

Joint Transnational Call 2023

for research projects in synergy with the two European initiatives

Graphene Flagship

and

Human Brain Project – EBRAINS

Call Announcement

Deadline: 1 June 2023, 17:00 CEST

Documents and procedures: <http://www.flagera.eu>

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1. Introduction

The national and regional research funding organisations in FLAG-ERA join the agenda of two large-scale European initiatives: [Graphene Flagship](#) and [Human Brain Project - EBRAINS](#). The present call aims at supporting the integration of the respective national and regional research communities into the European-wide effort that they represent. Building on ten years of outstanding collaboration, the objective is to leverage on the initiatives' achievements and evolutions to look to the future under the renewed context of Horizon Europe:

1. The *Graphene Flagship* will benefit from a continued and significant support¹ of the European Commission;
2. *Human Brain Project - EBRAINS* is evolving towards a European Research Infrastructure Consortium (ERIC).

Both initiatives, launched in 2013 as FET Flagships, address grand and multidisciplinary scientific and technological challenges, built around an ambitious unifying vision. Their overarching nature and magnitude imply that they can only be realised through a federated and sustained effort.

In this context, FLAG-ERA, the 'Flagship ERA-NET', gathers national and regional funding organisations in Europe and beyond with the goal of supporting, together with the European Commission, these initiatives and their research areas: Graphene and 2D materials and computational neurosciences. One of its main aims is, using dedicated Joint Transnational Calls (JTCs), to allow researchers from several countries to jointly complement them and to collaborate towards the achievement of the respective visions. The present JTC 2023 is the fifth such call, after the JTC 2015, JTC 2017, JTC 2019 and JTC 2021.

Such JTCs combine the features of conventional ERA-NET calls with specific features designed to exploit the potential synergies offered by the initiatives. These specific features are as follows:

- The thematic scope of the call corresponds to topics where synergies with the initiatives are expected. For that purpose, this scope has been defined in partnership with them.
- Applicants are encouraged to describe in the proposal the potential synergies expected in the framework of the proposed project.

2. Call topics

The call is divided into three sub-calls. Two sub-calls support *Graphene Flagship* and one sub-call *Human Brain Project – EBRAINS*. The two sub-calls supporting *Graphene Flagship* correspond to different approaches: Indeed, in order to translate graphene and 2D materials known effects and concepts into technological applications, a sub-call on applied research and innovation is organised in addition to one on basic research laying down foundations for future graphene and 2D materials technologies. The sub-call supporting *Human Brain Project – EBRAINS* targets both basic and applied research projects.

The three sub-calls differ in term of participating countries and funding organisations, they are evaluated by different evaluation panels. The evaluation criteria used are identical but weighted differently. The funding organisations participating to the call and more specifically to each sub-call

¹ See Horizon Europe [Work Programme 2023-2024](#) for Digital, Industry and Space

are listed in the next section. The funding organisation contact points are provided in Annex II, and the contact information of the FLAG-ERA joint call secretariat is provided on the front page of the present Call Announcement.

The topics of each sub-call are listed below and full description of their scope are provided in Annex I. Only proposals falling into these areas will be considered.

2.1. Sub-call Graphene Flagship (basic research)

The goal is to lay the foundations for the graphene and 2D materials technologies of the future. The focus is on basic research, and the projects should explore novel phenomena, concepts, resources, protocols, algorithms, and/or address major challenges that prevent broad applications of some graphene and 2D materials technologies. The following topics fall within the scope of the sub-call:

1. Graphene-related materials-based scaffolds for living cells integration;
2. Graphene related materials for neuromorphic photonics;
3. Layered materials for quantum sensing;
4. Neuromorphic circuits based on layered materials;
5. Graphene-related materials-based field effect transistor sensors for viral surveillance;
6. Layered material-based antiviral, antibacterial and antifungal coatings;
7. Tunneling magnetoresistance in layered materials-based spintronic devices.

Motivations, target outcomes and expected impacts of each topic are detailed in Annex I of the present Call Announcement.

2.2. Sub-call Graphene Flagship (applied research and innovation)

The goal is to take known graphene and 2D materials effects and established concepts from basic research, translate them into technological applications. These could be novel devices that are based on known effects and that will serve a novel application, or devices and systems that translate known applications into products and industrial applications. The following topics fall within the scope of the sub-call:

1. Graphene-related materials-based scaffolds for living cells integration;
2. Graphene-related materials-enhanced industrial sensors;
3. Properties of graphene-related materials suspensions;
4. Flexible substrates with enhanced thermal dissipation enabled by layered materials;
5. Graphene-related materials-based field effect transistor sensors for viral surveillance;
6. Layered material-based antiviral, antibacterial and antifungal coatings.

Motivations, target outcomes and expected impacts of each topic are detailed in Annex I of the present Call Announcement.

2.3. Sub-call Human Brain Project – EBRAINS (basic and applied research)

This sub-call focuses on:

1. Preclinical and clinical neuroscience research through data reuse

It targets research proposals using cross dataset analysis as well as the development of robust modelling and simulations to address ambitious and novel research objectives. Proposals should be primarily based on pooling, harmonisation, transformation and/or reanalysis of existing research datasets or a combination of them.

Ongoing projects funded through FLAG-ERA and other national, European or international initiatives such as the ERA-NET NEURON and the JPND are encouraged to broaden their initial objectives by exploring and making use of existing datasets.

This sub-call is intended to contribute to the transformation of neurosciences research landscape enabled by Open Science opportunities, such as EBRAINS. Applicants are encouraged to exchange with the EBRAINS infrastructure (flag-era.JTC2023@ebrains.eu). A non-exhaustive list of datasets which can be exploited and further analysed in the context of this sub-call, together with an overview of some of the available EBRAINS services are mentioned in Annex I. A complete list of FAIR data discoverable via EBRAINS is found here: [Data and Knowledge - EBRAINS](#).

3. Participating funding organisations and indicative budgets

The table below provides the list of funding organisations participating to the call, indicative budgets and anticipated number of fundable research groups. Note that the list of participating funding organisations depends on the sub-call.

Country	Funding organisation	Graphene Flagship (basic research)	Graphene Flagship (applied research and innovation)	Human Brain Project – EBRAINS (basic and applied research)	Foreseen Budget (K€)	
BE	Belgium	FNRS	Yes	No	Yes	400
BG	Bulgaria	BNSF	Yes	Yes	Yes	380
EE	Estonia	ETAg	Yes	No	Yes	150
FR	France	ANR	Yes	Yes	Yes	2 000
DE	Germany	DFG	Yes	No	No	2 000
IL	Israel	InnovationAuth	No	Yes	Yes	500
LT	Lithuania	LMT	Yes	Yes	Yes	300
NL	The Netherlands	ZonMw	No	No	Yes	800
RO	Romania	UEFISCDI	No	Yes	Yes	500
SK	Slovakia	SAS	Yes	Yes	Yes	240
SI	Slovenia	MIZS	Yes	Yes	Yes	900

SE	Sweden	VINNOVA	No	Yes	No	500
SE	Sweden	VR	Yes	No	No	360
TW	Taiwan	NSTC	Yes	Yes	Yes	810
TR	Turkey	TÜBITAK	Yes	Yes	Yes	400

4. Timeline

The timeline below is indicative.

16 March 2023	Information webinar
1 June 2023	Proposal submission deadline
15 November 2023	Notification of accepted proposals
December 2023 - February 2024	Project start

5. Open Science policy

Research supported by public funds should be available free of charge, to improve transparency, reproducibility, visibility and democratisation of research, and also to avoid multiple payment of the same research. As such, FLAG-ERA is committed to promote Open Science by encompassing national and regional efforts.

This entails achieving more openness in the FLAG-ERA-funded science through open access to peer-reviewed publications and associated software and data, as well as constantly improving the transparency of the FLAG-ERA processes.

At the level of FLAG-ERA, Open Science aspects are positively appreciated already during the evaluation, whose criteria explicitly assess the Open Science practices and activities planned within each project. In addition, we refrain from using inadequate proxies (e.g. impact factors) during the assessment of the projects and give higher weight to the scientific content of a paper than to publication metrics, in line with the principles of the San Francisco Declaration on Research Assessment² (DORA).

5.1. Open access to publications, data and software

All publications of the project³ must be available in open access⁴ under Creative Commons CC-BY licence or equivalent.

² <https://sfdora.org/>

³ This includes peer-reviewed journal publications, peer-reviewed conference papers, books and book chapters.

⁴ By publishing i) in a natively open access to publications venue or ii) in a subscription journal by implementing the [Rights Retention Strategy](#).

Moreover, the full text of the publication (version Author Accepted Manuscript - AAM or publisher version - VoR) must be deposited on an open institutional repository, at the time of publication at the latest, with a reference to the FLAG-ERA support.

All data⁵ underlying a project output must be widely accessible and deposited on a trustworthy repository⁶ together with all the necessary documentation in accordance with the FAIR principles⁷, as early as possible in the course of the project and at the latest with the publication of the corresponding output and appropriately linked to the latter, with a reference to the FLAG-ERA support.

All software produced by the project must be available under an open-source licence⁸. In order to facilitate contribution and reuse, software development must be performed on a code hosting platform that allows collaborative development⁹. To ensure long term availability of the project results, the source code of the software must be stored together with all its development history in the Software Heritage archive¹⁰ with a reference to the FLAG-ERA support. It is recommended to have it referenced with curated metadata in an open institutional repository when possible.

For data and software that cannot be shared for a legitimate reason, the specific clause as well as the conditions under which the data could be accessed must be provided. In this case, the metadata must be deposited on a FAIR-enabling repository.

In the long-term, we expect FLAG-ERA supported projects to aim at preserving data and software beyond the projects' lifetimes.

5.2. Data Management Plan

The project must produce a Data Management Plan that must be submitted to FLAG-ERA at the beginning of the project. The Data Management Plan is a living document and it is the responsibility of the project's Open Science Coordinator to update it at least once per year. At the end of the project, the Data Management Plan must be updated and made publicly available on a document or data repository. The main goal is to provide a sustainable overview of data and software associated to the project beyond its mere lifetime, ensuring reproducibility and long-term reuse.

5.3. Open Science Coordinator

In order to facilitate the planning and the proper implementation of the Open Science policy, the role of Open Science Coordinator must be assigned to one of the project partners. The Open Science Coordinator has the following responsibilities:

⁵ It is the necessary material that is commonly accepted in the scientific community as necessary to document, validate and reproduce findings: Datasets, software and any other possible type of artefacts, including metadata.

⁶ Criteria to select a trustworthy repository: <https://scienceeurope.org/media/b0bhp2ro/se-rdm-template-4-researcher-guidance-for-the-selection-of-trustworthy-repositories.docx>

⁷ <https://www.openaire.eu/how-to-make-your-data-fair>

⁸ <https://opensource.org/licenses>

⁹ Many collaborative development platforms for software are available: Besides the popular GitHub, GitLab.com and Bitbucket platforms, one can find other ones operated and maintained by academic institutions.

