



Molecular Regulatory Networks of Life (R'Life)

Academy Programme 2020–2023

Programme memorandum

1. Background

The aim of the Molecular Regulatory Networks of Life Academy Programme (R'Life) is to broaden our understanding of the function and structure of the genome. The programme provides more information on how various mechanisms create links between different parts of the genome and gene networks and how these connections regulate the functions of life. How do individual differences in genomes, for example, affect the ability of the body to adapt to acute and chronic stress? And what then happens inside the organism in terms of its internal molecular mechanisms? How do the mechanisms that regulate the interaction between the genome and environmental factors affect the phenotype?

There will be two separate calls for applications under the programme. The main call is limited to research consortia in order to enable new kinds of approaches and interdisciplinary cooperation. The call for consortia will be accompanied by an additional call targeted at researchers who already have funding from the Academy of Finland. The additional call is designed to promote the adoption of the latest scientific methods in ongoing projects. More detailed instructions for the additional call are provided in Appendix 1 of this memorandum.

2. Objectives

- The programme seeks to broaden our understanding of the regulatory networks of organisms instead of individual molecular changes.
- The programme aims to generate new information on the key regulatory mechanisms of cells, individuals and/or populations through the latest advances in molecular biology.
- The programme promotes the adoption of the latest scientific methods, more efficient use of existing research infrastructures and interdisciplinary cooperation.

3. Themes

The R'Life Academy Programme focuses on basic research in order **to produce comprehensive key information on the networks that regulate the function of cells, tissues and individuals**. There is already a lot of research knowledge on the function of the genome, for example, but most of it is fragmented and focused on a specific part of the (epi)genome or information layer, or the regulation of a specific gene.

Comprehensive knowledge can be built **by combining new molecular biology and bioinformatics tools**. The study of regulatory networks is made possible by significant advances in genome-wide research methods that delve into different layers of information. Research into the functioning of regulatory mechanisms can be based on modern and efficient genomic and epigenomic modification methods and combinations of, for example, omics, cell and tissue models and in-vivo plant and animal models. The programme's research designs thus also make use of regeneration and stem cell biology techniques. The use of genome-wide databases enables the integrative study of endogenous and exogenous factors. Useful tools include big data analysis and artificial intelligence, which help interpret new phenomena.

The programme's consortia enable close cooperation between researchers of different disciplines, which makes it possible to explore new perspectives and, through a broader study of phenomena, achieve **scientific breakthroughs in fundamental questions of biology**. In addition to encouraging the implementation of ambitious projects, the funding is designed to call attention to the opportunities presented by existing research infrastructures. These national and international equipment, information networks, databases, data resources and services have the potential of making a significant contribution to research projects, which is why project teams are expected to make use of the opportunities that the infrastructures present. Another aim of the programme is to strengthen the ethical dimension of research and compliance with the principles of responsible research.



4. Impact

The programme will broaden our understanding of the regulatory networks of the genome. This will promote research, development and innovation in a range of fields from plant and animal breeding to the study of multifactorial traits and responses and personalised medicine.

The numerous new techniques developed in this field provide a basis for many biological, medical and biotechnological applications. Gene editing and editing the regulatory regions of genes have proved to be major technological steps forward, which make functional testing of various scientific hypotheses possible in practice.

Finland has a strong tradition in the study of genetics and molecular and developmental biology, and these disciplines benefit from the extremely rapid development of new techniques. The R'Life Academy Programme encourages and promotes the adoption of both new research methods and new scientific approaches across the Finnish research community and thereby contributes significantly to renewal in these disciplines. The programme enables a major leap forward in bioscientific research.

5. Implementation

5.1 Consortium call and additional call

There will be two simultaneous calls for applications under the R'Life Academy Programme, both of which will open in April 2019. The main call is for research consortia, and the second additional call is targeted at researchers who already have funding from the Academy. Applications for funding cannot be submitted under both calls simultaneously. More detailed instructions for the additional call are provided in Appendix 1 of this memorandum.

5.2 Funding

The Molecular Regulatory Networks of Life Academy Programme (R'Life) is a research programme funded and coordinated by the Academy of Finland. Consortium projects funded under the main call will be funded for four years (2020–2023) and projects funded under the additional call for three years (2020–2022). The funding granted from the main call supports multidisciplinary research by research consortia, while the additional call is designed as further support to Academy-funded research projects. The programme's funding budget comes to a total of 8 million euros: 6 million euros for the consortium call and 2 million euros for the additional call. Consortia will be granted a maximum of 1 million euros and consortium subprojects 70 per cent of the total sum applied for. The goal is to fund 6–8 consortia. In the additional call, individual projects will be granted a maximum of 250 000 euros. The programme will later be supplemented with an international call (or several calls), whose funding budget will be decided separately.

