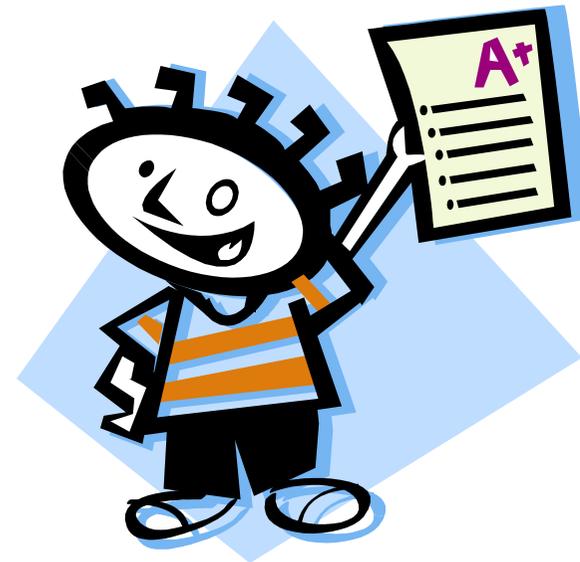


Preparing and Refining a Research Proposal: Tips for Inexperienced Scientists

Topics

- Proposal format
- Strengthening elements
- Internal continuity
- Funding targets
- Know your donor
- Grantee ethics



Never too old to learn

Background

- Scientists occupy privileged positions within society and bear the responsibility of offering feasible solutions to crucial problems
- Applied science implies the generation of potentially useful research products targeted to known client groups of stakeholders
- The important roles of scientific capacity building in agriculture and of improved agriculture and food security in African development are foremost on many donor agendas.

An effective proposal reflects awareness of all these issues!

Proposal Format:

A simple, short proposal is often best. One possible major heading and sub-heading format

Title Page Consisting of proposal title, principal investigator, cooperating investigators, complete contact details of principal investor, proposal duration, funds requested and a brief scientific summary (1Page)

Introduction, Justification and literature review. A clear statement of the problem and a state-of-the-art review of the research topic. In many cases 2-3 pages of tightly worded introduction are sufficient, followed by a one page justification and a comprehensive but concise literature review. (3-8 Pages)

Objectives. State a general and a few more specific objectives (0.5 Pages)

Hypothesis. The statement of clear general (global hypothesis) and a few specific (working) hypotheses (0.5 Pages)

Research Approach. May be subdivided into (3-5 pages):

- a. General experimental approach and site characteristics.
- b. Treatments and Treatment Rationale.
- c. Experimental design, often with a plot diagram
- d. Measurements. What data is required to test your hypotheses?
- e. Analysis of results. What facilities are available / necessary?

Research Outputs and Impacts. What do you anticipate the key accomplishments and how will these be popularized? (1-2 Pages)

Time Frame and Logistics. What will be done when? How will different components of the research interact and complement one another? (1-2 Pages)

Literature Cited. In leading journal format. (2-4 Pages)

Budget and Budget Notes: A simple table with items as rows and years as columns In a currency of donor organization. (1-3 Pages)

**Substance
and
Structure**



Note that a strong proposal may be developed in as few as 14 pages!



