phynest

Guidelines for applicants

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1. PHYNEST PROGRAMME

1.1. Programme description

PHYNEST ("**PHY**sics for a greener world: fostering the **NE**xt generation of talented young researchers in novel materials, innovative **ST**rategies and energy solutions") is a new, excellent doctoral programme led by the Universitat Autònoma de Barcelona (UAB) for the recruitment and training of **25 doctoral candidates** in the fields of advanced materials, innovative strategies, and key solutions for a new energy paradigm and environmental sustainability. Funded under the Horizon Europe MSCA COFUND scheme, PHYNEST offers an interdisciplinary and intersectoral research approach, fully aligned with the principles of Open Science and committed to the highest standards of research excellence.

The **UAB**, as beneficiary and coordinator, will host **18 doctoral positions**. The remaining **7 positions** will be hosted by the following Implementing Partners:

- Institut Català de Nanociència i Nanotecnologia (ICN2) – 3 positions
- Instituto de Ciencia de los Materiales de Barcelona (ICMAB) – 1 position
- Fundació Institut de Recerca en Energia de Catalunya (IREC) – 1 position
- Instituto de Microelectrónica de Barcelona – Centro Nacional de Microelectrónica (CNM) – 1 position
- Centre de Visió per Computador (CVC) – 1 position

In addition, more than **30 renowned international organisations** will participate as Associated Partners, contributing to the training programme, offering secondments and amplifying its impact through collaboration, knowledge transfer, and a strong multiplier effect.

Achieving Europe's ambition of becoming the first climate-neutral continent by 2050 requires a massive scale-up of clean energy solutions. While significant progress has been made under the European Green Deal, urgent challenges remain. The global surface air temperature has already risen by 1.3°C above pre-industrial levels, making it imperative to move away from fossil fuels and accelerate the transition to a sustainable energy paradigm.

This transformation depends on designing and developing new materials and devices for renewable energy applications, as well as on understanding, modelling, and optimising their behaviour to boost efficiency and reliability. It also demands the exploration of disruptive ideas and a re-examination of energy and climate concepts over time. PHYNEST is conceived to address these scientific challenges by training the next generation of researchers to lead this transition.

The programme offers a tailor-made training programme for recruited fellows to educate tomorrow's researchers on climate action through a broad set of scientific and transferable skills. It focuses on five key areas:

- Materials and measures empowering energy efficiency
- Theory and modelling of energy-efficient devices
- Historical and societal evolution of energy and sustainability
- Advanced sensing and actuation for sustainability improvement
- Climate change carbon monitoring

Moreover, the PHYNEST programme incorporates key aspects to ensure a comprehensive and impactful training experience for all fellows:

- **International:** The programme will recruit top international fellows who fulfill the mobility rule. It includes a strong collaborative network with international organizations for secondments, short stays, and training activities. Fellows will also gain international exposure through events like conferences and workshops.
- **Interdisciplinary:** Available research themes are multidisciplinary by nature, involving different scientific fields such as Physics, Materials Science & Engineering, Environmental Science, and Chemistry. A range of training activities will be organized in non-research-oriented skills, and networking will be promoted among researchers from different disciplines.
- **Intersectoral:** The non-academic sector is deeply involved in the programme through secondments, with the proactive involvement of companies and other organizations. A strong focus of the programme is to create future career opportunities for fellows beyond the academic sector.

1.2. *What does PHYNEST offer*

- **4-year full-time doctoral contracts** (37,5 hours/week). The salary will be €1,875 per month (gross), plus a mobility allowance of €700 per month. Please note that the taxation applied to the mobility allowance may vary depending on the host institution.
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- **Over 50 cutting-edge research topics** across experimental, theoretical, and societal dimensions (see section 1.3 Research projects).
- **Access to top-tier research facilities** and supervision by internationally renowned experts.
- **Excellent training programme,** including workshops, seasonal schools, retreats, and public engagement events.
- **Dedicated support for diversity, equity, and inclusion**, including mentoring and bias mitigation.
- **Ethics and integrity training**, overseen by PHYNEST and UAB Ethics Committees.

1.3. *Training activities*

PHYNEST offers a rich and diverse training programme designed to equip fellows with both scientific excellence and transferable skills, preparing them for successful careers in academia, industry, and beyond.

