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**CHALLENGE  
PROGRAMME 2020  
NATURAL AND  
TECHNICAL SCIENCES**

Information and guidelines for applicants

2020

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## Grant information

### Grant capital:

Up to DKK 10 million per year for up to 6 years, for a total budget of DKK 30-60 million per grant.

### Application form opens:

14 October 2019.

### Application deadline:

Stage 1: 12 December 2019, 2 pm (CET).

Stage 2: 23 April 2020, 2 pm (CEST).

### Applicant notification:

Stage 1: March 2020.

Stage 2: October 2020.

### Earliest start date:

1 January 2021.

### Latest start date:

31 December 2021.

### Review committee:

Applications will be evaluated by an independent, international committee of scientific experts.

The committee will be posted on the Novo Nordisk Foundation's website.

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# 1 CHALLENGE PROGRAMME 2020

## 1.1 PURPOSE

The vision of the Novo Nordisk Foundation Challenge Programme is to contribute to the development and strengthening of the Danish research environment within biomedicine, life science research promoting sustainability and the natural and technical sciences. The solution to many challenges within biomedical, biotechnological and natural sciences requires time, resources and collaborative efforts. The Challenge Programme provides exceptional researchers the possibility to establish smaller, collaborative research centres with a unifying vision and mission, and long-term funding that will allow scientific depth and focus and facilitate synergy between the research partners.

The goal of the Challenge Programme is to make substantial contributions to the funding needed for overcoming challenges in global health, technology and the environment. The programme is a strategic effort targeting specific challenges within annually selected research themes.

## 1.2 ELIGIBILITY

The Challenge Programme supports excellent research leaders from 1-4 research groups, in addition to the main applicant, that will establish and collaborate in a dynamic centre structure to solve a shared research question within the Challenge theme.

The scientific discipline and the location of the groups are not restricted, but the host institution must be located in Denmark. The research institutions of the co-applicants can be located in Denmark or abroad. It is critical, however, to ensure the best possible interaction between the partners. The programme leader who is the main applicant should be at least 50% employed at a Danish university, hospital or other non-profit research organization. Levels of association of less than 50% at the Danish institution must be justified. Additionally, the programme leader must be a principal investigator with documented experience in management and leadership of larger research programmes and should be an outstanding scientist within the relevant research theme at international level. Industry collaboration is possible within the Challenge Programme, however, funding cannot be awarded to the industrial partner(s).

Awarded funding from another Novo Nordisk Foundation grant does not preclude the applicant from receiving a Challenge Programme grant.

## 1.3 RESEARCH FIELD

For the 2020 application round, the Challenge Programme within the Natural and Technical Sciences is seeking to support outstanding scientists working within the following theme:

- **Quantum simulators for unravelling complex processes in nature**

The research must be in-depth, but can be cross-disciplinary, and should not be considered limited to any specific research methodology or discipline.

**The programme is focused on developing, exploring and exploiting quantum simulators to address challenges, particularly in the life sciences or biotechnology, that lie beyond the capabilities of modern-day supercomputers.**

Examples include:

- Programmes seeking to develop and realize large-scale quantum simulator platforms, experimental or theoretical, to facilitate simulations of complex systems.
- Programmes focused on quantum simulation of biologically or biotechnologically relevant systems, e.g., of molecules or proteins in relevant environments and at relevant timescales.
- Programmes seeking to develop a quantum simulator platform that can progress understanding of quantum phenomena in biology or biomolecular systems, for instance in photosynthesis, cellular respiration, olfaction or vision.
- Programmes seeking to employ quantum simulators for the understanding and development of materials useful for, e.g., photovoltaic cells, energy storage or biosustainability.

**Please note, that the examples mentioned above are neither exhaustive, nor limiting, and should be seen only as inspiration for this Challenge Programme theme.**

## 1.4 DIALOGUE MEETINGS AND THEMATIC SYMPOSIA

To facilitate network building and knowledge-sharing, the grant recipients within each theme are expected, together, to facilitate two thematic symposia during the grant period. The thematic symposia will take place at the Novo Nordisk Foundation. The foundation will provide a separate budget and cover the costs of the symposia.

