Decree of the Rector n. 214 of 25/03/2026
Competition for awarding 1 research assignment 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. 214 of 25/03/2026). 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

Call for applications for the award of 1 research assignment at the University of Udine on the topic "SINCRO: Spatiotemporal entrainment as Innovative Neuromodulation targeting Cerebello-cerebral circuits for enhancing Rehabilitation Outcomes of cognitive and social skills in progressive and acquired cerebellar diseases" GSD: 11/PSIC-01 SSD: PSIC-01/A (scientific supervisor, Andrea Marini).

Article 1

A selection process has been arranged for the award of a research assignment at the University of Udine to carry out the research activity specified in Annex A, which is an integral and substantial part of this call for applications.
The research assignment is linked to the research project which will bear the relevant costs and is subject to the relevant funding.
The research assignment does not entitle the successful applicant to any rights as regards access to permanent posts at the University.
Any personal communications to applicants relating to this selection will be sent exclusively to the email address indicated during the application process.

Article 2

Young scholars who, at the time of submitting their application, have been in possession of a **master's degree or a single-cycle degree** for no more than six years and have a *curriculum vitae* suitable for assisting in the conduct of the research activities are eligible for the research assignment. In order to take part in the selection procedure, applicants **must not have reached the age of forty years** on the closing date of this call for applications.

The Examining Board shall proceed to assess the qualification obtained abroad on the basis of the documentation enclosed with the application to take part in the selection and may exclude

any applicant if the documentation submitted does not provide sufficient elements for the assessment.
Applicants are therefore invited to enclose all documentation in their possession relating to their qualifications in order to provide the Examining Board with sufficient elements to assess their position.

Without prejudice to the provisions of Article 4 of the Regulations for the awarding of research assignments pursuant to Article 22-ter of Law no. 240 of 30 December 2010, applicants may not participate in the selection process if they:
- have held research assignments, even those held at different institutions, for a period which, when added to the total duration of the assignment that is the subject of this call for applications, is equal to or greater than a total of three years, even if the assignments were not continuous. The maximum time limit of three years can only be waived in order to implement specific EU research funding actions under the Marie Skłodowska-Curie (MSCA) programme;
- have benefited from fixed-term researcher contracts pursuant to Article 24 of Law no. 240 of 30 December 2010 and belong to the permanent staff of universities, public research organisations and institutions whose postgraduate scientific diploma has been recognised as equivalent to the PhD degree qualification pursuant to Article 74(4), of Presidential Decree no. 382 of 11 July 1980;
- have 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 Governors of the University of Udine, the Scientific Supervisor or a professor/researcher belonging to the relevant department or entity where the research assignment is to be carried out.

Any additional requirements are set out in Annex A and must be met at the time the application is submitted.
Failure to meet the admission requirements will result in the applicant's **exclusion** from the selection process.
Applicants are admitted conditionally to the selection process and their exclusion, for failure to meet the requirements, may be ordered at any time with a measure indicating the reasons.

Article 3

The research assignment in this call for applications is incompatible:

a) with attendance in courses for university degrees, specialised or master's degrees, PhD or specialisation courses in the medical field, in Italy and abroad, without prejudice to the possibility of implementing specific European Union research funding actions under the Marie Skłodowska-Curie (MSCA) programme;
b) with PhD scholarships or other scholarships, for whatever reason, awarded by national or foreign institutions, unless these are aimed at international mobility for research purposes;
c) with other research assignments;
d) with post-doc research assignments under Article 22-bis of Law no. 240 of 30 December 2010;
e) with research contracts under Article 22 of Law no. 240 of 30 December 2010;

f) with fixed-term contracts for university researchers referred to in Article 24 of Law No. 240 of 30 December 2010;
g) with research grants pursuant to Article 22 of Law no. 240 of 30 December 2010 (in the text prior to Decree Law no. 36 of 30 April 2022, converted with amendments by Law no. 79 of 29 June 2022);
h) with the status of full-time employee or part-time employee with more than 50% hours, without prejudice to the possibility of taking a period of unpaid leave from one's employer.

Persons who have been convicted of a criminal offence resulting in a secondary penalty entailing disqualification from holding public office or the inability to enter into contracts with the public administration, are not eligible for selection.

Further cases of incompatibility are set out in Article 10 of the Regulations for the awarding of research assignments pursuant to Article 22-ter of Law no. 240 of 30 December 2010.

Article 4

Applicants must submit an application to take part in the selection, duly signed in handwritten or digital form in line with the procedures described in Article 5 below. An application without a signature will result in the **exclusion of** the applicant from the selection procedure, except in the case of access using the Italian Public Digital Identity System (SPID), in which case a signature will not be required.
The application to take part must be uploaded in its entirety (i.e. with all pages included)**, otherwise** the applicant will be **excluded from** the selection process.

Applicants must enclose the following with their application for taking part in the selection, **under penalty of exclusion**:

1. a professional scientific *curriculum vitae* in Italian or English or in any additional language, indicated in Annex A, highlighting the applicant's aptitudes that make him or her suitable for carrying out and implementing the research programme;
2. copy of a valid identity document or other valid identification document. Citizens of non-EU states must compulsorily enclose a copy of their passport or a copy of their Italian identity document and valid residence permit, if they are in possession thereof;
3. limited to citizens of non-EU states residing or authorised to reside in Italy, a copy of their residence permit or authorisation to reside in Italy;
4. documentation proving possession of the academic qualification required for admission to the selection process or self-certification of possession of such a qualification, subject to the conditions set out below. Any possession of a higher academic qualification does not exempt the candidate from producing such documentation, and failure to produce it will result in exclusion:
   - **Applicants who are Italian citizens or citizens of a European Union Member State** must submit a declaration in lieu of certification and, if necessary, a notarial deed regarding the academic qualification required for admission (indicating the academic qualification, the academic institution awarding the qualification, the year it was awarded and the mark obtained) and the publications and other qualifications held, indicating for each one all the identification details required to allow the Examining Board to assess them. **Applicants must declare on the application form their possession of the academic qualification**

required for eligibility and this will count as a declaration in lieu of certification. If the subject matter of the declaration in lieu is not clearly identified in terms of its nature, duration, time setting and the institution concerned, the Examining Board will disregard it. The Administration reserves the right to carry out appropriate checks on the truthfulness of the content of the declarations made; in the event of a false declaration, the provisions of Article 76 of Presidential Decree no. 445/2000 and Articles 483, 485 and 486 of the Italian Criminal Code shall apply. The University will disregard any certificates attached by applicants who are Italian citizens or citizens of a state belonging to the European Union.

