# HORIZON

# Call: ERC-2023-ADG
## (Call for Proposals for ERC Advanced Grant)

# Topic: ERC-2023-ADG
# Type of Action: HORIZON-ERC

# Proposal number: SEP-210942287

# Proposal acronym: DISCOVER

## Type of Model Grant Agreement: HORIZON Action Grant Budget-Based

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# 1 - General information

Fields marked * are mandatory to fill.

| | | | |
|---|---|---|---|
| Topic | ERC-2023-ADG | Type of Action | HORIZON-ERC |
| Call | ERC-2023-ADG | Type of Model Grant Agreement | HORIZON-AG |

Acronym　DISCOVER

Proposal title　Automated Model Discovery  for Soft Matter Systems

Note that for technical reasons, the following characters are not accepted in the Proposal Title and will be removed: < > " &

Duration in months*　60

Primary ERC Review Panel*　PE8 - Products and Processes Engineering

Secondary ERC Review Panel　Not applicable　(if applicable)

ERC Keyword 1*　PE8_07 Mechanical engineering

*Please select, if applicable, the ERC keyword(s) that best characterise the subject of your proposal in order of priority.*

ERC Keyword 2　*PE8_04 Computational engineering*

ERC Keyword 3　*Not applicable*

ERC Keyword 4　*Not applicable*

Free keywords　*In addition, please enter free text keywords that you consider best characterise the scope of your proposal.The choice of keywords should take into account any multi-disciplinary aspects of the proposal.*

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## Abstract *

Constitutive modeling and parameter identification are the cornerstones of the mechanics of materials and structures. For decades, the gold standard in constitutive modeling has been to first select a model and then fit its parameters to data. However, the scientific criteria for model selection remain poorly understood, and the success of this approach depends largely on user experience and personal preference. This limits the successful use of constitutive modeling—and with it the accurate design and analysis of engineering structures—to a few well-trained specialists in the field. This project will democratize constitutive modeling through automated model discovery and make it accessible to a more inclusive and diverse community to accelerate the design of new functional materials and structures with tailored properties. The objective of this proposal is to establish, train, benchmark, and validate a new family of constitutive neural networks that simultaneously and fully autonomously discover the model, parameters, and experiment that best explain the behavior of a wide variety of soft materials. This discovery platform will induce a paradigm shift in constitutive modeling and can forever change how we simulate materials and structures. My central hypothesis is that automated model discovery facilitates exploring a large parameter space of models and enables the identification of complex relationships between microstructure and properties that are not apparent from experimental data alone. Automating the process of model discovery will help eliminate user bias, identify new phenomena in soft matter systems, lead to a deeper understanding of the mechanics of soft matter, and guide the design of more accurate simulation tools for these systems. My immediate deliverable is an open source discovery platform that features a new family of constitutive neural networks, a benchmark library to train, test, and validate these networks for a wide variety of soft materials.

Remaining characters        0

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Has this proposal (or a very similar one) been submitted in the past 2 years in response to a call for proposals under any EU programme, including the current call?    ○ Yes   ◉ No

| Please give the proposal reference or contract number. |
|---|
| *Previously submitted proposals should be with either 6 or 9 digits.* |

# Application forms

## Declarations

Field(s) marked * are mandatory to fill.

1) We declare to have the explicit consent of all applicants on their participation and on the content of this proposal. * ☒

2) We confirm that the information contained in this proposal is correct and complete and that none of the project activities have started before the proposal was submitted (unless explicitly authorised in the call conditions). * ☒

3) We declare:
- to be fully compliant with the eligibility criteria set out in the call
- not to be subject to any exclusion grounds under the EU Financial Regulation 2018/1046
- to have the financial and operational capacity to carry out the proposed project. * ☒

4) We acknowledge that all communication will be made through the Funding & Tenders Portal electronic exchange system and that access and use of this system is subject to the Funding & Tenders Portal Terms and Conditions. * ☒

5) We have read, understood and accepted the Funding & Tenders Portal Terms & Conditions and Privacy Statement that set out the conditions of use of the Portal and the scope, purposes, retention periods, etc. for the processing of personal data of all data subjects whose data we communicate for the purpose of the application, evaluation, award and subsequent management of our grant, prizes and contracts (including financial transactions and audits). * ☒