Scientific and technical training

- Fellows will receive advanced training in topics such as renewable energy, energy storage and conversion, sustainable computing, climate change, and the historical and social dimensions of energy.

- Access to cutting-edge infrastructure and specialized equipment at host institutions.
- Hands-on experience with experimental and modelling techniques, progressing from basic to advanced levels.
- Secondments (3-6 months) at partner laboratories and premises for intersectoral and interdisciplinary transfer of knowledge.

Transferable skills training

- Workshops on entrepreneurship, intellectual property rights, communication, leadership, project management, and diversity & inclusion.
- Courses offered by UAB Doctoral School and Language School.
- Access to UAB's Coursera MOOC platform with over 40 courses on science, technology, and personal development.

Network-wide events

- **Initial Orientation Workshop:** this five-day workshop will introduce new fellows to key topics in energy, sustainability, and climate change. It will include scientific lectures and will provide an opportunity for fellows to present their own PhD projects to supervisors and peers, fostering group cohesion and identity. The training will also cover essential non-research skills, such as managing time and projects, navigating scientific literature with the help of AI tools, and effectively communicating a research hypothesis through a concise "Elevator Pitch."

- **Winter School:** organized during the second year, this 4.5-day school will combine scientific lectures from high-profile speakers with presentations by fellows on their initial research results. A key component of this event will be the transferable skills training. Fellows will learn to develop a more analytical and audience-focused approach to scientific writing and will acquire new skills in graphical and structural communication to create high-impact presentations and visuals, such as infographics.

- **Summer School:** taking place in the third year, this five-day school will feature scientific lectures and will provide fellows with a platform to present their PhD work progress. The training activities will be designed to help fellows prepare for their future careers. The "Career Development" workshop will assist with making informed career choices and will provide practical advice for the job market, while a session on public speaking and improvisation will teach techniques for engaging an audience and handling unexpected questions, ensuring fellows can effectively convey their conclusions.

- **Personal Development Retreat:** this 2.5-day event will be designed for personal and professional growth, offering a break from the lab and a chance for team-building. Held in a relaxed setting, the retreat will include activities aimed at improving emotional intelligence, motivation, and mental health. Fellows will also receive valuable training on intellectual property rights, entrepreneurship, and the creation of spin-off companies, with the support of specialized units.

- **Public Performance at CCCB:** this two-day event will provide a unique opportunity for fellows to apply their communication skills and present their PhD outcomes to a broader, non-specialized audience at the Barcelona Centre of Contemporary Culture (CCCB). This knowledge translation activity will aim to share research findings with the public and relevant stakeholders in the energy sector. Fellows will deliver short presentations and will showcase interactive materials like posters, videos, or prototypes, helping to ensure that the research evidence informs public decisions on energy, sustainability, and climate change.

1.4. Research projects

Candidates will be able to select from a wide variety of hot research topics at the forefront of current science in advanced materials, energy and environmental sustainability. The research projects offered by the PHYNEST programme are listed below:

Topic	Supervisors	Institution
Novel magnetoelectric composites for energy-efficient memory concepts based on CMOS compatible ferroelectrics	Alberto Quintana Jordi Sort Ignasi Fina	UAB
Analysis of stability and resilience of interacting physical systems to external forcing	Daniel Campos Javier Cristín Ariane Arias	UAB
Physics-based compact modeling and circuit-level integration of graphene FETs for emerging applications	Nikolaos Mavredakis David Jiménez	UAB
Synchronization and criticality in the stability of power grids	Javier Cristín Daniel Campos Pere Masjuan	UAB
Magnetic field enhanced electrocatalysis with sustainable materials	Jordi García-Antón Eva Pellicer	UAB
From hydrogen pressure to electrode potential: an electrochemical approach to organometallic nanoparticle synthesis	Jordi García-Antón Eva Pellicer	UAB
Molecule-programable 2D organic-inorganic heterostructures through local tunning of their optoelectronic properties	Cristian Rodríguez Jose Muñoz	UAB
Designing hybrid heterostructures with molecular polarization–controlled magnetoelectric coupling	Javier Rodríguez-Viejo Alberto Quintana Puebla Irena Spasojević	UAB
Data-driven approaches for tracking anthropogenic greenhouse gas emissions changes	Vanessa Monteiro Gara Villalba Ariane Arias	UAB
Magneto-ionics using novel mobile ions for bio-inspired memory and computing systems	Enric Menéndez Jordi Sort Mariona Coll	UAB