- **Citizens of a non-EU State** must submit documents and qualifications in Italian or English or any additional language indicated in Annex A, under penalty of exclusion from the selection process or, as the case may be, they will not be assessed.
  Documents and qualifications, originally in a different language, must be accompanied by a translation, made by the candidate under his or her own responsibility, into Italian or English or any other language indicated in Annex A. With reference solely to a thesis, the translation may be limited to an extended abstract.
- **Citizens of a non-EU State regularly residing in Italy** may use declarations in lieu of certification only in respect of statuses, personal qualities or facts that may be certified or attested by Italian public bodies, without prejudice to the special provisions contained in the laws and regulations governing immigration and the status of foreigners.
- **Citizens of non-EU states authorised to reside in Italy** may use the aforementioned declarations in lieu in cases where they are produced pursuant to international conventions between Italy and the declarant's country of origin.

Applicants may also enclose with their application for assessment purposes their publications, any letters of reference from scientific personalities and any other qualification deemed useful to prove their suitability in relation to the research programme described in Annex A and attest any research activity carried out in public and/or private entities (with indication of the starting date and duration). The procedures for submission are similar to those indicated in point 4 of the previous paragraph.

Only qualifications possessed by the applicant on the date of submission of his or her application for selection and submitted in accordance with Article 5 will be assessed.

Any exclusion from the selection procedure due to a lack of the requirements for eligibility, the absence of compulsory documents, failure to sign the application for taking part in the selection process or due to the submission of the application according to procedures other than those provided for in this call for applications will be communicated to interested parties exclusively by email to the email address indicated in the application to take part in the selection process.

Article 5

Registration for this selection process will start on March 30, 2026 at 2 p.m. (Italian time) and end on April 9, 2026 at 2 p.m. (Italian time).

The application to take part in the selection must be filled in, under penalty of exclusion, using the appropriate online procedure, available at https://pica.cineca.it/.

For those who do not already have a pica user account, the procedure includes a registration phase for the applicant, and a subsequent phase for filling out the application online.

Once completed, the application must be signed in the manner described in the online procedure (handwritten signature, with attached identity document, or digital signature), under penalty of exclusion from the selection process. The application does not have to be signed if the above-mentioned online procedure is accessed using the Italian Public Digital Identity System (SPID). The information entered on the application form shall constitute a declaration in lieu of certification and affidavit, pursuant to Articles 46 and 47 of Presidential Decree no. 445/2000.

The qualifications referred to in Article 4 must be attached to the application in .pdf format. Individual files, in .pdf format, may not exceed 30MB in size.
It is not permitted to submit attachments to the application in the form of links to files residing on "online storage/file sharing" services or web pages. Reference to documents or publications submitted to this or other administrations or to documents attached to an application to take part in other selection procedures is not permitted

The application for taking part in the selection process will automatically be sent to the University of Udine with the final closure of the online procedure.

The University Administration:
- accepts no liability in the event that it is impossible to read the submitted documentation in electronic format due to damaged files;
- does not accept or take into consideration any qualifications or documents received in paper form or by any other means than those specified in this Article.

The Administration accepts no liability in the event of incorrect indication by the applicant of his or her email address or in the event of failure or delay in communicating a change in the email address indicated in the application, nor for any online errors attributable to third parties, unforeseeable circumstances or force majeure.

Applicants are advised not to wait until the last few days before the deadline date for submitting their application to take part in the selection process. The University accepts no liability for any malfunctions due to technical problems and/or overloading of the communication line and/or application systems.

Article 6

The selection test shall take place in accordance with the procedures and any timetable set out in Annex A.

The test will aim to assess the candidates' preparation and aptitude for research and innovation. It will consist of an assessment of the *curriculum vitae*, publications, scientific and academic qualifications, documented research activities in public and private entities, and letters of reference from scientific personalities; if provided for in Annex A, the test will also consist of an

interview with the applicants. Failure of the applicant to attend the interview will be considered as a renunciation of taking part in the selection, whatever the cause.

Applicants who intend to avail themselves of the benefits provided for by Article 20 of Law no. 104 of 1992, in relation to their disability condition, must request them in the application form, specifying the aid needed in relation to their disability condition as well as the possible need for additional time, in order for the Administration to prepare in good time the means and tools to guarantee the envisaged benefits. Such candidates must send appropriate medical certification together with their application; failure to submit the medical certification shall exempt the Administration from any obligation in this regard.

Article 7

The Examining Board shall be identified in Annex A.

At its first meeting the Examining Board shall appoint its Chairperson and Secretary taking the minutes and establish the criteria and procedures for assessing the qualifications and the interview, if any takes place.

The Examining Board shall conduct a comparative assessment of the applications.
The results of the assessment of qualifications must be made known to the interested parties at the interview, if any takes place.

The Examining Board has a total number of 100 points (one hundred hundredths) attributable to each applicant.
At the end of its work, the Examining Board shall draw up the overall ranking list on the basis of the total marks obtained by each applicant and prepare the minutes indicating the various competition operations. The ranking list will be made public exclusively by publication on the University's official notice board; the outcome of the assessment will not be communicated personally to the applicants.

To be declared eligible, applicants must have obtained a minimum overall mark of 70/100 (seventy hundredths). The research assignment shall be awarded to the eligible applicant with the highest score in the ranking list.

Any applicant who does not declare his or her acceptance of the research assignment or does not show up at the entity where the research activity is to be carried out to sign the contract by the deadline communicated by the entity to the email address indicated by the applicant in their application, shall forfeit his or her right to the research assignment, except in the case of any health reasons or reasons of force majeure duly documented and promptly notified.

In the event of non-acceptance of the assignment or failure to show up at the entity by the notified deadline, the eligible candidates on the ranking list will be approached based on the order of ranking.
In the event that the holder renounces the research assignment after the start of the research activities, the University will consider whether or not to proceed with approaching other applicants on the ranking list.

Successful applicants with qualifications obtained abroad, must submit, if not already attached to their application for taking part in the selection process:

- **For degrees issued by a country that is a party to the Lisbon Convention (**https://www.enic-naric.net/**), the following documentation**
  - Diploma *Supplement* or similar certificate in English issued by the competent university;
  - "Certificate of Verification of a Foreign Qualification - CIMEA" issued by CIMEA (Information Centre on Academic Mobility and Equivalence) via the "diplo***me***" service at https://cimea-diplome.it/
- **For degrees issued by a country that is not a party to the Lisbon Convention (**https://www.enic-naric.net/**), one of the following options:**
  - Declaration of Validity in loco of the qualification held and the certificate relating to the qualification with examinations and grades. A certificate in a language other than Italian or English must be accompanied by an official translation into one of those languages (certified by the competent diplomatic-consular authority or sworn at a court in Italy);
  - "Certificate of Comparability and Verification of a Foreign Qualifications - CIMEA" issued by CIMEA (Information Centre on Academic Mobility and Equivalence) via the "diplo***me***" service at https://cimea-diplome.it/

If the aforementioned documentation is not available at the time of entering into the contract, the holder must prove that he or she has requested it and submit it as soon as possible; if it is not submitted within six months of the start of the assignment, the candidate will forfeit the assignment and will be required to repay any sums received up to that moment under the contract.

Article 8

The activity that is the subject of the research assignment cannot begin until the contract defining the terms of the collaboration has been signed.

