EU-OPENSCREEN Small Molecule Screening Application Guidelines

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Access

- EU-OPENSCREEN ERIC offers access to the European Chemical Biology Library (ECBL) and the European Academic Compound Libray (EACL), as well as access to academic high-throughput screening facilities in eight European countries (Czech Republic, Finland, Germany, Latvia, Poland, Portugal, Spain and Sweden).
- Assay providers can work with EU-OPENSCREEN and develop chemical tool modulators for their target of interest or lead compounds for the development of drug candidates. For a complete overview of our screening partner sites please visit https://www.eu-openscreen.eu/services/screening.html.
- The ECBL is a chemically diverse library composed of approx. 100,000 small molecules. The pilot library consists of a representative set of 2,464 diverse compounds and 2,464 known bioactives compounds, which are modulating more than 1,000 known biological targets or pathways. The European Academic Compound Library (EACL) is a unique library consisting of compounds submitted to EU-OPENSCREEN by academic institutions (approx. 7,000 small molecules). More information about the EU-OPENSCREEN libraries can be found at https://www.eu-openscreen.eu/services/compound-collection.html.
- For further information and support in the application process please contact us at scientific-projects@eu-openscreen.eu.

Who can apply?

- Researchers from academia, non-profit organisations and industry (including SMEs) can request access to EU-OPENSCREEN screening services.
- Any scientist can apply for access. However, different compound replenishment fees apply, depending on whether the applicant is affiliated to an institute in an EU-OPENSCREEN member country or not (see “Costs and funding” below).

General criteria for application

- Applicants commit to having obtained legal and ethical consent regarding their research, their samples and/ or their data prior to submitting their application.
- Applicants must agree to comply with the access, IP and dissemination policies described in the statutes of EU-OPENSCREEN ERIC (available at https://www.eu-openscreen.eu/fileadmin/user_upload/newsroom_and_downloads/201210_Statutes_V3_FINAL.pdf).
- Applicants must agree to comply with the EU-OPENSCREEN privacy policy and terms of submission (available at https://drive.eu-openscreen.eu/index.php?id=137).

How to submit a proposal

1. Applicants submit their project idea to the EU-OPENSCREEN project management team via a dedicated Contact Form at https://www.eu-openscreen.eu/screening-project-submission.html.
2. Applicants will then be contacted to arrange a short call to discuss the projects feasibility and potential partner sites.
3. Suitable applicants will be asked to complete a full application form by connecting to the ARIA online submission platform (at https://apply.eu-openscreen.eu/submit-proposal/)(for the full application template please see below “Application step by step (via ARIA)”.

- Applications for access can be submitted at any time and will be evaluated on a rolling basis.

Proposal evaluation

- The review process consists of a scientific and a technical evaluation. The application will remain strictly confidential throughout the review process. Reviewers are bound by a non-disclosure agreement (NDA).
- Two independent experts in the field of chemical biology will evaluate the scientific excellence and novelty of the proposal. An exception will be made for those proposals that were already subjected to a peer-review evaluation prior to submission (for instance as part of a funding application). In such a case, applicants will be asked to report the available funding and related grant agreement number during the application process.
- Technical feasibility of the submitted project will be assessed by one of our screening partner sites. Herein, the degree of pharmacological validation of the user assay in a microplate format, the suitability for transfer to a miniaturised automated screening format, and the availability of key assay reagents will be taken into consideration. Moreover, technical reviewers will evaluate the resources needed for the technical implementation of the projects at the chosen screening partner site.
- The complete evaluation is carried out online in ARIA, and evaluation results are visible on the applicant's dashboard (at https://apply.eu-openscreen.eu/dashboard/).
- Incomplete proposals and those that did not pass the minimum threshold/ criteria for acceptance, will be returned to applicants for amendments according to the reviewer's comments. Users will be able to re-submit their revised proposals which will be re-evaluated.

Discussion between applicant and partner sites

If the proposal is positively evaluated, the EU-OPENSCREEN project management team will circulate it to partner sites that were either selected by the applicant, or match the service/ technology requested for the proposed research. At this stage, each contacted partner site will consider the project feasibility (i.e. robustness of the assay, maturity of the assay, other pre-requisites, if applicable) and prepare a cost estimation for the proposed research. The EU-OPENSCREEN team will then put you in contact with the partner sites of interest for further discussions on the project implementation (costs, timelines etc).

