
How to write a good research proposal

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Bad news

- › For any researcher obtaining independent funding from public and private funding agencies is a MUST!
- › Even more so in the foreseeable future!
- › The competition is getting tougher in terms of the number of competitors and the amount of available funding!

Good news

- › The general standard of research proposals is low, so it is not hard to shine
- › A strong proposal is in a lottery, but a weak one is certainly dead
- › And with a modest effort, learning generally how to improve the standard of your proposals, you are at least in lottery!

Sources

You can find numerous information on the web related to “how to write a good grant proposal”.

These slides have been heavily inspired (including some cutting and pasting) by the home page of *Simon Peyton-Jones*, Microsoft Research, where you can also find lots of other useful related information:

research.microsoft.com/en-us/people/simonpj

Sources

More and more foundations provide their own advice!



Sources

You may also find some useful guidelines on our CS web pages (should always be consulted before writing a research proposal!)

cs.staff.au.dk/boards-and-committees/research-committee/research-application

Overview

1. Choosing your funding agency
2. Writing your proposal
 - > The Project
 - > The Principal Investigator / Research Group
3. Procedures at CS
4. Three cases of upcoming calls

Choosing your funding agency

Make sure that **your case for support** matches the **priorities of the agency!** Read the lingo in the call carefully – and make sure to address ALL issues!

- > *Pure-, strategic-, applied research, development*
- > *Blue sky versus close to market*
- > *Science versus innovation*
- > *Bottom-up versus top-down*
- > *Discipline-oriented versus thematic-oriented*
- > *The (wo)man versus the ball*

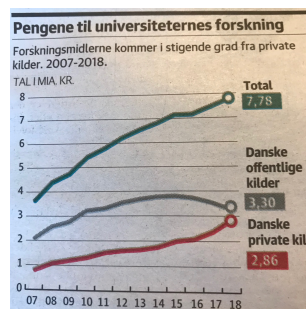
Some relevant public foundations

- > Aarhus University
 - > Aarhus University Research Foundation (AUFF)
- > DK
 - > The Independent Research Fund Denmark (DFF)
 - > FNU, FTP, ...
 - > Danish National Research Foundation (Grundforskningsfonden)
 - > Innovation Fund Denmark (Innovationsfonden)
- > EU
 - > European Research Council (ERC)
 - > Future and Emerging Technology (FET)

New players: private foundations



Research funding – Danish Universities



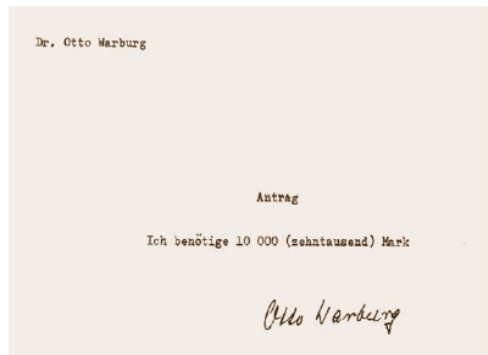
Choosing your funding agency

Important piece of advice: make use of

[Researchprofessional.com](https://www.researchprofessional.com)

available to all researchers at Aarhus University

Writing the proposal – in 1921



Get familiar with your audience

- › Obtain as much information as you can about the **criteria** and the **members** of the panel/council/board of your funding agency
- › With luck, your proposal will be read carefully by one or two experts
- › But it will certainly be read superficially by non-experts - and THEY will be most often be the panel members. You have a few minutes of their time to catch their attention

A case: Evaluation criteria ERC

- › Research project : Ground-breaking nature, ambition and feasibility
 - › Ground-breaking nature and potential impact of the research project
 - › To what extent does the proposed research address important challenges
 - › To what extent are the objectives ambitious and beyond the state of the art (e.g. novel concepts and approaches or development across disciplines?
 - › To what extent is the proposed research high risk / high gain?
 - › To what extent is the outlined scientific approach feasible?

For all audiences: Tell a story!

- › Here is an interesting and important **problem** (evidence...)
- › Here is an original and promising **idea** (evidence...)
- › Here is the **methodology** we intend to exploit
- › Here are the **results** we aim to achieve (gains, risks...)
- › Here is the **ideal team** for the project (evidence...)
- › Here is what **we need** in order to succeed (justified...)

The PROBLEM

- › Is it interesting (i.e. is it research)?
- › Is it important (who are the “customers”)?
- › Bad phrase
 - *As we all know, we need to understand the Analgesic and Anti-Inflammatory Activities of Salicylaldehyde 2-Chlorobenzoyl Hydrazone (H₂LASSBio-466) and Their Zinc(II) Complexes*
- › Good phrase
 - › *The emerging ubiquitous computing needs alternatives to traditional security mechanisms (passwords, keys, certificates, etc.), since....*

The IDEA

- › Is it original and novel in addressing the problem?
- › What are your hypotheses?
- › Bad phrases
 - › *We aim to gain insight into...*
 - › *We shall continue to study...*
- › Good phrase
 - › *We propose trust based technology as a novel security mechanism in ubiquitous computing, and our hypothesis is...*

The METHODOLOGY

- › Do you have a plan for achieving your goals?
- › What is in place and what is needed in order to carry out your plan?
- › Bad phrases
 - › *We shall bring together a number of researchers....*
 - › *We shall write a number of papers....*
- › Good phrase
 - › *We shall develop a model for trust, and a prototype implementation testing our hypothesis,.....*

The RESULTS

- › What are the *success* criteria?
- › What are the *risks*?
- › Bad phrases
 - › *We hope to provide some insight into.....*
 - › *We shall improve our understanding of....*
- › Good phrase
 - › *The criteria for success will be a prototype security system demonstrating the following properties:.....*