Exploiting random phenomena in magnetic materials for development of new generation computing strategies.	Nuria Del Valle Jordi Sort Carles Navau	UAB
Polarimetric imaging for the optical characterization of advanced materials: application to organic glasses and nanostructured materials	Àngel Lizana Marta González Irene Estévez	UAB
Study of the emergent thermodynamics in magnetic systems	Carles Navau F. Xavier Alvarez Nuria Del Valle	UAB
Investigation of quantum effects with atomic simulators in the T2K and Hyper-Kamiokande neutrino experiments, (NEAT – Neutrino with atoms)	María Pilar Casado Alessio Celi	UAB
Ecological drivers of the ocean carbonate pump and carbon export: linking biodiversity, trophic interactions, and carbonate biogeochemistry	Patrizia Ziveri Montserrat Roca	UAB
Quantum thermodynamics in atomic quantum simulators	Alessio Celi Gabriele De Chiara	UAB
Flexible magneto-ionic cells enabled by proton-driven magnetic modulation of transition metal oxides	Eva Pellicer Jordi Sort F. Xavier Àlvarez	UAB
Chiral symmetry breaking with quantum algorithms	Pere Masjuan Queralt Alessio Celi	UAB
PhotoSeebeck and photothermoelectric properties of low-dimensional semiconductors	Javier Rodríguez-Viejo Aitor Lopeandia Irene Estevez	UAB
Opportunities for synergistic optimization of hydrogen production in microbial electrolysis cells via low-intensity magnetic fields	Albert Guisasola Carles Navau	UAB
Optimizing Formate Production in Single-Chamber Electrochemical Cells using Low-Cost Bi and Sn Cathodes	Albert Guisasola Eva Pellicer Zainab Ul Kausar	UAB
Energetics of Information: From Timekeeping to Computing	Martí Perarnau Llobet Vicenç Méndez López	UAB
Contentious “Green Transitions”; renewable energies and geopolitical materials in historical perspectives	Jaume Valentines-Álvarez	UAB
The role of Materials Science in the historical construction of small-scale research	Xavier Roqué Gemma Garcia	UAB
Concrete landscapes: technology, politics and environment in the twentieth century	Jaume Sastre-Juan Gemma Garcia	UAB
Quantum information transfer via high-dimensional structured states	Adam Vallés John Calsamiglia	UAB

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Developement of a numerical tool for assessing radon prevention and mitigation methods in energy-efficient new buildings and existing buildings	Lluís Font Xavier Álvarez Victoria Moreno	UAB
Non-diffusive heat conduction mechanisms from crystalline to amorphous materials	Albert Beardo Aitor Lopeandia Libertad Abad Muñoz	UAB
Dual-Scale Polarimetry: Miniaturized and Terahertz-Range Polarization Control Using Advanced Materials	Irene Estévez Alberto Quintana Adam Vallés	UAB
Accelerated Discovery of Seawater HER Catalysts via Artificial Intelligence-Guided Electrodeposition of Transition-Metal Alloys	Jordina Torrents Eva Pellicer	UAB
Artificial Intelligence-Driven Design of Ternary Alloy Electrodeposits: Deciphering the Interplay Between Plating Mechanisms, Process Parameters, and Coating Properties	Jordina Torrents Eva Pellicer	UAB
Modelling Tumour Dynamics and Radiotherapy Response: Towards Sustainable and Energy-Efficient Cancer Treatments	Imma Martínez Pere Masjuan	UAB
Carbon fluxes across the land-ocean interface: the role of Submarine Groundwater Discharge	Valentí Rodellas Joan Villanueva	UAB
Phased-array acoustic levitation to characterize contact electrification	Galien Grosjean Carles Navau	UAB
Smart gas sensors based on 2D materials	Marianna Sledzinska Aitor Lopeandia Javier Rodríguez-Viejo	ICN2
Spintronic control of many-body interactions in flat-band graphene	Sergio O. Valenzuela Juan F. Sierra	ICN2
2D transition metal dichalcogenides for thermal management and energy-efficient technologies	Javier Rodríguez-Viejo Marianna Sledzinska Aitor Lopeandia	ICN2
Spin-orbit torques in van der waals heterostructures	Sergio O. Valenzuela Juan F. Sierra	ICN2
Exploring physical properties of Semiconducting qubits with Artificial Intelligence-based computational workflows	Stephan Roche José-Hugo García	ICN2
Irradiation effects on high temperature superconducting films	Teresa Puig Joffre Gutíerrez	ICMAB
Overdoping HTS films: the route to get closer to the maximum departing current	Teresa Puig Joffre Gutiérrez	ICMAB
Additive manufacturing of functional ceramics for solid state batteries	Antonio Gianfranco Sabato Alex Morata Albert Tarancón	IREC