Costs and funding

- A compound replenishment fee will apply for the usage of the ECBL. The net replenishment fee is:
    - 15.000€ for academic users coming from an EU-OPENSCREEN member country (Czech Republic, Finland, Germany, Latvia, Poland, Portugal, Spain and Sweden).
    - 40.000€ for academic users from any other country.
    - 42.000€ for users from industry irrespective of the seat of their organization.

If you apply for an open call funded by an EU grant (e.g. CanServ, AgroServ etc) replenishment fees for successful projects may be funded.

- The compound replenishment fee applies for the usage of the full set of the ECBL (~100,000 small molecules), while approx. 5,000 small molecules of the pilot library containing 2,464 bioactive compounds and 2,464 HTS representative compounds are provided free-of-charge. The EACL (~7,000 non-commercially available small molecules) is also provided free of charge.
- EU-OPENSCREEN does not provide funding for the services offered by the partner sites. These costs (e.g. personnel, machine time, consumables, labware *etc*) are discussed with the relevant partner site and depend on the complexity and duration of the project.

If you apply for an open call funded by an EU grant (e.g. CanServ, AgroServ etc) costs of successful projects for instrumentation time, consumables, regular assay readout reagents, and personnel required at the facilities are funded.

- Current funding available can be found here: https://www.eu-openscreen.eu/services/project-funding.html
- Please get in touch with us at scientific-projects@eu-openscreen.eu for grant writing support and/ or help with funding opportunities.

Partner site selection

- Once the partner site is selected, a written project agreement between the applicant and the site has to be signed. The agreement regulates the usage of the ECBL and/or EACL, IP rights, acknowledgments etc.
- Before the start of the project, you will be also asked to prepare together with the partner site a project workplan indicating main project milestones and timelines.

Publication

Users have to acknowledge EU-OPENSCREEN for using the EU-OPENSCREEN Compound Collection in publications and/ or communication activities that contain data which are based on testing the ECBL by using the following sentence: "EU-OPENSCREEN ERIC is acknowledged for providing its Compound Collection for the presented scientific work."

European Chemical Biology Database (ECBD)

Data will be made publicly available through the ECBD for its rapid and safe dissemination and exploitation. Data ownership stays with the user. An embargo period of up to three years on primary screening results can be requested by the applicant within a time frame of six months from the identification of a validated hit. The time should allow publication and/ or patent filing to secure intellectual property. Data are disseminated according to the FAIR data principles (i.e., Findable, Accessible, Interoperable and Re-usable), allowing scientific communities to fully benefit from these research activities. Please read more about our EU-OPENSCREEN database at https://www.euopenscreen.eu/services/database.html. Visit the ECBD at https://ecbd.eu/.

Application step by step (via ARIA)

Click on "Begin a new proposal" and follow the instructions.

1. **Proposal Details** (*required fields).

Complete the fields with details of the desired research:

*mandatory fields

*Research Project Title:** please provide a title for your project.

*Abstract of the scientific background, project description and main objectives:** please provide a concise project overview including target relevance, significance of proposed research and objectives including the expected impact of the research and the potential contribution of a new small molecule for further scientific investigation (max 3000 characters).

Please indicate the partner site of preference, if any. A detailed list and description of EU-OPENSCREEN screening partner sites is available at https://www.eu-openscreen.eu/services/screening.html.
Please select one or multiple options from the drop-down menu. In case of multiple options, please indicate the order of preference in the comment box below.

☐ Institute of Molecular Genetics AS CR, v. v. i. (IMG)

☐ Palacký University Olomouc, Institute of Molecular and Translational Medicine (IMTM)
☐ Leibniz Research Institute for Molecular Pharmacology (FMP)
☐ Helmholtz Centre for Infection Research (HZI)
☐ Fraunhofer Institute for Translational Medicine and Pharmacology (ITMP)
☐ Fundacion MEDINA (MEDINA)
☐ Prince Felipe Research Center (CIPF)
☐ University of Santiago de Compostela (USC), BioFarma Research Group
☐ Institute for Research in Biomedicine (IRB)
☐ University of Helsinki (UH), Faculty of Pharmacy
☐ Institute for Molecular Medicine Finland (FIMM), High Throughput Biomedicine (HTB) unit
☐ University of Turku, BioCityTurku (BCT)
☐ Institute of Medical Biology of Polish Academy of Sciences (IMB PAS)
☐ Institute of Bioorganic Chemistry of Polish Academy of Science (IBCH PAS)
☐ Institute of Molecular and Cell Biology, Innovation and Health Research Institute of Porto University (i3S-LA)
☐ University of Coimbra, Centre for Neuroscience and Cell Biology (CNC-UC)
☐ Karolinska Institute, Department Medical Biochemistry and Biophysics (CBCS-KI)
☐ Umeå University, Chemical Biology Centre (CBCS-UmU)
☐ No preference
Comments (max. 500 characters)

Please indicate the library(ies) of interest. *More information about the EU-OPENSCREEN compound collections can be found at https://www.eu-openscreen.eu/services/compound-collection.html*).