The activity that is the subject of the research assignment must have the following characteristics:

a) be carried out within the framework of the research programme that is the subject of the assignment and not be a mere technical support to it;
b) have a close connection with the implementation of the research programme;
c) be of a continuous and in any case temporally defined nature, not merely occasional, and in coordination with the overall activity of the University;
d) be carried out autonomously, under the supervision of the Scientific Supervisor, within the sole limits of the research programme in which it is included, without any preset working hours.

The holder of the research assignment is required to submit a detailed written report on the work carried out and the results achieved, together with the opinion of the Scientific Supervisor, to the reference entity by the deadlines specified in the contract. The holder of the research assignment must also submit interim reports and timesheets if requested by the reference entity and/or the Scientific Supervisor.

The holder of the research assignment is entitled to use the equipment of the department or entity at hosting his or her research activity and to use the services available to the university's permanent staff in accordance with the internal rules in force.

The holder of the research assignment is bound to strict confidentiality regarding the data and information he or she becomes aware of in the course of performing the research activity. At the request of the Scientific Supervisor, he or she will be required to sign an appropriate confidentiality agreement.
Industrial property rights over the results achieved by the holder in the performance of the research activity belong exclusively to the University, without prejudice to the moral right to be recognised as the creator or inventor.
With reference to the confidentiality and ownership of results, Article 11(3) of the Regulation for the awarding of research assignments pursuant to Article 22-ter of Law no. 240 of 30 December 2010 shall apply, in addition to any internal regulations that may apply.

The holder of the research assignment must comply with the University's open access policies and make their research products available on the IRIS catalogue, subject to the opinion of the Scientific Supervisor.

The holder of the research assignment shall carry out his or her activities in compliance with the University's Code of Ethics and Conduct. As a member of the academic community, the holder of the research assignment is required to comply with the University's Statute of Autonomy as well as the internal rules and regulations adopted by the governing bodies of the University.

The University reserves the right to revoke this call for applications for reasons of public interest, should the research project and/or the funding on which the research assignment is based cease to exist. Should such causes arise after the contract has been signed, the University may withdraw from the contract without notice.

Article 9

The following shall apply to the research assignment referred to in this call for applications:

- in tax matters, the provisions of Article 4 of Law no. 476 of 13 August 1984, as amended and supplemented;
- in social security matters, the provisions of Article 2(26 et seq.) of Law no. 335 of 8 August 1995, as amended and supplemented;
- on compulsory maternity leave the provisions of the Ministerial Decree of 12 July 2007;
- on sick leave, the provisions of Article 1(788) of Law no. 296 of 27 December 2006, as amended.

During the period of compulsory maternity leave, the allowance paid by INPS pursuant to Article 5 of the Ministerial Decree of 12 July 2007 is supplemented by the University up to the full amount of the research assignment.

The amount of the research assignment is paid in monthly instalments in arrears.

The cost of insurance cover for accidents and third-party liability is borne by the holders of research assignments, if not already covered by the University.

Article 10

The data collected as part of the procedure referred to in Article 5 are necessary for the proper management of the selection procedure, for the possible subsequent management of the research assignment and for purposes related to the management of the services provided by the University. The University of Udine is the Data Controller. At any time, the data subject may request access, rectification and, compatibly with the institutional purposes of the University, erasure and restriction of processing or object to the processing of his or her data. Data subjects can always lodge a complaint with the Italian Data Protection Authority. The full privacy policy 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/it/pagine-speciali/guida/privacy

Article 11

For all matters not expressly mentioned in this call for applications, reference is made to the relevant regulations in force cited in the introduction and to the "Internal Regulations for the awarding of research assignments, Article 22 *ter* of Law no. 240 of 30 December 2010" of the University of Udine issued by Rector's Decree no. 557 of 7 August 2025.

Article 12

The Procedure Supervisor is Ms Sandra Salvador, Head of the Research, Libraries and Third Mission Division of the University of Udine.

The reference office at the University of Udine is the Research Training Office - Research, Libraries and Third Mission Division, via Mantica no. 31 - 33100 Udine.

This call for applications, including Annex A, is written in Italian and English. In the event of any conflict or discrepancy between the two versions, the Italian language version shall prevail.

For information regarding applications, please send an e-mail to: incarichi.ricerca@uniud.it

Annex A

Responsabile scientifico della ricerca / *Principal investigator*:

Nome e cognome / *Name and surname*: Andrea Marini
Qualifica / Position: Professore Ordinario / *Full Professor*
Dipartimento / Department: Lingue e Letterature, Comunicazione, Formazione e Società / *Languages and Literatures, Communication, Education and Society*
Area MUR / *Research field*: 11, Scienze storiche, filosofiche, pedagogiche, psicologiche / *History, philosophy, pedagogy and psychology.*
Gruppo scientifico disciplinare e Settore scientifico disciplinare / *Scientific sector*: 11/PSIC-01 - psicologia generale, neuropsicologia e neuroscienze cognitive, psicometria, PSIC-01/A – Psicologia Generale / *11/PSIC-01 General psychology, neuropsychology and cognitive neuroscience, psychometricS, PSIC-01/A General Psychology.*

Titolo dell'incarico di ricerca / *Topic of the research assignment "incarico di ricerca"*:

Sincronizzazione spazio-temporale dei circuiti cerebello-cerebrali come neuromodulazione innovativa per coadiuvare la riabilitazione delle abilità cognitive e sociali nelle malattie cerebellari progressive e acquisite.

SINCRO: Spatiotemporal entrainment as Innovative Neuromodulation targeting Cerebello-cerebral circuits for enhancing Rehabilitation Outcomes of cognitive and social skills in progressive and acquired cerebellar diseases.

Funzioni richieste, obiettivi previsti e risultati attesi del programma di ricerca in cui si colloca l'attività del titolare di incarico di ricerca / *The required functions, intended objectives and expected results of the research programme in which the researcher will carry out their work*:

Le alterazioni cerebellari sono state collegate non solo a deficit sensori-motori, ma anche a una costellazione di disfunzioni cognitive, sociali e affettive, nota come Sindrome Cognitivo-Affettiva Cerebellare (CCAS) [1, 2], che colpisce bambini e adulti con atassia congenita o acquisita [3, 4]. Le nostre vite sono caratterizzate non solo da attività sincronizzate di diverse aree cerebrali e da attivazioni muscolari sincronizzate orchestrate nei gesti, ma anche da comportamenti sincronizzati con quelli di altre persone che favoriscono le interazioni sociali. Quando le persone camminano insieme, tendono a sincronizzare i passi; quando parlano, alternano spontaneamente fasi di parola e di ascolto. Questi comportamenti spontanei si basano sulla previsione delle azioni e delle intenzioni altrui. Negli individui con CCAS, questa abilità sociale è spesso compromessa. Il cervelletto è considerato un nodo centrale nei circuiti neurali distribuiti che supportano funzioni sensori-motorie, cognitive e affettive [5-7], e opera principalmente generando simulazioni di eventi sotto forma di modelli interni [4, 12, 13]. Queste computazioni si generalizzano ai domini motorio, cognitivo e sociale attraverso diverse reti cerebello-cerebrali [5, 14, 15], spiegando il complesso pattern di sintomi della CCAS [1-4, 16, 17].
L'obiettivo di questo progetto è testare l'efficacia di un protocollo di tACS cerebellare per potenziare le abilità sociali in adulti sani, combinando esiti comportamentali ed elettroencefalografici (EEG). Modulando l'eccitabilità corticale e l'attività oscillatoria mediante l'erogazione di correnti elettriche a

