



SWEDISH FOUNDATION *for*
STRATEGIC RESEARCH

SSF Call for Proposals

SSF Multidisciplinary Research Center Complex Cellular Systems (C-Cell)

The Swedish Foundation for Strategic Research (SSF) announces 60 million SEK in a national call for proposals for a Multidisciplinary Research Centre (MRC) that meets the highest international scientific standards. The call aims to stimulate truly multidisciplinary research collaboration between academia, research institutes, industry, and society.

SSF intends to approve one (1) MRC application in the field of Complex Cellular Systems (C-Cell).

The MRC will be granted up to 40+20 million SEK in total including overhead costs for a period of six years. Full funding will be contingent upon a successful midterm evaluation.

SSF Multidisciplinary Research Centers (MRC)

Multidisciplinary research is defined here as coordinated research efforts in which several scientific competences, presumably not all from the same department or faculty, each outstanding in their field, work together to solve a major societal problem.

A Multidisciplinary Research Center (MRC) should be characterized by the added scientific value that arises from multidisciplinary research. The potential for an MRC to find new solutions through multidisciplinary and synergistic approaches is a key evaluation criterion.

The research by the MRC should be based on a clear scientific question centered on gaps in knowledge related to a significant problem and opportunity. Moreover, the MRC should have explicit plans for the implementation and/or knowledge transfer of research results into industry and society in a long-term perspective.

Another MRC characteristic should be its strong presence in international research initiatives (*e.g.*, *EU Horizon Europe*), leveraging the SSF-funding with international funding for increased thrust. The potential for an MRC to constitute an internationally leading research center is a key evaluation criterion.

Aims and Scope

This call aims to create enhanced conditions for novel multidisciplinary research on Complex Cellular Systems (C-Cell). The establishment of a Multidisciplinary Research Center with this orientation should consolidate the necessary knowledge base and establish Sweden at a leading international front position in the field.

Complex cellular systems are composed of multiple cell types including components of the extracellular matrix interacting as three-dimensional structures of the tissues and organs they represent. In contrast to regular *in vitro* cell cultures, C-Cell allows for organ-specific physiologically relevant responses and cell interactions more similar to *those in vivo*, both regarding health and disease. Human disease models based on Complex Cellular Systems are becoming increasingly important to dissect disease processes, progress, and responses, and as tools for diagnosis and in drug development processes. These models have a range of scientific advantages over animal models and traditional cell cultures – such as a higher relevance and predictive value with the use of human material – and modelling of complex cellular interactions. Therefore, the models are an important contribution to the principles of the 3Rs (Replacement, Reduction, and Refinement) embedded in legislation and regulations on the use of animals in scientific procedures.

An example of Complex Cellular Systems are organoid models, which are self-organized three-dimensional cell constructs that are usually derived from stem cells that can mimic the key functional, structural, and biological complexity of an organ or a tissue. Organoid models have been developed for a range of tissues, aiming to recapitulate their physiology *ex vivo*.

The development of Complex Cellular Systems opens for ground-breaking advances in personalized medicine, making it possible to, e.g., choose the most effective treatment for a specific patient using a collection of cells in a complex system from that individual patient. As such, the field also contributes to the Agenda-2030 goal to “ensure healthy lives and promote well-being for all at all ages”.

In this call, SSF aims at bringing researchers from different fields together to establish an interdisciplinary melting pot necessary to make technological advancements answering key biological questions by new measures placing Sweden in a leading position within Complex Cellular Systems research internationally. The proposal should clearly state which knowledge gaps will be addressed and how, as well as specify the combination of technologies and competences needed to achieve this. Multidisciplinarity is at the core and its added value should be clearly outlined in the proposal. SSF encourages innovative, multidisciplinary collaborations not already established.

The proposed research must have a clear relevance to human health and disease. Development of novel Complex Cellular System models is a prerequisite for funding, i.e., it is not sufficient to merely utilize an already existing model. Furthermore, the model must consist of multiple cell types. The proposal must state how the model is going to be applied, a solid plan for in which ways it will be utilized within the MRC C-Cell, and how it goes beyond the current state-of-the-art. It is strongly encouraged that the proposed model aims at recapitulating the *in vivo* tissue architecture and reciprocal interactions with the extracellular matrix for authentic representation. Increased understanding of the inherent micro-physiology as well as measurable responses to drug treatment or effects of diverse delivery systems will be an advantage.

Eligibility

An MRC consists of applicants from one hosting Higher Educational Institution (HEI) and applicants from one to three other HEIs or research institutes (RI), supported by at least two industrial and/or societal partners.

Each of these organizations may be represented in maximum two (2) applications in this call.

The main applicant (Center Director) must have international standing as a research leader in her/his field, must be actively employed by the hosting Swedish HEI to at least fifty percent of full time and must be prepared to assume operative responsibility for the MRC during the entire grant period.

The co-applicants are the researchers employed to at least fifty percent of full time by the collaborating HEIs/RIs, including the hosting HEI. The total number of co-applicants should not exceed seven (7) persons, and gender equality should be considered in the team.

Applications with industrial and/or societal partners registered in Sweden are prioritized.

International research organizations may participate only by their own means, apart from international researchers that becomes employed by the MRC through the participating Swedish HEIs/RIs.

The MRC must have a Governing Board, approved by SSF, having a majority of industrial/societal representatives. The Center Director shall be part of the Board. The Board, with a chair from industry/society, shall have the mandate to recommend SSF to terminate the funding, in whole or in parts, or to change the management of the MRC. A tentative Board should be stated in the application.

The MRC must assign an international Scientific Advisory Committee (SAC), proposed in the application.