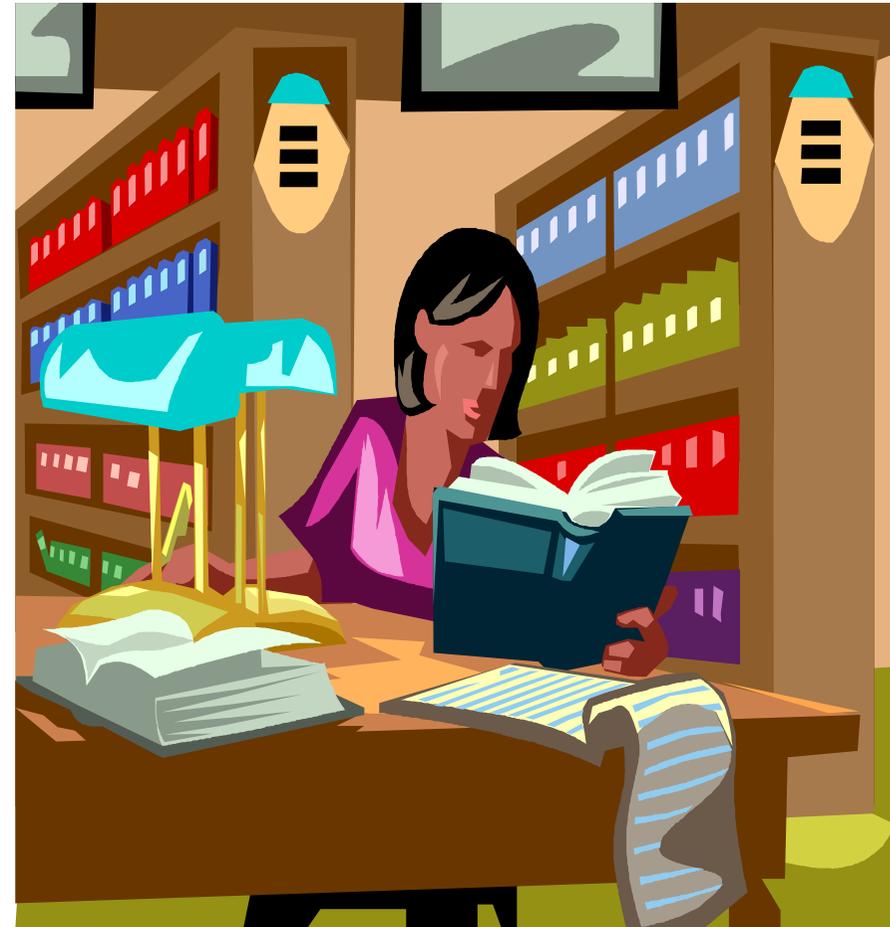
short but sweet

Some common pitfalls:

- Summary contains excess “pre-justification
- Routine Introduction and Justification
- Reliance upon weak and out-of-date citations
- Vague objectives and tautological hypotheses
- Poorly-cited methods
- Confusion of results with outputs
- Shortsighted description of impacts
- Absence of tables, figures and diagrams
- Excessively detailed or overly rounded budget

The overall content and appearance of a proposal is indicative to donors of an applicant's liability to later publish their research findings.