bassa intensità sullo scalpo, gli strumenti di stimolazione cerebrale non invasiva (NIBS) si sono dimostrati in grado di influenzare connessioni funzionali a lunga distanza tra neocorteccia umana e cervelletto [20, 25]. In particolare, studi precedenti hanno mostrato che la NIBS cerebellare, attivando la connettività cerebello-cerebrale, può facilitare le "primitive computazionali" generate dal cervelletto, cioè l'apprendimento di sequenze e il rilevamento di errori/deviazioni, e portare a miglioramenti in compiti di percezione sociale strettamente associati alla funzionalità della trasmissione e dell'elaborazione del segnale tra cervelletto e corteccia cerebrale [20-22].
La tACS è un metodo di neuromodulazione non invasiva che consente di modulare le oscillazioni cerebrali spontanee tramite correnti alternate a bassa intensità applicate sulla superficie dello scalpo. La frequenza di stimolazione può essere regolata (cioè "agganciata", entrainment) alla frequenza naturale delle oscillazioni cerebellari sottostanti, inducendo miglioramenti online e after-effect della performance motoria [28, 31]. In effetti, nel cervelletto sono state registrate diverse frequenze in strati distinti: un ritmo oscillatorio di 50 Hz corrisponde alla frequenza basale di scarica delle cellule di Purkinje, mentre un ritmo di 6 Hz rientra nell'intervallo di oscillazioni delle cellule granulari [32]. Tuttavia, solo una tACS cerebellare a 50 Hz si è dimostrata efficace nell'influenzare sia i potenziali evocati motori sia la prestazione motoria, mentre una stimolazione a 10 Hz è risultata non efficace [30]. Inoltre, l'uso di un montaggio modificato centro-anello (il cosiddetto tACS ad alta definizione, HD-tACS [35]) permetterà di guidare selettivamente le oscillazioni neurali nel circuito cerebellare. La specifica frequenza di tACS sarà adattata al picco individuale della banda gamma di ciascun partecipante, rilevato mediante registrazione EEG a riposo. La possibilità di personalizzare i parametri di intervento consente di affrontare la variabilità interindividuale nei pattern di oscillazioni cerebrali.
La tACS cerebellare verrà somministrata durante l'esecuzione di una batteria di compiti sperimentali, per testare in modo specifico le abilità predittive sociali a diversi livelli di complessità: a) previsione delle intenzioni motorie; b) previsione degli stati emotivi; c) previsione dei tratti di personalità. Verrà inoltre utilizzato un compito di controllo volto a testare le capacità di previsione in un contesto non sociale. Testare gli effetti comportamentali ed elettrofisiologici della tACS in giovani adulti con sviluppo tipico consentirà di formulare aspettative più raffinate sugli effetti della tACS in pazienti con alterazioni cerebellari e fornirà una prova di concetto sulla fattibilità ed efficacia di questo trattamento NIBS per la riabilitazione delle abilità di percezione sociale. Ci aspettiamo di riscontrare che la tACS cerebellare attiva, rispetto alla sham, migliori la performance nei compiti di previsione sociale, potenziando in particolare l'uso delle aspettative sociali per predire intenzioni, emozioni e tratti di personalità altrui, con trasferimento delle abilità acquisite nella vita quotidiana. Condurremo una serie di esperimenti in giovani adulti sani (N = 30; 18-35 anni) per stimare gli effetti della tACS erogata su diversi target cerebellari rispetto alla sham tACS sulla previsione sociale e sulle funzioni cognitive associate. Le regioni bersaglio saranno gli emisferi cerebellari posteriori sinistro e destro, in linea con evidenze che indicano che il contributo cerebellare alla cognizione sociale è principalmente supportato bilateralmente da Crus I e Crus II negli emisferi [5]. In effetti, mentre regioni più mediali (cioè il verme) sono tipicamente associate a un'elaborazione di basso livello dei segnali emotivi tramite connessioni con strutture limbiche cerebrali [42], i settori cerebellari postero-laterali sono stati trovati partecipare alla rete di mentalizing a riposo, dedicata alla comprensione degli stati mentali altrui, attraverso connessioni funzionali a circuito chiuso con regioni corticali del mentalizing (ad es., TPJ) [5]. I criteri di esclusione includono condizioni psichiatriche e neurologiche, farmaci che influenzano il sistema nervoso centrale, nonché i criteri standard di esclusione per la tACS. Sulla base dei risultati della simulazione del campo elettrico descritta nei dati preliminari, la tACS verrà applicata mediante un montaggio 4×1 HD-tACS, composto da cinque elettrodi ad anello (3,14 cm^2). Più specificamente, l'elettrodo attivo verrà posizionato sopra la regione cerebellare bersaglio, mentre gli altri quattro elettrodi, usati come riferimenti, saranno disposti in cerchio ed equidistanti dal centro (3 cm). La tACS attiva consiste in correnti sinusoidali (2 mA), con una fase di salita/discesa (ramp-up/down) di 30 s. Nella condizione di controllo sham, le correnti presentano ramp-up/down di 10 s. Per individualizzare il trattamento, prima dell'erogazione della tACS rileviamo il picco della frequenza

gamma individuale (IGF) (di solito prominente sui lobi prefrontali) registrando 5 minuti di EEG a riposo con occhi aperti. L'IGF (intervallo: 40–60 Hz) viene selezionata come frequenza target per la tACS in quanto particolarmente efficace per l'attività cerebellare.
Durante la tACS, i partecipanti eseguono uno dei compiti che coinvolgono la previsione degli stati mentali altrui (intenzioni, emozioni, tratti di personalità) e un compito di controllo di previsione non sociale. Tutti i compiti hanno una struttura simile, con informazioni contestuali (sociali) a priori presentate come stimoli di priming, seguite da target ambigui, prevedibili o non prevedibili sulla base dei contesti sociali. Anche se la decisione del compito dipende dall'informazione fornita dal target, essa dovrebbe essere influenzata dalla congruenza/incongruenza dell'informazione contestuale a priori (cioè in linea con la previsione vs violazione della previsione). Considerata l'ambiguità del target, gli effetti contestuali risultano dunque evidenti come effetti di priming, con i partecipanti generalmente più accurati nella discriminazione quando il target può essere previsto sulla base dell'informazione contestuale. Saranno condotti quattro esperimenti, ciascuno dei quali testerà, entro-soggetto, gli effetti della tACS sull'emisfero cerebellare sinistro vs destro vs sham tACS su uno dei quattro compiti. In ogni esperimento applicheremo un disegno sperimentale a misure ripetute, considerando come fattori entro-soggetto la congruenza tra prime e target (congruenza vs incongruenza), il tipo di stimolazione (tACS cerebellare attiva sinistra vs destra vs sham) e la tempistica delle misurazioni EEG (prima vs dopo la tACS). Ci aspettiamo che la tACS cerebellare all'IGF potenzi le abilità di previsione sociale dei partecipanti. Più specificamente, ci aspettiamo un miglior uso degli indizi contestuali a priori per predire intenzioni, emozioni e tratti di personalità altrui durante la tACS cerebellare attiva, rispetto alla stimolazione sham. Al contrario, non ci si attende alcun effetto sul compito di controllo non sociale, dimostrando così la specificità della stimolazione cerebellare sulle abilità di previsione sociale. Inoltre, ci aspettiamo di osservare cambiamenti nei pattern delle oscillazioni cerebrali dopo la stimolazione, evidenziati da cambiamenti della connettività funzionale misurati tramite EEG a riposo e durante il compito visuomotorio, che potrebbero sottendere il flusso di informazione neurale all'interno dei circuiti cerebro-cerebellari.

