

Guidelines for funding research projects within the research programme

“FUGATO-plus: Optimised breeding methods for complex traits in productive livestock”

Excerpt from the relevant announcement

made by the German Federal Ministry of Education and Research

on 25 September 2006

1. Purpose of funding

The increasing need for the provision of high-quality and healthy animal food products, coupled with the occurrence of infectious diseases in livestock, such as avian influenza and swine fever, has meant that society at large has become increasingly aware of issues associated with the quality of food products of animal origin, as well as animal breeding, animal health and animal welfare. They illustrate the interaction between the social and economic significance of high-quality food production on the one hand and animal welfare and animal health on the other. With the establishment of the research programme “FUGATO – Functional Genome Analysis in Animal Organisms” in 2004, the German Federal Ministry of Education and Research (BMBF) recognised the high value-added potential of innovative solutions for problems associated with livestock breeding. Within the scope of FUGATO, competent research networks in academia and industry are deciphering the molecular mechanisms associated with important traits in productive livestock. Important insights, required for the production of high-quality animal food products by optimising livestock breeding, will be gained as a result. FUGATO aims to focus national expertise and build networks in the areas of animal breeding, veterinary medicine and bioinformatics. Focusing efforts in this manner has helped to profile national animal breeding research on a European level. A bilateral cooperation with France has already been initialised.

FUGATO-plus builds on the successful research and funding programme, FUGATO, and takes this research to a new qualitative and quantitative level in the areas of the quality of animal food products, animal health and animal welfare. FUGATO-plus hopes to realise new scientific and economic goals and to focus the critical body of expertise at the research institutions and industrial companies involved. This effect will be strengthened by cooperations with research programmes in other European countries. The economic relevance will be heightened in FUGATO-plus by including more industrial partners from the value chain. Demand-oriented technology transfer via a patent and licensing agency should allow the scientific findings arising out of the funding initiative to efficiently penetrate the livestock farming and livestock breeding industry. The FUGATO-plus initiative will thus make a significant contribution to improving the profitability and competitiveness of animal breeding and animal production in Germany. The programme also hopes to establish scientific links with activities on human, plant and microbial genome research, particularly with regard to the topic of nutrition research. Furthermore, research projects coordinated by junior researchers also form an integral part of FUGATO-plus. This should give new impetus to research in the area of animal breeding and improve career prospects for qualified young scientists within Germany.

The objectives of FUGATO-plus will be realised through a set of research categories within the initiative. These research categories will enable the issues at hand to be optimally funded via individual project structures. A patent and licensing agency working on behalf of FUGATO-plus will be set up to encourage technology transfer and the quick adoption of project findings in the livestock breeding and food production industry. Participating partners from industry will thus benefit in the medium term from a significant innovation impetus.

2. Projects to be funded

Funding is intended for research and development projects focusing on basic and applied research. These projects will use innovative methods to deal with issues on the quality of animal food products, animal health and animal welfare. The gained knowledge will be used to develop economically relevant processes for the production of food, the protection of animal health and the development of breeding strategies. Proposals involving industry that include concrete strategies for the industrial implementation of project results will be given funding priority. Applications should adhere to the category-specific project structure (see no. 2.3). Both individual projects and collaborative projects will be considered.

2.1. Animal species and complex traits

Research projects should focus on the following species of animal: cattle, pigs and poultry and thus strengthen the existing research networks. Practically relevant project proposals dealing with livestock such as sheeps, goats and horses should preferably deal with general questions concerning all breeds of animal. Projects focusing on bees will also be considered for funding.

The following complex traits should be dealt with in each of the areas listed above: hereditary diseases, fundamental stability, infection defense, disease resistance, fertility, ability to adapt and adaptation mechanisms. Projects may also deal with the optimisation of the production capacity of livestock with regard to finding a balance between animal welfare, animal health, the environment and the economy (balanced animal breeding).

2.2. Research approaches and methods

The following scientific approaches should be applied:

- investigation of the genetic mechanisms underlying trait characteristics listed above (see no. 2.1), paying particular attention to the genotype-environment-interaction, non-additive hereditary, epigenetic effects, and the influence of animal nutrition on the expression profile of relevant genes (e.g. foetal programming, diet-dependant development of traits)
- functional phenotyping (transcriptome, proteome, metabolome, physiology, etc.) with the aid of genetic statistical methods and bioinformatics
- systems biology-based methods for modelling complex traits in livestock
- development of methods and procedures for the implementation of marker-assisted and gene-assisted selection (MAS, GAS) in breeding programmes.