6) We declare that the proposal complies with ethical principles (including the highest standards of research integrity as set out in the ALLEA European Code of Conduct for Research Integrity, as well as applicable international and national law, including the Charter of Fundamental Rights of the European Union and the European Convention on Human Rights and its Supplementary Protocols. Appropriate procedures, policies and structures are in place to foster responsible research practices, to prevent questionable research practices and research misconduct, and to handle allegations of breaches of the principles and standards in the Code of Conduct. * ☒

7) We declare that the proposal has an exclusive focus on civil applications (activities intended to be used in military application or aiming to serve military purposes cannot be funded). If the project involves dual-use items in the sense of Regulation 428/2009, or other items for which authorisation is required, we confirm that we will comply with the applicable regulatory framework (e.g. obtain export/import licences before these items are used). * ☒

8) We confirm that the activities proposed do not
- aim at human cloning for reproductive purposes;
- intend to modify the genetic heritage of human beings which could make such changes heritable (with the exception of research relating to cancer treatment of the gonads, which may be financed), or
- intend to create human embryos solely for the purpose of research or for the purpose of stem cell procurement, including by means of somatic cell nuclear transfer.
- lead to the destruction of human embryos (for example, for obtaining stem cells)
These activities are excluded from funding. * ☒

9) We confirm that for activities carried out outside the Union, the same activities would have been allowed in at least one EU Member State. * ☒

The coordinator is only responsible for the information relating to their own organisation. Each applicant remains responsible for the information declared for their organisation. If the proposal is retained for EU funding, they will all be required to sign a declaration of honour.

**False statements** or incorrect information may lead to administrative sanctions under the EU Financial Regulation.

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## 2 - Participants

## List of participating organisations

| # | Participating Organisation Legal Name | Country | Role | Action |
|---|---------------------------------------|---------|------|--------|
| 1 | FRIEDRICH-ALEXANDER-UNIVERSITAET ERLANGEN-NUERN | Germany | Coordinator | |

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# Organisation data

## Host Institution

| PIC | Legal name |
|-----|-----------|
| *999995408* | *FRIEDRICH-ALEXANDER-UNIVERSITAET ERLANGEN-NUERNBERG* |

Short name: FAU

Address

| | |
|---|---|
| Street | SCHLOSSPLATZ 4 |
| Town | ERLANGEN |
| Postcode | 91054 |
| Country | Germany |
| Webpage | www.fau.de |

## Specific Legal Statuses

| | |
|---|---|
| Legal person ......................................................... | yes |
| Public body ............................................................ | yes |
| Non-profit .............................................................. | yes |
| International organisation ..................................... | no |
| Secondary or Higher education establishment ...... | yes |
| Research organisation .......................................... | yes |

**SME Data**

Based on the below details from the Participant Registry the organisation is **not an SME** (small- and medium-sized enterprise) for the call.

| | |
|---|---|
| SME self-declared status ...................................... | 14/01/2022  - no |
| SME self-assessment ........................................... | unknown |
| SME validation ..................................................... | unknown |

## Gender Equality Plan

Does the organization have a Gender Equality Plan (GEP) covering the elements listed below?   ⦿ Yes   ○ No

**Minimum process-related requirements (building blocks) for a GEP**

- **Publication:** formal document published on the institution's website and signed by the top management
- **Dedicated resources:** commitment of human resources and gender expertise to implement it.
- **Data collection and monitoring:** sex/gender disaggregated data on personnel (and students for establishments concerned) and annual reporting based on indicators.
- **Training:** Awareness raising/trainings on gender equality and unconscious gender biases for staff and decision-makers.
- **Content-wise, recommended areas** to be **covered** and addressed via concrete measures and targets are:
  - o  work-life balance and organisational culture;
  - o  gender balance in leadership and decision-making;
  - o  gender equality in recruitment and career progression;
  - o  integration of the gender dimension into research and teaching content;
  - o  measures against gender-based violence including sexual harassment.