Cerebellar alterations have been linked to not only sensorimotor deficits, but also a constellation of cognitive, social and affective dysfunctions, known as Cerebellar Cognitive Affective Syndrome (CCAS) [1, 2], which affects children and adults with congenital or acquired ataxia [3, 4]. Our lives are characterized not only by synchronized activities of different brain areas and by synchronized muscular activations that are orchestrated in gestures, but also by behaviors synchronized with those of other people that favor social interactions. When people walk together, they tend to synchronize their steps, when they talk, they naturally alternate speaking and listening phases. These spontaneous behaviors are based on the prediction of actions and intentions of other people. In individuals with CCAS this social ability is often impaired. The cerebellum is viewed as a central node in the distributed neural circuits subserving sensorimotor, cognitive, and affective functions [5-7], where it mainly operates by generating simulations of events in the form of internal models [4, 12, 13]. These computations generalize across motor, cognitive and social domains through different cerebello-cerebral networks [5, 14, 15], explaining the complex pattern of CCAS symptoms [1-4, 16, 17]. The aim of this project is to test the effectiveness of cerebellar tACS protocol to enhance social skills in healthy adults combining behavioral and electroencephalographic (EEG) outcomes. By modulating cortical excitability and oscillatory activity through the delivering of low-intensity electric current flow over the scalp, NIBS tools have been observed to influence long-range functional connections between the human neocortex and the cerebellum [20, 25]. In particular, previous studies have shown that cerebellar NIBS, by activating cerebello-cerebral connectivity, may facilitate the computational primitives generated by the cerebellum, i.e., sequence learning and error/deviant detection, and lead to improvements in social perception tasks that are strictly associated to the functionality of signal transmission and processing between the cerebellum and the cerebral cortex [20-22]. TACS is a noninvasive neuromodulation method that allows spontaneous brain oscillations to be modulated via low-intensity alternating

currents applied on the scalp surface. Frequency of stimulation can be tuned (i.e., entrainment) to the natural frequency of the underlying cerebellar oscillations, inducing online and after-effect improvements of motor performance [28, 31]. Indeed, various frequencies have been recorded in distinct layers of the cerebellum: an oscillatory rhythm of 50 Hz corresponds to the basal firing frequency of the Purkinje cells, whereas a rhythm of 6 Hz falls into the oscillations range covered by the granule cells [32]. Only a 50 Hz cerebellar tACS, however, was proven effective in affecting both motor evoked potentials and motor performance, whereas a 10 Hz stimulation resulted to be non-effective [30]. Furthermore, using a modified centre-ring montage (known as high-definition (HD) tACS [35]) will allow selectively driving neural oscillations in the cerebellar circuit. The specific tACS frequency will be tailored to the individualized peak of the gamma frequency band of each patient as detected with EEG recording during resting state. The opportunity to customize intervention parameters allows facing interindividual variability in the pattern of brain oscillations.

Cerebellar tACS will be administered during the execution of a battery of experimental tasks, to specifically test social predictive abilities at different levels of complexity: a) prediction of motor intentions; b) prediction of emotional states; 3) prediction of personality traits. A control task aimed to test prediction abilities in a non-social context will be also used. Testing the behavioral and electrophysiological effects of tACS in young adults with typical development will allow for more refined expectations about the effects of tACS in patients with cerebellar alterations and will provide a proof of concept for the feasibility and efficacy of this NIBS treatment for the rehabilitation of social perception skills. We expect to find that active, as compared to sham, cerebellar tACS will improve performance at the social prediction tasks, particularly enhancing the use of social expectancies to predict the intention, emotion and personality traits of others, transferring the acquired skills into daily life. we will run a series of experiments in young healthy adults (N = 30; 18-35 yo) to estimate the effects of tACS delivered to different cerebellar targets vs. sham tACS on social prediction and associated cognitive functions. Target regions will be the left and right posterior cerebellar hemispheres in line with evidence showing that the cerebellar contribution to social cognition is mostly supported by bilateral Crus I and II in the hemispheres [5]. Indeed, while more medial regions (i.e. vermis) are typically associated with low-level processing of emotional signals via connections with cerebral limbic structures [42], postero-lateral cerebellar sectors have been found to participate to the mentalizing resting-state network devoted to the understanding of others' mental states, through functional closed-loop connections with cortical mentalizing regions (e.g., TPJ) [5]. Exclusion criteria are psychiatric and neurological conditions, medication influencing the central nervous system as well as standard tACS exclusion criteria. Following the results of the simulation of the E-field described in the preliminary data, tACS will be applied through a 4x1 HD-tACS montage, composed of five ring electrodes (3.14 cm2). More specifically, the active electrode will be placed over the target cerebellar region, while the other four electrodes, serving as references, will be positioned in a circle and equidistant from the center (3 cm). Active tACS consists of sinusoidal currents (2 mA), with a ramp-up/down phase of 30-s. In the sham control condition, the currents are ramp-up/down for 10-s. To individualize the treatment, before delivering tACS, we detect the individual gamma frequency (IGF) peak (usually prominent on prefrontal lobes) recording 5 min eyes-open resting-state EEG. The IGF (range: 40-60 Hz) is selected as target frequency for tACS as particularly effective for cerebellum activity.