¹⁰ It is possible to trigger archival in Software Heritage of software projects hosted on a broad variety of platforms, see <https://www.softwareheritage.org/howto-archive-and-reference-your-code/>

- a. Planning the dissemination activities of the consortium in connection with all scientific deliverables;
- b. Assisting with adapting the consortium budget to cover for the Open Science costs, given the available opportunities offered by the FLAG-ERA funding organisations;
- c. Submit and update the project's Data Management Plan and follow up with Open Science aspects during the lifetime of the project (data sharing, embargos, etc.). In particular, coordinate these aspects with the elaboration of exploitation plans for some of the project deliverables such as those requiring specific intellectual property strategies (e.g. patenting or commercialisation);
- d. Liaise with project members with respect to Open Science aspects;
- e. Analyse state-of-the-art Open Science practices.

6. Gender balance and Widening Countries participation

6.1. Gender equality

FLAG-ERA is committed to promoting gender equality in research and innovation to overcome persisting gender gaps. The goal is two-fold:

- Create gender-equal working environments where all talents can thrive;
- Better integrate the gender dimension in projects research and innovation content to improve research quality as well as the relevance to society of the knowledge, technologies and innovations produced.

To support this ambition:

- A section of the proposal template is dedicated to gender equality;
- The selection criteria prioritise projects ensuring higher gender equality in case of ex-aequo projects.

6.2. Widening Countries participation

The Widening Countries designate a list established by the European Commission of low performing countries in research and innovation, be they European Union Member States or Associated Countries to Horizon Europe.

To spread excellence, FLAG-ERA, as competitive funding instrument of collaborative projects, can support the opening of established research and innovation networks in the non-Widening Countries to most talented researchers and experts in the Widening Countries. Conversely, broader engagement of the Widening Countries' research and innovation communities has the capacity to broaden the European scientific and technological landscape with varied perspectives and scientific and technology challenges to tackle.

To support this ambition, the following actions are implemented:

- The selection criteria prioritise projects with Widening Countries in case of ex aequo projects;
- A Partner Search Tool is made available at www.flagera.eu;

- An additional funding for coordination support may be granted by some funders of the Widening Countries.

With regard to the latter, applicants are encouraged to consult national requirements in Annex II or funding organisation contact points to check if specific support applies.

The participating Widening Countries to the call are: Bulgaria, Estonia, Lithuania, Romania, Slovakia and Slovenia.

7. Eligibility

The FLAG-ERA joint transnational call is a hybrid funding instrument. Proposals are submitted by international consortia with partners in multiple countries, and the proposal evaluation and selection are international. Funding is then provided by participating funding organisations directly to the selected consortium partners.

Each partner is directed by a Principal Investigator (PI), who interacts with its respective funding organisation. One partner acts as the coordinator for the consortium and is the single point of contact with the FLAG-ERA joint call secretariat.

It is both necessary that the consortium is eligible for FLAG-ERA, and that all partners are eligible to be funded by the respective funding organisations they request to.

7.1. Eligibility of the consortium

Consortia must be international. They must involve at least 3 eligible and independent partners requesting funding to organisations in the call from 3 distinct countries.

Consortia must be balanced. The maximum requested funding allowed per country in a proposal is 60% of the total requested funding of the proposal.

Research groups who are not eligible to receive funding by an organisation participating in the call but are willing to collaborate and contribute to the proposed project may be part of a consortium if they are able to secure their own funding. Third-party funding is not considered for the application of the above-mentioned balance rule.

The consortium coordinator must be a partner requesting funding (and be eligible for funding) from an organisation participating in the call.

7.2. Eligibility of partners

The eligibility criteria for project partners are specific to their respective funding organisations (see Annex II). In order not to jeopardize the whole consortium, each partner in the consortium should ensure that no doubts exist about the eligibility of their entity, the eligibility of their PI and their eligible costs. It is important to note that some funding organisations require that eligibility of partners is checked with them prior to applying. It is also important to be aware that some funding organisations request the submission of an application at the national or regional level in parallel to the transnational submission, and that failing to submit the national application makes the partner ineligible. It is the responsibility of the coordinator to ensure that all necessary checks have been done before submitting.

Details as well as contact points are provided in Annex II.

7.3. Duration

Projects may be funded for a period of up to three years and according to individual funding organisation regulations (see Annex II).

8. Application procedure

Before submitting, ensure the proposal is valid, and in particular that:

- the research is in line with the topics of the call,
- the consortium meets the eligibility criteria,
- each project partner meets the eligibility criteria, and
- all partners who must contact their funding organisation prior to submission have done so.

8.1. Submission of proposals

A one-step submission process applies. A joint proposal document (maximum 30 pages, in English, in PDF format) shall be prepared by the consortium partners and submitted by the coordinator. The document shall follow the template provided on the call web page. It shall be submitted in electronic format no later than the deadline provided on the front page of this Call Announcement, via the electronic submission system. The URL of the submission system will be provided on the call webpage in April.

It is recommended that a preliminary proposal be submitted several days before the deadline to guarantee against unforeseen issues. Submitted proposals can be updated until the deadline.

Partners whose funding organisation requires submitting forms alongside the consortium application must do so.

The coordinator and all partners must be in a position to diligently answer e-mail queries after the submission. If a partner's PI is not available, he or she must be represented by a collaborator of the same organisation.

9. Evaluation and selection

The evaluation and selection processes are independent of the *Graphene Flagship* and *Human Brain Project – EBRAINS* initiatives. Proposals are assessed and ranked by independent international scientific evaluation panels. There are three different panels, one for each sub-call.

9.1. Evaluation criteria

The evaluation criteria are the following:

1. **Relevance to the Topic:** Relevance of the project with respect to the topic description
2. **Excellence:** Scientific and/or technological quality
 - a. Soundness of the concept, and quality and pertinence of the objectives;

- b. Quality and effectiveness of the methodology, reproducibility of the results;
 - c. Expected progress beyond the state-of-the-art;
 - d. Originality and novelty of ideas.
3. **Implementation:** Quality and efficiency of the implementation and management
- a. Quality of the work plan, appropriateness of allocation and justification of requested resources (staff, equipment...) and of data management;
 - b. Appropriateness of the management structure and procedures;
 - c. Quality and added value of the consortium (complementarity, balance, etc.); quality and relevant experience of individual participants;
 - d. Identification of risks (incl. possible ethical issues) and mitigation plan.
4. **Impact:** Potential impact through the development, dissemination and exploitation of results
- a. Contribution to the expected impacts mentioned in the topic description;
 - b. Potential to transform research results into innovations with societal, industrial and economic impact at the European and/or international level;
 - c. Appropriateness of measures for the dissemination and/or exploitation of project results (incl. data and means to reproduce results) in line with the Open Science policy, and management of intellectual property;
 - d. Communicate the project to different target audiences.

Each criterion is scored between 0 and 5. The scores indicate the following with respect to the criterion under examination:

- 0. The proposal fails to address the criterion or cannot be assessed due to missing or incomplete information (unless the result of an 'obvious clerical error').
- 1. **Poor** – The criterion is inadequately addressed or there are serious inherent weaknesses.
- 2. **Fair** – The proposal broadly addresses the criterion, but there are significant weaknesses.
- 3. **Good** – The proposal addresses the criterion well, but a number of shortcomings are present.
- 4. **Very good** – The proposal addresses the criterion very well, but with a small number of shortcomings.
- 5. **Excellent.** The proposal successfully addresses all relevant aspects of the criterion. Any shortcomings are minor.

Proposals that do not reach a score of 4 for the above criterion "Relevance to the Topic" and 3 for each of the other criteria are rejected. The total score for a proposal is weighted average of the scores for the three individual criteria. The weights and thresholds are as follows:

	Graphene Flagship		Human Brain Project - EBRAINS
	Basic research	Applied research and innovation	Basic and applied research
Relevance to the Topic (threshold 4/5)	25%	25%	25%
Excellence (threshold 3/5)	30%	20%	25%
Implementation (threshold 3/5)	25%	25%	25%
Impact (threshold 3/5)	20%	30%	25%

The total score is the basis for the ranking of the proposals.

9.2. Evaluation and selection of proposals

Proposals are assessed by the panels, which will be assisted by external reviewers if the number of applications is high. The assessment of each proposal is detailed in a consensus report, which is made available to the applicants.

On the basis of the ranking and of available funding, if necessary in the case of ex-aequo proposals considering gender equality and participation of Widening Countries, a board representing the participating funding organisations will prepare a list of projects recommended for funding.

10. Management of projects

10.1. Setting up the consortium and project start

If the proposal is recommended for funding, each project partner interacts with its respective funding organisation to establish a funding grant or contract. This phase between the project partner and the funding organisation follows the respective established national/regional procedures and, if successful, results in grant agreement between the parties.

All project partners of a consortium should agree on a common start date, which is communicated to the FLAG-ERA joint call secretariat, and request funding in agreement with this common start date, to ensure that the collaborative research can be conducted as planned.

The administrative and financial management of funding is overseen by the respective funding organisations, according to their rules and guidelines.

At the latest six months after a project's start:

- A consortium agreement has to be signed by all partners. Some funding organisations may require that the consortium agreement is signed before the grant agreement can be finalised or before any payment;
- The initial version of the Data Management Plan has to be produced.

Both documents must be sent to the FLAG-ERA joint call secretariat.

10.2. Reporting and publications

The coordinators of funded projects have to submit a progress report on each 12-month period of the project. The report includes an updated version of the Data Management Plan. The reports must be sent to the FLAG-ERA joint call secretariat within two months after the end of each period. In addition, the consortia must present the status of their projects at yearly events (expectedly three times for three-year projects). These events will be, as much as possible, coupled with events of Graphene Flagship and Human Brain Project – EBRAINS initiatives. The related costs are eligible and it is advised to include them in the project budget. Note that collaboration with both initiatives might involve other meetings, and that the related costs are also eligible.

Some funding organisations require separate reports for individual project partners. This will be specified in the respective national grant agreements.

Any publications resulting from FLAG-ERA funded projects must acknowledge FLAG-ERA and the involved funding organisations and must comply with the FLAG-ERA Open Science policy.