**Please note:** These symposia **should not** be included in the application budget.

To follow the progress of the individual Challenge research programmes, the Foundation will hold dialogue meetings with grant recipients every second year. Grant recipients will receive information regarding the timeline and format of these meetings.

## 1.5 FUNDING

The project can be funded with up to DKK 10 million per year for up to 6 years, for a total budget of DKK 30-60 million per grant.

Funding may be requested for:

- Salaries, but not own salary for main or co-applicants.
- Operating expenses – including materials, consumables, and purchase of services.
- Equipment – purchase of equipment that, at expenses above DKK 100.000, must be located at the host institution for the duration, and following the termination, of the project.
- Infrastructure required for the project. Infrastructure funded by the grant must be located at the host institution for the duration, and following the termination, of the project. Free/excess capacity for the infrastructure must be made available to the wider research community.
- Data Management.
- Attending conferences.
- Publication costs – scientific publications deriving from the project.
- Travel costs for project-related conferences and meetings.
- Collaboration activities – expenses due to project-related meetings, workshops, seminars and exchange of personnel that will strengthen the collaboration between partners of the programme.
- Bench fee – Support for individual researchers to cover direct expenses needed to conduct the research project applied for. Bench fees must be specified in the budget and may only be used for operating expenses, lab consumables and access to laboratory space and facilities that cannot be included within another individual budget category. To include a bench fee in the budget, the fee must be part of the

general expenses policy of the institute/institution and apply to all employees for which the policy concerns.

- Tuition fee – up to DKK 80.000 per year.

For administrative support of the grant, an amount up to 5% of, and included in, the funding applied for from NNF may be included in the budget.

**The administrative support:**

- can cover non-scientific, administrative expenses in relation to the project, such as accounting, administration related to payment of salaries and purchasing, hiring, as well as auditing and financial reporting on the project.
- cannot cover administrative expenses that are not directly related to the project.
- can via the host institution be shared between the institutions of the main- and co-applicants, as detailed in the application budget.
- is not automatically included in the grant and must be stated/applied for in the application budget but should not be specified in detail.

The Novo Nordisk Foundation does not allow double funding of projects.

- If the applicant has received funding for the proposed project from other sources, in part or in full, this situation **must be** accounted for in the budget, as no budgetary overlaps are allowed.
- If an identical or overlapping project proposal has been submitted to other funding institutions than the Novo Nordisk Foundation, it **must be** noted in the application.
- If the applicant, post application submission, receives funding for the project or parts of the applied project from others, the Novo Nordisk Foundation **must be** contacted as soon as possible.



**IMPORTANT!** The grant may not be used to cover 'overhead' (i.e. rent, electricity, water, maintenance etc.)

## 1.6 LANGUAGE

The application must be written in English.

## 1.7 APPLICATION PROCESS

The application process will consist of two stages.

**Stage 1.** The project description for the Stage 1 consists of a brief project description (up to 2000 characters), a lay project description (up to 1000 characters) and the main application that can be up to 10,000 characters and should briefly describe:

- The proposed research, including its relevance for the theme and hypotheses to be addressed.
- The project's originality, ambition, and expected outcome.
- An organizational outline of the centre, and how this setting is foreseen to be particularly well suited to address the proposed challenge.
- The participating PIs and their research groups.

Please note that the stage 1 application does not contain a budget.

A number of shortlisted applicants will be invited to Stage 2, in which the applicants will be asked to submit an application with a detailed project proposal of up to 30,000 characters.

**Stage 2.** At this stage, invited applicants should submit a comprehensive application, including:

- an extensive, detailed research proposal that includes purpose, background, methods, and the significance of the project.
- a description of the involved research groups and their roles and plans for national and international research collaboration and partnerships.
- plans for ensuring the establishment of a learning environment able to foster the next generation of outstanding researchers.
- a detailed account of the organization and management of the research collaboration.
- letter of commitment from the Danish host institution.
- letters of commitment from all co-applicants.
- a detailed budget.