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## Departments carrying out the proposed work

**Department 1**

| | | |
|---|---|---|
| Department name | Department of Mechanical Engineering | ☐ not applicable |
| | ☐ Same as proposing organisation's address | |
| Street | Egerlandstrasse 5 | |
| Town | Erlangen | |
| Postcode | 91058 | |
| Country | Germany | |

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# Principal Investigator

*The following information of the Principal Investigator (PI) is used to personalise the communications. The EU services will contact the PI together with the HI contact person concerning this proposal (e.g. for additional information, invitation to interviews, sending of evaluation results, convocation to start grant preparation). Please make sure that your personal information is accurate and please inform the ERC in case your e-mail address changes by using the call specific e-mail address indicated in the below webpage. Please also provide your mobile phone number as we may need to urgently contact you regarding your submitted proposal and/or potential interview.*

[https://erc.europa.eu/about-erc/contact-us](https://erc.europa.eu/about-erc/contact-us)

**The name and e-mail of contact persons including the Principal Investigator, Host Institution contact are read-only in the administrative form, only additional details can be edited here. To give access rights and contact details of contact persons, please save and close this form, then go back to Participants Step of the submission wizard and save the changes.**

| | |
|---|---|
| ORCID | 0000-0002-6283-935X |

| Researcher ID | G | 4444 | 2011 | *The maximum length of the identifier is 11 characters (ZZZ-9999-2010) and the minimum length is 9 characters (A-1001-2010).* |
|---|---|---|---|---|

| Other ID | Google Scholar | jjQDKYYAAAAJ |
|---|---|---|

| Career Stage | Category A  Top grade researcher |
|---|---|

| Last Name* | KUHL | Last Name at Birth | Sawischlewski |
|---|---|---|---|
| First Name(s)* | Ellen | Gender* | ○ Male  ◉ Female  ○ Non Binary |
| Title | Prof. | Country of residence | United States |
| Nationality* | Germany | Country of Birth* | Germany |
| Date of Birth* (DD/MM/YYYY) | 15/08/1971 | Place of Birth* | Hannover |

## *Contact address*

| | |
|---|---|
| Current organisation name | Stanford University |
| Current Department/Faculty/Institute/ Laboratory name | Department of Mechanical Engineering |

☐ Same as organisation address

| Street | 440 Escondido Mall, Bldg. 530, Room 113 | | |
|---|---|---|---|
| Postcode/Cedex | CA 94305 | Country* | United States |
| Town* | Stanford | | |
| Phone | +16504500855 | Phone2 / Mobile | +16507765365 |
| E-mail* | ekuhl@stanford.edu | | |

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## Contact address of the Host Institution and contact person

This will be the person the EU services will contact concerning this proposal (e.g. for additional information, invitation to hearings, sending of evaluation results, convocation to start grant preparation). The data in blue is read-only. Details (name, first name and e-mail) of Main Contact persons should be edited in the step "Participants" of the submission wizard.

Title   _____      Gender    ○ Male   ⦿ Female   ○ Non Binary

First name*  **Laura**        Last name*  **Kropf**

E-Mail*  **laura.kropf@fau.de**

Position in org.  EU Officer

Department  Referat H3 - Drittmittel und Rechtsangelegenheiten der Forschung   ☐ Same as organisation name

☒ Same as proposing organisation's address

Street  SCHLOSSPLATZ 4

Town  ERLANGEN      Post code  91054

Country  Germany

Website  _Please enter website_

Phone  00491745833713     _Phone 2_    _+xxx xxxxxxxxx_

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## 3 - Budget

| Beneficiary Short Name | PI | Senior Staff | Postdocs | Students | Other Personnel costs | A. Total personnel costs/€ | B. Subcontracting Costs/€ (No indirect costs) | C.1 Travel and subsistence | C.2 Equipment - including major equipment | Consum-ables incl. fieldwork and animal costs | Publications (incl. Open Access fees) and dissemination | Other additional direct costs | C.3 Total other goods, works and services | Total Purchase costs/€ | D. Internally invoiced goods and services/€ (No indirect costs) | E. Indirect Cost/€ | Total Eligible Costs | Requested EU contribution /€ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Fau | 296226 | 430550 | 1020941 | 45000 | 0 | 1792717.00 | 0 | 65000 | 220609 | 60000 | 75000 | 7000 | 142000.00 | 427609.00 | 0 | 555082.00 | 2775408.00 | 2775408.00 |
| Total | 296226 | 430550 | 1020941 | 45000 | 0 | 1792717.00 | 0 | 65000 | 220609 | 60000 | 75000 | 7000 | 142000.00 | 427609.00 | 0 | 555082.00 | 2775408.00 | 2775408.00 |

