

Submitting a research proposal for external approval and funding

6.1. Preparation

Preparation is the key to a successful outcome when submitting a research proposal for external approval and funding. To reach this stage you should already have:

- Chosen a suitable research project (Chapter 3)
- Read and evaluated the scientific literature (Chapter 4)
- Formulated a research plan (Chapter 5)

The next step is to select a suitable organisation to receive your formal research proposal and to customise your research plan to comply with the requirements of that organisation.

6.2. Some simple truths

Securing research funding support in laboratory medicine is likely to be a competitive process. Therefore, it is sensible to acknowledge a few simple truths at the outset of preparing your research proposal:

- There are always more applications than available funding
- Preliminary screening of research proposals is often done quickly by experts in screening not in the specific science
- Screeners are looking for reasons to exclude applications
 - Stick to the rules, length, time lines etc.
 - Match the funding guidelines as closely as possible
- Referees are volunteers and busy. They may also be close competitors
- Unrealistic proposals or claims are easily spotted by referees
- In Laboratory Medicine successful outcomes should link to better patient care

6.3. Ten steps on the 'road to success'

Figure 6.1 sets out a simple 'road map', which should increase the chances of a successful outcome to the submitted research proposal. There are ten steps:

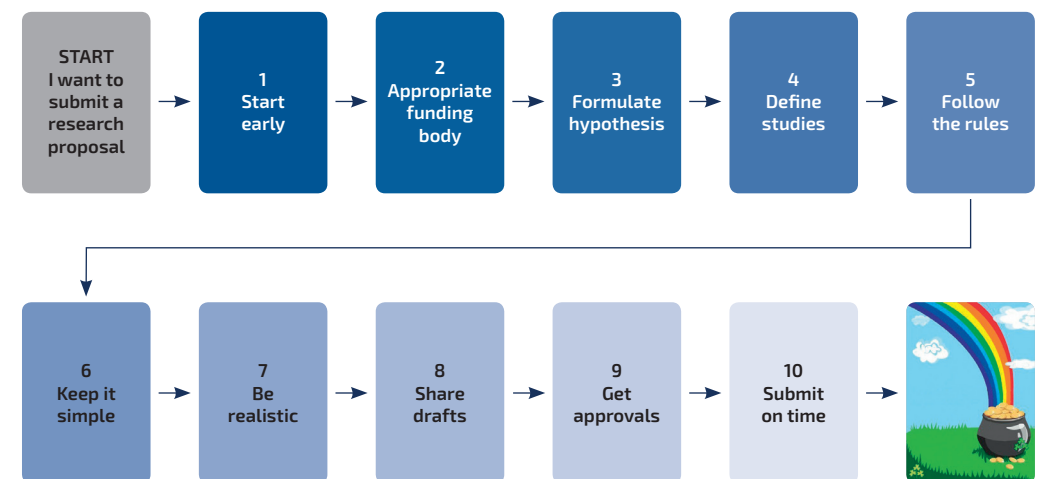
1. Start early

Drafting a successful research proposal takes a long time (~6 months). Actions include:

- Performing the literature review
- Recruiting collaborators
- Formulating specific research questions
- Getting ethical approval
- Producing a first draft
- Sharing with busy colleagues
- Getting feedback from busy colleagues
- Producing the final draft of correct length with figures
- Obtaining co-author and institutional approvals
- Submitting on time

If the preparation steps have already been taken and a research plan is available then the time may be reduced but it is unwise to rush preparing a research proposal.

Figure 6.1. | A road to success?



2. Choose an appropriate funding body

All research funding bodies have written criteria to describe the type of application they may fund. They will not fund outside these criteria. Examples of such criteria include:

- Basic science / translational science / clinical practice
- Research in a specific area (e.g. cardiac disease, cancer etc.)
- Collaborative research – link with clinical teams and patients
- International partnership
- Minimum / maximum age of applicant
- Minimum / maximum length of research project
- Funding of equipment and/or salaries
- Maximum funding possible
- Need for shared or matching funding

3. Formulate an hypothesis for your research

As explained in Chapter 3 it is worthwhile to formulate an hypothesis for your research and explain it in your proposal.

- The approach of " I believe 'X', if this proposal is successful the outcome will be 'Y' and the benefit (to patients) will be 'Z'"
- Avoid 'fishing expeditions': "We will do this research in the hope of finding something that will shed light on 'X'"
- Aim for a clinical end-point which will improve outcomes / benefit patient experience / improve cost effectiveness

The hypothesis for your research should be included at the end of the Introduction section of the proposal.

4. Define the studies required

From your research plan you will already have an outline of the studies that you wish to perform and the methods that you wish to use.

- These should be described in detail in the proposal:
 - Use literature as a guide
 - Wherever possible use pilot study data
- Use of a flowchart can be helpful
- For each study estimate:
 - Patients / animals/ cell cultures involved
 - Equipment and consumables required
 - Input needed from collaborators
 - Likely time to completion (allowing for false starts)
 - Expected outcome / indices of success

- Assess whether the full range of studies will be possible within the timescale / budget allowed by the funding body

5. Follow the rules

Funding bodies usually have strict rules relating to the structure and layout of applications.

