

Research projects

NEXT – Quantum Biology

Profile area: Exploration

Deadline: February 11, 2025 (02:00 PM CET)

This call aims to enhance the scientific understanding of the fundamental mechanisms underlying quantum effects in biological systems. The Volkswagen Foundation invites interdisciplinary collaborative research teams to experimentally validate theoretical hypotheses, thereby increasing the acceptance and recognition of the biological significance of quantum effects.

Within the funding framework "NEXT", the Volkswagen Foundation intends to take up new or little researched topics and research approaches that have a high knowledge potential and relevance for the future. The funding framework is the overarching umbrella for different thematic calls, all of which are intended to stimulate progress within the scientific landscape and to focus on what could be 'next', as the title of the framework indicates.



area of research: natural and life sciences



type of funding: interdisciplinary collaborative research projects with 2-4 PIs



target group: postdoctoral researchers and professors at German universities and other research institutions, international collaborations are possible



up to 2 million EUR



up to 5 years



application possible from mid-January 2025

1 Objectives

A century ago, pioneers of quantum mechanics such as Erwin Schrödinger speculated about the possible role of quantum mechanical phenomena such as entanglement, tunneling and coherence in biological processes. Despite this long-standing hypothesis, the field still lacks conclusive evidence and – associated with this – a broad acceptance of the existence and relevance of quantum effects in biological systems.

The field is particularly challenging due to the multiscale nature of biological structures. Thus, new theoretical models and non-invasive experimental techniques are needed to observe these effects *in vivo* and to ensure that the results are relevant to real biological functions. The solution to this complex and challenging problem lies beyond the scope of a single discipline. Therefore, an integrative interdisciplinary collaboration between biologists and physicists is essential. However, such interdisciplinary approaches are also a challenge in itself.

The scientific and societal relevance of understanding quantum effects in biological systems is profound, as it promises groundbreaking discoveries that could revolutionize our understanding of biological systems. This research undoubtedly involves a high level of risk. The aim of this call for proposals under the funding framework “NEXT” is to provide the necessary impetus to stimulate the further development of this field and take it to the next level of acceptance in the scientific community and beyond.

2 Scope of Funding

The Foundation supports interdisciplinary research projects with 2 to 4 principal investigators (PIs), providing up to 2 million euros for a funding period of up to 5 years.

The call is open to postdoctoral researchers and professors in the natural and life sciences at German universities and other research institutions. Researchers from international institutions can participate as PIs, but the partner(s) from the German institution(s) should take the lead and be substantially involved in the project both financially and in terms of content. It is desirable to have a mix of early career and experienced researchers in the team.

The research team must include expertise in both biology and physics, with additional expertise, in, for example, chemistry or engineering being welcome. In order to improve the chances of success of the project, given the interdisciplinary nature of the field, existing collaborations and previous experience of the applicants in the respective interdisciplinary research are an advantage.

The aim of this call is the **experimental verification** of theoretical hypotheses underlying the existence of quantum effects in biological systems. We are looking for scientifically plausible hypotheses and ideas aimed at elucidating **physiological** and **functional mechanisms**. Pathophysiological mechanisms as well as purely theoretical, methodological or physical/chemical approaches without biological perspective are excluded from funding. Approaches that aim to increase knowledge only incrementally in areas where quantum effects have already been extensively explored are not the focus of this call.

Overheads

State and state-recognized universities and universities for applied sciences can apply for 10 %

overheads. This also applies for foreign universities. For more information on overheads, see "Information on lump sum for overheads", which is provided in our [download-section](#).

Open Science

The Foundation is committed to Open Science ([Open Science Policy](#)). It is therefore expected that project results will be published open access and that data collected will be made available for scientific use via recognized repositories (see [NFDIs](#), [re3data](#), and [RIsources](#)). If data collection is intended, the essential information is to be presented in a data management plan ([basic data management plan](#) of the foundation or a more detailed data management plan of the respective discipline). In case no data is generated in the project, this needs to be explicitly stated in the application.

Note: For the later preparation of the project's research data, in the case of a grant, the offer '[Data Reuse - Additional funding for the preparation of research data](#)' is available.

General Information

The Foundation cannot be held responsible for any obligations entered into prior to the receipt of grant approval.

Applications that have been or are intended to be submitted in this or a similar form to another funding organization will not be processed by the Foundation. Applications that do not meet the formal requirements will not be submitted for review. The Foundation can only award funds to scientific institutions.

3 Application and Selection Procedure

3.1 Time schedule

- **February 11, 2025 (02:00 PM CET)**: Deadline for the submission of proposals.
- **Summer 2025**: Evaluation by an international and interdisciplinary peer-review panel.
- **Expected in November 2025**: Final decision by the Foundation's Board of Trustees.

3.2 Procedure

First, the eligibility and formal criteria of the submitted applications are checked. Proposals that do not meet these requirements will not proceed to the peer-review stage. An international and interdisciplinary review panel will evaluate and discuss the eligible proposals.

The relevant assessment criteria are:

- **innovative nature** of the experimental approach
- **high-quality research approach** with the potential to significantly advance the field
- **high-risk/high-gain** character and potential impact for future research directions
- **excellently qualified team** constellation with regard to the feasibility and realization of the project

Written reviews are not collected. The Foundation's Board of Trustees will make the final decisions based on the panel's recommendations.

4 Application Checklist

4.1 Electronic Application – Instructions

Applications have to be submitted through our electronic application system. The foundation is switching its funding management system to a new provider at the turn of the year. As part of this change, the electronic application system will also be fundamentally revised and optimized. The change will bring a number of improvements that will make the application process more efficient and user-friendly.

Please note that it is currently not possible to prepare and submit applications for this call via the electronic application system. The new system is expected to be available from mid-January 2025. From that date, you will be able to register and submit applications for this call through the new application system.

For further information and any changes, please check the Foundation's website and the guidelines for this call in January 2025.

4.2 Application documents e.g.

All application documents must be submitted in English.

4.2.1 Proposal according to the template file

For your proposal, please use the template available for download from the initiative website.

4.2.2 Budget Plan

Please submit a separate budget plan for each PI; a template will be available in the application system in mid-January. The following costs can be applied for:

- **Personnel costs**
 - PIs, postdocs, PhD candidates, research assistants, student assistants, non-research staff with technical or administrative tasks
 - funding of own position is possible
 - estimate personnel costs in consultation with the institution's administration; if this is not possible, use our average personnel rates
- **Travel costs:** project meetings, conference visits, research stays, workshops
- **Publication costs** (open access)
- **Equipment >10,000 euros** (>200,000 euros 50 % co-funding from institution expected)
- **Other research funds:** laboratory and consumables, equipment <10,000 euros, contracts for work and external services, literature, laptops, software/licenses

4.2.3 Curriculum Vitae of every applicant

Please submit your scientific career in tabular-narrative form. A template is available on the funding initiative's website for this purpose.

4.2.4 Template: Further Information on the Application

The Volkswagen Foundation aims to promote good working conditions in academia. Please submit a personnel concept using the template "[Further Information on the Application](#)". Information on the personnel concept as well as on funding for personnel in general can be found [here](#).

4.2.5 Further application documents

- Data management plan (template available on the website)
- Ethical statement (if relevant)

5 Contact

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6 More Information

- [Website funding initiative "NEXT – Quantum Biology"](#)
- [FAQs for applicants](#)
- [Useful Information and downloads](#)
- [Recommendations for sustainable traveling](#)
- [Influence of generative models of text and image creation in research and in the funding activities of the Volkswagen Foundation](#)