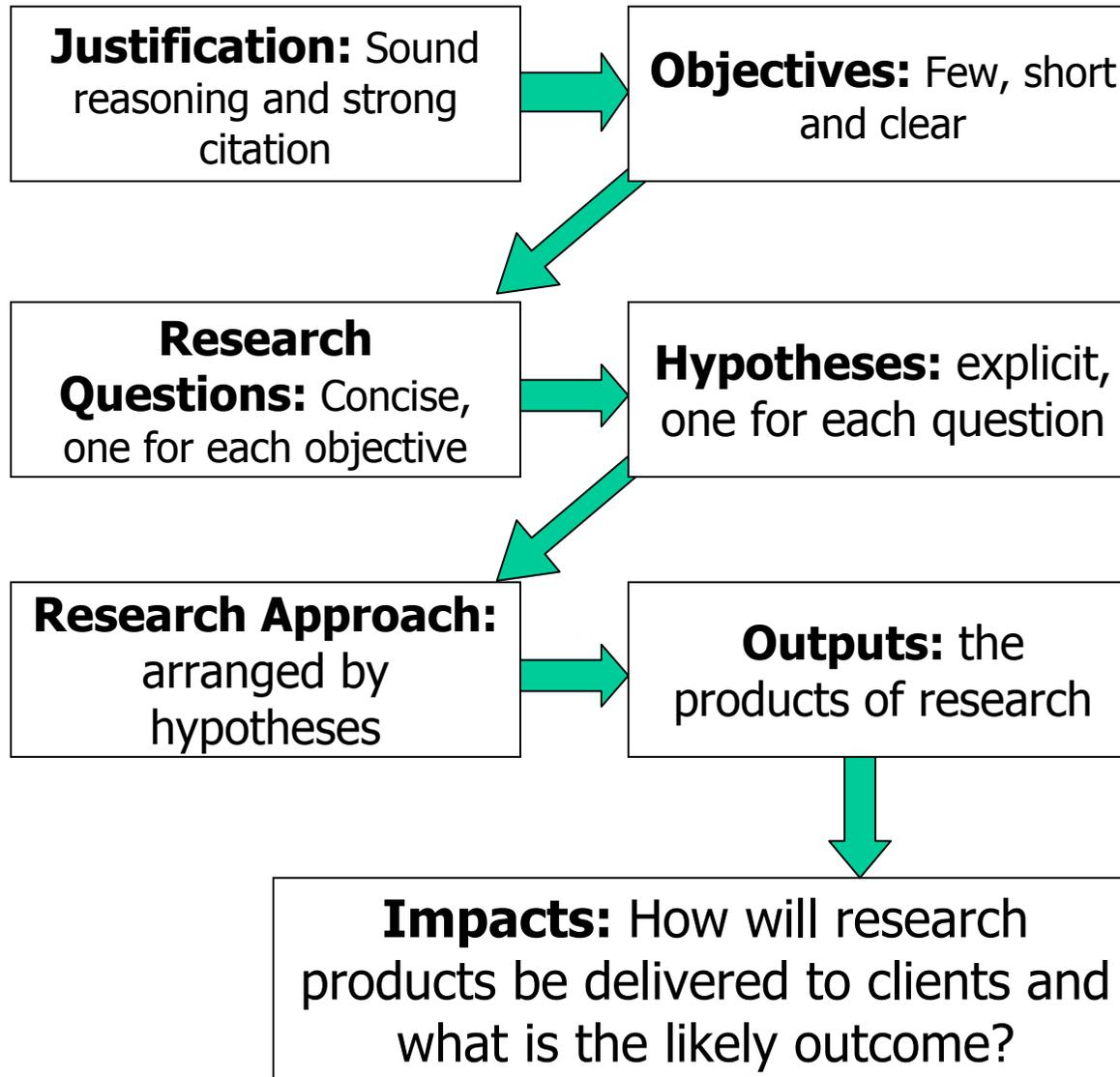
Incorrectly spelled words, inconsistent heading and sub-heading structure, poorly constructed tables and improperly cited reference are serious liabilities to an otherwise strong proposal!



Continuity between proposal elements

- The key to a successful grant proposal is continuity between proposal sections.
- Objectives must logically conclude the introduction and justification
- Objectives must be few, clearly stated and lead to well worded hypotheses
- Hypotheses must be stated such that treatment selection and important measures are obvious
- Different experiments must be easily distinguishable and related to the individual working hypotheses.
- Experimental outcomes may be anticipated and related to possible outputs and impacts

Confluence of proposal elements



Avoid proposal drift!

Sometimes authors' thinking and ideas change or further develop during the writing process.



This must not be considered undesirable because it is a fundamental part of the learning process.

What is undesirable within a proposal is when this transition is reflected in the finished product!

Structure of headings

Important to maintain consistent section, subsection and sub-subsection headings throughout the proposal.

MAIN HEADINGS CENTERED BOLD AND CAPITALIZED

Sub-headings bold, left justified

Sub-sub-headings bold italics left justified

... or structure the headings and sub-headings in the manner of a leading scientific journal within your area of interest!