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Ultrafast high temperature sintering of ceramic components for solid state batteries	Antonio Gianfranco Sabato Alex Morata Albert Tarancón	IREC
Thermoelectric generator based on ultrathin Si thin films. Design, fabrication and characterization	Libertad Abad Muñoz Marc Salleras	CNM
Electrospun PVDF and copolymer nanofibers for flexible, low-voltage electrocaloric cooling	Libertad Abad Muñoz Marc Salleras	CNM
Quantum Machine Learning	Fernando Vilariño Paula García	CVC

The applicants may contact the host groups to discuss common interests. Contact details and a comprehensive description of each research project can be found under the "offered PhD positions" tab on the PHYNEST website.

2. CALL FOR CANDIDATES

2.1. *Open call timeline*

- **Call opens:** January 1, 2026
- **Application deadline:** February 28, 2026, at 24:00 CEST
- **Evaluation and selection period:** March – July 2026
- **Results announced:** September 2026
- **Fellowship start date:** October - December 2026 (flexible start)

2.2. *Application process*

All applications must be submitted via the online application platform on the PHYNEST website.

Applicants are required to submit their application in English, including the following information and supporting documents:

- **General info from the applicant:** A free-format **Curriculum Vitae** (CV) of maximum of 4 pages and a **motivation letter** of maximum 2 pages. The CV may include details on academic history, research interests, relevant work experience, publications, honours/awards, accomplishments, etc. The motivation letter should include a concise introduction stating which PhD research topics the candidate is applying for (three preferred options), while emphasizing any key skills the candidate possesses that makes him/her an ideal candidate, and the interest and motivation for applying. All applicants should also provide two **recommendation letters**, ideally issued by former teachers or supervisors (e.g., master's thesis

advisor) of the candidate. Recommendation letters must include the date and signature.

- **BSc and MSc academic transcripts:** digital/scanned copies of bachelor (BSc) and master (MSc) degrees and their official translation in English or Spanish where necessary. Candidates must submit a single PDF document for each degree that includes the official certificate of the academic degree and the transcript of records showing the grades obtained. As a general rule, the following will apply for admission of the student to a PhD programme: (i) to hold an European Higher Education Area (EHEA) member country university degree that qualifies the candidate for access to a master's degree and to have passed a minimum of 300 ECTS in the set of official university studies of which, at least 60 ECTS must be at master's level, or (ii) an official Spanish graduate degree of at least 300 ECTS. Detailed information on the documents required for admission to a PhD programme can be consulted on the UAB website. In case of not providing master degree certification, the candidate must include a declaration of compliance with all requirements to access to the doctoral programme at the time of starting the fellowship (template provided in the "Documents and templates" tab).

- **Proof of English level:** all applicants must provide documentation of sufficient communication skills in English. Supporting documentation of English proficiency must be uploaded during application from an internationally recognized body (minimum of TOEFL 72, IELTS 5-6.5, CEFR B2, B2 First (FCE), PTE Level 3). Candidates from English-speaking countries or those that conducted an official BSc and/or MSc degree entirely in English do not need to proof their English level, provided that an official document confirming it is properly submitted in the section: proof of English level.

- **Mobility declaration:** template provided in the "Documents and templates" tab. The template must be completed following the instructions provided in the document and signed.