☐ European Chemical Biology Library (ECBL): diversity library (approx. 100.000 compounds)
☐ European Chemical Biology Library (ECBL): pilot library with 2464 bioactive compounds (approx. 5.000 compounds)
☐ Bioactives (2464 compounds)
☐ European Academic Compound Library (EACL): unique collection of academic compounds (approx. 7.000 compounds)
☐ Fragment library

Please indicate the assay of interest:* please select one option from the drop-down menu.
☐ Biochemical/ biophysical assays, ☐ Cell-based assays using cellular systems, ☐ Cell-based assays using complex cellular systems (e.g. human iPS cells, primary human cells, 3D cultures, etc.)

*Please indicate the screening technology(ies) of interest:** Please select one or multiple options from the drop-down menu. In case of other, please specify.
☐ Absorbance, ☐ AlphaLISA, ☐ Alphascreen, ☐ Automatic X-Ray radiation, ☐ Bioluminescence Resonance Energy Transfer (BRET), ☐ Cellular Reporter Assay, ☐ ELISA, ☐ FLIPR-Tetra, ☐ Flow Cytometry, ☐ Fluorescence, ☐ Fluorescence Energy Transfer (FRET), ☐ Fluorescence polarisation, ☐ High Content Screening (HCS), ☐ High-throughput mass spectrometry, ☐ Ion redistribution, ☐ Label free dynamic mass redistribution (DMR), ☐ Luminescence, ☐ Mobility Shift Assay, ☐ NMR, ☐ Radioactivity, ☐ Surface Plasmon Resonance (SPR), ☐ Thermal Shift Assay, ☐ xCELLigence, ☐ xMAP Technology Luminex, ☐ other (please specify).

Relevant publications: * please report the relevant literature (up to 5 publications) including literature describing the screening target and/or assays. For patents, please provide relevant information as an attachment.

Please provide a brief description of your/ PI's CV: please include in this section a brief overview of your education, professional background, and expertise that supports the proposed research. (max 3000 characters)

*Please provide information about collaborators (other than the PI and her/ his research team) on this proposal: ** please include name, surname, position, affiliation and reason for collaboration within this proposal and the expertise each collaborator will contribute (max 3000 characters)

*Please specify the disease area or relevant field of biology in which the target is involved. ** Please select one or multiple options from the drop-down menu (multiple choices are possible):
☐ cancer, ☐ cardiovascular diseases and haematology, ☐ gastrointestinal diseases, ☐ infectious diseases, ☐ inflammation and immunology, ☐ metabolic diseases, ☐ neurodegenerative diseases, ☐ rare diseases (please specify), ☐ respiratory diseases, ☐ other (please specify).

*Description of scientific work including a detailed description of your previous and current work relating to the proposed project and planned follow-up experiments:** please give also information whether the identified molecules shall be used as tool compounds or to build a starting point for a drug discovery project, and the type of experiments planned after screening for hit validation. (max 3000 characters)

Please specify expected start and end date of the screening campaign

Attachments: please upload attachments here.

*Please specify the target:** Please specify (if possible) the target using the identifiers derived from the following databases:

Target TYPE	Where to find 'IDENTIFIER'
Protein	http://www.uniprot.org
Protein Complex	http://www.uniprot.org
Nucleic Acid	http://www.ncbi.nlm.nih.gov/genbank/
Cell line	http://www.lgcstandards-atcc.org
Tissue	http://bioportal.bioontology.org/ontologies/BTO?p=classes
Organism	http://www.ncbi.nlm.nih.gov/taxonomy
Pathway	http://www.reactome.org OR http://www.geneontology.org
None	-

Please indicate the biosafety level for the biological material if known/ any. (max 500 characters)