5.3 National and international cooperation

Finland boasts several top research units and numerous cutting-edge bioscientific research groups especially in the fields of genetics, genomics, genetic regulation and developmental biology, for which the programme provides an opportunity to adopt the latest techniques. The goal of the is to make Finland more appealing to researchers who have been educated in international, state-of-the-art environments and to promote the mobility of Finnish early-career researchers.

Extremely rapid progress has been made in respect of the research topics and techniques involved in the programme, and it is important for Finnish science to stay abreast of the developments. National and international collaboration can pave the way for important scientific discoveries particularly in cell and molecular biology as well as developmental and stem cell biology.



6. Application guidelines and review criteria

The main call of the programme will provide funding for four-year consortium projects. The call has two stages. At the first stage, applicants submit letters of intent including short plans of intent (guidelines provided in connection with the Academy's April 2019 call). The call for letters of intent will open in April 2019. The funding can be applied for by consortia composed of two or several research teams. The consortium parties may represent one or several research organisations. The applicant may be assigned as a consortium PI in only one application.

The programme's steering group will make a proposal to the programme subcommittee appointed by the Academy Board on the highest quality projects that would best match the programme objectives based on the letters of intent. To be successful in the call for letters of intent, consortia will need to meet the programme objectives. The consortia that proceed to the second call stage will submit their full applications in September 2019.

The guidelines for full applications and the call dates will be published on the Academy of Finland's website. The full applications will be reviewed by a panel of international experts. Based on the scientific review of the applications and considering the programme's objectives, the steering group will prepare a proposal to the programme subcommittee on the projects to be funded. The subcommittee will make the funding decisions in November 2019 at the latest.

Applications will be reviewed following the general criteria applied to Academy Programmes (see [Guides for reviewers](#) on our website).

The programme's additional call will provide funding to individual, three-year research projects. The additional call is a single-stage call. Applications for funding cannot be submitted under both programme calls simultaneously. If an applicant applies for funding from both calls, we will only review the first application to arrive. Applications that are not reviewed will not be eligible for funding. More information about the additional call is provided in Appendix 1 of this memorandum.

7. More information

This programme memorandum is available as a PDF download at www.aka.fi/rlife.

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Appendix 1: Molecular Regulatory Networks of Life Academy Programme (R'Life) – additional call

Call

There will be two simultaneous calls for applications under the R'Life Academy Programme: a main call for research consortia and an additional call. Both calls will open in April 2019. The additional call has a funding budget of 2 million euros. Applications to the additional call may be submitted by researchers who have ongoing Academy funding at the closing date of the call (24 April 2019).

Themes, objectives and review criteria

The additional call supports the objectives of the R'Life Academy Programme. The idea of additional call is to provide additional funding to highly rated researchers and research teams who already have funding. The funding is designed to support researchers in adopting the latest research methods in their fields.

In the research plan, the applicant must describe the research to be carried out with the additional funding, such as the method or resource and how it will benefit the ongoing project, its objectives and research questions. The applicant must also justify the novelty value of the research and its significance for the R'Life programme. To be successful in the call, applications will need to match the programme objectives.

Who is eligible to apply?

The funding may be applied for by researchers who have ongoing Academy of Finland research funding at the closing date of the call, 24 April 2019. This may be a person who has received personal funding from the Academy for a research post as Postdoctoral Researcher, Academy Research Fellow, Clinical Researcher or Academy Professor. The funding may also be applied for by a project PI or consortium subproject PI with funding from one of the following Academy-funded or Academy-reviewed funding schemes:

- Academy Project, targeted Academy Project or project within Academy Programme
- Centre of Excellence funding
- Flagship programme
- Strategic research programme
- international project (not mobility grant).

Funding

The funding is granted to individual projects, not consortia. Applications for funding cannot be submitted under both R'Life calls simultaneously. If an applicant applies for funding from both calls, the Academy will only review the first application submitted. Applications that are not reviewed will not be eligible for funding.

In the additional call, individual projects will be granted a maximum of 250 000 euros. Funding is provided for three years, and the funding period starts on 1 January 2020.