Section C. Resources (Maximum 8000 characters allowed)

A: Direct personnel costs

One principal investigator position for in total 5 person years at 50% (30 person months) and one senior staff scientist position for in total 4 person years (48 person months), and two postdoctoral positions for in total 10 person years (120 person months) and three student assistant positions for in total 2700 hours (180 person months at 15 hours/month). This request is based on the following calculation:

FAU Erlangen will employ the PI Dr. Kuhl for (5 years, yr1-5, 50%, 20h/w), one senior scientist (4 years, yr1-4, 40h/w), two postdoctoral researchers (each 5 years, yr1-5, 40h/w), and three student assistants (5 years, yr1-5, 15h/m).

PI Dr. Kuhl will oversee and manage the project, coordinate weekly meetings with the group, mentor the senior staff scientist, the two postdocs, and the three student assistants, and oversee the overall execution and timeline of the project. One postdoc and one student assistant will build the family of constitutive neural networks (WP1.1), train and test the networks on soft matter data from single and multiple loading modes (WP1.2,WP1.3), and discover models and parameters for a wide variety of soft matter systems (WP1.4) in years 1-3, compare their models to the new data (WP2.4) in year 4, and help integrate all knowledge into a single universal subroutine (WP3.4) in year 5. The senior staff scientist and one student assistant will perform a series of multiaxial tests on the heart, arteries, muscle, lung, liver, skin, brain, hydrogels, silicone, artificial meat, foams, and rubber; first starting with man-made soft materials, second turning to natural soft materials from a nearby slaughter house, and third testing freshly harvested human tissue samples (WP2.1) in years 1-3. They will discover the best model and parameters to explain the data (WP2.2), learn the parameters for traditional models (WP2.3), and compare newly discovered and traditional models (WP2.4) in years 2-4, iteratively reperform experiments (WP3.3) in years 3-4, and document and integrate all knowledge (WP3.4) in year 5. One postdoc and one student assistant will help build the family of constitutive neural networks (WP1.1) in year 1, and then embed the networks into a Bayesian analysis (WP3.1) and test and train the networks (WP3.2) in years 2-4. They will iteratively discover better models (WP3.3) in years 3-5 and integrate and document all knowledge (WP3.4) in year 5. Student assistants will be supervised by the postdocs and the senior staff scientist, and all will be supervised and mentored by the PI.

All salaries are determined by the general contract for public servants in science in Germany (Tarifvertrag für den öffentlichen Dienst/TVöD) where the PI is paid at level E15Ü, the senior staff scientist at level E13Ü, the postdoctoral researchers at level 13. Student assistants will be compensated according to the guidelines of the FAU Erlangen-Nürnberg (Vergütungstabelle für studentische Hilfskräfte) at 13€/hr plus 28.29% insurance. This yields Total Personnel costs of 1,792,717 €.

B: Subcontracting cost

not applicable

C: Purchase costs

C.1: Travel and subsistence

For all five years, annual attendance of one major international conference (2,500€) for all four scientists (PI, senior staff scientist, two postdoctoral researchers), for in total 50,000 €.

For the first three years, annual visits of Professor Gerhard Holzapfel (TU Graz, Austria), for two project members (2,500€) to train on the triaxial testing device and establish a collaboration on soft matter testing and analysis (WP2.1-WP2.4), for in total 15,000 €.

This yields a Travel and subsistence cost of 65,000 €.

C.2: Equipment incl. major equipment

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This project relies critically on performing novel high-accuracy multiaxial tests in tension, compression, and shear to generate previously unseen soft matter data to train, test, and validate our automated model discovery platform. We will train our team in Institute of Biomechanics at TU Graz, Austria, on the Zwick/Roell triaxial testing device and then purchase the same equipment for our project at FAU Erlangen, Germany. Because this equipment relies heavily on advanced software and electronics, we apply a depreciation time of five years, such that the requested funding is equal to the acquisition costs.

