not expressly mentioned in this call for applications, refer to the regulations in force on the subject cited in the introduction and to the "Internal rules for awarding research grants pursuant to Italian Law no. 240 of 30 December 2010" of the University of Udine, issued by Rector's Decree no. 182 of 31 March 2021.

Art. 12

The procedure supervisor is Dr Sandra Salvador, Head of the Research Services Area of the University of Udine.

The Responsible office at the University of Udine is "Area Servizi per la Ricerca - Ufficio Formazione per la Ricerca", via Mantica n. 31 - 33100 Udine, Italia.

To request information about the call for applications, please complete the following form available on the University of Udine website:
https://helpdesk.uniud.it/SubmitSR.jsp?type=req&accountId=universityofudine&populateSR_id=42105
Attachment A

Responsabile scientifico della ricerca / Principal investigator:

Nome e cognome / Name and surname: Fabio Marroni
Qualifica / Position: Professore Associato / Associate Professor
Dipartimento / Department: Scienze agroalimentari, ambientali e animali / Agricultural, Food, Environmental and Animal Sciences
Area MUR / Research field: 05 – Scienze biologiche
Settore concorsuale e Settore scientifico disciplinare / Scientific sector: 05/11; BIO/18 – Genetica

Titolo dell’assegno di ricerca / Topic of the research fellowship “assegno di ricerca”:
I bandi sono consultabili dal sito dell’Ateneo, del MUR e di Euraxess / The calls are available on the University, MUR and Euraxess websites

Testo in italiano:
Analisi bioinformatiche volte a comprendere fattori che regolano la trascrizione.

Text in English:
Bioinformatics analysis to understand transcriptional regulation.

Obiettivi previsti e risultati attesi del programma di ricerca in cui si colloca l’attività dell’assegnista di ricerca / Foreseen objectives and results of the research programme performed by the research fellow “assegnista di ricerca”:
I bandi sono consultabili dal sito dell’Ateneo, del MUR e di Euraxess / The calls are available on the University, MUR and Euraxess websites

Testo in italiano:

I laboratori di Biotecnologie e Genomica animale e vegetale del Dipartimento di Scienze Agroalimentari, Ambientali e Animali (DI4A) dell’Università degli Studi di Udine svolgono attività di ricerca finalizzate alla comprensione dei meccanismi molecolari fondamentali che sottendono la biologia di animali e piante nonché allo sviluppo di applicazioni biotecnologiche mediante l’utilizzo di organismi modello e specie da allevamento o coltura. Nel perseguire questi obiettivi, i gruppi di ricerca affiliati si avvalgono di tecniche e approcci di bioinformatica, biologia molecolare, ingegneria genetica e genonomica strutturale e funzionale.

L’assegno di ricerca biennale disponibile presso la struttura è finalizzato a sostenere l’attività di un ricercatore con competenze di bioinformatica applicata alla ricerca nel campo genomico ed epigenomico presso le unità di ricerca del prof. Fabio Marroni e del prof. Emanuele De Paoli. La ricerca, finanziata nell’ambito della programmazione PRIN (Progetti di Rilevante Interesse Nazionale) 2022, si innesta sul tema generale della regolazione epigenetica che, attraverso la modulazione della metilazione del DNA e delle modificazioni istoniche, contribuisce sia alla stabilità strutturale di un genoma eucariote sia alla funzionalità dei suoi diversi distretti in risposta a segnali intracellulari e stimoli ambientali. Partendo da questa base comune e utilizzando una batteria di tecnologie in gran parte condivise, il programma della ricerca si snoderà su due filoni, concentrando da un lato sulla funzione centromerica dei mammiferi e dall’altro sulla funzione molecolare di modificatori della cromatina di piante modello e da coltura nel contesto della risposta a stress abiotici.

FUNZIONALITÀ DELLA CROMATINA NEL DOMINIO CENTROMERICO

Diversi lavori di genetica medica hanno descritto l’acquisizione di funzioni centromeriche in frammenti cromosomici privi di DNA satellite, quindi recuperati come cromosomi soprannumerari con un neoacentromero attivato. Questi centromeri di novo possono essere associati a conseguenze fenotipiche negative. Recentemente, sono stati identificati individui cariotipicamente normali con un
centromero privo di DNA satellite spostato in una nuova posizione. Ultimamente, abbiamo scoperto che lo stesso fenomeno si è verificato durante l'evoluzione portando alla formazione di centromeri evolutivamente recenti (ENC). Nonostante questi entusiasmanti progressi, i meccanismi alla base della formazione e dell'evoluzione degli ENC non sono ancora chiari.