ANNEX I – Topic Descriptions

Graphene Flagship (basic research) topics

1. Graphene-related materials-based scaffolds for living cells integration

Abstract	<p>Integration of living cells with nonbiological surfaces of scaffolds and implants poses severe restrictions on interface quality and properties. The scaffold material must support cellular viability, preserve sterility, and at the same time allow real-time analysis and control of cellular activity. Unfavourable reactions due to tissue scar fuel the search for a viable alternative to silicon, conventionally used in biomedical research. Micro- and nanostructured graphene-related materials offer such an alternative for the development bioscaffolds due to their chemical neutrality, the opportunity to control the physical/chemical properties and nanotopography.</p> <p>The target is to expand the materials base for living cells integration by exploiting novel GRM based scaffolds.</p>
Keywords	Bio-scaffolds, biocompatibility
Application sectors	Biomedical research

2. Graphene related materials for neuromorphic photonics

Abstract	<p>Growing demand for data processing is pushing the computing industry towards new paradigms, such as artificial neural networks and neuromorphic computing, enabling advances in Artificial Intelligence (AI) and Deep Learning (DL). However, speed and power limitations of electronic interconnects cannot support the ever-growing future demands. Neuromorphic photonics aims to address these challenges by incorporating the high-bandwidth and low-energy interconnect capabilities of photonic integrated circuits (PICs) in neuromorphic platforms. Graphene-related materials, thanks to their tunable optical properties and fast electron interactions, are expected to further boost performance when integrated as the active material in different functional layers.</p> <p>The target is to exploit graphene-related materials to improve metrics (computational speed, energy efficiency, footprint, cost) compared to state-of-the-art GPUs, TPUs and neuromorphic engines.</p> <p>The expected impacts are to contribute to the long-term viability of the European industry, foster the emergence of new technologies and markets (DL chipsets, GRM/CMOS photonics integration, fast reconfigurable and non-volatile weights, etc.).</p>
Keywords	Graphene-related materials, integration, neuromorphic, photonics, deep learning, training, inference
Application sectors	Neuromorphic computing, big data/cloud computing, AI/DL, cybersecurity

3. Layered materials for quantum sensing

Abstract	<p>Transition metal dichalcogenides (TMDs) and hexagonal boron nitride (hBN) have potential as novel magnetic sensors by taking advantage of the optical selection rules or applying optically detected magnetic resonance. Spins proximal to optomechanical membranes would allow to entangle non-classical states of motion with quantum two-level systems for quantum sensing. hBN defects with spin can be used as sensors. They can be optically initialised and read out, and manipulated by microwaves. They are sensitive to temperature, magnetic fields, and pressure, and could be used as detectors for these quantities. Defects in monolayer hBN can be in very close proximity to a magnetic substrate, enhancing spatial resolution, as well as detecting stray fields from a weaker magnetisation. TMDs can also be used as magnetic probes by placing them in close proximity to magnetic materials, and exploiting their polarisation-dependent optical selection rules.</p> <p>The target is to expand materials base for the quantum sensing by developing new quantum sensors based on layered materials.</p>
Keywords	Spintronics, topological superconductivity, quantum sensors, quantum technology
Application sectors	Sensing

4. Neuromorphic circuits based on layered materials

Abstract	<p>The ever-increased demand for image, language and pattern recognition applications requires neuromorphic circuits, enabling efficient computation with reduced power consumption. Neuromorphic computing is an emerging field with potential for future ICT applications, which could open new applications especially, if such devices could be included in portable and embedded systems, which require to work at reduced energy consumption. The aim is to develop new classes of neuromorphic circuits and devices based on layered materials, leveraging the potential of this technology to work with reduced power requirements. This includes design and fabrication of devices and circuits based on graphene-related materials for neuromorphic computing and computing sensor systems, new architectures such as synaptic weights, new sensors and integrated circuits for (analogue) computing.</p> <p>The target is to develop innovative solutions and new functionalities for neuromorphic circuits and sensor systems with improved performance, exploiting layered materials.</p> <p>The expected impacts are low-power neuromorphic systems.</p>
Keywords	Neuromorphic computing, synaptic weights, integrated circuits
Application sectors	Machine Learning, electronics, ultra-low power computing and sensor systems, image and pattern recognition, Internet-of-Things

5. Graphene-related materials-based field effect transistor sensors for viral surveillance

Abstract	<p>Devices capable of high sensitivity, multiplexed measurements of viruses for environmental monitoring and diagnostic applications at point of care, could be key in preventing future pandemics. Next generation diagnostic devices will need to be sensitive to unexpected and/or unknown pathogens, reusable, rapid, cost-effective, compact, and semiautomatic. The aim is to develop a multi-targeting and multipurpose sensor exploiting graphene-related material-based field effect transistors. Multitargeting means that the device must detect a spectrum of viruses, including unknown and unexpected viral species. Multipurpose implies the applications should range from prevention and environmental monitoring, to point of care diagnostics. Graphene-related material-based electrical platforms are ideal candidates as cost-effective, highly sensitive, miniaturized devices for the analysis of viruses in small sample volumes.</p> <p>The target is to create a disruptive technology in biosensing. Production of high-performance graphene-related material devices, controlled derivatization of graphene-related material protocols should be demonstrated through scalable processes, with virus recognizing elements compatible with diverse sample media, and able to maximize the interaction with the target. The developed technology should reach experimental proof-of-concept for detecting a representative group of viruses.</p> <p>The expected impacts: Multitargeting and multipurpose sensing devices will revolutionize the market of rapid test now restricted to well characterized pathogens. <i>In vitro</i> diagnostics and point of care testing. Research for vaccines or therapies that could prevent viral infections and future pandemics. Detection of biomarkers as new diagnostic tool in diverse diseases.</p>
Keywords	Virus, viral surveillance, biosensing, graphene-related material-based field effect transistors
Application sectors	Point of care testing, <i>in vitro</i> diagnostics, biosecurity

6. Layered material-based antiviral, antibacterial and antifungal coatings

Abstract	<p>In order to limit the spread of infectious diseases, hygiene standards must include effective anti-infective approaches and tools. This is currently done by wearing personal protective equipment and by disinfecting surfaces. Disinfection is an important tool, but it is difficult to be continuously applied in many circumstances. Viruses, bacteria and fungi have a remarkable ability to survive for extended periods of time on various surfaces. It is therefore vital to redesign functional surfaces to prevent infection by indirect contact, reducing the need of constant disinfection. Antiviral, antibacterial and antifungal coatings offer a compelling solution to these issues.</p>
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	<p>The target is to exploit multifunctional layered materials to develop next generation antiviral, antimicrobial and antifungal surfaces. These will include liquid processable, electrically and thermally conducting layered materials, chemically modified with organic moieties capable of i) efficiently binding viruses and bacteria, ii) irreversibly damaging the pathogens, iii) hampering biofilm formation, and iv) exploiting electrical and thermal properties to inactivate pathogens and regenerate an active surface.</p> <p>List of expected impacts: limit the risk of spreading infections from harmful pathogens thereby providing safer living and working environments, hence improving EU's citizen health. Such actions will have an enormous societal impact by generating economic benefits and providing commercial opportunities for the private sector, ultimately offering an impetus to EU research, development and innovation.</p>
Keywords	(corona)viruses, multidrug resistant bacteria and fungi, pandemics, biofilms, antifouling
Application sectors	Applied research

7. Tunneling magnetoresistance in layered materials-based spintronic devices

Abstract	<p>Spintronics is at the heart of widely distributed applications such as hard drive read heads and MRAMs and is a candidate for beyond CMOS architectures including spin-logic, neuromorphic, stochastic and quantum technological layers. Layered materials offer a range of electric and magnetic functionalities, with great potential for integration into electronic devices. The use of layered materials in magnetic tunnel junctions is promising for spintronics applications such as atomically defined interfaces, barriers free of defects, spin filtering, perpendicular anisotropy and spin-orbit torques modulation.</p> <p>The target is to increase the magnetoresistance signal in layered-materials based spintronic devices, by combining large spin filtering and long spin diffusion lengths. The work should also focus on processes to incorporate air instable layered materials (i.e. black phosphorous) in spin valves, to unlock the investigation of yet to be explored materials.</p> <p>The expected impacts are device miniaturization, performance engineering and new architectures, as crucial building blocks for spintronics post-CMOS architectures.</p>
Keywords	magnetic tunnel junctions, spintronics, post-CMOS
Application sectors	Nanoelectronics/Spintronics: beyond CMOS architectures, spin-logic, neuromorphic, stochastic and quantum technological devices

Graphene Flagship (applied research and innovation) topics

1. Graphene-related materials-based scaffolds for living cells integration

Abstract	<p>Integration of living cells with nonbiological surfaces of scaffolds and implants poses severe restrictions on interface quality and properties. The scaffold material must support cellular viability, preserve sterility, and at the same time allow real-time analysis and control of cellular activity. Unfavourable reactions due to tissue scar fuel the search for a viable alternative to silicon, conventionally used in biomedical research. Micro- and nanostructured graphene-related materials offer such an alternative for the development bioscaffolds due to their chemical neutrality, the opportunity to control the physical/chemical properties and nanotopography.</p> <p>The target is to expand the materials base for living cells integration by exploiting novel GRM based scaffolds.</p>
Keywords	Bio-scaffolds, biocompatibility
Application sectors	Biomedical research

2. Graphene-related materials-enhanced industrial sensors

Abstract	<p>Sensing is rapidly advancing and there exists a broad range of sensing platforms based on photoionization, ion mobility, impedance spectroscopy and other techniques. The relevant devices rely on sensing elements (usually membranes) that change properties in presence of target molecules. The sensitivity of graphene-related materials to external influence, combined with recent achievements in the integration graphene-related materials into integrated circuits, make them ideal candidates to improve existing sensor platforms.</p> <p>The target is to improve existing sensing platforms performance by integrating graphene-related materials.</p>
Keywords	Chemical pollutants, impedance spectroscopy
Application sectors	Chemical sensing

3. Properties of graphene-related materials suspensions

Abstract	<p>Graphene-related materials in liquid solutions have applications ranging from bulk graphene-related material production and functionalization, down to micro- and nanofluidic devices for biophysical applications. However, experimental characterizations have shown graphene-related material suspensions to exhibit complex behaviours, e.g., shear thinning, phase transitions to liquid crystalline phases etc., which are yet to be fully understood, and that are inherently complex to model. To aid in the development of applications, and tailor graphene-related material suspensions to meet the diverse range of requirements, a deeper</p>
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	<p>understanding of the physics of graphene-related material suspensions is needed. This necessitates finding ways to efficiently model rheological properties of graphene-related material suspensions using fluid dynamic simulations and understand how the details of functional groups on the atomistic level influence physical properties, reaction pathways etc.</p> <p>The target is to develop models that can describe the rheological behaviour of graphene-related material suspensions in bulk and/or microfluidic flow regimes and that can be used as a basis for application design and optimization. These should be accompanied by experimental verification of how composition and/or functional groups affect the behaviour of graphene-related material suspensions.</p> <p>The expected impacts are improved and more efficient large-scale graphene-related material fabrication, enhanced efficiency of device operation in applications where at least part of the functionality makes use of graphene-related material suspensions, and improved performance and reliability of graphene-related material-based microfluidic devices.</p>
Keywords	Graphene-related material suspensions, rheology, characterization, multiphase flows, modelling, (bio)sensors
Application sectors	Liquid phase graphene-related material exfoliation, functionalization, ink-jet printing, micro- and nano-fluidic devices, (bio)-physical applications of functionalized graphene-related materials