An acknowledge email will be automatically sent to each candidate after submission of an application.

2.3. Eligibility criteria

In support of **equality and non-discrimination** principles, gender, age, nationality, race, or any other discrimination or inequality issues will not be considered during the application and selection process. Scientific/academic merits and excellence of the candidates are the only criteria for evaluation. To avoid that 'unconscious' or 'implicit' bias unintentionally influences judgements and opinions about others, the members of the panels involved in the selection process will be properly trained and instructions to be aware of their own biases will be provided in the guidelines for the evaluators. Female candidates are strongly encouraged to apply for the positions.

The two eligibility criteria to comply by prospective candidates are related to mobility and experience:

- **Mobility rule**: candidates must not have resided or carried out their main activity (work, studies, etc.) in Spain for more than 12 months in the 36 months immediately preceding the deadline for the programme call (February 28th, 2026).
- **Experience rule:** at the date of recruitment, researchers must not be in possession of a doctoral degree. Those that have successfully defended their doctoral thesis but have not yet formally awarded the doctoral degree will not be eligible. Recruited researchers must be enrolled in a doctoral programme leading to the award of a doctoral degree at UAB at the time of signing the contract.

Diversity aspects

Applications from candidates with disabilities, those requiring special assistance, researchers at risk, members of the LGBTQ+ community, and other underrepresented groups are strongly encouraged. Equal opportunities and diversity will be fully considered throughout both the recruitment process and the implementation of the training programme. In cases where candidates have comparable qualifications, preference will be given to applicants from minority or underrepresented backgrounds.

3. SELECTION PROCESS

3.1. Evaluation process

Our selection process will be transparent, rigorous, and fair, ensuring that the most qualified and promising candidates are selected for the program. The process will be divided into four key phases:

Phase I (eligibility check): this initial phase will last for 30 days after the Open Call's closing date. The Project Management Team (PMT) will perform the initial eligibility check on all candidates, verifying criteria such as mobility, academic background, absence of a previously obtained doctoral degree, and whether their undergraduate and master's degrees are in the same or a related field as their first research project choice. Any candidate who fails to meet these criteria will be deemed ineligible. Once the eligibility check is complete, the documentation of eligible candidates will be sent to the Catalan Agency for University and Research Grants AGAUR for the next phase of evaluation.

Phase II (evaluation of merits): the scientific evaluation of the applications will be conducted externally to the UAB by the AGAUR, guaranteeing an independent, professional, and timely assessment. To ensure fairness and impartiality, each application will be evaluated by at least three independent experts. The scientific coordinators (SCs) of each panel will supervise the entire process to prevent or detect possible errors, contradictions, or omissions. The SCs will review the initial scores, and if there are no significant discrepancies (a difference of ≤15% between the maximum and minimum score), the average of the three evaluations will be maintained as the final score. If discrepancies are detected, the area coordinators will make a final decision, or the SCs may request a new evaluation in cases of clear disagreements. The AGAUR's evaluation process is based on peer review and will follow the principles outlined in the European Code of Conduct for the Recruitment of Researchers. The AGAUR will provide the UAB with a comprehensive evaluation report, including a ranked list of candidates based on their scores and an Individual Evaluation Report (IER) for each application. The results will be

communicated to all applicants via email, with twice the number of available positions (50 candidates) being shortlisted for a remote interview in Phase III. The remaining candidates will receive their IER and final score by email, a report designed to help them better prepare for future PhD applications. The external scientific evaluation will take place between April and June 2026.

Phase III (interviews): the 50 shortlisted candidates will be invited to a 20-minute online interview conducted by the Interview Panel (IP). The interviews will be divided into two equal parts. In the first 10 minutes, candidates will be asked to talk about their academic and scientific background, their merits, and the suitability of their profile for the position. They may use PowerPoint slides as supporting material. The following 10 minutes will consist of a Q&A session with the evaluation committee, designed to gather information about the candidate's ability to work autonomously, their team-player capabilities, and their interest in the programme from both a scientific and training perspective. This phase will be coordinated by the IP and the PMT, who will jointly prepare a summary report for each interview. The interviews will be conducted in July 2026.