Nel corso di questo progetto, ci proponiamo di rispondere alle seguenti domande:

- Cosa succede al centromero canonico quando viene attivato un neocentromero? Perché alcune regioni cromosomiche sono più inclini ad attivare i centromeri de novo?
- Lo stato di metilazione del DNA è coinvolto nella funzione centromerica? L'espressione genica è alterata dalla formazione di nuovi/neocentromeri? Come viene influenzata la struttura della cromatina?
- Quando un ENC compare in una nuova posizione, quali sono le dinamiche sulla sua diffusione nella popolazione selvatica?

Recentemente, il cromosoma 12 dell'orango (Pongo spp) ha dimostrato di essere un modello per studiare la presenza de novo di un centromero, poiché un ENC è stato rilevato in entrambe le specie di Pongo: pygmaeus e abelii.

Ci proponiamo di rispondere alle domande sopra menzionate mediante il lavoro di seguito riportato:

1. Caratterizzazione funzionale dei cromosomi dell'orangutan maschio, con particolare attenzione alle regioni ENC12 e CEN12 e ai loro alleli alternativi, utilizzando una combinazione di Iso-Seq, RNA-seq, ChIP-seq, ATAC-seq e Hi-C-seq;
2. Estendere lo studio a livello di popolazione sequenziando ulteriori campioni di orangutan con uno stato ENC noto.

L'obiettivo principale del contratto di ricerca è l'analisi bioinformatica di dati allele-specifici. Ciò sarà ottenuto utilizzando pacchetti software sviluppati dal nostro gruppo (BayesASE) o pacchetti alternativi. Tale analisi consentirà di ottenere informazioni sull'effetto di un nuovo centromero sull'espressione genica, la metilazione genica, la conformazione del DNA e la modificaizione del DNA. L'indagine degli effetti, apitoto-specifici e il confronto con la situazione in individui omozigoti permetteranno di comprendere gli effetti cis e trans della formazione di un centromero sulla struttura e funzione del DNA.

**FUNZIONE DEI MODIFICATORI DELLA CROMATINA NELLA RISPOSTA DELLE PIANTINE ALLO STRESBIOTICO**

I fattori coinvolti nella memoria dello stress includono le proteine del gruppo Polycomb (PcG). Le PcG, in quanto modificatori istonici, svolgono ruoli chiave nella repressione o attivazione epigenetica della trascrizione negli animali e nelle piante durante lo sviluppo, sono conservate evolutivamente e sono coinvolte nella risposta a stress biotici e abiotici. La funzione delle proteine PcG può essere investigata mediante approcci di genetica chimica che, attraverso l’applicazione mirata di composti chimici attivi (epidrug), mirino al dominio funzionale conservato della famiglia di enzimi, senza compromettere in maniera definitiva la loro funzione molecolare come nel caso dei mutanti genetici ed evitando le limitazioni imposte dalla ridondanza genica.

In questo studio verrà realizzato lo screening di una libreria di composti farmacologici, precedentemente sintetizzata e testata su marcatori epigenetici umani riconducibili all'attività di PcG, su campioni della pianta modello Arabidopsis thaliana e in un secondo momento sulle specie di interesse agrario pomodoro e vite. La sperimentazione sarà organizzata in modo da favorire l’identificazione di composti elicitori o inibitori che possano interferire con uno o più meccanismi epigenetici alla base della risposta delle piante allo stress abiotico mediato dall'ormone ABA (acido abscissico) e da condizioni ambientali sfavorevoli alle colture come freddo o salinità.

La valorizzazione degli effetti di epidrug a funzione già verificata e di nuovi epidrug in grado di modificare la risposta delle piante allo stress abiotico sarà effettuata mediante screening fenotipici nelle fasi della germinazione o del germogliamento, a seconda della specie utilizzata, e mediante indagini molecolari di tipo RNA-seq e ChIP-seq con attenzione particolare ai target molecolari delle proteine PcG e in particolare alla modificazione istonica repressiva H3K27me3. La rilevazione di effetti inibitori su fattori epigenetici di diversa natura potrà indirizzare la ricerca verso la verifica di perturbazioni della
chromatina a livelli ulteriori, come ad esempio quello della metilazione del DNA o dei pathway di miRNA e siRNA, che richiederanno l’applicazione delle relative tecniche NGS di indagine, di cui il laboratorio ha consolidata competenza.