The applicants are encouraged to include preliminary data to support the underlying hypothesis.

As part of the Stage 2 evaluation, the main applicant will be invited to the Novo Nordisk Foundation to present and discuss their proposed research projects with the review committee.

The application must be completed and submitted using the Novo Nordisk Foundation's electronic application and grant management system, NORMA, which can be accessed from:

<https://norma.novonordiskfonden.dk>

Further information on how to access and navigate in NORMA can be found in Chapter 2.

It is important, that the applicant carefully reads these guidelines before initiating the application process, as this document contains the complete call text as well as instructions regarding the completion of the application.

## 1.8 SELECTION PROCESS

Applications will be evaluated by an independent, international committee of scientific experts. The selection of the successful Challenge Programme applicants will be based on:

- scientific excellence, originality and potential impact.
- feasibility of the project and suitability of the proposed centre setup.

Ongoing research commitment may be taken into consideration in the evaluation of your application for a Challenge Programme grant. The application should clearly describe if and how the proposed project relates to ongoing projects.

The Novo Nordisk Foundation handles all applications and grants with confidentiality, impartiality and respect.



**IMPORTANT!** The foundation does not provide feedback in case the application is not selected for funding.

## 1.9 IMPORTANT DATES



## 1.10 IMPORTANT INFORMATION WHEN COMPLETING THIS APPLICATION

**Project descriptions for Stage 1 and Stage 2:** Please see section 1.7 for the information needed for these. Up to four illustrations (figures/charts/tables/images/etc.) can be uploaded to the project description for the Stage 1 and Stage 2 applications.

**CV for main applicant:** can be a maximum of 4,000 characters. Please include in your CV:

- A short bibliographic overview summarizing total number of peer-reviewed publications, number of first authorships, number of corresponding authorships, number of citations, and *h*-index.

**Publications list** (for main applicant). Can be a maximum of 5,000 characters (including spaces, line breaks and special characters). Please only include the 10 most relevant publications for evaluating your merits. Include a complete specification of all authors for each publication with your own name highlighted. Applicants are strongly encouraged to provide a full list of publications in ORCID.

**Supplementary Information** (under Applicant Information). This field can be utilized to describe special circumstances regarding your application that the evaluation committee should be aware of, e.g. current terms of employment. Please do not include any personal information of a sensitive nature, e.g. illnesses, family conditions etc.

**Co-applicants.** Co-applicants signify persons who will contribute scientifically to the project and who will have a financial share in the grant. It is a requirement that co-applicants are informed about the project and that they have agreed to being mentioned in the application.

The Challenge Programme allows up to four co-applicants. It is important that section 2.4.4 is read carefully before inviting co-applicants in the system. If the co-applicant is already a user in the Novo Nordisk Foundation's electronic application and grant management system "NORMA", it is important that the invitation is sent to the email address registered to the co-applicant.

**Lay project description** (in English) of maximum 1,000 characters should be short and suitable for publishing on the Novo Nordisk Foundation website in case the project is funded.

### **Mandatory uploads – only for stage 2**

- Support letters from all co-applicants.
- A hosting letter signed by the department head at the administrating institution.

## 2 THE NOVO NORDISK FOUNDATION APPLICATION AND GRANT MANAGEMENT SYSTEM – NORMA

### 2.1 USER REGISTRATION

The Novo Nordisk Foundation (NNF) application and grant management system “NORMA” can be accessed through links on NNFs website or directly at: <https://norma.nvonordiskfonden.dk>

Before you begin, please read the instructions and technical information on the login-page.

It is possible to register as an organization in the application system, however organizations are currently only eligible to apply for open calls within 'Social and Humanitarian Grants' and 'Education and Outreach Grants'.

If you hold an active grant, or if you have applied for funding from NNF recently, you may already exist in our system. You can check this by clicking “forgot password,” enter the email address you used when previously applying and request a new temporary password. If you are registered in our system, you will receive an email within 5-10 minutes with your login details and the temporary password. If you are not in our system, register as a new user.