Triaxial testing device: The multiaxial mechanical tests (WP2 and WP3.3) require a triaxial testing device that is capable of performing tension, compression, and shear tests on one and the same sample. While uniaxial tension tests and torsional rheometer shear test are routinely performed at the Chair of Applied Mechanics at FAU Erlangen, these tests require to unmount and remount the samples. Remounting samples into different devices influences the quality of the data, especially when testing ultrasoft materials, liver, brain, hydrogels, silicone, or artificial meat (WP2). It is therefore critical to perform these experiments on a fully triaxial testing device. This system exists and is routinely used at the TU Graz. However, since we will test twelve material systems, heart, arteries, muscle, lung, liver, skin, brain, hydrogels, silicone, artificial meat, foams, and rubber, it is impossible to outsource all the experiments to TU Graz. More importantly, a major outcome of this project is that it will not only discover the best model and parameters, but also the best experiment for each material. We will address this through an iterative discovery of models, parameters, and new experiments (WP3.3). A continuous access to a triaxial testing device is thus mandatory to iteratively perform new tests. Accordingly, a dedicated triaxial testing device has to be purchased specifically for this project.

We have received an offer for a suitable triaxial testing system from ZwickRoell Testing Systems GmbH, Fürstenfeld, Austria, at 220,609.34 € including tax. This system is especially designed to probe soft materials. It consists of two main components, an upper platform moving vertically and a lower platform moving horizontally in two perpendicular directions. The system can not only characterize isotropic, but also anisotropic materials. Specimens are attached to the upper and lower platforms using a thin coating of super glue. Forces in three directions are measured simultaneously with a special load cell on the upper platform. The test setup includes a 256x510mm test frame, load cells with nominal forces of 2N in each direction at a maximum velocity of 100mm/min and a resolution of 0.009um. It also includes four sets of specimen holders for multiaxial testing and a temperature-controlled fluid bath. The device is controlled via the software testXpert III with graphic user interface and a work station. Purchasing this triaxial test system amounts to an Equipment cost of 220,609 €.

C.3: Other goods, works and services

Consumables incl. fieldwork and animal cost: For all five years, the project requests 10,000€/year for consumables for experimental testing to train, test, and validate our models on previously unseen data (WP2.1) and iteratively refine the experiments to reduce the credible intervals of the Bayesian analysis (WP3.3). These consumables including lab coats, gloves, scalpels, containers, tubes, disinfectants and other chemicals for the experimental workflow of tension, compression, and shear tests. The costs for these consumables is 10,000€ per year, amounting to 50,000 €. As a one-time purchase in year one, we estimate 10,000 € for additional storage devices including server hard drives. This amounts to a total Consumable cost of 60,000 €.

Publications: On average five open-access articles per year with on average 3,000 € / publication. This amounts to a Publication cost of 75,000 €.

Other additional direct costs: The financial audit amounts to Other additional direct cost of 7,000 €.

Altogether, this amounts to a total cost for other goods, work and service of 142,000 €.

Remaining characters       3

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# 4 - Ethics & security

## Ethics Issues Table

| 1. Human Embryonic Stem Cells and Human Embryos | | | Page |
|---|---|---|---|
| Does this activity involve Human Embryonic Stem Cells (hESCs)? | ○ Yes | ◉ No | |
| Does this activity involve the use of human embryos? | ○ Yes | ◉ No | |

| 2. Humans | | | Page |
|---|---|---|---|
| Does this activity involve human participants? | ○ Yes | ◉ No | |
| Does this activity involve interventions (physical also including imaging technology, behavioural treatments, etc.) on the study participants? | ○ Yes | ◉ No | |
| Does this activity involve conducting a clinical study as defined by the Clinical Trial Regulation (EU 536/2014)? (using pharmaceuticals, biologicals, radiopharmaceuticals, or advanced therapy medicinal products) | ○ Yes | ◉ No | |

| 3. Human Cells / Tissues (not covered by section 1) | | | Page |
|---|---|---|---|
| Does this activity involve the use of human cells or tissues? | ◉ Yes | ○ No | |
| Are they human embryonic or foetal cells or tissues? | ○ Yes | ◉ No | |
| Are they available commercially? | ◉ Yes | ○ No | |
| Are they obtained within this project? | ◉ Yes | ○ No | |
| Are they obtained from another project, laboratory or institution? | ○ Yes | ◉ No | |
| Are they obtained from biobank? | ○ Yes | ◉ No | |