4. Flexible substrates with enhanced thermal dissipation enabled by layered materials

Abstract	<p>Portable electronics requires lower power consumption and higher thermal dissipation. Even a few mW of power dissipated into heat can turn into a reliability issue, limiting or degrading device performance if no thermal path is provided. Current flexible electronics substrates are not good thermal conductors, but rather are thermal insulators. The aim is to develop new flexible thin substrates based on layered materials where thermal conductivity is improved, as validated by theoretical and experimental approaches, while keeping an electrical insulating nature compatible with RF applications (lower dielectric losses).</p> <p>The target is to develop flexible substrates with improved thermal conductivity, while retaining electrical insulating properties, exploiting the properties of layered materials.</p> <p>The expected impacts are new class of flexible substrate, suitable for wearable and wireless circuits.</p>
Keywords	Flexible electronics, heat dissipation, insulating flexible substrates, composite materials
Application sectors	Flexible electronics, power electronics, Radio Frequency applications

5. Graphene-related materials-based field effect transistor sensors for viral surveillance

Abstract	<p>Devices capable of high sensitivity, multiplexed measurements of viruses for environmental monitoring and diagnostic applications at point of care, could be key in preventing future pandemics. Next generation diagnostic devices will need to be sensitive to unexpected and/or unknown pathogens, reusable, rapid, cost-effective, compact, and semiautomatic. The aim is to develop a multi-targeting and multipurpose sensor exploiting graphene-related material-based field effect transistors. Multitargeting means that the device must detect a spectrum of viruses, including unknown and unexpected viral species. Multipurpose implies the applications should range from prevention and environmental monitoring, to point of care diagnostics. Graphene-related material-based electrical platforms are ideal candidates as cost-effective, highly sensitive, miniaturized devices for the analysis of viruses in small sample volumes.</p> <p>The target is to create a disruptive technology in biosensing. Production of high-performance graphene-related material devices, controlled derivatization of graphene-related material protocols should be demonstrated through scalable processes, with virus recognizing elements compatible with diverse sample media, and able to maximize the interaction with the target. The developed technology should reach experimental proof-of-concept for detecting a representative group of viruses.</p> <p>The expected impacts: Multitargeting and multipurpose sensing devices will revolutionize the market of rapid test now restricted to well characterized pathogens. <i>In vitro</i> diagnostics and point of care testing. Research for vaccines or therapies that could prevent viral infections and future pandemics. Detection of biomarkers as new diagnostic tool in diverse diseases.</p>
Keywords	Virus, viral surveillance, biosensing, graphene-related material-based field effect transistors
Application sectors	Point of care testing, <i>in vitro</i> diagnostics, biosecurity

6. Layered material-based antiviral, antibacterial and antifungal coatings

Abstract	<p>In order to limit the spread of infectious diseases, hygiene standards must include effective anti-infective approaches and tools. This is currently done by wearing personal protective equipment and by disinfecting surfaces. Disinfection is an important tool, but it is difficult to be continuously applied in many circumstances. Viruses, bacteria and fungi have a remarkable ability to survive for extended periods of time on various surfaces. It is therefore vital to redesign functional surfaces to prevent infection by indirect contact, reducing the need of constant disinfection. Antiviral, antibacterial and antifungal coatings offer a compelling solution to these issues.</p> <p>The target is to exploit multifunctional layered materials to develop next generation antiviral, antimicrobial and antifungal surfaces. These will include liquid processable, electrically and thermally conducting layered materials,</p>
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chemically modified with organic moieties capable of i) efficiently binding viruses and bacteria, ii) irreversibly damaging the pathogens, iii) hampering biofilm formation, and iv) exploiting electrical and thermal properties to inactivate pathogens and regenerate an active surface.

List of expected impacts: limit the risk of spreading infections from harmful pathogens thereby providing safer living and working environments, hence improving EU's citizen health. Such actions will have an enormous societal impact by generating economic benefits and providing commercial opportunities for the private sector, ultimately offering an impetus to EU research, development and innovation.

Keywords	(corona)viruses, multidrug resistant bacteria and fungi, pandemics, biofilms, antifouling
Application sectors	Applied research

Human Brain Project – EBRAINS (basic and applied research) topic

EBRAINS opportunities in the context of the JTC 2023

EBRAINS

EBRAINS is a digital research infrastructure, created by Human Brain Project (HBP) and made sustainable through continued funding from multiple sources and support from members and partners across Europe. EBRAINS fosters brain-related research and helps translate the latest scientific discoveries into innovation in medicine and industry, for the benefit of patients and society. It draws on cutting-edge neuroscience and offers an extensive range of brain data sets, atlases, modelling and simulation tools, easy access to high-performance computing resources and to robotics and neuromorphic platforms. EBRAINS has been included in the Roadmap of the European Strategy Forum on Research Infrastructures (ESFRI) since 2021. For more information about EBRAINS, visit www.ebrains.eu.

Example of EBRAINS datasets of potential relevance for this topic

- Leblond, C., Cliquet, F., Mathieu, A., Delorme, R., & Bourgeron, T. (2021). Genetic variants in autistic and typically developing individuals [Data set]. EBRAINS. <https://doi.org/10.25493/284B-QCD>
- Reichmann, F., Pilic, J., Trajanoski, S., & Norton, W. H. J. (2022). Fighting the mirror: Brain transcriptome of high and low mirror aggression zebrafish (v1) [Data set]. EBRAINS. <https://doi.org/10.25493/VTP5-8J9>
- Wu, J., Eickhoff, S. B., Hoffstaedter, F., Patil, K. R., Schwender, H., Yeo, B. T. T., & Genon, S. (2022). Region-wise Connectivity-based Psychometric Prediction using the Julich-Brain Cytoarchitectonic Atlas (v1.0) [Data set]. EBRAINS. <https://doi.org/10.25493/D4HH-VJJ>
- Warnat-Herresthal, S., Varga, T., Händler, K., Bourry, S., Hinkley, E., Ulusoy, A., Weber, S., Di Monte, D. A., Schultze, J. L., & Beyer, M. (2020). Characterization of striatal neurons in Parkinson's disease patients and healthy individuals using scRNA-seq [Data set]. EBRAINS. <https://doi.org/10.25493/69PP-N32>
- Salgueiro-Pereira, A. R., & Marie, H. (2020). Excitability profile of CA1 pyramidal neurons in APPS1 Alzheimer disease mice and control littermates [Data set]. EBRAINS. <https://doi.org/10.25493/YJFW-HPY>
- Caspers, S., Röckner, M. E., Jockwitz, C., Bittner, N., Teumer, A., Herms, S., Hoffmann, P., Nöthen, M. M., Moebus, S., Amunts, K., Cichon, S., & Mühleisen, T. W. (2020). Pathway-Specific Genetic Risk Scores for Alzheimer's Disease to Differentiate Regional Cortical Atrophy in Older Adults [Data set]. EBRAINS. <https://doi.org/10.25493/X4MV-59J>
- Lillehaug, S., Syverstad, G., Nilsson, L., Bjaalie, J. G., Leergaard, T. B., & Torp, R. (2018). Brainwide distribution and variance of amyloid-beta deposits in tg-ArcSwe mice [Data set]. Human Brain Project Neuroinformatics Platform. <https://doi.org/10.25493/G6CQ-D4D>
- Pavone, F., Mazzamuto, G., & Costantini, I. (2020). Layer-specific excitatory and inhibitory neuronal maps of hippocampus (v1.0) [Data set]. Human Brain Project Neuroinformatics Platform. <https://doi.org/10.25493/1GZV-ZU>
- Andlauer, T. F. M., Mühleisen, T. W., Hoffstaedter, F., Teumer, A., Wittfeld, W., Teuber, A., Reinbold, C. S., Bülow, R., Caspers, S., Herms, S., Hoffmann, P., Minnerup, H., Moebus, S.,

- Teismann, H., Völker, U., Berger, K., Grabe, H. J., Nöthen, M. M., Amunts, K., . Cichon, S. (2022). Genetic factors influencing a neurobiological substrate for psychiatric disorders [Data set]. EBRAINS. <https://doi.org/10.25493/SHXD-KHE>
- Annen, J., Sala, A., Bonin, E. A. C., Sanz, L. R. D., Barra, A., Cecconi, B., Vitello, M., Szymkowitz, E., Cardone, P., Bernard, C., Martial, C., Laureys, S., Gosseries, O., & Thibaut, A. (2021). FDG-PET/CT data of healthy volunteers and patients with disorders of consciousness [Data set]. EBRAINS. <https://doi.org/10.25493/7TXP-WCF>
 - Raimondo, F., Wolff, A., Sanz, L. R. D., Barra, A., Cassol, H., Carrière, M., Laureys, S., & Gosseries, O. (2020). TMS-EEG perturbation in patients with disorders of consciousness [Data set]. Human Brain Project Neuroinformatics Platform. <https://doi.org/10.25493/G8E3-DQE>
 - Brain-Derived Neurotrophic Factor and Insulin-Like Growth Factor 1 Serum Levels in Naive and Medicated Subjects with Autism (v1.0) https://search.kg.ebrains.eu/?facet_type%5b0%5d=Dataset&category=Dataset&q=disorder#94a58fa3-b28c-4b1a-8e9d-fb0f79395c01
 - Sorokina, O., McLean, C., Sterratt, D., & Armstrong, D. (2021). A configurable and empirical model of the synaptic proteome (SQLite database) - Extension with ASD mutations [Data set]. EBRAINS. <https://doi.org/10.25493/VA01-BRD>
 - Pimpinella, D., Marchetti, C., Cherubini, E., & Griguoli, M. (2020). NLG3KO mice exhibit deficits in social behavior [Data set]. EBRAINS. <https://doi.org/10.25493/9WBS-PK4>
 - Sanchez-Vives, M. (2019). Cortical activity features in transgenic mouse models of cognitive deficits (Williams Beuren Syndrome) [Data set]. Human Brain Project Neuroinformatics Platform. <https://doi.org/10.25493/DZWT-1T8>
 - Castano-Prat, P., & Sanchez-Vives, M. (2018). Cortical recordings of the Fmr1KO mouse model of Fragile X syndrome during slow wave activity [Data set]. Human Brain Project Neuroinformatics Platform. <https://doi.org/10.25493/5VDM-SHH>
 - Sanchez-Vives, M. (2019). Cortical activity features in transgenic mouse models of cognitive deficits (Fragile X Syndrome) [Data set]. Human Brain Project Neuroinformatics Platform. <https://doi.org/10.25493/ANF9-EG3>
 - Kharabian Masouleh, S., Eickhoff, S. B., & Genon, S. (2021). Structure-phenotype associations for Julich-Brain Cytoarchitectonic Atlas regions [Data set]. EBRAINS. <https://doi.org/10.25493/65R0-E9U>

More datasets can be found on the EBRAINS Knowledge Graph: [EBRAINS - Knowledge Graph Search](#)

The Data and Knowledge services for finding and publishing FAIR data

The EBRAINS Data and Knowledge services (<https://ebrains.eu/services/data-knowledge>) provide services for sharing/publishing and finding and accessing research data from human and rodent brains. The services facilitate research, e.g., on case-control studies, cohort studies, as well as on basic neuroscience and models of disease mechanisms. As far as sensitive data is concerned, restricted access to selected pseudonymized data from human subjects can be provided (Human Data Gateway). For sensitive data in general anonymized metadata can be shared accompanied with information about possible controlled access.