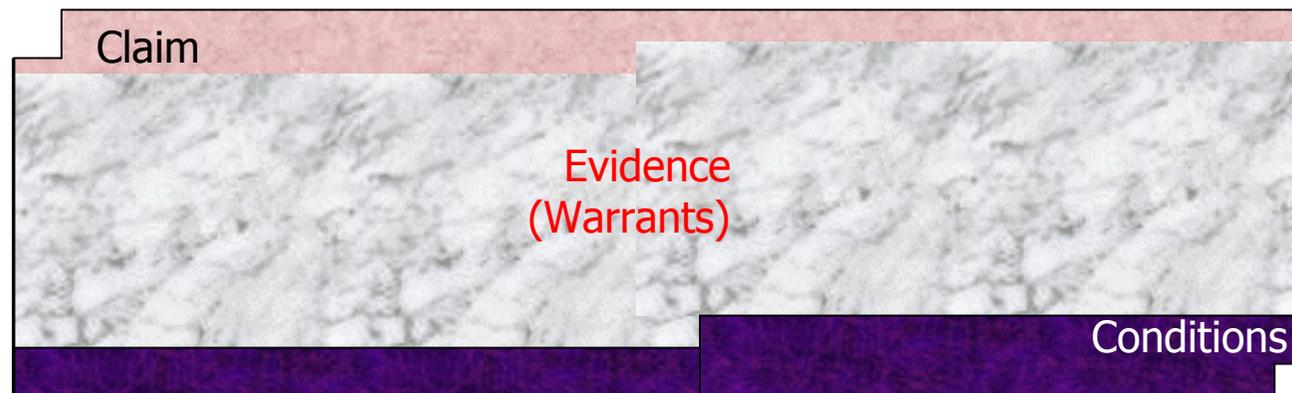
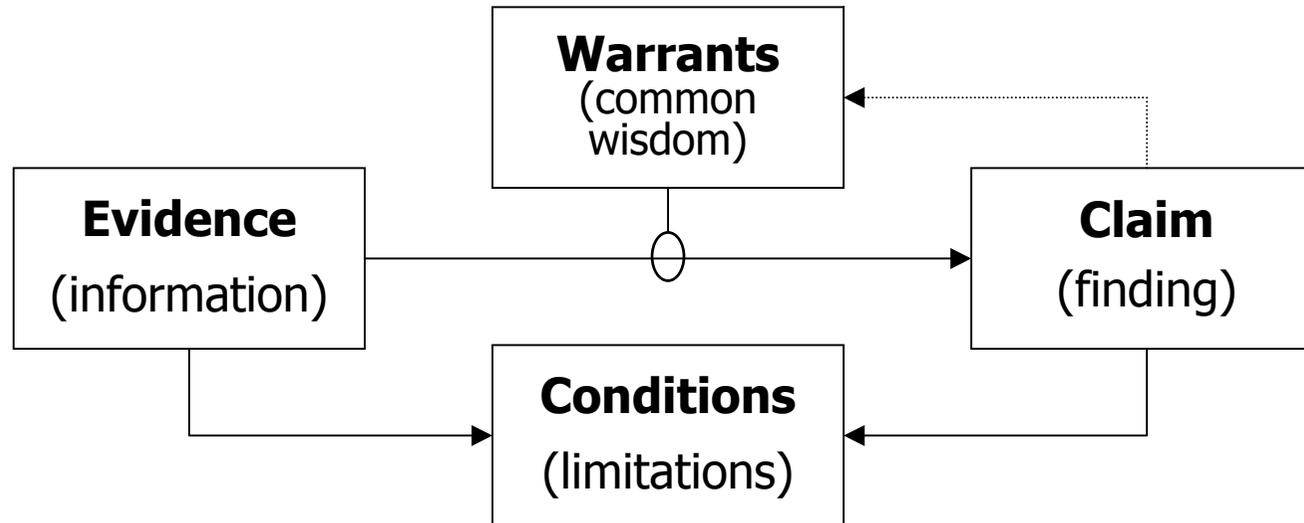
Paragraph Structure

One of the keys to successful scientific writing is the adherence to sound paragraph structure.

Each paragraph:

- *should consist of a single claim in the opening sentence....*
- *followed by evidence in support of that claim in the next few sentences and*
- *conclude with a sentence that places conditions or limitations upon that claim.*

In search of the perfect paragraph



(after Booth *et al.*, 1995)

Tables, Figures and Conceptual Diagrams

Every proposal should include tables, figures and conceptual diagrams.

These tools demonstrate an ability to compile and synthesize diverse sources of information and to prepare publication quality material.

Conceptual diagrams are best designed as graphic presentations of working hypotheses that identify likely mechanisms and how they might be elucidated.

Quality graphics greatly reduce the need for lengthy text explanations where “*one picture is worth a thousand words*”.

