

Call for Joint Research Projects FY 2025
Exploratory Research Center on Life and Living Systems (ExCELLS)
National Institutes of Natural Sciences (NINS)

1. Joint research projects to be proposed

- (1) ExCELLS Project Research [**Exploration of the Boundary between Matter and Life**]
- (2) ExCELLS Project Research [**Spatiotemporal atlas of dynamic structure and function of organelles**]
- (3) ExCELLS Project Research [**Simulation of Living Systems**]
- (4) ExCELLS Project Research [**Creation of Neo-Life Forms**]
- (5) ExCELLS Themed Research (Seeds Discovery)
- (6) General joint research

2. Project term

- (1)(3)(4) From 1st April 2025 to 31st March 2027
- (2) From 1st April 2025 to 31st March 2028
- (5)(6) From 1st April 2025 to 31st March 2026

* ExCELLS participates in The Glyco Science Network; J-GlycoNet (<https://j-glyconet.jp/en/>), and some projects would be handled as part of the J-GlycoNet project. If you are considering an application that includes research in the field of glycoscience, please consult with an ExCELLS researcher or the Strategic Research Administration Office of ExCELLS.

3. Eligibility

A researcher at a research institution, such as a university or a national or public research institute, or whose research capability is approved as equivalent by the Director of ExCELLS.

Graduate students, researchers belonging to NIBB, NIPS, IMS, or ExCELLS are not eligible to apply for this project.

4. How to apply

Proposals for joint research projects must be submitted to ExCELLS online via the Natural Science Collaborative Research Management System (NOUS). NOUS can be accessed from the login page (<https://nous.nins.jp/user/signin>). Before submission, every person must consult beforehand with an ExCELLS researcher who is most relevant to the intended research, regarding details such as the research theme, research plan, visit term, travel expenses, etc.

The names of principal investors in research groups, their research themes, and their contact details are as shown on the website of ExCELLS (<https://www.excells.orion.ac.jp/en>).

Web Application System NOUS Application Manual

https://www.excells.orion.ac.jp/en/application/nous_manual

5. Deadline for proposals

17:00 Monday, 2nd, December, 2024 (JST)

Even after the deadline, you may apply Proposals for General joint research at any time after April 1, 2025. In this case, the submission should be completed at least one month before the proposed project's scheduled start.

6. Determination of proposal acceptance

The Director of ExCELLS will accept proposals based on reviews by ExCELLS Joint Research Project Committee.

7. Date of decision regarding proposal acceptance

Around March 2025

8. Travel expenses

Travel expenses are reimbursed within the budget according to the NINS Regulations for Travel Expenses.

No additional budget will be added after acceptance.

9. Certificate application for individuals working with radiation

When the project accepted involves an experiment using a radioisotope at ExCELLS, all the persons who work under a radioactive condition are strictly required to be registered at ExCELLS.

10. Gene recombination experiments

When the project accepted involves an experiment using gene recombination or gene editing at ExCELLS, the experiment plan should be reviewed and approved beforehand by the Gene Recombinant Experiments Safety Committee of the Three Okazaki Institutes before starting.

11. Animal experiments

When the project accepted involves an animal experiment at ExCELLS, the experiment plan should be reviewed and approved beforehand by the NINS Animal Experimentation Committee before starting.

12. Any projects involving human subjects or specimens obtained from human bodies

When the project you are planning to submit involves human subjects or specimens obtained from human bodies or related fields, it should be approved by the ethics committee of your institution before submission. After approval by ExCELLS, it should be next approved by the Ethics Committee for Human Research of National Institutes of Natural Sciences before starting.

When a project is classified as "clinical research" by the Ethical Guidelines for Medical and Health Research Involving Human Subjects issued by the Ministry of Health, Labour, and Welfare of Japan, please consult with an ExCELLS researcher beforehand.

13. Human genome or gene analysis research

When the project accepted involves an experiment on human genome/gene analysis at ExCELLS, the experiment plan should be reviewed and approved by the Ethics Committee for Human Research of National Institutes of Natural Sciences before starting.

14. Submission of the research report

After the project term, please submit your research report using NOUS within 30 days. More information on the report form and other details are available on the website (<https://www.excells.orion.ac.jp/en/application>).