A provisional Center Agreement signed by all partners will be required from the consortium behind the application, if and when it is selected for a hearing. The period for this contract is recommended to be at least three years, *i.e.*, until the mid-term evaluation.

While SSF's statutes stipulate that supported research must be in the realms of natural science, engineering sciences, or medicine, it is appreciated that a higher impact of the concerned MRC may come from collaboration with research initiatives relating to society, including humanities, economy, policy making, operation health and safety, and other science branches complementary to what SSF has for statutes. The proposed MRC should describe how it is connected to those complementary research branches as for liaison or formalized direct collaborations. This is an important criterion for SSF:s evaluation of proposals. Likewise, successful parties should be connected internationally, for example to European Commission initiatives.

Applications not conforming to the above eligibility criteria will not be considered by SSF. It is the responsibility of the main applicant to inform all co-applicants and industrial/societal partners, and to check the proposal for compliance before submission.

Grant

SSF-funding is available only to Swedish universities or research institutes, where one HEI is the administrative organization for the grant. The industrial/societal partners and international partners must support the MRC by their own means.

The proposed budget from SSF shall be up to 60 million SEK in total during six years.

The budget allocation from SSF will be a decision of 40 million SEK in conjunction with the MRC's start. Up to 20 million SEK will be decided and distributed by SSF after a mid-term evaluation. Three percent (3%) of the grant will be reserved by SSF for supporting utilization/exploitation efforts of the research results proposed by the Center Director.

The universities/research institutes can use the grant for salaries (senior researchers, postdocs, PhD students, *etc.*), research tools/infrastructure, and running costs according to the needs of the MRC. The application must demonstrate how the SSF grant will be adequately distributed among the HEIs/RIs, *i.e.*, with adequate budget for each organization. It must also clearly display any co-funding (in-kind, cash, lab usage, research infrastructure, *etc.*) from the industrial/societal partners.

A maximum of twenty-five percent (25%) of the overall grant may be used for salaries for the Main applicant (Center Director) and/or for the Co-applicants (*i.e.*, these individuals) taken together. However, no more than twenty-five percent (25%) of the salary of each applicant (*i.e.*, the same individuals) may be covered by the SSF grant. A maximum overhead cost of twenty-five percent (25%) is allowed.

Proposal and submission

A complete application must contain, among other data specified in SSF's online application portal, a full description of the MRC research plan and details of the relevant and complementary expertise of each of the participants. The multidisciplinary approach to the research problem should be clearly described.

Each proposal must clearly describe the international state of the art within the research area(s) addressed, and present how the MRC would be competitive. In addition, the proposal should clearly state the resources available and to demonstrate that the proposed participating organizations will be effective to reach the MRC goals. The plan and potential for international cooperation and leverage should be clearly described.

The application should contain a clear account of the strategic significance of the research, including an IPR plan and a plan for utilization/exploitation of the results in Sweden during the MRC's research operations as well as after completion of the MRC.

The MRC participants must themselves propose a concise set of long/short term Key Performance Indicators (KPI) upon which the MRC can be evaluated in the mid-term evaluation. These indicators must cover scientific, managerial, and business qualities and substance as well as strategic relevance impact. Each of the KPIs should be elaborated in the research plan and tightly connected to the MRC goals.

The following KPIs are mandatory for all MRCs:

- the volume of co-authored papers by the collaborating research groups and partners
- mobility in person-years between the collaborating research groups and partners
- international presence, *e.g.*, grants from EU and/or other international initiatives (state also the starting values of these for base line).

The application should be elaborated jointly by all the MRC participating organizations and must be submitted by the Centre Director (main applicant). All participating organizations must attach Letters of Intent (LoI) signed by the highest management level in the organizations (head of research, or equivalent). The vice-chancellor of the hosting HEI must also sign the application.

Each participating organization may be represented in maximum two applications.

The proposal must be written in English and submitted via the SSF online application portal at: <http://apply.strategiska.se>. Note that in order to get a complete view of all data required for submission it is necessary to consult the portal. Please log on to the portal well in advance of the deadline. Please also submit the application in due time before the deadline. When the application is submitted, the system will reject it if some data fields are missing. It is possible to submit and re-submit as needed before deadline.

Applications must be submitted by 5 March 2024, 14:00 hours CET. No additional material will be considered after this deadline, unless explicitly asked for by SSF.

Evaluation

Applications will be assessed by an evaluation committee and a hearing committee consisting of national and international experts from industry, academia, and research institutes as well as by international peer reviews.

The applications will be evaluated using the following criteria:

- Conformity to scope and eligibility as outlined above.
- Constituting an internationally leading research constellation.
- Scientific quality; originality, strengths, weaknesses, and feasibility of research plan.
- Added value of multidisciplinary and synergistic approaches.
- Degree of internationalization.
- Strategic relevance to Swedish industry and/or society as well as explicit long-term impact of the proposed research.
- Qualifications of the applicants and composition of the research team, including previous achievements (science, innovation, and entrepreneurship), international experience and networks, gender balance and leadership/management.
- Level of engagement from all participating organizations, including evidence of anchoring of the application to top management (including Letter of Intent, Lol).

Timetable

Last date for applications: 5 March 2024, 14:00 hours CET

The applications will be evaluated in stages:

- Selection of maximum three applications for hearings. **April/May 2024**
- External peer review. **Summer 2024**
- Hearings. **September 2024**
- Selection of one application for funding. Contract negotiations. **September 2024**
- Decision by the SSF Board. October **2024**
- Center start. **1 January 2025.**

Please note that the Foundation is subject to the Principle of Public Access to Official Records (*Offentlighetsprincipen*). Thus, applicants should avoid submitting material that they do not wish to be made public, e.g., information that could prevent patenting.

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