Phase IV (final ranking and appointment): in the final phase, the PMT will create the definitive ranking list of candidates. The final score will be determined by equally weighing the scores from Phase II (evaluation of merits) and Phase III (interviews), with each contributing 50% to the total. A Consensus Report from the SC and IP committees will formalize the final funding decisions. Non-selected candidates and those on the reserve list will receive an Overall Assessment Report (OAR), which will include their position in the final ranking. Candidates recommended for hiring will be notified and asked to sign an acceptance letter within 15 days to secure the grant. If a fellowship is rejected, the offer will be extended to the first candidate on the reserve list, and so on. Once the PMT has collected all acceptance letters, the final 25 PhD candidates will be invited to negotiate the contract terms and informed about the procedures for their enrolment in a UAB PhD programme. The notification email will also include the names of their PhD supervisor(s), tutor, and mentor, with the supervisor(s) simultaneously added in Cc.

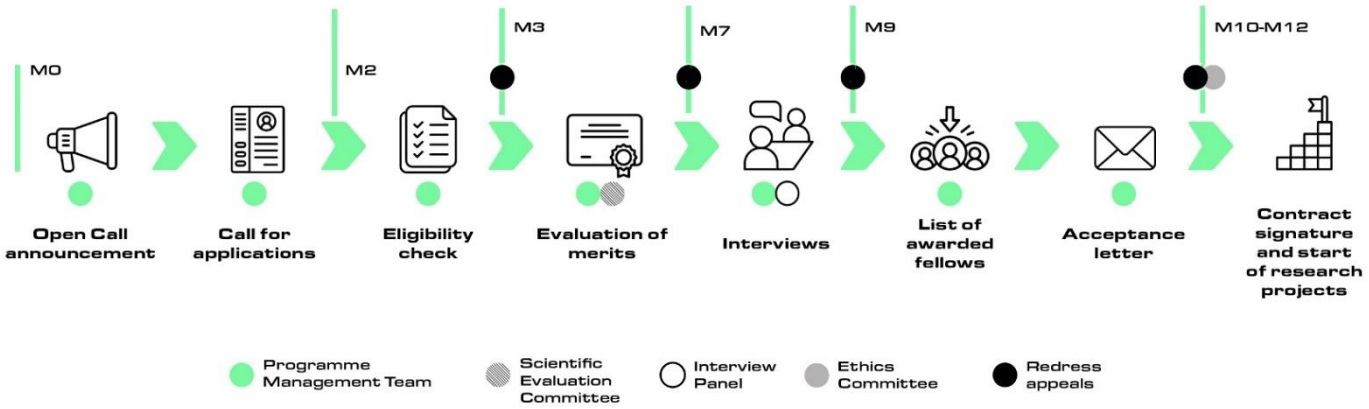

Figure 2: The recruitment process pipeline for PHYNEST, with the appointed committees at each stage.

3.2. Evaluation criteria

After the eligibility check, candidates will be evaluated against a set of criteria and sub-criteria during Phase II (evaluation of merits) and Phase III (interviews with short-listed

candidates), as outlined in Table 1. The scoring system and thresholds are predefined to ensure transparency. These criteria encompass not only academic and scientific achievements, but also career potential and soft skills, guaranteeing a fair and consistent selection process in line with the principles of the Code of Conduct.

Table 1: Evaluation criteria, scoring and thresholds for PhD candidates' selection.

Phase	Selection criteria	Scoring (over 100)	Thresholding
Eligibility check (Phase I)	Application submitted before the deadline / All requested documentation included in the application / Mobility + definition of doctoral candidate + ECTS requirements to embark on doctoral studies fulfilled / Proof of minimum English level / BSc & MSc degrees in the same or a related field as their first choice.	No scoring applies. The candidates must fulfil the eligibility criteria to be considered further.	
Evaluation of merits (Phase II)	BSc + MSc (20%): suitability of the doctoral candidate to the research group & academic transcripts.	50	30
	Research & working experience (40%): knowledge and practical skills in specialized techniques (e.g., electron microscopy, gamma spectrometry, COMSOL Multiphysics software), participation in projects, publications, patents, attendance at conferences/workshops.		
	Recommendation letters (10%): independent account of the applicant's academic strength and social character.		
	Motivation letter (10%): interest and motivation to join PHYNEST.		
	Other merits (20%): internships, awards, supervision and mentoring, teaching, outreach activities, foreign languages, English level, industrial exposure.		
Interviews (Phase III)	Research skills (50%): excellence, commitment to research and innovation, critical thinking, projection as future leader, robustness of the answers to the questions formulated by the PI members, ability to persuade about the matching of the candidate's profile with the position.	50	25
	Transferable skills (50%): structured discourse, tolerant attitude, credibility, self-confidence, team player capabilities, communication skills, motivation, etc.		