*Please indicate already known molecules reported in the literature that are active against the proposed target (including CAS-Number (if available)) if known/any: ** please indicate only few of those that might be useful for validating the assay. The CAS-Number can be derived from a structural search on www.chemspider.com, while known biological activities can be derived from a target name search e.g. at www.ebi.ac.uk/chembl/, https://www.probes-drugs.org/compounds, https://probeminer.icr.ac.uk (max. 3000 characters). *Please specify the requested type of active compound (agonist/activator, antagonist/inhibitor (or both), allosteric modulator, or other).** (max. 500 characters)

*Do you confirm that an established bioassay and associated key bespoke reagents developed at lab-scale are available for a primary screen? **

☐ Yes ☐ No (If not, please justify your answer in the comment section below)

Comments (max. 1000 characters)

*Is the assay format compatible with the performance in microtiter plates, allowing the quantitative determination of an optical parameter (e.g. absorbance, fluorescence, luminescence) or high content imaging?**

☐ Yes (if yes, please give details) ☐ No (if not, please comment in the comment section below)

Comments (max. 1000 characters)

Do you need assay development support?
☐ Yes, ☐ No (if not, please elaborate your answer in the next question)

Please provide a detailed description of the screening assay including existing experimental data to prove assay reliability. For more detailed information on HTS requirements please consult the HTS QC General Guidelines at https://drive.eu-openscreen.eu/fileadmin/user_upload/210203_EU-OS_HTS_QC_General_Guidelines_v2.1.pdf please note that the assay should be described in detail by including as much information as available on features such as assay format, readout technology, signal/background ratio, DMSO tolerance, cell lines, signal and background CV, protein, incubation times, reagent and readout stability and Z'-factor. Partner sites can assist in advising on how to obtain assay parameters. Please include raw data for verification (files can be uploaded in the attachments section below) (max 5000 characters).

Attachments: please upload attachments here.

Please describe the complete and detailed protocol of your screening assay, including all sequential steps and required reagents (with CAT no.). Please specify which specific reagents/ components will be provided by you, and their current status of availability (max 5000 characters).

*Please describe the positive and negative controls which are available and, if applicable, how the positive/negative plate controls are used for calculating the Z'-factor:** please comment. (max. 3000 characters)

For hit characterisation, please provide potential orthogonal assay(s) including as much details as possible (e.g. protocols, literature references or other assay details) (max. 3000 characters)

If possible, please provide suggestions to test the selectivity profile of the compounds, and other secondary assays by *including as much detail as possible (e.g. protocols, literature references or other assay details, if available)* (max. 3000 characters)

In case of a successful screening campaign, do you have a follow-up strategy in place (e.g. access to medicinal chemistry expertise, resources etc). Please select one option from the drop-down menu for possible medicinal chemistry support:
☐ I have already a collaboration for further medicinal chemistry support

☐ I don't have a collaboration with medicinal chemistry groups and would like to discuss the EU-OPENSCREEN medicinal chemistry services

☐ I don't have a collaboration with a medicinal chemistry group, and I am currently not interested in the EU-OPENSCREEN medicinal chemistry services;

☐ Other (please specify)

In case you would like to request medicinal chemistry support offered by one of the EU-OPENSCREEN chemistry sites (https://www.eu-openscreen.eu/services/medicinal-chemistry.html), please indicate the site of preference (if any). Please select one or multiple options from the drop-down menu for possible medicinal chemistry support. In case of multiple options, please indicate the order of preference in the comment box below.
☐ Masaryk University (MU), Laboratory of Organic Synthesis and Medicinal Chemistry

☐ Leibniz-Forschungsinstitut für Molekulare Pharmakologie (FMP), Medicinal Chemistry group

☐ Helmholtz Centre for Infection Research (HZI)

☐ Center for Biological Research Margarita Salas (CIB-CSIC), Translational Medicinal and Biological Chemistry

☐ Institute of Biomedicine of the University of Barcelona (IBUB-UB)

☐ Latvian Institute of Organic Synthesis (LIOS)

☐ Institute of Biochemistry and Biophysics (IBB PAS)

☐ University of Lisbon, Research Institute for Medicines (iMed.Ulisboa)

☐ University of Porto, Chemistry Research Centre (FCUP)

☐ Karolinska Institute, Department Medical Biochemistry and Biophysics (CBCS-KI)

☐ Umeå University, Chemical Biology Centre (CBCS-UmU)

☐ no preference

Comments (max. 500 characters)

Please comment on the innovative potential and scientific challenges of the proposed research. (max. 3000 characters)

Please describe gender aspects of the proposed research. Please consider gender balance in your team and integrate the gender dimension in the content of research (max 3000 characters).