| 4. Personal Data | | | Page |
|---|---|---|---|
| Does this activity involve processing of personal data? | ○ Yes | ◉ No | |
| Does this activity involve further processing of previously collected personal data (including use of preexisting data sets or sources, merging existing data sets)? | ○ Yes | ◉ No | |
| Is it planned to export personal data from the EU to non-EU countries? Specify the type of personal data and countries involved | ○ Yes | ◉ No | |
| Is it planned to import personal data from non-EU countries into the EU or from a non-EU country to another non-EU country? Specify the type of personal data and countries involved | ○ Yes | ◉ No | |
| Does this activity involve the processing of personal data related to criminal convictions or offences? | ○ Yes | ◉ No | |

| 5. Animals | | | Page |
|---|---|---|---|
| Does this activity involve animals? | ○ Yes | ◉ No | |

| 6. Non-EU Countries | | | Page |
|---|---|---|---|
| Will some of the activities be carried out in non-EU countries? | ○ Yes | ◉ No | |
| In case non-EU countries are involved, do the activities undertaken in these countries raise potential ethics issues? | ○ Yes | ◉ No | |
| It is planned to use local resources (e.g. animal and/or human tissue samples, genetic material, live animals, human remains, materials of historical value, endangered fauna or flora samples, etc.)? | ◉ Yes | ○ No | |

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| | | |
|---|---|---|
| Is it planned to import any material (other than data) from non-EU countries into the EU or from a non-EU country to another non-EU country? For data imports, see section 4. | ○ Yes  ◉ No | |
| Is it planned to export any material (other than data) from the EU to non-EU countries? For data exports, see section 4. | ○ Yes  ◉ No | |
| Does this activity involve low and/or lower middle income countries, (if yes, detail the benefit-sharing actions planned in the self-assessment) | ○ Yes  ◉ No | |
| Could the situation in the country put the individuals taking part in the activity at risk? | ○ Yes  ◉ No | |

| 7. Environment, Health and Safety | | Page |
|---|---|---|
| Does this activity involve the use of substances or processes that may cause harm to the environment, to animals or plants.(during the implementation of the activity or further to the use of the results, as a possible impact) ? | ○ Yes  ◉ No | |
| Does this activity deal with endangered fauna and/or flora / protected areas? | ○ Yes  ◉ No | |
| Does this activity involve the use of substances or processes that may cause harm to humans, including  those performing the activity.(during the implementation of the activity or further to the use of the results, as a possible impact) ? | ○ Yes  ◉ No | |

| 8. Artificial Intelligence | | Page |
|---|---|---|
| Does this activity involve the development, deployment and/or use of Artificial Intelligence? (if yes, detail in the self-assessment whether that could raise ethical concerns related to human rights and values and detail how this will be addressed). | ○ Yes  ◉ No | |

| 9. Other Ethics Issues | | Page |
|---|---|---|
| Are there any other ethics issues that should be taken into consideration? | ○ Yes  ◉ No | |

I confirm that I have taken into account all ethics issues above and that, if any ethics issues apply, I will complete the ethics self-assessment as described in the guidelines How to Complete your Ethics Self-Assessment ⊠

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## Ethics Self-Assessment

| Ethical dimension of the objectives, methodology and likely impact |
|---|
| Explain in detail the identified issues in relation to:<br>          - objectives of the activities (e.g. study of vulnerable populations, etc.)<br>          - methodology (e.g. clinical trials, involvement of children, protection of personal data, etc.)<br>          - the potential impact of the activities (e.g. environmental damage, stigmatisation of particular social groups, political or financial adverse consequences, misuse, etc.) |

Remaining characters            5000

| Compliance with ethical principles and relevant legislations |
|---|
| Describe how the issue(s) identified in the ethics issues table above will be addressed in order to adhere to the ethical principles and what will be done to ensure that the activities are compliant with the EU/national legal and ethical requirements of the country or countries where the tasks are to be carried out. It is reminded that for activities performed in a non-EU countries, they should also be allowed in at least one EU Member State. |