The user registered, who submits the application(s) is 'the applicant'; the legal entity responsible for the truthfulness of the content in the application.

If you experience problems logging in please contact NNF using the contact information on page 3.

### 2.2 GENERAL INSTRUCTIONS

#### Filling in the fields

For all applications, the individual fields must be completed in accordance with these guidelines and the instructions supplied in NORMA.



**IMPORTANT!** To prevent loss of data, it is essential to press “Save Draft” before you leave NORMA or navigate in the system.

#### Abbreviations

Abbreviations should be defined at the first use, and preferably a list of abbreviations should be included in the project description.

#### Submission

The application in its entirety must be submitted electronically via the application system. It is not possible to submit an application or any part of it by standard mail or e-mail. Any material submitted outside the application system will not be included in the evaluation and will not be returned.

Applications cannot be modified after the submission deadline. If you wish to make changes to a submitted application before the submission deadline, it is possible for you (the applicant) to reopen the application. Be aware that the application must be resubmitted before the deadline in order to be evaluated.

Once the application has been submitted, a confirmation of receipt will be sent to the e-mail address used for logging into the system. If you do not receive a confirmation of receipt, you should contact NNF as soon as possible using the contact details on page 3.

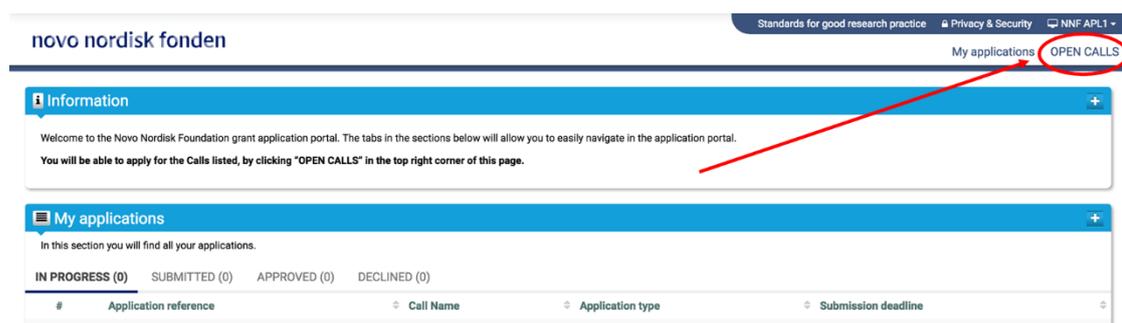
### Confidentiality

All applicant and application information will be treated confidentially.

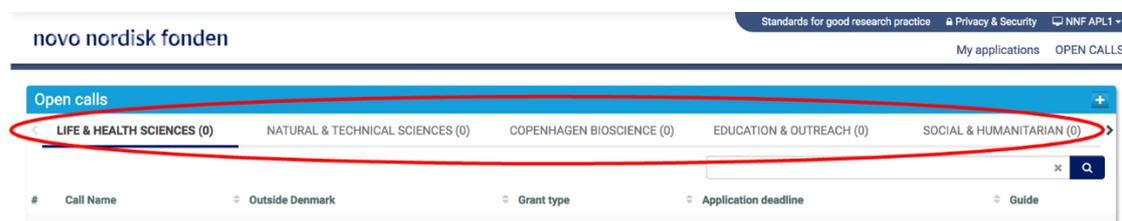
## 2.3 IDENTIFYING THE CORRECT OPEN CALL IN NORMA

When you are logged into NORMA, you will enter 'My Applications', where you will find an overview of the status of your applications (in progress, submitted, approved and declined). In addition there is a 'Pending Action' section where there may be additional requests from NNF regarding your applications.

To initiate a new application you first need to identify the call and grant you wish to apply for. Go to the 'OPEN CALLS' tab, which is located in the upper right corner of the screen.



In the 'OPEN CALLS' window, all currently available grants from NNF are visible in seven tabs that are sorted by the foundation's overall grant areas. Search the tabs to find the call that you wish to apply for.