Additional attachments: please upload any additional document that might be relevant for the evaluation of your proposal.

Project funding: * please select one option from the drop-down menu.

☐ I have funding available for the proposed project. The project was already subjected to a peer-review evaluation prior to submission (please indicate the project acronym and grant agreement number in the comment section below)

☐ I have funding available for the screening project, but no peer-review evaluation has been undertaken;

☐ I don't have funding available and would like to get support for applying to funding sources

☐ other (please specify)

Comments (max. 500 characters)

*Ethics: does the activity proposed within this project involve research using human cells or tissues (other than from Human Embryos/Foetuses) or any research requiring ethical approvals?**

☐ yes (if yes, please specify), ☐ no

User statement:

☐ *I agree to be the principal researcher of the submitted project as it is described in the present application**.

☐ *I confirm that all relevant authorisations, declarations and accreditation from the competent authority(ies) have been obtained in order to process the above-mentioned samples and data through EU-OPENSCREEN, for the requested purposes, in full compliance with the applicable EU and National laws.**

☐ *All publications resulting from collaborating with, or including data obtained through EU-OPENSCREEN, will be published under Open Access.**

☐ All *legal requirements for exporting/importing materials to/from other countries have been met.**

Other

Do you agree that EU-OPENSCREEN partners may use general information from your project for outreach and reporting purposes (respecting confidentiality of project specifics): in case that you do not agree, please give your explanation in the comment section below.

☐ yes, ☐ no

Comments: (max. 500 characters)

☐ *I agree to sign a mutual confidentiality agreement*

Comments: please add any additional relevant comment and/ or information. (max. 1000 characters)

How did you hear about EU-OPENSCREEN? Please select one or multiple options from the drop-down menu.
☐ EU-OPENSCREEN website, ☐ EU-OPENSCREEN-DRIVE website, ☐ EU-OPENSCREEN newsletter, ☐ NKS newsletter, ☐ other newsletters (please specify in the box below); ☐ via institutional email, ☐ via other European research infrastructures (e.g. INFRAFRONTIER, Instruct, BBMRI, Euro-Bioimaging, etc), ☐ at conferences/ meetings/ scientific events (please specify in the text box below), ☐ LifeScience RI webpage, ☐ ISIDORe webpage ☐ Twitter, ☐ LinkedIn, ☐ other social media channels (please specify in the text box below), ☐ other (please specify).

Comments: please specify the conference/ meeting/ scientific event or social media channels (max. 1000 characters)

2. **Your Research Team**

Choose which local researchers from your lab will be involved in the project.

Principal Investigator: The principal investigator (PI) is a scientist eligible by their institution to supervise the research work. Please note that the user profile will be the reviewer's main source of information about the PI, applicant and team.

Note: If you select a Principal Investigator other than yourself, they will be contacted by email to verify this submission.

Home Lab Colleagues: in addition to the applicant, please indicate other members of your home institution that will be part of the research project. Only scientists mentioned in this section will be eligible to access facilities (if applicable) if the proposal is approved. Please note that the user profile will be the reviewer's main source of information about the applicant and the team.

Note: Applicants (including PI and home lab colleagues which are mentioned in the proposal) should register for an ARIA account prior to the submission of the proposal or login directly if they are already registered with an ARIA account. Once registered, the applicants are required to follow ARIA instructions. Please note that the user profile will be the reviewer's main source of information about the applicant and the team. Please make sure to provide adequate information for evaluation.

3. **Exclude Reviewers** (feel free to exclude reviewers that may have a conflict of interest)

List of excluded reviewers:

4. **Confirm Proposal** (review the information you have entered and submit your proposal for moderation and review).

Summary of your proposal

5. **Accept terms and conditions of submission** (accept terms and conditions of the access route you have selected)

You are about to finalise your proposal submission. Once this step is performed you will not be able to modify any aspect of the proposal.

☐ I confirm that I have read and agreed to all of the terms of submission of my chosen access routes and to the terms on this page.

6. **Proposal submitted** (confirmation of proposal submission)

Your proposal has been successfully submitted. You, the applicant, will be updated on the review status of your proposal. Please make a note of your proposal's PID number as it will be required if you need any future support or information relating to this submission. You can view all your submitted proposals in your dashboard and view and track this proposal by selecting "View Proposal" from your dashboard.