Please be aware that your research project title, the names of the representative and joint researchers, as well as other details about job titles may be disclosed by the ExCELLS Information and Outreach departments. If all collaborators do not agree with the disclosure of this information, in addition to submitting standard reports you must also submit a separate report [Report (for Press Release)] indicating what information should be redacted.

15. Clarification of supports by ExCELLS

If you publish any outcome of the proposed joint research in academic papers, please be sure to clearly indicate in the Acknowledgments that the work was performed as joint research hosted by ExCELLS.

※Example

This research was supported by Joint Research of the Exploratory Research Center on Life and Living Systems (ExCELLS). (ExCELLS program No.***)

*Please replace *** with the project number, which will be provided when the project is adopted.

16. Handling of intellectual property rights

Intellectual property rights will be handled pursuant to the stipulations of the NINS Regulations on Inventions by Employees (NINS-Regulations No. 12 of 2004).

When the proposal is adopted as a joint research project, the proposal representative and the joint researcher will be assigned the status of "joint researcher" to research the adopted project, and the intellectual property rights of the research will be handled in the same way as those of the officers and employees in the above regulations. (For specific details, please contact us individually.)

17. Accommodations

We have accommodations for use by researchers who participate in joint research.

Researchers who want to use the lodging facilities shall contact an ExCELLS researcher.

18. Childcare support

Depending on availability, researchers who participate in ExCELLS joint research projects can use our onsite childcare facility. Researchers requiring childcare s contact the receptionist (details below) to make a booking at least 6 weeks in advance.

[Contact for childcare booking] NINS Okazaki Administration Center, General Affairs Section
TEL: +81-564-55-7122

19. Promotion of gender equality

NINS actively promotes gender equality. Please consider this when planning and conducting any collaborative project with us.

20. Personal information

The personal information in your proposal shall be used limitedly for tracking research activities originating from your project or for administrative procedures by NOUS.

Be aware that such information in "open" sections in your research reports, like the name and affiliation of the representative researcher, the project title, or other related data, shall appear at the ExCELLS website and in the ExCELLS publicity materials; information in the "closed" sections shall not.

21. Consultant

< Strategic Research Administration Office >

TEL: +81-564-59-5201

E-MAIL: collabo@excels.orion.ac.jp

ACCESS

From areas around Tokyo

Take JR Shinkansen to Toyohashi Station

Take Meitetsu Nagoya Honsen Line from Toyohashi Station to Higashi-Okazaki Station (about 20 min with a Limited Express train)

From areas around Osaka

Take JR Shinkansen or Kintetsu Line to Nagoya Station

Take Meitetsu Nagoya Honsen Line from Nagoya Station to Higashi-Okazaki Station (about 30 min with a Limited Express train)

From the south exit of Higashi-Okazaki station,

- By bus: Take Tatsumigaoka-junkan bus that departs from the No.11 bus station, get off at Tatsumi-kita-1chome (about 5 min) and walk east for about 3 min.

- On foot: About 20 min.

For more details, please refer to the ExCELLS website (<https://www.excels.orion.ac.jp/en/contact>).

Details of the Call for Proposals

ExCELLS Project Research

1. Outline

The ExCELLS aims to answer the fundamental question common to all humankind, "What is life? ". For this purpose, we have established "the Advanced Co-creation Platform" to develop and promote advanced life science research. As part of this platform, the faculty members affiliated with the center and researchers from external research institutions form a research team to work on a project-oriented collaborative research. We refer to this collaborative research and the team as "the ExCELLS Project Research. "

(1) Exploration of the Boundary between Matter and Life

The ExCELLS project research "Exploration of the Boundary between Matter and Life" will observe the interactions between organisms and viruses living in extreme environments and the morphology, function, and dynamics of molecular complexes related to environmental responses, in order to elucidate the essential or minimal mechanisms and principles necessary to maintain biological functions. This project will conduct research for a systematic understanding of the boundary between matter and life. We are calling research proposals for these goals.

We also welcome research proposals based on own original and novel ideas by young researchers.

(2) Spatiotemporal atlas of dynamic structure and function of organelles

The ExCELLS project research "Spatiotemporal atlas of dynamic structure and function of organelles" promotes organelle research, which is expanding with the recent identification of membraneless organelles. We aim to elucidate organization of membrane and membraneless organelles, as well as their reorganization, dynamics conversion, and functional regulation by various cues. In particular, it is currently difficult to isolate membraneless organelles that have undergone liquid-liquid phase separation in cells, so new analytical methods are in demand. Such analytical methods are expected to also contribute to new developments in membrane organelle research. We are calling research proposals based on molecular and cellular biology, imaging, spatial omics, etc., aiming at these goals.