During tACS, participants perform one of the tasks involving the prediction of others' mental states (intentions, emotions, personality traits) and a control non-social prediction task. All tasks have a similar structure, with (social) contextual prior information offered as priming stimuli, followed by ambiguous targets, either predictable or not predictable based on the social contexts. Even if the task decision depends on the information provided by the target, it should be affected by the congruence/incongruence of the contextual prior (i.e., in line with the prediction vs. violation of the prediction). Considering the ambiguity of the target, contextual effects are thus evident as "priming" effects, with participants being usually better in discrimination when the target can be predicted based

on the contextual information. Four experiments will be conducted, each one testing, within-subjects, the effects of tACS over left vs. right cerebellar hemisphere vs. sham tACS on one of the 4 tasks. In each experiment, we will apply a repeated measure experimental design, considering the congruence between prime and target (congruence vs incongruence), the type of stimulation (active left vs. right cerebellar tACS vs. sham tACS) and the timing of EEG measurements (before vs after tACS) as within-subjects factors. We expect to observe cerebellar tACS at the IGF to enhance participants' social prediction abilities. More specifically, we expect improved use of contextual priors to predict others' intentions, emotions and personality traits during active cerebellar tACS, compared to sham stimulation. Conversely, no effect is expected for the non-social control task, thus demonstrating the specificity of the cerebellar stimulation on social prediction abilities. Furthermore, we expect to observe changes in brain oscillations patterns following the stimulation, as shown by functional connectivity changes as measured by means of EEG recordings during resting-state and the visuomotor task, which may underlie the flow of neural information within the cerebro-cerebellar circuits.

References

1. Schmahmann JD. Disorders of the cerebellum: ataxia, dysmetria of thought, and the cerebellar cognitive affective syndrome. J Neuropsychiatry Clin Neurosci. 2004 Summer;16(3):367-78. doi: 10.1176/jnp.16.3.367. PMID: 15377747.
2. Argyropoulos GPD, van Dun K, Adamaszek M, Leggio M, Manto M, Masciullo M, Molinari M, Stoodley CJ, Van Overwalle F, Ivry RB, Schmahmann JD. The Cerebellar Cognitive Affective/Schmahmann Syndrome: a Task Force Paper. Cerebellum. 2020 Feb;19(1):102-125. doi: 10.1007/s12311-019-01068-8. PMID: 31522332; PMCID: PMC6978293.
3. Tavano A, Grasso R, Gagliardi C, Triulzi F, Bresolin N, Fabbro F, Borgatti R. Disorders of cognitive and affective development in cerebellar malformations. Brain. 2007 Oct;130(Pt 10):2646-60. doi: 10.1093/brain/awm201. Epub 2007 Sep 14. PMID: 17872929.
4. Tedesco AM, Chiricozzi FR, Clausi S, Lupo M, Molinari M, Leggio MG. The cerebellar cognitive profile. Brain. 2011 Dec;134(Pt 12):3672-86. doi: 10.1093/brain/awr266. Epub 2011 Oct 27. PMID: 22036960.
5. Van Overwalle F, Manto M, Cattaneo Z, Clausi S, Ferrari C, Gabrieli JDE, Guell X, Heleven E, Lupo M, Ma Q, Michelutti M, Olivito G, Pu M, Rice LC, Schmahmann JD, Siciliano L, Sokolov AA, Stoodley CJ, van Dun K, Vandervert L, Leggio M. Consensus Paper: Cerebellum and Social Cognition. Cerebellum. 2020 Dec;19(6):833-868. doi: 10.1007/s12311-020-01155-1. PMID: 32632709; PMCID: PMC7588399.
6. Baumann O, Borra RJ, Bower JM, Cullen KE, Habas C, Ivry RB, Leggio M, Mattingley JB, Molinari M, Moulton EA, Paulin MG, Pavlova MA, Schmahmann JD, Sokolov AA. Consensus paper: the role of the cerebellum in perceptual processes. Cerebellum. 2015 Apr;14(2):197-220. doi: 10.1007/s12311-014-0627-7. PMID: 25479821; PMCID: PMC4346664.
7. Mariën P, Ackermann H, Adamaszek M, Barwood CH, Beaton A, Desmond J, De Witte E, Fawcett AJ, Hertrich I, Küper M, Leggio M, Marvel C, Molinari M, Murdoch BE, Nicolson RI, Schmahmann JD, Stoodley CJ, Thürling M, Timmann D, Wouters E, Ziegler W. Consensus paper: Language and the cerebellum: an ongoing enigma. Cerebellum. 2014 Jun;13(3):386-410. doi: 10.1007/s12311-013-0540-5. PMID: 24318484; PMCID: PMC4090012.
8. Wolpert DM, Doya K, Kawato M. A unifying computational framework for motor control and social interaction. Philos Trans R Soc Lond B Biol Sci. 2003 Mar 29;358(1431):593-602. doi: 10.1098/rstb.2002.1238. PMID: 12689384; PMCID: PMC1693134.
9. Leggio MG, Chiricozzi FR, Clausi S, Tedesco AM, Molinari M. The neuropsychological profile of cerebellar damage: The sequencing hypothesis. Cortex. 2011 Jan;47(1):137-44. doi: 10.1016/j.cortex.2009.08.011. Epub 2009 Sep 6. PMID: 19786276.
10. Leggio M, Molinari M. Cerebellar sequencing: a trick for predicting the future. Cerebellum. 2015 Feb;14(1):35-8. doi: 10.1007/s12311-014-0616-x. PMID: 25331541.