- These rules include:
 - Section headings
 - Maximum word length in each heading
 - Maximum number of figures / tables
 - Maximum number of references
 - Type of experiment
 - Equipment / staffing allowed
- Failure to follow the rules is a reason for rejection of your proposal

6. Keep it simple

To get as far as referees the proposal must be intelligible to non-experts who may perform the initial screen of the proposal

- Avoid:
 - Too much jargon / too many abbreviations
 - Long complex sentences
 - Deviating from the purpose of the proposal
 - Hyperbole or criticism of other researchers
- Use:
 - Simple language
 - Reviews where possible
 - Figures and diagrams where possible
- Anticipate:
 - Likely referees and quote accurately from their studies

7. Be realistic in your proposal

In your research proposal it is natural to try to impress the reader. However, unrealistic proposals are as dismissed along with bad proposals. Experts in assessing research proposals can judge:

- How long studies will take
- If they are adequately powered
- If they have a realistic expectation of completion
- Whether claimed outcomes are achievable
- How much they will cost

8. Share drafts with others

You may think that you have written the 'perfect' proposal. In reality you haven't because you are too close to it and cannot see the flaws. Therefore you should share early drafts with:

- Research collaborators
- Colleagues / peers who will respect confidentiality
- Lay people e.g. family or patients

You should be willing to accept constructive criticism, amend the proposal and check with critics that the edited version is an improvement.

9. Get approvals

All research proposals require signatures of approval on the final document.

Approvals will include:

- Support of co-authors and collaborators
- Supervisor / head of department
- Backing of employing institution

Approvals may include:

- Ethical approval
- Evidence of suitable licences (e.g. animals)

Approvals take time, this is reduced if individuals have seen early drafts and/or are primed to expect document on a set date

10. Submit on time

You should never miss the deadline for submission of your research proposal. To do so will exclude your proposal from consideration and mean that you have wasted or lost months of preparation. Try to submit a day or two ahead of the deadline because this will allow you:

- Breathing space to address any last minute problems
- To go to front of pile, read when reviewer is fresh

You should send your proposal with a simple covering letter, and if possible check that it has arrived. At this stage all you can do is wait but you are entitled to allow yourself a small celebration for completing the process.

6.4. Structure of research proposal

Each research funding organisation will have its own specific requirements for submitting a research proposal, often contained in an application form. The specific requirements must be met in full and these should be identified and worked towards

once a decision has been taken on the organisation to which the application will be submitted.

Although the structure, sequence and nomenclature used in application forms may differ the content is fairly generic and is illustrated in Table 6.1.

Table 6.1. | Generic information required in a research proposal

Section of research proposal	Comment
Title of proposal	Concise and not too technical
Names of applicants	Specifying principal investigator
Aims and objectives of proposal	Succinct and SMART
Summary of proposal	Both lay and technical summaries
Introduction	Background to the proposal
Hypotheses	Scientific basis of the proposal
Plan of Investigation	Detailed research plan with time lines
Data analysis	Including statistical methods
Expected outcomes	If hypotheses are proven
Expected benefits	To patients and/or service users
Finances requested	Staff, equipment and consumables
Justification for finances	To assure value for money
References	Key scientific literature
Curriculum vitae of applicants	Including publications and grants held
Approvals	Evidence of ethical approval + licences
Letters of support	From collaborators, employers

6.5. Evaluating feedback

The various organisations that fund research in Laboratory Medicine have different criteria and rules for responding to the applicant once the proposal has been evaluated. Applicants should understand the nature of the feedback that they are likely to receive. The different responses may include:

UNQUALIFIED APPROVAL

From the applicants perspective this is the best possible outcome. It indicates that having evaluated the comments of referees the funding organisation accepts

every detail of the proposal and has agreed to fund everything that was suggested and requested. Such unqualified approval is not a common response to a research proposal.

QUALIFIED APPROVAL

This form of feedback is fairly normal. It indicates that having seen the comments from the referees the funding organisation approves the proposal subject to certain conditions. Those conditions may relate to small changes in the nature of the proposed research, amendment of the suggested timescale and/or the level of funding support available. The applicant will be invited to accept the modifications as a condition of overall approval.

REQUEST FOR CLARIFICATION OR ADDITIONAL INFORMATION

Feedback in this category indicates that the referees and the funding organisation like the fundamentals of the proposal but do not fully understand the detail and/or wish to suggest some changes to the proposal. The applicant will be invited to comment on one or more specific points. In such circumstances the way in which the applicant responds will determine whether the proposal is subsequently accepted or rejected. The applicant may challenge some of the specific points raised but should only do so if he/she can produce an evidence-based response. The aim of this dialogue between applicant and funding organisation is to improve the research proposal and so help to increase the chances of a successful outcome.

REJECTION

For many funding organisations the rejection of a research proposal is the most common outcome in a competitive research environment. Rejection of a proposal will be a disappointment to the applicant but it does not necessarily mean that it was a poor proposal. Research proposals may be rejected for a variety of reasons including:

- It is scientifically or technically invalid or unachievable
- It lacks clarity or detail
- It lacks originality
- It lacks ethical or other necessary approval
- It is inappropriate to the criteria set by the funding body
- It is of insufficient importance in comparison with other proposals
- It did not score sufficiently highly in comparison with other proposals
- The applicants do not have a track record of research achievement

The feedback should enable the applicant to understand the reason for rejection. He/she may feel disappointed or aggrieved but there is no merit in challenging the decision once it has been made. For the young and inexperienced researcher it is worth remembering that:

- It is normal to fail first time
- Even experienced researchers rarely achieve 50% success
- Feedback should be seen as a learning experience
- The second proposal is much easier than the first!

6.6. References

All grant awarding bodies will provide specific information and advice on how to prepare and submit a research proposal. Applicants should study the appropriate document from the grant awarding body to which they will submit their application. The following are general references.

How to write a grant proposal.
www.wiki.how/Write-a-Grant-Proposal

Points to bear in mind when preparing a grant application. The Wellcome Trust.
www.wellcome.ac.uk/Funding/Biomedical-science/Application-information/wtvm052727.htm

Grant proposals (or give me the money). The Writing Center
<http://writingcenter.unc.edu/handouts/grant-proposals-or-give-me-the-money/>

Grant writing. National Institute for Health.
www.cc.nih.gov/training/resources/grant_writing.html