We welcome proposals rooted in biological questions and those based on analysis technology. We also welcome research proposals based on own original and novel ideas by young researchers.

(3) Simulation of Living Systems

The ExCELLS project research "Simulation of Living Systems" promotes research that elucidates the vitality of cells, tissues, organs, and individuals using methods such as mathematical models and numerical simulation. This includes research to simulate and predict behaviors of living systems, and to design and integrate large-scale simulation for living systems. We aim to reconstruct living systems on a computer and understand them as a system to answer questions such as how the proliferation rate of cells is determined, how cells cooperate with surrounding cells to control and optimize the remodeling of tissues and organs, whether life and death can be defined, and what the dormant state is. We are calling for theoretical and computational modeling research proposals in line with this goal. We also welcome research proposals based on measurement and perturbation technologies that provide the quantitative data necessary for the simulation of living systems.

(4) Creation of Neo-Life Forms

The ExCELLS project research "Creation of Neo-Life Forms", aims at developing neo-life forms exhibiting higher-order functions, which nature has not evolved, by using engineered or abiological biomolecules and biomolecular systems. To this end, we are soliciting research proposals aimed at 1) establishing design methods for biomolecules with tailored functions, 2) exploring yet-to-be-discovered biomolecules, 3) designing molecular systems comprised of biomolecules, and 4) developing methodologies for large-scale installation of the developed molecular systems within cells and organisms. We also welcome research proposals from early-career researchers based on their own unique and innovative ideas.

2. ExCELLS researcher in charge

When applying, you must choose one ExCELLS researcher that is participating the ExCELLS project research you wish to participate as an ExCELLS researcher in charge for facilitating your participation in that ExCELLS project research.

For details of lists for the ExCELLS researchers that are participating the ExCELLS project research, please visit the ExCELLS website. (ExCELLS web site URL) <https://www.excells.orion.ac.jp/en/list-of-adoption#1-1>

3. Project term

- (1)(3)(4) From 1st April 2025 to 31st March 2027
- (2) From 1st April 2025 to 31st March 2028

4. Research expenses

Up to 2.0 million yen will be allocated for research expenses during the fiscal year.

ExCELLS Themed Research (Seeds Discovery)

1. Outline

Collaborative research conducted by researchers at universities and public research institutes in collaboration with two or more research groups from ExCELLS on following research themes related to ExCELLS's goal for understanding the design principles of life.

[Research themes]

1. Research and development of basic technology for creation of artificial cells
2. Research on artificial creation of cellular networks
3. Research on adaptation of life for extreme environments
4. Research on DX that contributes to the integration of the molecular-cell-tissue hierarchy

2. ExCELLS researcher in charge

For details of the acceptable research groups, please visit the ExCELLS website.
(ExCELLS web site URL) <https://www.excells.orion.ac.jp/en/list-of-adoption#1-2>

3. Project term

From 1st April 2025 to 31st March 2026

4. Continuing research project

You can continue to apply for research project. Judgement is conducted every fiscal year, and it can be continued for up to three years.

5. Research expenses

Up to 2.5 million yen will be allocated for research expenses during the fiscal year.

General joint research

1. Outline

Joint research projects conducted by researchers from universities/public research institutes in cooperation with faculty members from ExCELLS. We provide opportunities to use state-of-the-art equipment and advanced technical support.

For details of the equipment, please visit the ExCELLS website.

(ExCELLS web site URL) <https://www.excells.orion.ac.jp/en/equipments-for-cooperative-studies>

2. ExCELLS researcher in charge

For details of the acceptable research groups, please visit the ExCELLS website.
(ExCELLS web site URL) <https://www.excells.orion.ac.jp/en/list-of-adoption#1-3>

3. Project term

From 1st April 2025 to 31st March 2026

4. Continuing research project

You can continue to apply for research project. Judgement is conducted every fiscal year.

5. Research and travel expenses

Based on the visit plan stated in the application form, travel expenses will be allocated within the budget of ExCELLS.

Research expenses will not be allocated.