Long-term data storage and high-performance computing resources (<https://fenix-ri.eu/about-fenix>) are available in combination with other EBRAINS services in areas such as model building and brain

simulation. For all projects funded via the present call, EBRAINS offers to publish FAIR data through the EBRAINS Knowledge Graph (<https://kg.ebrains.eu/search>), and to couple FAIR data with journal publications (https://ebrains.eu/service/share-data/#dataset_and_journal_publication).

EBRAINS also support working with medical data. Nevertheless, due to the nature of that data and where it originates, working with such data would require dedicated solutions. EBRAINS has several of those services available that allow to either work with data in hospitals or data centers on the one hand or to store or process it on the other hand. The scope of the solutions should be discussed with the EBRAINS team (e.g. nature of data, data access) prior to submission. Applicants should contact EBRAINS through the service email for the FLAG-ERA call: flag-era.JTC2023@ebrains.eu, at the latest 3 weeks prior to the submission deadline, if they have any questions.

The Brain Atlas services for integrating and combining data in atlases

The Brain Atlas services (<https://ebrains.eu/services/atlases/>) offer tools and resources for integrating multiple reference spaces and maps of the human, rodent and mouse brain into a common framework, and for exploring and analyzing data in the atlases. For all projects in the present call, tools are available for registration of new data to the atlases, and for exploring and analyzing data through the interactive Atlas Viewer and a range of analytical tools.

EBRAINS access modalities and services costs

1. The use of the EBRAINS website, its tools, services and data is subject to the terms and policies such as the General Terms of Use, the Access Policy, the Data Use Agreement or the Data Provision Protocol. More information can be found at <https://ebrains.eu/terms>;
2. Several of the services provided by EBRAINS are openly available online. An EBRAINS account is required for extended access to tools and resources. EBRAINS accounts are available for free to users across the world following EU regulations. Apply for an EBRAINS account here: <https://ebrains.eu/register>;
3. The Data and Knowledge services will give priority to requests from FLAG-ERA projects for sharing / publishing of research data, including data curation, at no cost. Applicants are invited to contact flag-era.JTC2023@ebrains.eu if they have any questions related to curation needs;
4. Extended services for data management and stewardship can be tailored to the project's specific needs;
5. Projects with high demand for high-performance computing or large data storage: Conditions and procedures for requesting allocation of computing resources can be found at <https://fenix-ri.eu/access>;
6. Applicants willing to propose new EBRAINS functionalities that go beyond the current EBRAINS services and tools available on the EBRAINS website can engage discussion with EBRAINS.

For points 4 to 6, applicants are invited to contact flag-era.JTC2023@ebrains.eu at the latest 3 weeks prior to the submission deadline. Potential costs associated to the corresponding EBRAINS services or operation can be included in the project budget provided that they meet costs eligibility criteria of the concerned FLAG-ERA funding organisations.

ANNEX II – National Requirements

BE – Belgium – F.R.S.-FNRS

Country/Region	Belgium, French-speaking Community
Funding organisation	Fund for Scientific Research – FNRS (F.R.S.-FNRS)
National contact person	Florence Quist, +32 2 504 9351 Joël Groeneveld, +32 2 504 9270 international@frs-fnrs.be
Funding commitment	€ 200.000 per Flagship (€ 400.000 in total)
Anticipated number of fundable research groups	2 (in total)
Eligibility of project duration	The maximum amount of requested funding per project is € 200.000 for a total period of three years. If the project involves the recruitment of a PhD student, the project duration of the F.R.S.-FNRS sub-project could be up to four years (cf. PINT-MULTI regulations).
Maximum funding per awarded project / partner	The maximum amount of requested funding per project is € 200.000.
Eligibility of a partner as a beneficiary institution	All eligibility rules and criteria can be found in the PINT-MULTI regulations .
Eligibility of costs, types and their caps	All eligibility rules and criteria can be found in the PINT-MULTI regulations .
Submission of the full proposal at the national level	Applicants to F.R.S.-FNRS funding must provide basic administrative data by submitting an administrative application on e-space within 5 working days after the general deadline of FLAG-ERA to be eligible. Please select the “PINT-MULTI” funding instrument when creating the administrative application.
Submission of financial and scientific reports at the national level	Financial reporting to the F.R.S.-FNRS: yearly by the finance department of the institution Scientific reporting: the joint FLAG-ERA reports replace the reporting for F.R.S.-FNRS.
Information available at	http://www.ncp.fnrs.be/index.php/appels/era-nets
OTHER	Please note that F.R.S.-FNRS does not allow multiple funding; the principal investigator should clearly state how the proposed project differs from other granted projects.

BG – Bulgaria – BNSF

Country/Region	Bulgaria
Funding organisation	Bulgarian National Science Fund (BNSF)
National contact person	Milena Aleksandrova Phone: +359 884 171 363 e-mail: milena.aleksandrova@mon.bg
Funding commitment	Up to € 383,468
Anticipated number of fundable research groups	2 or 3 projects tentatively envisaged to be funded
Eligibility of project duration	36 months
Maximum funding per awarded project / partner	Up to € 127,822 per project 2 projects tentatively envisaged to be funded
Eligibility of a partner as a beneficiary institution	1) Accredited universities as defined in Art.85 para.1, p. 7 of the Higher Education Act; 2) Research organizations as defined in Art. 47, para 1 of the Higher Education Act. http://ill.mon.bg/uploaded_files/zkn_visseto_obr_01.03.2016_EN.pdf
Eligibility of costs, types and their caps	Eligible costs are specified in the "National requirements and eligibility conditions" of the Bulgarian National Science Fund available at: https://www.fni.bg/sites/default/files/competition/12_2016/ERA/BNSF_International_Programs-2017_ENG.pdf
Submission of the proposal at the national level	Applicants have to submit an application form for national eligibility when submitting the proposals. The form, entitled "Administrative description of the project" should be filled in both Bulgarian and in English and signed. Application forms can be obtained at: https://www.fni.bg/?q=node/578 These forms have to be sent back in person to BNSF Registry Office before the deadline of the pre-proposal submission.
Submission of financial and scientific reports at the national level	Information available at: https://www.fni.bg/?q=node/578
Information available at	https://www.fni.bg/
OTHER	Applicants under this procedure shall be directly responsible for the implementation of the activities under the project proposal and shall not act as intermediaries, but they shall carry out activities under the project proposal on their behalf and at their expense. Applicants to this procedure must be entities: - Carrying out fundamental research studies; and - Whose activities are entirely of a non-profit nature; or - Whose activities are of both for-profit and not-for-profit nature, but these activities are clearly distinguished and their organization allows tracking of revenue and expenditures connected with their implementation, including by keeping analytical accounting. In the event that an applicant is involved in both for-profit and not-for-profit activities, the funding, expenditures and revenues shall be considered separately for each type of activity and on the basis of consistently applied principles of accounting of expenditures being justifiable.

EE – Estonia – ETAg

Country/Region	Estonia
Funding organisation	Eesti Teadusagentuur (ETAg)
National contact person	Margit Suuroja, margit.suuroja@etga.ee , +372 731 7360
Funding commitment	€ 150 000
Anticipated number of fundable research groups	1
Eligibility of project duration	24-36 months
Maximum funding per awarded project / partner	Up to 150 000 €. If several Estonian institutions are applying in one proposal, the total requested budget can be still max. 150 000 € per proposal
Eligibility of a partner as a beneficiary institution	<p>The Host Institution could be any legal entity that is registered and located in Estonia.</p> <p>The Host Institution (the final recipient) is the applicant to which the grant will be allocated.</p> <p>The Host Institution must confirm to Estonian Research Council (with a confirmation letter after the submission deadline) that the project can be carried out on their premises and that they will employ the Principal Investigator during the proposed project, should the project receive funding.</p> <p>If the Host Institution is an undertaking, then State aid and de minimis aid must be taken into account.</p> <p>The Principal Investigator is a researcher who acts as the Estonian team leader in the project proposal. The Principal Investigator will be responsible for how the grant is used and how Estonia's part in the project is executed.</p> <p>The Principal Investigator:</p> <ol style="list-style-type: none"> 1. must have an updated public profile in the Estonian Research Information System (ETIS) by the submission deadline; 2. must hold a doctoral degree or an equivalent qualification. The degree must be awarded at the latest by the submission deadline of the grant application; 3. must have published at least three articles that comply with the requirements of Clause 1.1 of the ETIS classification of publications, or at least five articles that comply with the requirements of Clauses 1.1, 1.2, 2.1 or 3.1, within the last five calendar years prior to the proposal submission deadline. International patents are equalled with publications specified under Clause 1.1. A monograph (ETIS Clause 2.1) is equalled with three publications specified in Clause 1.1 if the number of authors is three or fewer. If the applicant has been on pregnancy and maternity or parental leave or performed compulsory service in the Defence Forces, or has another good reason, they can request the publication period requirement to be extended by the relevant period of time. <p>If the Principal Investigator has received the PhD degree outside Estonia, its correspondence to an Estonian doctoral degree must be recognised by either the Estonian ENIC-NARIC Center or the Host Institution in accordance with the Regulation of the Government of the Republic of April 6, 2006, No. 89 "Evaluation and academic recognition of documents proving foreign education and the name of the qualification awarded in</p>

	<p>the foreign education system terms and conditions of use". The Funding Organisation may ask for a relevant Evaluation Report². If several Estonian institutions participate in a proposal, all institutions must have a Principal Investigator who meets the national eligibility requirements</p>
Eligibility of costs, types and their caps	<p>Research expenses consist of direct costs (personnel costs, travel costs and other direct costs) and subcontracting costs. The research expenses must be used to carry out the project and be separately identifiable.</p> <p>Direct costs</p> <ol style="list-style-type: none"> 1. Personnel costs are monthly salaries with social security charges and all the other statutory costs of the project participants, calculated according to their commitment and in proportion to their total workload at their Host Institution. 2. Travel costs may cover expenses for transport, accommodation, daily allowances and travel insurance only for travels abroad. 3. Other direct costs are: <ul style="list-style-type: none"> - consumables and minor equipment related to the project; - publication and dissemination of project results; - organising meetings, seminars or conferences (room rent, catering); - fees for participating in scientific forums, conferences and other events related to the project; - patent costs; - all other costs that are identifiable as clearly required for carrying out the project (e.g. translation, copy editing, webpage hosting, etc.) and comply with the eligible costs. 4. Subcontracting costs should cover only the additional or complementary research related tasks (e.g. analyses, conducting surveys, building a prototype, etc.) performed by third parties. Subcontracting costs should not be included in the overhead calculation. The activities and budget should be described in the proposal. Core project tasks should not be subcontracted. Subcontracting costs may not exceed 15% of the total costs. <p>Indirect costs are overhead from the personnel costs only, which may not exceed 15% and should cover the general expenses of the Host Institution. Costs for equipment and services intended for public use (a copy machine or a printer that is publicly used, phone bills, copy service, etc.) should be covered from the overhead.</p> <p>Double funding of activities is not acceptable.</p> <p>State Aid EU Regulations on State aid and de minimis aid must be taken into account when requesting funding from the Estonian Research Council (ETAG).</p>
Submission of the full proposal at the national level	No
Submission of financial and scientific reports at the national level	Financial reports are required
Information available at	https://etag.ee/wp-content/uploads/2022/07/Vastavusnouded-RV-uhiskonkurssidel_30.08.22.pdf
OTHER	<p>Grant Agreement If a positive funding decision is made, the Estonian Research Council enters into a grant agreement with the Host Institution. Information on the transnational project must be entered into ETIS once the agreement has been signed.</p>