## 2.4 CREATING AND COMPLETING AN APPLICATION

An application is initiated by clicking the blue "Apply Now" button, once you have identified the call and grant you wish to apply for.

Your draft application is then created and it will remain a draft version until you actively submit the application. After submission, you can continuously edit or cancel the application prior to the deadline. However, you are responsible for submitting or re-submitting before the deadline.

If you wish to withdraw a submitted application after the deadline you must contact NNF via email, using the contact information on page 3.

To submit the application, it is necessary to read and accept NNF's standards for good research practice. A link can be found in the top right corner next to your name. Further, the applicant must declare that the information provided in the application is true and accurate.

You can at any time during the application process access a PDF view of your application, and you should always check to ensure that the PDF is readable and formatted appropriately before submission.

### 2.4.1 APPLICATION TEXTS

Formatted text from e.g. Word can be copied and pasted into most text fields of the application. It is, however, important to check that special formatting and special letters and symbols have not been converted or lost in the text fields after copying and pasting.

Available functions for formatting text are at the top of the text fields. Some shorter text fields do not have the option to format.



**IMPORTANT!** For readability purposes, standard fonts, font size 11-12, and line spacing between 1.0 and 1.5 must be used.

### 2.4.2 ILLUSTRATIONS

In the 'Project Information' tab, figures/charts/tables/images, (etc.) related to the project description can be uploaded (maximum four illustrations is allowed). Include illustration number and legend/caption for each illustration file when uploading. The illustrations will be integrated in the final application PDF.

The following file formats are accepted in the system: JPG, JPEG, PNG, TIFF, BMP. The maximum accepted size for each illustration is 1050\*1650 pixels.

### 2.4.3 BUDGET

The budget template will be correctly generated once you have entered the Grant Period Start Date and Grant Period End Date, which can be found under the 'Project Information' tab, and pressed 'Save Draft'. You must provide these dates, before entering any information in the budget. The budget must be entered in budget years following the grant period and not calendar years.

- To access the budget template press the blue 'Open / Edit' icon
- Press the '+' icon to add budget rows
- For each budget row, choose a budget post from the drop down menu, specify details for the post under "Description", and enter the amount under 'Value'.
- All amounts must be stated in Danish Kroner (DKK) without decimals.
- When entering DKK amounts, do not use periods, commas or spaces.

- Save and close the template when the budget is completed.

Supplementary information for the budget requested from NNF can be entered in a separate field.

Funds applied or obtained from other sources must be entered under 'Additional Contributions for the Project'. Please specify what the additional funding covers and state if there are any overlaps with the budget applied for from NNF.

#### **2.4.4 CO-APPLICANTS**

For certain calls, a number of co-applicants may be either required or allowed for the application. Co-applicants take an active part in organizing and implementing the project and will receive a share of the grant. The project description must clearly describe the co-applicants' role in the project and the budget must clearly indicate the co-applicants' share.

Co-applicants must be invited and accept their status as co-applicants in NORMA. To invite co-applicants, go to the 'Invitations' tab, which can be found on the left side of the screen. The main applicant must provide the full name, email and select role as 'Co-applicant' and then press the 'Invite' button. You will be notified by email once the co-applicants accept the invitation.

Co-applicants will be contacted by email from the main-applicant via NORMA and asked to confirm their status as co-applicants. The co-applicant has the option to accept or decline the invitation. If the co-applicant accepts, additional fields will be visible in the 'Co-applicants' tab in the application. The 'Co-Applicant' fields must be filled out by either the co-applicant or the main applicant. It is essential that the main applicant ultimately checks that the fields have been correctly populated before submitting the application.

A Short CV (maximum 2 pages) for each co-applicant must be uploaded to the application as a PDF file under the 'Co-Applicants' tab.

Co-applicants have the ability to read, edit and upload information in the entire application, however, cannot submit the application.

If co-applicants are mandatory, the application cannot be submitted before the required number of co-applicants have accepted. Please start the process of inviting co-applicants well in advance before submission deadline.