As candidates are expected to be early-stage fellows, i.e., at the beginning of their careers, Phase II will focus on evaluating their education, research skills, and academic/professional merits (teaching, supervision, internships in companies and/or research institutions, participation in research projects, foreign language and IT skills, outreach activities, etc.).

Phase III will assess additional qualities that may not be fully reflected in the CV, such as creativity, critical thinking, adaptability, autonomy, communication and teamwork, leadership potential, and self-awareness regarding strengths and weaknesses.

A maximum of 50 points can be awarded in Phase II. The top 50 candidates will then be invited to a 20-minute online interview in Phase III, where they can earn up to an additional 50 points. The final ranking, based on a maximum of 100 points, will determine the 25 selected fellows.

In case of a tie, priority will be given in the following order:

1. Applications from women, refugees, and candidates with disabilities.
2. Higher scores obtained in Phase III.
3. If still unresolved, higher scores in Phase II, following the order of the criteria listed in Table 1.

3.3. Redress appeal

An opportunity to submit a request for redress will be available for applicants after each evaluation phase, if they believe the selection process or the final score is unfair or incorrect. The deadline to submit an appeal is 7 calendar days from receiving the email notification for a specific stage: eligibility check (Phase I), evaluation of merits (Phase II), interviews (Phase III). Requests must be sent by email to phynest.cofund@uab.cat using the redress template provided in the "Documents and templates" section on the PHYNEST website. Each appeal will be reviewed individually before a final decision is made. The review will be conducted by the PMT (for Phases I and III) or by AGAUR (for Phase II). If the appeal is accepted, the application will be reviewed again. Candidates will be notified of the final decision within 10 working days.

4. CONSORTIUM MEMBERS

4.1. Coordinator

Universitat Autònoma de Barcelona (UAB)

The UAB is one of Spain's top public universities, located in Cerdanyola del Vallès near Barcelona. It is internationally recognized for its excellence in research, innovation, and teaching. With over 37,000 students and more than 3,600 academic and research staff, UAB offers 68 PhD programmes and hosts numerous research institutes across disciplines. The university is deeply committed to sustainability, social responsibility, and internationalization, with 27% of its master's programmes taught in English.

Established as a Campus of International Excellence (CIE) since 2009, UAB has devoted strong efforts to position itself as one of the leading research and knowledge frameworks in Europe. For this, it has established the Sphere UAB-CIE, a partnership that encompasses the research institutes, business parks, technological companies, foundations, and university hospitals affiliated to UAB or located in the surroundings of UAB to establish a unique environment for collaborations and synergies. Currently, the Sphere UAB-CIE involves 80 organisations from the fields of social sciences, humanities, technology, experimental sciences, and health in which the university has taken on a central role and has stimulated the search for synergies, the optimisation of resources and, in short, the exploration for new frameworks of collaboration.

UAB coordinates PHYNEST and provides the academic framework for the doctoral programme, hosting fellows across departments such as Physics, Chemistry,

Neurosciences, and ICTA. Its vibrant campus and interdisciplinary ecosystem make it an ideal environment for nurturing future leaders in science and sustainability.

🔗 More about UAB

4.2. Implementing Partners

Institut Català de Nanociència i Nanotecnologia (ICN2)

ICN2 is a leading research institute in nanoscience and nanotechnology, located on the UAB campus. It focuses on the unique properties of materials at the nanoscale, with applications in energy, health, and information technologies. ICN2 hosts over 200 researchers and has been recognized as a Severo Ochoa Centre of Excellence. Its multidisciplinary research groups work on advanced electron microscopy, 2D materials, nanobiosensors, spintronics, and magnetic nanostructures. ICN2 combines fundamental research with innovation and technology transfer, offering PHYNEST fellows access to cutting-edge facilities and expert mentorship in a dynamic and collaborative environment.