11. Ito M. Control of mental activities by internal models in the cerebellum. Nat Rev Neurosci. 2008 Apr;9(4):304-13. doi: 10.1038/nrn2332. PMID: 18319727.
12. Lupo M, Siciliano L, Leggio M. From cerebellar alterations to mood disorders: A systematic review. Neurosci Biobehav Rev. 2019 Aug;103:21-28. doi:10.1016/j.neubiorev.2019.06.008. Epub 2019 Jun 10. PMID: 31195001.
13. Butti N, Corti C, Finisguerra A, Bardoni A, Borgatti R, Poggi G, Urgesi C. Cerebellar Damage Affects Contextual Priors for Action Prediction in Patients with Childhood Brain Tumor. Cerebellum. 2020 Dec;19(6):799-811. doi: 10.1007/s12311-020-01168-w. PMID: 32699945.
14. Butti N, Biffi E, Genova C, Romaniello R, Redaelli DF, Reni G, Borgatti R, Urgesi C. Virtual Reality Social Prediction Improvement and Rehabilitation Intensive Training (VR-SPIRIT) for paediatric patients with congenital cerebellar diseases: study protocol of a randomised controlled trial. Trials. 2020 Jan 14;21(1):82. doi: 10.1186/s13063-019-4001-4. PMID: 31937355; PMCID: PMC6961250.
15. Urgesi C, Butti N, Finisguerra A, Biffi E, Valente EM, Romaniello R, Borgatti R. Social prediction in pediatric patients with congenital, non-progressive malformations of the cerebellum: From deficits in predicting movements to rehabilitation in virtual reality. Cortex. 2021 Nov;144:82-98. doi: 10.1016/j.cortex.2021.08.008. Epub 2021 Sep 24. PMID: 34662720.
16. Tieri G, Morone G, Paolucci S, Iosa M. Virtual reality in cognitive and motor rehabilitation: facts, fiction and fallacies. Expert Rev Med Devices. 2018 Feb;15(2):107-117. doi: 10.1080/17434440.2018.1425613. Epub 2018 Jan 10. PMID: 29313388.
17. Miterko LN, Baker KB, Beckinghausen J, Bradnam LV, Cheng MY, Cooperrider J, DeLong MR, Gornati SV, Hallett M, Heck DH, Hoebeek FE, Kouzani AZ, Kuo SH, Louis ED, Machado A, Manto M, McCambridge AB, Nitsche MA, Taib NOB, Popa T, Tanaka M, Timmann D, Steinberg GK, Wang EH, Wichmann T, Xie T, Sillitoe RV. Consensus Paper: Experimental Neurostimulation of the Cerebellum. Cerebellum. 2019 Dec;18(6):1064-1097. doi: 10.1007/s12311-019-01041-5. PMID: 31165428; PMCID: PMC6867990.
18. Cattaneo Z, Ferrari C, Ciricugno A, Heleven E, Schutter DJLG, Manto M, Van Overwalle F. New Horizons on Non-invasive Brain Stimulation of the Social and Affective Cerebellum. Cerebellum. 2022 Jun;21(3):482-496. doi: 10.1007/s12311-021-01300-4. Epub 2021 Jul 16. PMID: 34270081.
19. Oldrati V, Ferrari E, Butti N, Cattaneo Z, Borgatti R, Urgesi C, Finisguerra A. How social is the cerebellum? Exploring the effects of cerebellar transcranial direct current stimulation on the prediction of social and physical events. Brain Struct Funct. 2021 Apr;226(3):671-684. doi: 10.1007/s00429-020-02198-0. Epub 2021 Jan 11. PMID: 33426567.
20. Ferrari C, Ciricugno A, Urgesi C, Cattaneo Z. Cerebellar contribution to emotional body language perception: a TMS study. Soc Cogn Affect Neurosci. 2019 Oct 7;17(1):81–90. doi: 10.1093/scan/nsz074. Epub ahead of print. PMID: 31588511; PMCID: PMC8824541.
21. Ciricugno A, Ferrari C, Rusconi ML, Cattaneo Z. The left posterior cerebellum is involved in orienting attention along the mental number line: An online-TMS study. Neuropsychologia. 2020 Jun;143:107497. doi: 10.1016/j.neuropsychologia.2020.107497. Epub 2020 May 12. PMID: 32413432.
22. Ferrari C, Ciricugno A, Battelli L, Grossman ED, Cattaneo Z. Distinct Cerebellar regions for Body Motion Discrimination. Soc Cogn Affect Neurosci. 2019 Dec 10;17(1):72–80. doi: 10.1093/scan/nsz088. Epub ahead of print. PMID: 31820788; PMCID: PMC8824544.
23. Oldrati V, Schutter DJLG. Targeting the Human Cerebellum with Transcranial Direct Current Stimulation to Modulate Behavior: a Meta-Analysis. Cerebellum. 2018 Apr;17(2):228-236. doi: 10.1007/s12311-017-0877-2. PMID: 28786014; PMCID: PMC5849643.
24. Thut G, Bergmann TO, Fröhlich F, Soekadar SR, Brittain JS, Valero-Cabré A, Sack AT, Miniussi C, Antal A, Siebner HR, Ziemann U, Herrmann CS. Guiding transcranial brain stimulation by EEG/MEG to interact with ongoing brain activity and associated functions: A position paper. Clin Neurophysiol. 2017 May;128(5):843-857. doi: 10.1016/j.clinph.2017.01.003. Epub 2017 Jan 29. PMID: 28233641; PMCID: PMC5385293.

25. Miyaguchi S, Otsuru N, Kojima S, Yokota H, Saito K, Inukai Y, Onishi H. The effect of gamma tACS over the M1 region and cerebellar hemisphere does not depend on current intensity. J Clin Neurosci. 2019 Jul;65:54-58. doi: 10.1016/j.jocn.2019.03.045. Epub 2019 Apr 3. PMID: 30954355.
26. Naro A, Leo A, Russo M, Cannavò A, Milardi D, Bramanti P, Calabrò RS. Does Transcranial Alternating Current Stimulation Induce Cerebellum Plasticity? Feasibility, Safety and Efficacy of a Novel Electrophysiological Approach. Brain Stimul. 2016 May-Jun;9(3):388-395. doi: 10.1016/j.brs.2016.02.005. Epub 2016 Feb 12. PMID: 26946958.
27. Naro A, Bramanti A, Leo A, Manuli A, Sciarrone F, Russo M, Bramanti P, Calabrò RS. Effects of cerebellar transcranial alternating current stimulation on motor cortex excitability and motor function. Brain Struct Funct. 2017 Aug;222(6):2891-2906. doi: 10.1007/s00429-016-1355-1. Epub 2017 Jan 7. PMID: 28064346.
28. De Zeeuw CI, Hoebeek FE, Schonewille M. Causes and consequences of oscillations in the cerebellar cortex. Neuron. 2008 Jun 12;58(5):655-8. doi: 10.1016/j.neuron.2008.05.019. PMID: 18549777.
29. D'Angelo E, Nieus T, Maffei A, Armano S, Rossi P, Taglietti V, Fontana A, Naldi G. Theta-frequency bursting and resonance in cerebellar granule cells: experimental evidence and modeling of a slow k+-dependent mechanism. J Neurosci. 2001 Feb 1;21(3):759-70. doi: 10.1523/JNEUROSCI.21-03-00759.2001. PMID: 11157062; PMCID: PMC6762330.
30. Naro A, Milardi D, Cacciola A, Russo M, Sciarrone F, La Rosa G, Bramanti A, Bramanti P, Calabrò RS. What Do We Know About the Influence of the Cerebellum on Walking Ability? Promising Findings from Transcranial Alternating Current Stimulation. Cerebellum. 2017 Aug;16(4):859-867. doi: 10.1007/s12311-017-0859-4. PMID: 28456901.
31. Heise KF, Kortzorg N, Saturnino GB, Fujiyama H, Cuypers K, Thielscher A, Swinnen SP. Evaluation of a Modified High-Definition Electrode Montage for Transcranial Alternating Current Stimulation (tACS) of Pre-Central Areas. Brain Stimul. 2016 Sep-Oct;9(5):700-704. doi: 10.1016/j.brs.2016.04.009. Epub 2016 Apr 14. PMID: 27160465.
32. Di Russo F et al.. Normative event-related potentials from sensory and cognitive tasks reveal occipital and frontal activities prior and following visual events. Neuroimage. 2019 Aug 1;196:173-187. doi: 10.1016/j.neuroimage.2019.04.033. Epub 2019 Apr 11. PMID: 30981857.