### 3 GENERAL RULES FOR GRANT APPLICATIONS

#### The general conditions (a-h) apply to grant applications to NNF

- *The 'applicant' in the rules below refers to the main applicant responsible for submitting the application. There are no general rules for co-applicants.*
- *There may be additional application conditions for individual calls, if so these are specified in the guidelines in section 1 under 'Eligibility'.*
- *If an applicant submits applications exceeding the allowed in points a-d, the latter application(s) will receive administrative rejection.*
- *Points g-h are relevant only if you currently hold an active NNF grant.*

a) An applicant may submit only one application per call.

b) For the NNF grant type "Project grants"<sup>2a</sup>, an applicant may submit only one application per calendar year.

c) An applicant may submit one application for either the NNF grant type "Investigator Grants"<sup>2b</sup> or "Postdoctoral fellowships" and may not submit another application for either grant type while the application is under review. If the applicant receives a written rejection from NNF for the submitted application, the applicant may again apply for either grant type.

d) An applicant may submit only one application for a specific purpose/project per calendar year. Submitting two or more applications for different purposes/projects to different calls is permitted, as long as it is not to the same type of grant<sup>2</sup>.

e) When applying for grants that do not allow funding for the applicant's salary, the applicant must be able to account for own salary during the entire grant period applied for.

f) NNF does not allow double funding of project-specific expenses. If an applicant has applied for, or has received, funding for the project or parts of the project from others, this must be detailed in the budget of the application. If the applicant receives funding for the project or parts of the project from other sources following submission of the NNF application, NNF should be contacted as soon as possible.

g) It is not possible to hold more than one active grant of the same grant type<sup>2</sup>. Researchers with an active grant of a specific type may be able to apply for a new grant of the same type during the final year of the grant, however, a new grant cannot be activated until the existing grant is completed and no longer active. The only exemption to this is that researchers with an active 'Project Grant'<sup>2a</sup> awarded by a specific committee may apply for another 'Project Grant' while their current grant is active if all three following requirements are met:

- it is awarded by a different committee,
- it is for a different purpose/project, and
- the applications are not submitted within the same calendar year.

h) It is permitted to hold two or more active grants of different types<sup>2</sup>, i.e., researchers with an active grant of a specific type may apply for a new grant of a different type.

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<sup>2</sup> An 'NNF grant type' is defined by the general grant frame and/or support function. Three examples of individual NNF grants that are three different NNF grant types are: 'Challenge Programme Grants', 'Steno Collaborative Grants' and 'Tandem Programme Grants'. Two examples of NNF grant types that include multiple NNF grants having the same general grant frame and support function are:

<sup>2a</sup> Type 'Project Grants' includes: Project Grants for Biotechnology-based Synthesis and Production Research; Project Grants in Endocrinology and Metabolism; Project Grants in Clinical and Translational Medicine; Project Grants for Clinical Nursing Research; Project Grants in Bioscience and Basic Biomedicine, Project Grants for Art History Research.

<sup>2b</sup> Type 'Investigator Grants' includes: Emerging Investigator; Ascending Investigator; Distinguished Investigator; NNF Young Investigator; NNF Laureate Investigator, Investigator Grant in Art History Research, Excellence Project for Young Researchers within Endocrinology and Metabolism, Borregaard Clinical Scientist Fellowship, Research Stipend in General Practice, and Advanced Grant in Endocrinology and Metabolism.

September 2019

## The Novo Nordisk Foundation

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Please read "Terms and conditions for grants from the Novo Nordisk Foundation", that all grant recipients must comply with:

<http://www.novonordiskfonden.dk/en/content/conditions-grants>

The Novo Nordisk Foundation is an independent Danish Foundation with corporate interests. The objective of the Novo Nordisk Foundation is twofold: To provide a stable basis for the commercial and research activities conducted by the companies within the Novo Group and to support scientific and humanitarian purposes.

The vision of the Novo Nordisk Foundation is to contribute significantly to research and development that improves the lives of people and the sustainability of society.