Grant application writing: first principles

Dmitri Rusakov

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Queen Square Institute of Neurology

University College London

UCL

General

Obtaining competitive research funding is an essential
part of your academic career

In lead institutions, obtaining a faculty position normally
requires a track record of competitive funding

In the UK, leading neuroscience labs maintain
an annual budget of £500-1000k external funding

Step 1. Keeping informed of funding opportinities

**Check funding availability on a regular basis (every week):
new funding bodies may announce calls any time**

If unsure where to look do not hesitate to google

Applying for a new funding scheme in its first year running has increased chances of success

Step 2. Eligibility checks

Check whether yourself, your institution, and your country are eligible for funding

Eligibility criteria may change every round: your age or your country which were not eligible last round can become eligible

Check special conditions for diversity and inclusivity

Applying under new eligibility criteria in their first year running has increased chances of success

Step 3. Areas and priorities of the Call

Check whether the exact area of the Call is in your field of science, whether the funding body encourages basic, translational, or clinical research

The list of priorities is particularly important: see if your proposal could fit one or more priority areas.

Try to fit your research proposal to the priorities of the Call – rather than waiting for the Call which lists your personal preferences.

The areas and priorities tend to change every round, keep an eye on it

Step 4. Application forms

Study the forms carefully, paying attention to various requirements that are additional to the science content

Relevant licences, permissions, institutional approvals, finance and contract requirements that might take time to prepare

Collaboration requests, support letters, quotations that might take time to prepare

Data security and management requirements, a plan for data storage and sharing

Step 5. Take a critical look at yourself

Explain why the grant is suited for your career phase: early career, mid-career, or internationally established

See if the applicants are expected to have a track record of independent funding and team leadership

Check if the expected scope and depth of a project are compatible with your existing and requested technical capabilities

See if the scientific environment and training capacities at the host institution suit the expectations

Step 6. Science case

IMPORTANCE What is the burning scientific question you want to answer?

NOVELTY Has anyone tried to answer it already?

TIMELINESS Why now? Is it really urgent?

INNOVATION Taking advantage of a new method or technique: super-resolution, new drug, new disease model, etc.

IMPACT What change could your successful project potentially make in the field and beyond?

Case study: Signal formation in synaptic circuits with astroglia (NETSIGNAL)

IMPORTANCE Astroglia emerge everywhere, in health and disease, but their roles remain an enigma

NOVELTY No one has tried before to conceptualise the role of astroglia in neural signal coding

TIMELINESS Rapidly multiplying astroglial studies are facing an interpretational deadlock

INNOVATION Recent advances in 2PE microscopy, optogenetics, and super-resolution microscopy promise breakthroughs

IMPACT New, non-neuronal targets for therapeutic intervention

Writing the case: Structure is important

- **Introduction** sets the scene, provides scientific background, explains importance, novelty, and timeliness.

- **Main goal and main hypothesis** are a logical consequence of the above. This has to be formulated separately.

- **Objectives** are individual steps in the research strategy to achieve the main goal of the proposal. Objectives have to be formulated clearly.

- **Work leading to the proposal** explains how you have come to your main hypothesis, with the help of your pilot data and your newly established techniques and protocols.

- **Research plans** explain what experimental or theoretical tests you will carry out to achieve your research objectives, one by one.

- **Expected results** explain the outcome of your proposal if successful. This should also refer to contingency plans.

Writing the case: What to focus on

- **Clarity** is often *more important* than technical details. Try to balance simplified explanations with precise references.

- **Brevity** usually goes hand-to-hand with clarity. Once you and everyone else are entirely satisfied with the text, cut it by further 30%.

- **Clear proposal structure and logic** will help, with subsections addressing individual points.

- **Preliminary data** are critical other for demonstrating (a) technical feasibility of your strategy strategy, and (b) proof of principle for your main hypotheses.

- **Positive controls** for all negative or non-effects is a sign of maturity.

- **Contingency plans** need to explain what youstrategy would be if your key experiments produced negative or failed.

- **Impact and future plans** will help to understand what your long-term outlook on your research and your career.

Response to reviewers

- Reviewers often act on a presumption of guilt. You have to prove your innocence.

- Additional experimental evidence always outweighs any theoretical arguments, do not hesitate add new data to your answer.

- Make your points strong: reviewers will not see your answers, the panel will. Panel members will decide.

- It is better to find a way of saying justifiably 'this is outside the scope of the present proposal' rather than 'it is too difficult to carry out'.

- If you know the grant panel membership, make sure your writing fits their line of thought.

- If you know or guess who will be running your grant application at the panel, study their work carefully and cite them if relevant.

Concluding tips

Try to be among first who find and apply for a newly announced type of grant

Leave two or more months to prepare an application, talk to the funding body if unclear of anything

Start early with your funding plan giving the admin plenty of time to check and approve it

Make sure you have pilot data that show your main techniques and demonstrate the rationale

Keep the proposal highly structured (Background, Importance, Timeliness, Objectives, Techniques, Plan, etc.)

The more data and method illustrations the better

Find top collaborators who can help with unique methods