Additional criteria: YOU and your team

- › Highlight ALL your strong points *relative to the project!*
- › Be BOLD rather than modest!
- › Bad phrase
 - › *Please check my cv on www...*
- › Good phrases
 - › *As evidenced by... I am recognized for my contribution to...*
 - › *I have acquired unique experience in... from my stay at ...(mobility)*

A Case: ERC Evaluation criteria

- › Principal Investigator
 - › To what extent has the PI demonstrated the ability to propose and conduct **ground-breaking** research?
 - › To what extent does the PI provide evidence of **creative independent thinking**?
 - › To what extent have the achievements of the PI typically gone **beyond the state of the art**?
 - › To what extent does the PI demonstrate the level of **commitment** to the project necessary for its execution and the **willingness** to devote a significant amount of time to the project (min 50% for Starting and 40% for Consolidator of the total working time and min 50% in an EU member State or Associated Country)

The principal investigator - CV

- › publications
- › citations (Google Scholar Profile, Research Gate,...)
- › grants
- › awards (societies, best papers,...)
- › leadership
- › teaching
- › training and training
- › industry (collaboration, experience,...)
- › internationalisation (collaboration, mobility,...)
- › academic services (editorial boards, pc's,...)



Useful checklist for a grant proposal

- | | |
|--|---------------------------------|
| › Title | › The team |
| › Summary or abstract | › Collaboration |
| › The problem <ul style="list-style-type: none">› relevance, impact,... | › Training of young researchers |
| › The idea <ul style="list-style-type: none">› originality, novelty,... | › Dissemination |
| › The methodology <ul style="list-style-type: none">› approach, workplan,... | › Budget |
| › Success criteria | |
| › Risks | |
| › The principal investigator | |

The summary or abstract

- › This is the most important part of your proposal!
- › It will be read by (almost) all panel members and reviewers
- › Make sure it contains succinctly all your strong points – every word is precious
- › Advice: write it at the very end of the process

Advice summary

- › Choose carefully and get familiar with your funding agencies
- › Remember that funding agencies have to argue for their existence – convince them that you may help[©]
- › Make sure that the first page contains THE case for support! When in doubt – simplify!
- › Writing research proposals is a continuous process – not something to be done just before deadline
- › Seek help and provide help – mutual benefit

The budget

- › Make sure that the money you ask for is argued well from the project
- › Make sure that the money you ask for fits the guidelines of the funding agency
- › Make sure that it fits the guidelines of your university

Typical rejection – the project

- › It is not clear what question is being addressed by the proposal
- › It is not clear why the question is worth addressing
- › The proposal is just a routine application of well-known techniques – lacking originality
- › The research outlined is incremental
- › There is no evidence that the proposers will succeed where others have failed
- › The proposers seem unaware of related research
- › The proposal is vague with respect to the expected outcome

Typical rejection - formalities

Administrative rejection

- › inappropriate grant instrument
- › illegal budget
- › missing signatures or stamps

Missing attachments

- › CVs for co-applicants
- › approval from host institution
- › project description

Unconvincing CV

- › obscure publication list
- › unclear employment status

Excessive budget

- › unjustified expenses



Procedures at CS

1. Send an email to HoD Kaj Grønbæk- groenbaek
 - › You will then be assigned a mentor from the departmental research committee
2. Register your application at services.brics.dk/java/reap/?dept=CS
 - › Communication wrt. status, budget, etc. – email notifications
3. Always contact the **AU Research Support Unit (FSE)**
 - › Advice on formalities and the writing your proposal
 - › Mandatory for EU applications – to be signed by AU
4. Always contact your AU financial officer
 - › Advice in setting up budget etc.
5. Most proposals need to be signed by Head of Department
 - › Make appointment no later than one week before submission

<http://cs.staff.au.dk/boards-and-committees/research-committee/research-application/>

DFF Sapere Aude starting grant

- › Next call March 26 2020
- › Aimed at giving young researchers
 - › possibility of pursuing their own research as project manager
- › PI must have obtained PhD within the last 8 years
- › Grant up to DKK 4,3 million (excl. overhead), max 4 years

DFF international postdoc grant

- › Next call November 5 2019
- › Funds for two year Post Doc abroad – DKK 1,3 million
 - › Salary, projects operating expenses, travel, insurance, and travel and insurance expenses for family
- › Applicant must have a PhD degree:
 - › Obtained at Danish institution
 - › Within last three years

DFF research project 1

- › Next call October 3 2019
- › Clear and well defined problem statement with research activities at a high international level
- › Applicant must have 3 years independent research experience after PhD
- › Up to DKK 2 million (excl. overhead), max. 3-4 years

European Research Council - ERC

- › Starting grants
 - › Next call October 16 2019 (annual calls)
 - › Up to euro 1,5 million over five years
 - › PI 2-7 years since PhD
 - › PI any nationality – host within one of the EU memberstates
- › Consolidator grants
 - › Next call to be announced in October 2019 (annual calls)
 - › Up to euro 2 million over five years
 - › PI 7-12 years since PhD
 - › PI any nationality – host within one of the EU memberstates

Carlsberg Foundation

- › Next call October 1, 2019
- › Selected instruments:
 - › **International Fellowship**
 - › PI - up to five years after PhD
 - › Grant up to 2 years for research outside DK
 - › DKK 350.000 annually (tax free)
 - › **Young Researcher Fellowship**
 - › PI - newly appointed (within last 2 years) associate professors
 - › Grant up to 3 years - building own research group
 - › Grant up to DKK 4,5 million

Can you do it?

Yes you can!