🔗 More about ICN2

Instituto de Ciencia de los Materiales de Barcelona (ICMAB-CSIC)

ICMAB is a multidisciplinary research center of the Spanish National Research Council (CSIC), specializing in functional materials for energy, electronics, and nanomedicine. Located in the UAB campus, ICMAB is a Severo Ochoa Centre of Excellence and hosts over 500 researchers annually. Its mission is to generate and transfer knowledge in materials science through high-impact research and collaboration with industry. The institute offers state-of-the-art facilities, including a cleanroom (Nanoquim Platform), and is active in educational outreach and international projects. PHYNEST fellows at ICMAB will engage in pioneering research on sustainable materials and benefit from a rich scientific ecosystem.

🔗 More about ICMAB

Fundació Institut de Recerca en Energia de Catalunya (IREC)

IREC is Catalonia's reference public research center for energy technologies. Founded in 2008, it focuses on energy production, transformation, distribution, and efficient use, with a strong emphasis on renewable energy and sustainability. IREC operates across two main areas: long-term scientific research and market-oriented technology development. Its seven research groups cover topics such as energy storage, solar energy, hydrogen, smart grids, and climate-resilient buildings. PHYNEST fellows hosted at IREC will benefit from its applied research focus, industry partnerships, and involvement in European innovation platforms like PRIMA and BATTECH.

🔗 More about IREC

Instituto de Microelectrónica de Barcelona – Centro Nacional de Microelectrónica (IMB-CNM-CSIC)

IMB-CNM is Spain's largest public research center in micro- and nanoelectronics, part of the CSIC network. Located on the UAB campus, it specializes in semiconductor devices, sensors, power electronics, and nanofabrication. The institute hosts eight research groups and operates a national cleanroom facility (ICTS), supporting advanced microfabrication and integration technologies. IMB-CNM is actively involved in European projects and industrial collaborations, and plays a key role in the development of sustainable electronic systems. PHYNEST fellows will have access to unique infrastructure and expertise in microelectronics applied to energy and environmental challenges.

🔗 More about IMB-CNM

Centre de Visió per Computador (CVC)

CVC is a leading non-profit research center in computer vision and artificial intelligence, based on the UAB campus. Founded in 1994, it conducts cutting-edge research in areas such as autonomous driving, medical imaging, robotics, and document analysis. CVC combines fundamental science with technology transfer, collaborating with industry and participating in major European projects like ELLIOT and ELSA. It is also a TECNIO-accredited center and actively promotes diversity, inclusion, and sustainability. PHYNEST fellows at CVC will explore the intersection of AI and sustainability, contributing to innovative solutions for environmental monitoring and energy efficiency.

🔗 More about CVC

4.3. Associated Partners

PHYNEST is supported by a diverse network of 24 Associated Partners from academia, industry, and the public sector. These institutions contribute to the programme by hosting fellows for secondments, participating in training events, and offering career development opportunities. Their involvement ensures that fellows gain exposure to a wide range of professional environments and perspectives.

Academic partners:

- University of Cagliari
- TU Dresden, IAPP
- Chalmers Tekniska Hogskola AB
- Technical University of Denmark
- Imperial College of London
- Universität zu Köln
- Vienna University of Technology

- Tampereen Korkeakoulusaatio sr, Tampere University
- École Polytechnique
- Dalhousie University
- Czech Metrology Institute
- Helmholtz-Zentrum Dresden-Rossendorf
- CNRS / UGA Laboratoire de Physique et Modélisation des Milieux Condensés
- Barcelona Supercomputing Center
- Institut de Recerca i Tecnologia Agroalimentàries

Non-academic partners:

- IDEADED S.L.
- Acquora SpA
- INGENII
- Deneb Medical, S.L.

Training partners:

- ThePaperMill
- DIVERSIunity
- Explainers Group S.A.U.

Communication partner:

- Parc de Recerca UAB (PRUAB)

Selection process partner:

- Agència de Gestió d'Ajuts Universitaris i de Recerca (AGAUR)

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