	<p>The Consortium Agreement should be signed at the latest six months after the grant agreement has been signed. If one year has elapsed and the CA has not been signed, the next instalment of funding will not be paid out.</p> <p>Research Involving Human Subjects or Animal Testing</p> <p>If human research or animal testing are intended in the project, a positive resolution by the Human Research Ethics Committee or the Authorisation Committee for Animal Experiments must be submitted to the Estonian Research Council by the start of the relevant activities.</p> <p>Nagoya Protocol</p> <p>By applying for funding by the Estonian Research Council, the applicants agree to consider the relevance of the Nagoya protocol for their research, and to submit the Due Diligence Declaration, if applicable.</p>
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FR – France – ANR

Country/Region	France
Funding organisation	Agence Nationale de la Recherche (ANR)
National contact person	Lina Bentakouk-Bernard lina.bentakouk-bernard@anr.fr +33 1 73 54 82 46
Funding commitment	2 M€ in total
Anticipated number of fundable research groups	8-10
Eligibility of project duration	No additional constraint in addition to the transnational level
Maximum funding per awarded project / partner	No predefined maximum. Requested funding should be justified with respect to the project work plan.
Eligibility of a partner as a beneficiary institution	The general rules of ANR apply (cf. link below). In particular, both public research institutions and enterprises can apply.
Eligibility of costs, types and their caps	The general rules of ANR apply (cf. link below). Personnel, consumables, subcontracts (within 50% of the eligible costs for the partner), equipment and travel costs are eligible. For more information please refer to the link mentioned below at 'Information available at'
Submission of the full proposal at the national level	No
Submission of financial and scientific reports at the national level	Financial reporting at the national level is needed, using the usual ANR procedures. The FLAG-ERA level reporting takes the place of the scientific reporting for ANR.
Information available at	http://www.anr.fr/AAPProjetsOuverts
OTHER	Applicants from France must read the specific appendix available at the above-mentioned link.

DE – Germany – DFG

Country/Region	Germany
Funding organisation	German Research Foundation (DFG)
National contact person	Michael Mößle, +49 228 885 2351, Michael.Moessle@dfg.de Martin Winger, +49 228 885 2039, Martin.Winger@dfg.de
Funding commitment	€ 2.000.000 for the “Graphene – Basic Research” sub-call. The DFG does not participate in the “Graphene – Applied Research and Innovation” and “HBP – Basic and applied research” sub-calls.
Anticipated number of fundable research groups	10 -12 depending on average funding amounts
Eligibility of project duration	Maximum of 3 years
Maximum funding per awarded project / partner	There are no predefined limits.
Eligibility of a partner as a beneficiary institution	The general DFG rules and conditions as defined in the DFG form 50.01 “Guidelines Research Grants Programme” (10/2011) apply. This document is available on the DFG website at: http://www.dfg.de/foerderung/programme/einzelfoerderung/sachbeihilfe/formulare_merkblaetter/index.jsp . As an exception, the Guidelines on the Duty to Cooperate (DFG guideline 55.01) shall not apply.
Eligibility of costs, types and their caps	Eligible cost categories (related to specific “Programme Modules”) are specified in DFG forms 52.01 – 52.07, available on the DFG website at: http://www.dfg.de/foerderung/programme/einzelfoerderung/sachbeihilfe/formulare_merkblaetter/index.jsp (Standard: “Basic Module”, form 52.01).
Submission of the full proposal at the national level	Yes. A copy of the proposal has to be submitted via the DFG’s ELAN system (http://www.dfg.de/en/research_funding/principles_dfg_funding/elan/index.html) at the same deadline. Please submit your proposal as a “Research Grant” (“Sachbeihilfe”) and select the call “FLAG-ERA JTC 2019 Graphene”.
Submission of financial and scientific reports at the national level	Financial and scientific reports needs to be submitted in accordance with the relevant rules as specified in the Guidelines for the Use of Funds and for Final Reports available on the DFG website at: http://www.dfg.de/foerderung/programme/einzelfoerderung/sachbeihilfe/formulare_merkblaetter/index.jsp
Information available at	http://www.dfg.de/en/research_funding/programmes/individual/research_grants/index.html (DFG-Website on Research Grants)
OTHER	In submitting a proposal for a research grant to the DFG, applicants agree to adhere to the rules of good scientific practice (http://www.dfg.de/en/research_funding/principles_dfg_funding/good_scientific_practice/). The DFG expects that the results of funded projects will be made available to the public.

IL – Israel – InnovationAuth / ISERD

Country/Region	Israel			
Funding organisation	The National Technological Innovation Authority (InnovationAuth)			
National contact person	Danny Seker, Dan@iserd.org.il , +972-3-5118121 Rachel Loutaty, Rachel.l@iserd.org.il , +972-3-5118182			
Funding commitment	500 K€ in total			
Anticipated number of fundable research groups	2 - 4			
Eligibility of project duration	As may be decided by the Consortia, subject to the rules of the “ Procedure for Implementation of International Agreements Related to the European Framework Program ” and the selected InnovationAuth benefit track (benefit tracks details below) (the "InnovationAuth Rules")			
Maximum funding per awarded project / partner	Type of organization	Funding % of eligible costs	Maximum Financial Support	Additional information
	SME	according to the InnovationAuth Rules	300K Euro	InnovationAuth Rules apply
	Large Industry	according to the InnovationAuth Rules	300K Euro	
	University	according to the InnovationAuth Rules	300K Euro	
Eligibility of a partner as a beneficiary institution	<p>The application and eligibility are subject to the InnovationAuth Rules, including the following: entities are eligible to apply:</p> <ul style="list-style-type: none"> • Industrial enterprises with R&D capabilities • Research Organizations/Academy <p>Entities must be registered in Israel. Financial viability and business soundness are verified by means of an internal check - companies that are in danger of insolvency cannot be funded.</p>			
Eligibility of costs, types and their caps	<p>Funding will be provided according to the InnovationAuth rules, including the selected IIA funding track:</p> <ul style="list-style-type: none"> • Knowledge commercialization track (Track 5D): A project that was approved for an Israeli enterprise that involves a technology transfer from an Israeli research organization/s to Israeli enterprise/s – up to 60% of the approved budget. • Academic knowledge direction track (Track 5C With industrial partner): A research project of an Israeli research organization / academy, that was approved based on Academic knowledge direction track rules (with a relevant Israeli industrial partner) - up to 90% of the approved budget. 			
Submission of the full proposal at the national level	<p>InnovationAuth requires a national application, to be submitted in parallel to the international proposal stage. Israeli applicants must contact ISERD (cf. contact information above) before proposal submission for the purpose of checking national funding terms and conditions.</p>			

Submission of financial and scientific reports at the national level	InnovationAuth rules apply.
Information available at	Call announcement - at ISERD website (www.iserd.org.il)
OTHER	-

LT – Lithuania – LMT

Country/Region	Lithuania
Funding organisation	Research council of Lithuania (LMT)
National contact person	Dr. Saulius Marcinkonis, tel +370 676 17256, saulius.marcinkonis@lmt.lt Research Council of Lithuania, Gedimino pr. 3, Vilnius, Lithuania
Funding commitment	€ 150.000 per Flagship (€ 300.000 in total)
Anticipated number of fundable research groups	2 (in total)
Eligibility of project duration	Up to three years
Maximum funding per awarded project / partner	Up to € 100.000 per project (for project partner) or up to € 150.000 per project (for project coordinator)
Eligibility of a partner as a beneficiary institution	The General Rules of the Research Council of Lithuania for the Competitive Funding of Research and Dissemination Projects apply: Lithuanian higher education and research institution (which is listed in the Register of Ministry of Education and Science of Republic of Lithuania); SME (only in collaboration with Lithuanian higher education and research institution); The applicant who intends to act as a project leader (PL) or principal investigator (PI) has to be a scientist (researcher holding at least a Ph.D. degree); A person, acting as a PL, PI or a core group member can participate only in one proposal per Call. The workload of the core members of project team must be at least 20 hours multiplied by the duration of the project in months.
Eligibility of costs, types and their caps	National funding will be provided according to the General Rules of the Research Council of Lithuania for the competitive funding of the Research and Dissemination Projects. Funding rates are 100% of eligible costs. Eligible direct costs: <ul style="list-style-type: none"> • Personnel • Subcontracting • Consumables • Travel and Subsistence • Equipment • Other Overheads/indirect costs: <ul style="list-style-type: none"> • Up to 20% of direct costs.
Submission of the full proposal at the national level	No
Submission of financial and scientific reports at the national level	Financial and scientific (mid- term and final) reporting at the national level is required, using the usual LMT procedures.
Information available at	https://www.lmt.lt/lt/mokslo-finansavimas/era-net-ir-kitos-koordinavimo-veiklos/flag-era-ii/2351
OTHER	For detailed information please contact the National Contact Person

NL – The Netherlands – ZonMw

Country/Region	The Netherlands
Funding organisation	The Netherlands organisation for health research and development (ZonMw)
National contact person	Gabriëlle Lijten, Jpnd@zonmw.nl , +31 (0)70 3495 470
Funding commitment	A total budget of 800 k€ is available for the sub-call Human Brain Project – EBRAINS. This budget includes a contribution from Alzheimer Nederland. Both basic and applied research are fundable. With this budget ZonMw can fund Dutch applicant(s) in 3 to 4 projects. A maximum project budget of 200 k€ is available if the Dutch applicant is a partner in the consortium and 300 k€ if the Dutch partner is also the international coordinator of the project.
Anticipated number of fundable research groups	3 to 4
Eligibility of project duration	No additional constraints in addition to those at the transnational level.
Maximum funding per awarded project / partner	The maximum amount of available funding per project is: 200 k€ if partner in the project 300 k€ if coordinator of the project consortium
Eligibility of a partner as a beneficiary institution	ZonMw Grant Terms and Conditions of April 1st 2022 apply (see ZonMw Grant Terms and conditions). Researchers who are employed at Dutch universities, NWO- / KNAW- /ZonMw- research institutes or Academic Medical Centres may apply for funding and participate in a consortium as main applicant or as co-applicant. Enterprises are not eligible. An applicant may be involved in up to two proposals, of which only one as main applicant. Please also check our data management protocol: https://www.zonmw.nl/en/research-and-results/open-science-fair-data/
Eligibility of costs, types and their caps	See https://www.zonmw.nl/en/news-and-funding/funding/grant-conditions-and-finances/ for ZonMw grant conditions and financial information.
Submission of the full proposal at the national level	No. However, prior to submission, applicants from the Netherlands should contact the National Contact Point indicated above.
Submission of financial and scientific reports at the national level	Financial and scientific (mid-term and final) reporting of funded projects at the national level is required, according to general ZonMw procedures.
Information available at	
OTHER	ZonMw does not financially support projects in the sub-calls on the Graphene Flagship. Alzheimer Nederland will co-finance the granted projects. Only research applications focused on dementia will be eligible for funding by Alzheimer Nederland.