2.3. Research categories and project structures

The topics mentioned under no's. 2.1 and 2.2 should be evaluated within the framework of the categories described below:

i) FUGATO-plus Basic Research

This category concerns projects focused on basic research with a high innovation potential that aim to generate results to be put into practice in breeding processes. Envisaged project objectives should have the potential for further development in terms of applications or products. Early involvement of partners from industry is therefore recommended.

ii) FUGATO-plus Applied Research

Practically oriented projects in the pre-competitive stage that significantly contribute to solving issues raised in FUGATO-plus will be awarded grants. The research topics in this category are characterised by their high breeding and economic relevance and should be developed in close collaboration with industrial companies. Furthermore, it is expected that the results will be put into practise.

iii) FUGATO-plus Junior Research Groups

Research projects led by young scientists will also be supported within the framework of FUGATO-plus. Junior research groups who will be based in German universities, non-academic research institutions, as well as in industrial companies, will be considered for funding. A prerequisite for the awarding of a grant is that the respective host institution makes the facilities required for implementing the project available (assignment of basic lab space, other infrastructure) and assists the group leader in all matters involved. A project is only eligible for funding if the host institution employs the young scientists for the duration of the project. It must be ensured that the group's scientific activities are as independent and autonomous as possible from the daily business of the host institution. A corresponding declaration by the host institution is to be submitted together with the project proposal (see no. 3.1.1). Applications will be considered from German or foreign scientists who have already been awarded their PhDs. It is expected that the junior researchers will gain even better scientific qualifications and also produce relevant results that can then be used in practise.

In category i), funding will be awarded to both individual and collaborative projects on the basis of highly innovative research approaches (see also no. 3.1.1). Collaborative projects should preferably be conceived with the involvement of partners from academia and industry. In category ii), collaborative projects involving partners from academia and industry will exclusively be considered for funding. It would be advantageous if the central coordination of these projects lay with a company. Category iii) deals with individual projects. It would be of advantage to match topics here with collaborative projects in categories i) or ii).

3. Procedure

3.1. Two-stage funding procedure

The funding procedure consists of two stages.

3.1.1. Submission and selection of project proposals

In the first stage, project proposals must be submitted to PtJ before 31.01.2007 at the latest (date of postmark) in both written and electronic form. In the case of collaborative projects, project proposals should be submitted with the approval of the envisaged collaboration coordinator. Since an international appraisal procedure is foreseen, project proposals should be submitted to PtJ in English.

Project proposals for individual projects must be 10 A4 pages max. and no longer 25 A4 pages if they are collaborative projects. Proposals that extend beyond this will not be taken into consideration. It is recommended that project proposals be structured as follows and that reference be made to funding criteria specified under no. 2 and further below:

1. Title of project

2. Applicant(s)

- address of institution applying
- name of project leader with business address, telephone, fax, email address and qualifications
- partners involved, if applicable (institution/working groups with responsible project leaders, business address, telephone, fax, email address and qualifications)

3. Summary

4. Project description

- 4.1. Work plan
- 4.2. Division of work/cooperations with third parties,
- 4.3. Contribution to the objectives of the funding programme and assignment of research categories i) – iii)
- 4.4. Milestone planning
- 4.5. Proof of relevant experience and qualifications
- 4.6. Key areas of relevant work to date, list of most important relevant publications within the last two years
- 4.7. Existing infrastructure and/or purchased materials and services that form part of the project proposal
- 4.8. Need for funding

5. Structured financing plan

The need for the funds applied for must be evident from the work programme and should be justified in detail. There is no funding available for basic equipment.

5.1. Personnel

Criteria for each proposed staff position:

- qualifications (e.g. MTA, student assistant or research assistant, PhD student, postdoc scientist)
- salary grade according to TVöD (or comparable pay grade) or hourly rate of pay
- envisaged duration of employment
- brief job description with reference to the work programme

5.2. Essential administration expenses

e.g. for consumables, travel, funds for patent right applications (application, patent attorney), material for the organisation of workshops. Requirements must be justified.

5.3. Project-specific equipment with justification

6. Declaration by the host institution

For project proposals in the *FUGATO-plus Young Scientists* category, a declaration by the host institution is required pursuant to the requirements laid down under no. 2.3 iii).

All project proposals must describe their application potential in breeding processes, as well as possible implementation strategies for project results. If partners from industry are to be included in project proposals under categories i) – iii), we recommend that you first contact companies who are members of the Business Platform FUGATO (IVF) (details available online at www.fugato-forschung.de). Networks with partners working on other national genome programmes and nutrition research, networks with partners involved in the previous FUGATO programme, and networks that arise as a result of work on general questions concerning all breeds of animals should also be detailed.

The project proposals received will be assessed with the participation of the scientific advisory committee SAC FUGATO-plus on the basis of the following criteria:

- contribution of the project to realising the objectives of the funding guidelines
- scientific and technical quality, international competitiveness and novelty of the research approach
- high scientific innovation potential with a preferably direct, practical significance. The substantial involvement of industry considerably increases the chances of funding, provided all other criteria have been fulfilled.
- scientific expertise of the applicant, prospects of success with regard to achieving the research goals set, description of the patent situation and a patent rights concept
- quality of the project consortium and project management
- chances of successfully transferring the research results into technologies or products; implementation potential of the research results
- economic significance of the project for the companies involved.

The two latter points are a priority in terms of evaluation criteria for project proposals submitted under category ii).

Project ideas suitable for funding will then be selected on the basis of this evaluation. The result of the selection process will be communicated in writing to those involved.

3.2.2. Submission of formal funding applications and decision-making process

In the second stage, those candidates whose project proposals were positively evaluated will be asked (in the case of collaborative projects, with the approval of the envisaged collaboration coordinator) to submit a formal application for funding which will form the basis for the final decision after a final review.

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