Struttura dell'Università di Udine presso la quale verrà sviluppata l'attività di ricerca / *Department or other structure of the University of Udine where research activities will be carried out*:

Laboratorio di Neuroscienze Cognitive, Dipartimento di Lingue e Letterature, Comunicazione, Formazione e Società / *Cognitive Neuroscience Laboratory, Department of Languages, Literature, Communication, Education and Society - DILL*

Laboratorio di Stimolazione Cerebrale c/o IMFR Gervasutta di Udine / *Brain Stimulation Laboratory, IMFR Gervasutta di Udine*

Importo dell'incarico di ricerca (al lordo oneri carico titolare di incarico) / *Total grant gross for the research assignment "incarico di ricerca" (gross expenses charged to the person in charge)*:

€ 27.990,04

Durata dell'incarico di ricerca / *Duration of the research assignment "incarico di ricerca"*:

12 mesi / *12 months*

Proroga o rinnovo dell'incarico di ricerca / *Extension or renewal of the research assignment "incarico di ricerca":*

L'incarico può essere prorogato e/o rinnovato con il titolare in conformità con quanto previsto dall'art. 22-ter della Legge 30 dicembre 2010, n. 240 e dal Regolamento dell'Università degli Studi di Udine per il conferimento di incarichi di ricerca in presenza di valutazione positiva del responsabile scientifico sull'attività svolta dal titolare dell'incarico di ricerca, adeguata motivazione scientifica e relativa copertura finanziaria. Qualora il responsabile scientifico riscontri elementi che richiedano la necessità o l'opportunità di prorogare/rinnovare l'incarico di ricerca, dovrà presentare apposita istanza di proroga/rinnovo alla struttura di riferimento in tempo utile per garantire la gestione delle relative procedure. Nell'istanza, il responsabile scientifico dovrà evidenziare le motivazioni a giustificazione in modo tale da permettere all'organo collegiale della struttura di riferimento di adottare una decisione in merito.

In accordance with the provisions of Article 22-ter of Law No. 30 of 30 December 2010, No. 240, and the University of Udine's Regulations for the awarding of research assignments, the assignment may be extended and/or renewed with the holder, subject to a positive evaluation of the work carried out by the research assignment holder, adequate scientific justification, and relative financial coverage. If the scientific supervisor identifies any reasons to extend or renew the research assignment, they must submit a specific request for extension or renewal to the relevant body in good time to allow for the management of the related procedures. The scientific director must provide justification for the extension/renewal in the request so that the relevant body of the reference structure can make a decision on the matter.

Finanziamento / *Financed by*:

La copertura finanziaria grava sui seguenti fondi / *The following funds cover the financial costs*:

CR_2023_IRCCS_SLUCIA_SINCRO_URGESI – CUP G23C22002980001 - Bando Ordinario della ricerca finalizzata (RF) - "Change promoting" Ministero della Salute, RF-2021-12374279. SINCRO: Spatiotemporal entrainment as Innovative Neuromodulation targeting Cerebello-cerebral circuits for enhancing Rehabilitation Outcomes of cognitive and social skills in progressive and acquired cerebellar diseases.

Requisiti di ammissione / *Minimum qualifications necessary*:

Alla data di presentazione dell'istanza, il candidato deve / *By the date of presentation of the application, the candidate must:*
- essere in possesso del titolo di laurea magistrale o a ciclo unico da non più di sei anni; / *have held a master's degree or equivalent qualification obtained abroad for no more than six years;*

Alla data di scadenza del presente bando, il candidato deve / *By the deadline of this call, the candidate must:*
- non aver compiuto 40 anni d'età / *not having reached 40 years of age.*

Requisiti aggiuntivi di ammissione / Additional admission requirements:

-

Ulteriori elementi valutativi / *Additional assessment elements*:

In sede valutativa, la Commissione terrà in particolare considerazione i seguenti elementi / *In its evaluation, the Commission will take into particular consideration the following requirements:*

- Documentata esperienza di ricerca con tecniche di neurostimolazione / *Documented research experience with neurostimulation techniques.*
- Pubblicazioni scientifiche nell'ambito delle neuroscienze cognitive / *Scientific publications on cognitive neurosscience topics.*

Modalità di presentazione della documentazione oggetto di valutazione / *Arrangements for the submission of documents*:

La modalità di presentazione della documentazione oggetto di valutazione è specificata agli articoli 4 e 5 del bando. / *The way of presenting the documentation under evaluation is specified in the articles 4 and 5 of the present notice.*

Ai fini valutativi, i candidati potranno presentare le pubblicazioni e ogni altro titolo ritenuto utile a comprovare la propria qualificazione in relazione al programma di ricerca descritto nell'Allegato A, nelle seguenti lingue: / *For evaluation purposes, candidates may present publications and any other qualifications deemed useful to demonstrate their qualification in relation to the research program described in Attachment A, in the following languages:*

- Italiano / *Italian*
- Inglese / *English*

Procedura selettiva / *Competition procedure:*

Valutazione per soli titoli/*Assessment of qualifications only.*

Commissione giudicatrice / *Examining Board*:

Nome e Cognome	**Qualifica**	**GSD**	**SSD**	**Università**
Membri Effettivi / *Permanent members*				
Andrea Marini	PO	11/PSIC-01	PSIC-01/A	Udine
Cristiano Crescentini	PA	11/PSIC-04	PSIC-04/B	Udine
Cosimo Urgesi	PO	11/PSIC-01	PSIC-01/B	Mercatorum
Membro Supplente / *Temporary member*				
Marina Camodeca	PA	11/PSIC-02	PSIC-02/A	Udine

Diritti e doveri / *Rights and responsibilities*:

Il titolare di incarico di ricerca sarà aggregato alla struttura di riferimento individuata dal responsabile scientifico. Alle condizioni indicate dalla struttura di riferimento, potrà accedere ai locali dedicati all'attività di ricerca e ai relativi laboratori oltre alle sedi dell'Ateneo. Il titolare riceverà un indirizzo di posta elettronica istituzionale dell'Ateneo che dovrà essere utilizzato per tutte le comunicazioni relativa all'attività di ricerca. Potrà accedere ai servizi informatici e alle risorse amministrative e informatiche dedicati al personale non dipendente.
Il titolare di incarico di ricerca è tenuto al rispetto dello Statuto di autonomia dell'Università, del Codice Etico e di Comportamento nonché della normativa interna e delle prescrizioni interne adottate dagli organi di governo dell'Università, in particolare del Regolamento per l'affidamento di incarichi di ricerca ai sensi dell'art. 22 ter della legge 30.12.2010, n. 240. Il titolare di incarico di ricerca deve osservare le prescrizioni a suo carico dettate nel bando di selezione e nel contratto da stipularsi a seguito di vincita.

The research fellow will be assigned to the reference structure specified by their scientific supervisor. They will have access to the premises dedicated to research activities and related laboratories, as well as the university's premises, under the conditions specified by the reference structure. They will receive an institutional email address from the university for all communications relating to research activities. They will also have access to IT and administrative resources intended for non-employee staff.
They are required to comply with the University's Statute of Autonomy and Code of Ethics and Conduct, as well as its internal regulations and requirements adopted by the governing bodies. In particular, they must comply with the Regulations for the Assignment of Research Positions pursuant to Article 22 ter of Law No. 240 of 30 December 2010. Holders of research positions must comply with the requirements set out in the selection notice and the contract to be signed following the award.