RO – Romania – UEFISCDI

Country/Region	Romania
Funding organisation	Executive Agency for Higher Education, Research, Development & Innovation Funding (UEFISCDI)
National contact person	Cristina Cotet, cristina.cotet@uefiscdi.ro Domnica Cotet, domnica.cotet@uefiscdi.ro
Funding commitment	500.000 Euro
Anticipated number of fundable research groups	3-4
Eligibility of project duration	36 months
Maximum funding per awarded project / partner	250.000 euro if the Romanian applicant is coordinators (no matter how many Romanian applicants there are). 200.000 euro if the Romanian applicant is partner (no matter how many Romanian applicants there are).
Eligibility of a partner as a beneficiary institution	All legal entities (public and private sector)
Eligibility of costs, types and their caps	The general rules of UEFISCDI apply (cf. link below). Staff costs, consumables, equipment, subcontracts (within 25% of the eligible costs for the partner), travel costs and indirect costs (20% from direct costs) are eligible. The aid intensity is applying in respect of type of organization and type of eligible activity (cf. link below).
Submission of the full proposal at the national level	If the project was selected for funding
Submission of financial and scientific reports at the national level	Reports are required at the national level, using the UEFISCDI procedures.
Information available at	http://uefiscdi.gov.ro/articole/4536/Pachet-de-informatii-ERANETERANET-Cofund.html
OTHER	The Romanian applicants must read carefully the information available at the link http://uefiscdi.gov.ro/articole/4536/Pachet-de-informatii-ERANETERANET-Cofund.html

SK – Slovakia – SAS

Country/Region	Slovakia
Funding organisation	Slovak Academy of Sciences (SAS)
National contact person	Zuzana Panisová, +421 2 5751 0245, panisova@up.upsav.sk
Funding commitment	240 000 €
Anticipated number of fundable research groups	Max. 2
Eligibility of project duration	Max. 36 months
Maximum funding per awarded project / partner	120 000 € / 36 months / project
Eligibility of a partner as a beneficiary institution	Only SAS research institutes are eligible organisations for funding (up to 100%). Applicants from other Slovak R&D centres (universities and/or other organisations from Slovakia) have to cover the project costs from their own sources. In addition to this, the teams outside of SAS can be consortium members but not the coordinator of the consortium.
Eligibility of costs, types and their caps	Salaries – fixed rate 15 k€/year Direct costs (DC): <ul style="list-style-type: none"> ▪ Non-permanent personnel costs (max. 15% of DC, 30% if SAS is project coordinator) ▪ Consumables ▪ Equipment (max. 40% of DC) ▪ Travel costs ▪ Other costs – services, publication costs etc... Indirect costs (IC) - overheads: max. 20 % of DC.
Submission of the full proposal at the national level	No
Submission of financial and scientific reports at the national level	Yes
Information available at	https://oms.sav.sk/wp-content/uploads/Financne-pravidla-od-1.1.-2023-schvalene-P-SAV-15.12.2022.pdf https://oms.sav.sk/wp-content/uploads/Pravidla-pre-schvalovanie-vyskumnych-projektov-MVTS-financovanych-zo-zdrojov-SAV_11-Nov-2021-1.pdf
OTHER	It is highly recommended to contact NCP prior to submission of proposal. According to the Resolution of SAS Presidium No. 358, participants are requested to submit “Declaration to participate to FLAG ERA JTC 2023” within the deadline for project proposals submission. For further details, please contact National Contact Person. The participation of the early career researchers is highly appreciated. Researchers that are partners in projects recommended for funding will be requested to submit an application (MVTS Form A). The SAS Presidium makes the final funding decision on the selected projects. The funded projects are requested to submit consortium agreement and annual financial and scientific reports.

SI – Slovenia – MVZI

Country/Region	Slovenia
Funding organisation	Ministry of Higher Education, Science and Innovation
National contact person	Andrej Ograjensek, andrej.ograjensek@gov.si , +386 1 478 4634
Funding commitment	900.000 € including VAT
Anticipated number of fundable research groups	Up to 3 projects
Eligibility of project duration	36 months (3 years)
Maximum funding per awarded project / partner	Max 300.000 €
Eligibility of a partner as a beneficiary institution	<p>Research organizations as defined in the national Scientific Research and Innovation Activities Act (Zakon o znanstvenoraziskovalni in inovacijski dejavnosti (Uradni list RS, št. 186/21)). All participating institutions have to be registered in the Slovenian Research Agency register of research institutions (Informacijski sistem o raziskovalni dejavnosti v Sloveniji -SICRIS).</p> <p>Eligibility of principal investigator and other research team members: The project activities of the Slovenian partner have to be under the supervision of the <u>primary investigator/primary researcher</u> who fulfills the requirements for project leader as defined in Art. 63 of the national Scientific Research and Innovation Activities Act (Zakon o znanstvenoraziskovalni in inovacijski dejavnosti (Uradni list RS, št. 186/21)). The criteria are further determined in the Rules on the Criteria for Establishing Compliance with the Conditions for being the Head of a Research Project (Kriteriji za ugotavljanje izpolnjevanja izkazovanja mednarodno primerljivih raziskovalnih rezultatov in obdobje zajema mednarodno primerljivih raziskovalnih rezultatov za vodjo raziskovalnega projekta in programa). All participating researchers have to be registered in the Slovenian Research Agency register of researchers (Sicris) and must have available research hours.</p>
Eligibility of costs, types and their caps	<p>Total national funding: max. 900.000,00 EUR including VAT</p> <p>Total requested funding per project: for all Slovenian partners within one consortium must not exceed 100.000,00 EUR per year (300.000,00 EUR for the total project duration of 36 months).</p> <p>Eligibility of costs: MVZI will fund all eligible costs of successful Slovenian transnational projects, recommended for funding, in accordance with the Decree on the scientific research funding from the budget of the Republic of Slovenia (Uredba o financiranju znanstvenoraziskovalne dejavnosti iz Proračuna Republike Slovenije (Uradni list RS, št. 35/22 in 144/22)). Providing the stipulated conditions are met, the Public Procurement Act (Zakon o javnem naročanju (Uradni list RS, št. 91/15, 14/18, 121/21, 10/22, 74/22 – odl. US in 100/22 – ZNUZSZS)) applies.</p> <p>This call is suitable for implementing Article 64 of the Scientific Research and Innovation Activities Act (Zakon o znanstvenoraziskovalni in inovacijski dejavnosti (ZZrID) (Uradni list RS, št. 186/21)).</p> <p>Period of eligibility of public expenditures: as of budgetary year 2024 until the end of the budgetary year 2027.</p>

	<p>Period of eligibility of expenditures on the project: From the starting date of the transnational project stipulated in the consortium agreement for a period of 36 months, with a prescribed additional 30 day period for the payment of invoices related to the project costs. The period of eligibility of expenditures on the project can only start from the date the national contract enters into effect. The exact duration of the project will be defined in the contract between MIZS and the selected Slovenian partner, after the consortium agreement between the selected consortium partners enters into force.</p>
Submission of the full proposal at the national level	No
Submission of financial and scientific reports at the national level	Financial reports are submitted yearly at national level and final financial and scientific reports at the end of the project according to internal procedures.
Information available at	http://www.mizs.gov.si/si/javne_objave_in_razpisi/javni_razpisi/
OTHER	<p>Eligible type of research and TRL: Basic research or applied research. The type of research conducted by Slovenian researchers must be defined and explained in the project proposal (e.g. in the Comments on budget section). TRL 1-6</p> <p>Legal basis – national regulation</p> <p>State Administration Act (Zakon o državni upravi (Uradni list RS, št. 113/05 - UPB4, 89/07 - Odl.US, 126/07 - ZUP-E, 48/09, 8/10 - ZUP-G, 8/12 - ZVRS-F, 21/12, 47/13, 12/14, 90/14,51/16, 36/21, 82/21in 189/21)) - Article 16 and 39; Public Finance Act (Zakon o javnih financah (Uradni list RS, št. 11/11 - uradno prečiščeno besedilo, 14/13, 110/11 - ZDIU12, 46/13 - ZIPRS1314-A, 101/13, 101/13 - ZIPRS1415, 38/14 - ZIPRS1415-A, 14/15 - ZIPRS1415-D, 55/15 - ZFisP, 96/15 - ZIPRS1617, 80/16 - ZIPRS1718, 71/17 - ZIPRS1819, 13/18, 75/19 - ZIPRS2021, 36/20 - ZIUJP, 61/20 - ZDLGPE, 89/20, 195/20 - odl. US, 203/20 - ZIUPOPVE, 174/20 - ZIPRS2122, 15/21 – ZDUOP, 187/21 – ZIPRS2223 in 29/2022 -ZUOPDCE))) - Article 106. j; Regulation on the procedure of standards and manners to allocate means for the promotion of the evolutionary programme and the preferential tasks (Uredba o postopku, merilih in načinih dodeljevanja sredstev za spodbujanje razvojnih programov in prednostnih nalog (Uradni list RS, št. 56/11)); Implementation of the Republic of Slovenia's Budget for 2022 and 2023 Act (Zakon o izvrševanju proračunov Republike Slovenije za leti 2022 in 2023 (Uradni list RS, št. 187/21, 206/21 – ZDUPŠOP , 129/22in 144/22 ZSDH-1A)); Integritty and Prevention of Corruption Act (Zakon o integriteti in preprečevanju korupcije (Uradni list RS, št. 69/11 – uradno prečiščeno besedilo, 158/20 in 3/22 – ZDeb)); Resolution on the Slovenian Scientific Research and Innovation Strategy 2030 (Resolucija o znanstvenoraziskovalni in inovacijski strategiji Slovenije 2030 (Uradni list RS, št. 49/22)); Decree on the scientific research funding from the budget of the Republic of Slovenia (Uredba o financiranju znanstvenoraziskovalne dejavnosti iz Proračuna Republike Slovenije (Uradni list RS, št. 35/22 in 144/22)), Rules on criteria for establishing compliance with the conditions for being the head of a research project (Pravilnik o kriterijih za ugotavljanje izpolnjevanja pogojev za vodjo raziskovalnega projekta, Uradni list RS št. 53/16 in 186/21 – ZZrID); Community Framework for State Aid for Research and Development and 108 Innovation the provisions of the Community Framework for State Aid for Research and Development and Innovation (OJ EU C 198, 27. 6. 2014) (Okvir za državno pomoč za raziskave in razvoj</p>