**Text in English:**

The Biotechnology and Animal and Plant Genomics laboratories of the Department of Agri-food, Environmental and Animal Sciences (DI4A) of the University of Udine carry out research activities aimed at understanding the fundamental molecular mechanisms underlying the biology of animals and plants as well as at the development of biotechnological applications through the use of model organisms and farmed or cultured species. In pursuing these objectives, the affiliated research groups make use of techniques and approaches from bioinformatics, molecular biology, genetic engineering and structural and functional genomics.

The two-year research grant available at the facility is aimed at supporting the activity of a researcher with bioinformatics skills applied to research in the genomic and epigenomic field at the research units of prof. Fabio Marroni and prof. Emanuele De Paoli. The research, funded under the PRIN program (Projects of Relevant National Interest) 2022, deals with the general theme of epigenetic regulation which, through the modulation of DNA methylation and histone modifications, contributes both to the structural stability of a eukaryotic genome and to the functionality of its different districts in response to intracellular signals and environmental stimuli. Starting from this common basis and using a battery of largely shared technologies, the research program will unfold along two lines, focusing on the one hand on the centromeric function of mammals and on the other hand on the molecular function of chromatin modifiers of model plants and from culture in the context of the response to abiotic stress.

**CHROMATIN FUNCTION IN THE CENTROMERIC DOMAIN**

Several medical genetic reports have described the acquisition of centromeric functions in chromosomal fragments devoid of satellite DNA, thus recovered as supernumerary chromosomes with an activated neocentromere. These de novo centromeres are associated with negative phenotypic consequences. Recently, a few karyotypically normal individuals with a free-satellite centromere “shifted” to a new location have been found. Lately, we discovered that the same phenomenon occurred during evolution identifying the evolutionary new centromeres (ENCs). In spite of these exciting advancements, the mechanisms underlying ENC formation and evolution are still unclear.

We propose to fill this scientific gap using a combination of long-read sequencing technologies, sequence assembly algorithms and cell biological approaches. We propose to address the following questions:

- What happens to the canonical centromere when a neocentromere is activated? Why are some chromosomal regions more prone to activate de novo centromeres?
- Is the DNA methylation status involved in centromeric function? Is gene expression altered by new/neocentromere formation? How is chromatin structure affected?
- When seeded in a new location, what are the dynamics over its spreading in the wild population?

Recently, orangutan chromosome 12 has proven to be a model to study the de novo occurrence of a centromere, since an ENC has been detected in both Pongo species: pygmaeus and abelii. We propose to answer the above-mentioned questions by:

1. Functionally characterizing the male orangutan’s chromosomes, with a focus on the ENC12 and CEN12 regions and their alternative alleles, using a combination of Iso-Seq, RNA-seq, ChIP-seq, ATAC-seq, and Hi-C-seq;
2. Extending the study to the population level by sequencing additional orangutan samples with a known ENC status.

The main focus of the proposed research contract is the bioinformatics analysis of allele-specific data. This will be achieved using software packages developed by our group (BayesASE) or alternative packages. Such analysis will enable to gain insights on the effect of a new centromere on gene expression, gene methylation, DNA conformation and DNA modification. The investigation of the
FUNCTION OF CHROMATIN MODIFIERS IN THE RESPONSE OF PLANTS TO ABIOTIC STRESS

Factors involved in stress memory include Polycomb group (PcG) proteins. PcGs, as histone modifiers, play key roles in the epigenetic repression or activation of transcription in animals and plants during development, are evolutionarily conserved, and are involved in the response to biotic and abiotic stresses. The function of PcG proteins can be investigated by chemical genetic approaches, which, through the targeted application of active chemical compounds (epidrugs), target the conserved functional domain of the enzyme family, without definitively compromising their molecular function as in the case of genetic mutants and avoiding the limitations imposed by gene redundancy.