Remaining characters            5000

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## Security issues table

| 1. EU Classified Information (EUCI)[2] | | | Page |
|---|---|---|---|
| Does this activity involve information and/or materials requiring protection against unauthorised disclosure (EUCI)? | ○ Yes | ⦿ No | |
| Does this activity involve non-EU countries which need to have access to EUCI? | ○ Yes | ⦿ No | |
| **2. Misuse** | | | **Page** |
| Does this activity have the potential for misuse of results? | ○ Yes | ⦿ No | |
| **3. Other Security Issues** | | | **Page** |
| Does this activity involve information and/or materials subject to national security restrictions? If yes, please specify: (Maximum number of characters allowed: 1000) | ○ Yes | ⦿ No | |
| Are there any other security issues that should be taken into consideration? If yes, please specify: (Maximum number of characters allowed: 1000) | ○ Yes | ⦿ No | |

## Security self-assessment

| |
|---|
| Please specify: (Maximum number of characters allowed: 5000) |

Remaining characters                    5000

[2]According to the Commission Decision (EU, Euratom) 2015/444 of 13 March 2015 on the security rules for protecting EU classified information, "European Union classified information (EUCI) means any information or material designated by an EU security classification, the unauthorised disclosure of which could cause varying degrees of prejudice to the interests of the European Union or of one or more of the Member States".

[3]Classified background information is information that is already classified by a country and/or international organisation and/or the EU and is going to be used by the project. In this case, the project must have in advance the authorisation from the originator of the classified information, which is the entity (EU institution, EU Member State, third state or international organisation) under whose authority the classified information has been generated.

[4]EU classified foreground information is information (documents/deliverables/materials) planned to be generated by the project and that needs to be protected from unauthorised disclosure. The originator of the EUCI generated by the project is the European Commission.

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## 5 - Other questions

| Academic data |
| --- |

| PhD reference date | |
| --- | --- |
| Earliest date of PhD or equivalent - DD/MM/YYYY | 01/07/2024 |

| Working time commitment | |
| --- | --- |
| Please indicate your percentage of working time in an EU Member State or Horizon Europe Associated Country over the period of the grant. Please note that you are expected to spend a minimum of 50% of your total working time in an EU Member State or Associated Country.* | 50 |
| Please indicate the % of working time you (as PI) will dedicate to the project over the period of the grant. Please note that PIs are expected to dedicate a minimum of working time to the project (30% for AdG, 40% for CoG and 50% for StG). The personnel cost for the PI provided in section "3-Budget" cannot be higher than the percentage indicated here. This information will be provided to the experts at Step 2 together with the section "3-Budget".* | 50 |

| ERC eligibility requirements | |
| --- | --- |
| Please acknowledge that you are aware of the eligibility requirements for applying for this ERC call as specified in the ERC Annual Work Programme, and please certify that, to the best of your knowledge your application is in compliance with all these requirements. Please note that your proposal may be declared ineligible at any point during the evaluation or granting process if it is found not to be compliant with these eligibility criteria.* | ☒ |

| Consent obtained from participants and researchers | |
| --- | --- |
| Please confirm that you (as PI) have the written consent of all participants on their involvement and the content of this proposal, as well as of any researcher mentioned in the proposal on their participation in the project (either as team member, collaborator, other PI or member of the advisory board). We may request you to provide proof of the written consent obtained at any time during the evaluation.* | ☒ |

| Sharing evaluation data | |
| --- | --- |
| If your proposal is not funded (due to budget limitations), do you consent to allow us to disclose the results of your evaluation (score and ranking range), together with your name (as PI), non-confidential proposal title, acronym, abstract and your/your host institution's contact details to national or regional public research funding authorities that run funding schemes specifically for ERC applicants that scored highly in the evaluation? | ○ Yes  ◉ No |
| If your proposal is funded, do you consent to allow us to disclose your name (as PI), non-confidential proposal title, acronym, abstract and your/your host institution's contact details to institutions that are awarding prizes to excellent researchers? | ◉ Yes  ○ No |

This proposal version was submitted by  on Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

# Application forms

Proposal ID  **SEP-210942287**
Acronym      **DISCOVER**

## Excluded Reviewers

*You can provide up to three names of persons that should not act as an evaluator in the evaluation of the proposal for potential competitive reasons.*

## Excluded Reviewers