Deutsche Forschungsgemeinschaft (German Research Foundation)
Information for Researchers

Call for Proposals

No. 66 **17 July 2024**

Priority Programme "Genomic Basis of Evolutionary Innovations (GEvol)" (SPP 2349)

In 2021 the Senate of the Deutsche Forschungsgemeinschaft (DFG, German Research Foundation) established the Priority Programme "Genomic Basis of Evolutionary Innovations (GEvol)" (SPP 2349). The programme is designed to run for six years. The present call invites proposals for the second three-year funding period starting in late 2025.

Background and Goals
New experimental and computational techniques provide exciting opportunities to study the evolutionary history of genomes using comparative genomics. These new tools help to reconstruct the emergence of new traits from an integrated, phylogenomic perspective, far beyond the limited perspective of individual model species.

The goal of the Priority Programme is to exploit new methods to reveal in the insect taxon the role of the following in trait evolution:

- coding vs. regulatory changes
- transposable elements
- epigenetic regulation
- gene family evolution
- copy number dynamics
- structural genomic rearrangements, etc.

This is to be accomplished by using multiple cutting-edge quantitative OMICs resources (e.g. genomics, transcriptomics and epigenomics). Eventually, the emerging hypotheses are to be tested by experiments where possible and/or the analysis of data made available in a larger evolutionary context.

Insects are the most species-rich class of metazoans with a huge variation in various traits making them the ideal system to investigate general principles of the evolutionary dynamics underlying major innovations based on a comparative genomics framework. To achieve these goals, researchers from various disciplines such as genomics, bioinformatics, evolutionary ecology, molecular evolution, developmental biology, theoretical biology, taxonomy and genetics will work together. Specifically, we solicit proposals that use a genome-wide comparative approach to reveal the genomic dynamics which underlie the evolution of novel traits. Such traits may include, but are not limited to:

- gain and loss of sociality or mating systems
- evolution of complex systems of communication

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- interaction
- defence and immunity
- developmental and morphological phenotypic innovations
- evolution of sex-related genomic features

We do not encourage projects focusing on single genes and/or single organisms, unless they are embedded in a genome-wide comparative and/or multi-species approach, in particular if they further insights and projects from phase 1. Nor do we encourage studies and approaches with a strong focus on ecological, taxonomic, comparative physiology, population genetics or short-term adaptation. Comparative RNA-seq studies are welcome, provided they compare multiple species and complement other OMICs data (which may exist or are generated in companion projects). We highly encourage projects with a focus on modelling and simulation and/or functional genomic analysis. Further genomes or projects along the lines of phase 1 are welcome provided they are strictly complementary to existing projects.

Structure and Organisation

To enable a tightly knitted network of collaborations, projects must target insects (but may also cover arthropod outgroups, e.g. spiders, for comparison). Exploratory studies, simulations and modelling are explicitly encouraged. Wherever possible, functional genomics (e.g. ATAC-seq, single-cell sequencing, spatial transcriptomics) and/or functional testing of emerging hypotheses using RNAi and/or genome editing should be considered for this round of funding.

To accomplish coherence and coordination, core projects in the Priority Programme will provide bioinformatics support and training, adjusted to complement funded projects, in particular in areas such as

- genomic innovations (e.g. gene family evolution, novel genes, novel motifs, chromosome birth and death, etc.),
- the evolution and diversity of epigenetic regulation (e.g. methylation, histone modification, 3D chromatin structure, etc.)
- functional genomics including prediction of regulatory motifs.

All applicants are strongly encouraged to liaise in tandem projects, for instance by teaming up a rather experimental group with a computational/theoretical group. The purpose of this approach is to propagate and catalyse the usage of novel and cutting-edge computational and experimental techniques across groups and, eventually, the whole German research landscape.

Applicants will need to make a statement (as a cover letter) of how they are planning to contribute to the training of researchers in early career phases in comparative and evolutionary genome analyses (and other OMICs). Also, successful applicants will be expected to engage in establishing a coherent German insect genomics community, which will be linked to a thriving international landscape. Projects may request a substantial amount of funding for sequencing when justified by the scope and quality of the project and its relevance to the entire programme.

The DFG strongly welcomes proposals from researchers of all genders and sexual identities, from different ethnic, cultural, religious, ideological or social backgrounds, from different career stages, types of universities and research institutions, and with disabilities or chronic illness. With regard

to the subject-specific focus of this call, the DFG encourages female researchers in particular to submit proposals.

Potential applicants are kindly asked to send a summary of the intended project(s) (including the applicant(s), preliminary title, abstract of no more than 1500 characters) via e-mail to the coordination office (see links below) by **29 November 2024** at the latest. To allow for mutual information and coordination among applicants, these short summaries will be compiled and made available to all applicants by the coordination office. For more information, please see the Priority Programme's website (see link below).

Proposal Instructions

Proposals must be written in English and submitted to the DFG by **29 April 2025.** Please note that proposals can only be submitted via elan, the DFG's electronic proposal processing system. To enter a new project within the existing Priority Programme, go to Proposal Submission – New Project/Draft Proposal – Priority Programmes and select "SPP 2349" from the current list of calls. Previous applicants can submit a proposal for the renewal of an existing project under Proposal Submission – Proposal Overview/Renewal Proposal.

When preparing your proposal, please review the programme guidelines (DFG form 50.05, section B) and follow the proposal preparation instructions (DFG form 54.01). These forms can either be downloaded from our website or accessed through the elan portal. In addition to submitting your proposal through elan, please send an electronic copy (including your cover letter) to the programme coordinator (see links below).

Applicants must be registered in elan prior to submitting a proposal to the DFG. If you have not yet registered, please note that you must do so by **15 April 2025** to submit a proposal under this call; registration requests received after this time cannot be considered. You will normally receive confirmation of your registration by the next working day. Note that you will be asked to select the appropriate Priority Programme call during both the registration and the proposal process.

The review process will include a colloquium with presentations and discussions between applicants and reviewers, presently scheduled to take place in the first week of September 2025. The date and location of the colloquium will be communicated to all applicants in due course. The envisaged start of funding is autumn 2025.

Further Information

More information on the Priority Programme is available under:
www.g-evol.com

For scientific enquiries please contact the Priority Programme coordinator:
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The elan system can be accessed at:
https://elan.dfg.de/en

DFG forms 50.05 and 54.01 can be downloaded at:
www.dfg.de/formulare/50_05
www.dfg.de/formulare/54_01

Questions on the DFG proposal process can be directed to:
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