	<p>ter inovacije (2014/C 198/01)); National scheme for state aid in Research and Development (Program za spodbujanje raziskav in razvoja Ministrstva za izobraževanje, znanost in šport na področju znanosti 2016-2020, št. 631-1/2016-1 z dne 8. 1. 2016); National strategy of open access to scientific publications and research data in Slovenia 2015-2020 (Nacionalna strategije odprtega dostopa do znanstvenih objav in raziskovalnih podatkov v Sloveniji 2015-2020, št. 60300-5/2015/5 z dne 3. 9. 2015). All Slovenian applicants must refer to the guidelines for Slovenian applicants published on the webpage https://www.gov.si/drzavni-organi/ministrstva/ministrstvo-za-izobrazevanje-znanost-in-sport/javne-objave.</p> <p>National contracting negotiations will commence after the projects are selected for funding on the level of the transnational call. National documentation, including evidence of the starting date of the transnational project (in the form of a Consortia Agreement or statement on the starting date by the transnational project coordinator), will be a prerequisite for signing the contract on national level. All Slovenian applicants are strongly advised to contact the Slovenian National Contact Person.</p>
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SE – Sweden – VINNOVA

Country/Region	Sweden
Funding organisation	Sweden’s Innovation Agency (Vinnova)
National contact person	Maria Öhman, +46 8 473 31 89, maria.ohman@vinnova.se
Funding commitment	<p>Vinnova allocates a budget of SEK 6 million for funding Swedish participation in the sub-call Graphene – Applied research and innovation.</p> <p>In this call for proposals, Vinnova only finances Swedish participation in project consortia that contain at least one company, for which the project results are expected to have positive effects on future R&I efforts and assets. The company does not have to be Swedish to fulfill this national eligibility criterion but applies within the consortium as a whole.</p> <p>Vinnova only funds partners within the sub-call Graphene – Applied research and innovation. For Swedish participation in Graphene -Basic research, see the national annex for the Swedish Research Council, VR.</p>
Anticipated number of fundable research groups	2-3
Eligibility of project duration	Se main document
Maximum funding per awarded project / partner	No maximum funding per proposal, but indicative SEK 0.5-1.5 million per year for three years for the Swedish partner
Eligibility of a partner as a beneficiary institution	<p>Only legal persons, with an establishment or branch in Sweden, are eligible as partners funded by Vinnova. Natural persons are not allowed.</p> <p>Companies funded by Vinnova must be a joint-stock with an establishment or branch in Sweden, and with business along with a recognizable record of R&D and industrial/commercial activities in Sweden.</p>
Eligibility of costs, types and their caps	<p>Vinnova's contribution is granted in accordance with the Governmental ordinance 2015:208 regarding state aid to research, development and innovation. The project activities constituting the eligible costs shall completely fall within either “Industrial research” or “Experimental development” in the GBER art. 25 for Research and Development. For definitions, see Chapter 1, article 2, No 85 and 86 (p.25) in the Commission regulation (EU) no 651/2014, https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX%3A32014R0651&from=EN</p> <p>Vinnova’s general terms and conditions for granting projects is found at: https://www.vinnova.se/en/apply-for-funding/rules-for-our-funding</p> <p>Vinnova's grant is a contribution to the project's eligible costs, as stated in Vinnova’s general terms and conditions for granting projects. The eligible costs are described in more detail in the “Instruction to eligible costs”. Se: https://www.vinnova.se/en/apply-for-funding/rules-for-our-funding/terms-and-conditions-for-our-funding/</p> <p>When Vinnova funds partners with economic activity, the maximum funding level of the total eligible costs depend on the type of research activity:</p>

	<table border="1"> <thead> <tr> <th>Type of research activity</th> <th>Large Enterprise</th> <th>Medium Enterprise**</th> <th>Small Enterprise**</th> </tr> </thead> <tbody> <tr> <td>Industrial Research</td> <td>50 %</td> <td>60 %</td> <td>70 %</td> </tr> <tr> <td>Experimental development</td> <td>25 %</td> <td>35 %</td> <td>45 %</td> </tr> </tbody> </table> <p>** For definitions of small- and medium size enterprises, see http://ec.europa.eu/DocsRoom/documents/15582/attachments/1/translations</p>	Type of research activity	Large Enterprise	Medium Enterprise**	Small Enterprise**	Industrial Research	50 %	60 %	70 %	Experimental development	25 %	35 %	45 %
Type of research activity	Large Enterprise	Medium Enterprise**	Small Enterprise**										
Industrial Research	50 %	60 %	70 %										
Experimental development	25 %	35 %	45 %										
Submission of the full proposal at the national level	The Swedish applicants of funded projects will be asked by Vinnova to resubmit the proposal through the IT portal in November 2023 using a specific weblink distributed by the national contact person.												
Submission of financial and scientific reports at the national level	Yes, financial and scientific reports must be submitted at national level every sixth month during the project.												
Information available at	https://www.vinnova.se/e/strategiska-innovationsprogrammet-for-grafen/sio-grafen-flag-era-extern/ (no additional information)												
OTHER	<p>Swedish applicants are encouraged to communicate with the national contact person regarding their intention to participate in the call before submission of proposal.</p> <p>Please observe: In this call for proposals, Vinnova only finances Swedish participation in project consortia that contain at least one company, for which the project results are expected to have positive effects on future R&I efforts and assets. The company does not have to be Swedish to fulfil this national eligibility criterion but applies within the consortium as a whole.</p>												

SE – Sweden – VR

Country/Region	Sweden
Funding organisation	Swedish Research Council (VR)
National contact person	Tomas Andersson, +46 8 546 441 73, tomas.andersson@vr.se
Funding commitment	VR has committed in total SEK 1.2 million per year for Graphene – Basic research.
Anticipated number of fundable research groups	1-2
Eligibility of project duration	3 years
Maximum funding per awarded project / partner	Maximum 1.2 MSEK per year for three years for the Swedish partner (Total 3.6 MSEK). Exchange rate by the deadline of the call will be used.
Eligibility of a partner as a beneficiary institution	<ol style="list-style-type: none"> 1. SRC funds Swedish partners within the sub-call Graphene – Basic Research. 2. SRC funds basic research of the highest scientific quality, and promotes research collaboration and the exchange of experience. 3. The investigators need to hold a PhD at the time of application. 4. The grants distributed by the SRC must be administrated by a Swedish university, higher education institution (HEI) or other public organisation that fulfils the Swedish Research Councils criteria for an administrating organisation: https://vr.se/english/calls-and-decisions/apply-for-a-grant/who-can-apply.html 5. A researcher may only apply for funds from the SRC in one application in the FLAG-ERA JTC 2023. A researcher who already has an ongoing project from SRC in the FLAG-ERA JTC 2021 is not eligible to apply.
Eligibility of costs, types and their caps	The project grant may be used to fund all types of project-related costs, such as salaries (including your own salary, however no more than corresponding to the person’s activity level in the project), running costs (such as consumables, travel including stays at research facilities, publication costs and minor equipment), premises and depreciation costs. Grants may not be used for scholarships. If a doctoral student participates, project funds may not be paid out as salary during teaching or other departmental duties. The minimum amount for which you may apply is SEK 400 000 per year, including indirect costs.
Submission of the full proposal at the national level	Yes. See below under other information.
Submission of financial and scientific reports at the national level	Yes, according to the terms and conditions of the grant agreement.
Information available at	See national call texts in Swedish and English for all national requirements.
OTHER	Swedish applicants are encouraged to communicate with the national contact person regarding their intention to participate in the call, before submission of the consortium application.

All Swedish project leaders participating in the call for support from the Swedish Research Council shall also submit a parallel application using the Swedish Research Council's application system Prisma. The application form in Prisma can be reached from the call text at the Council's website.

Parallel application is a mandatory eligibility criterion. Failure to submit the parallel application to the Swedish Research Council before the deadline of the Prisma call will result in the Swedish partner being declared ineligible.

TW – Taiwan – NSTC

Country/Region	Taiwan
Funding organisation	National Science and Technology Council (NSTC)
National contact person	Dr. Ching-Mei Tang Email: cmtom@nstc.gov.tw Tel: +886-2-2737-7557
Funding commitment	810 000 €
Anticipated number of fundable research groups	2-3
Eligibility of project duration	36 months (3 years)
Maximum funding per awarded project / partner	<ul style="list-style-type: none"> • The maximum amount per year per project is 90 000 € (about NTD 3 000 000). • The decision regarding the exact amount of the grant is dependent on the result of the NSTC's internal reviews. • The number of grants of every principle investigator must comply with NSTC's regulation of the max number of two international cooperation projects granted by NSTC for the same duration.
Eligibility of a partner as a beneficiary institution	All research institutes, universities, hospitals, public organisations in Taiwan endorsed by the National Science and Technology Council (NSTC) as eligible institutions.
Eligibility of costs, types and their caps	Including personnel, consumables, hosting expenses for foreign researchers, and travel expenses for international destinations-joint research & overseas studies, for more information please refer to: https://www.nstc.gov.tw/folksonomy/list/f6d5c23c-b3ce-438e-911b-12a705dbac5a?l=ch
Submission of the full proposal at the national level	No official national application is needed in the proposal phase. But applicants must notify the national contact person in the National Science and Technology Council of your submission to the FLAG-ERA joint transnational call via email, together with the application as an attachment.
Submission of financial and scientific reports at the national level	please refer to: https://www.nstc.gov.tw/folksonomy/list/f6d5c23c-b3ce-438e-911b-12a705dbac5a?l=ch
Information available at	https://www.nstc.gov.tw/folksonomy/rfpDetail/c1a582ae-95bc-4449-908f-590d6cb409ea?l=ch
OTHER	<ul style="list-style-type: none"> • Taiwanese project partners shall submit a proposal to the NSTC for national financing after the project has been selected and approved for funding through the FLAG-ERA evaluation and selection process. • The proposals are required to be submitted to NSTC for funding as soon as possible as the internal process of the NSTC generally takes 6 months.

TR – Turkey – TÜBİTAK

Country/Region	Turkey
Funding organisation	The Scientific and Technological Research Council of Turkey (TÜBİTAK)
National contact person	Ebru SOYUYÜCE AYDIN, ebru.aydin@tubitak.gov.tr 90 312 2981885
Funding commitment	400k€
Anticipated number of fundable research groups	2-4
Eligibility of project duration	Up to 36 months
Maximum funding per awarded project / partner	ARDEB 1071: 1000K TL
Eligibility of a partner as a beneficiary institution	Equipment, consumables, human resources, travel, overheads, dissemination (like printing of booklets or organizing workshops)
Eligibility of costs, types and their caps	Yes
Submission of the full proposal at the national level	Yes
Submission of financial and scientific reports at the national level	Yes
Information available at	Detailed information available at https://www.tubitak.gov.tr/tr/duyuru/flag-era-era-net-2023-yili-cagrisi-acildi website
OTHER	In addition to international submission, Turkish partners also need to complete their national submissions. It is strongly recommended to contact NCP before submitting the proposal.