In this study, the screening of a library of pharmacological compounds, previously synthesized and tested on human epigenetic markers attributable to PcG activity, on samples of the model plant Arabidopsis thaliana and subsequently on tomato and grapevine species of agricultural interest will be performed. The experiments will be organized in such a way as to favor the identification of elicitor or inhibitory compounds that can interfere with one or more epigenetic mechanisms underlying the response of plants to abiotic stress mediated by the hormone ABA (abscisic acid) and by unfavorable environmental conditions for crops such as cold or salinity.

The evaluation of the effects of epidrugs with already verified function and of new epidrugs capable of modifying the response of plants to abiotic stress will be carried out by phenotypic screening in the stages of germination or budding, depending on the used species, and by molecular investigations such as RNA-seq and chIP-seq with particular attention to the molecular targets of PcG proteins and in particular to the repressive histone modification H3K27me3. The detection of inhibitory effects on epigenetic factors of different nature will be able to direct the research towards the verification of chromatin perturbations at further levels, such as for example that of DNA methylation or of the miRNA and siRNA pathways, which will require the application of NGS, of which the laboratory has consolidated expertise.

Requisiti di ammissione / Minimum qualifications necessary:

- Possesso di un diploma di laurea vecchio ordinamento (ante decreto 3 novembre 1999 n. 509) o di laurea specialistica/magistrale (ex decreto 3 novembre 1999 n. 509 e decreto 22 ottobre 2004 n. 270) o titolo equivalente conseguito all’estero;
- possesso di un curriculum scientifico professionale idoneo allo svolgimento dell’attività di ricerca contemplata.
- University degree obtained before Decree n. 509 of 3 November 1999 or specialist/Master’s degree (post decree n. 509 of 3 November 1999 and decree n. 270 of 22 October 2004) or equivalent degree obtained abroad;
- professional scientific curriculum suitable for the research activity above mentioned.

Procedura selettiva / Competition procedure:

Valutazione per titoli e colloquio / Evaluation of titles and oral exam

I risultati della valutazione dei titoli saranno resi noti agli interessati nel corso del colloquio / The evaluation of the qualifications will be disclosed to candidates during the interview

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<tr>
<th>Calendario del colloquio / Calendar of the oral exam</th>
<th>Modalità / Modality</th>
<th>Videoconferenza / Videoconference</th>
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<tr>
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<td>Ora / Time</td>
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Per sostenere il colloquio i candidati devono esibire un valido documento di riconoscimento. / Candidates must come to the interview with a valid identity document.

Eventuali variazioni saranno rese note esclusivamente mediante pubblicazione all’albo ufficiale on line dell’Ateneo / Any change will be made public solely through publication on the University web site http://web.uniud.it/ateneo/normativa/albo_ufficiale

Nota / Note: Le indicazioni sulle modalità di svolgimento della prova in modalità telematica saranno inviate ai candidati con successiva email da parte del Presidente della Commissione. Ai fini dell’identificazione e a pena di esclusione dalla procedura selettiva, ciascun candidato è tenuto ad identificarsi prima che il colloquio abbia inizio, esibendo il medesimo documento di identità allegato alla domanda di ammissione al concorso. Il candidato deve risultare reperibile nella giornata e all’ora indicato sul bando. Il mancato collegamento, l’irreperibilità del candidato nel giorno o nell’orario stabilito o la mancata esibizione del documento identificativo, sono motivo di esclusione dalla procedura selettiva. La registrazione delle prove orali è vietata. L’Ateneo adotterà pertanto tutti i provvedimenti in suo potere per tutelare i soggetti coinvolti qualora venissero diffuse tramite internet – o altri mezzi di diffusione pubblica – video, audio o immagini della procedura selettiva. / Instructions on how the video interviewing will be conducted will be provided to candidates by the Chairman of the
Examining Board via email. For identification purposes, each candidate is required to identify him/herself before the interview by exhibiting the same identification document attached to the application. Candidates must be available on the day and time established by the call for applications. Failure of the candidate to establish a video connection, the unavailability of the candidate on the day and/or time established or failure of the candidate to provide the required identification document are all grounds for exclusion from the selection procedure. Recording of the video interviews is prohibited. The University will adopt all the measures within its power to protect all personnel involved as a result of dissemination via the internet or via other forms of public dissemination, of videos, audios or other pictures of the selection procedures.

**Commissione giudicatrice / Examining Board:**

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