Additional documentation

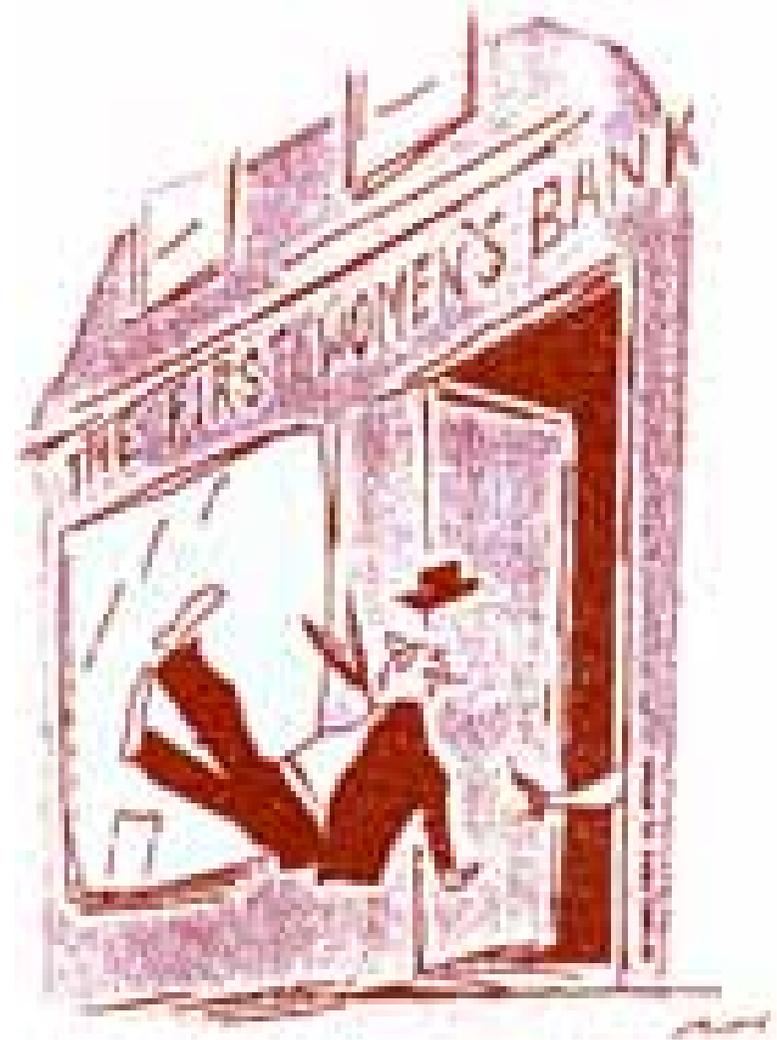
The submitted proposal should be accompanied by:

- a short cover letter
- letters of institutional support
- a brief description of the investigators' qualifications

Authors must not overwhelm a donor with enclosures or attachments accompanying a proposal as these may distract from the strengths of the proposal itself!

Know your donors!

While it is not possible for most scientists to know every donor representative personally or to be assured that an individual proposal will appear attractive to a donor organization, it is possible to target a proposal to a given donor.



Most donor organizations maintain home pages on the internet that describe their aims and programs.

Some donors post instructions to the authors and application forms over the internet.

Additional insights may be gained by examining the Acknowledgement section of recent publications.

Most donors “specialize” in areas of food, security, natural resource management, privatization and market liberalization, forestry, environmental conservation and in specific commodities or agroecological zones.

This knowledge is gained through experience as there is no single source for this information and donor priorities change with time.

Start a Donor File to assemble information on proposal submission strategies!

Emphasize substance, not superficial structure!

Be aware that many donors rely on experienced technical reviewers to evaluate incoming proposals and that these reviewers are expected to comment on the feasibility, relevance and potential impacts of the proposed research.

Avoid disciplinary jargon and excessive abbreviation as this will be interpreted as an inability to communicate with the wider scientific community.

Some proposals highlight structure, that is administrative mechanisms rather than scientific substance.

- Avoid establishing “management committees” for a project.
- Be careful not to reflect top-down administrative and client attitudes in work plan diagrams
- Emphasize interactions between research partners and stakeholders

Highlight the quality of the authors research experience rather than the size of one’s organization.

The proposal should reflect your stature as a developing scientist.

Time Frame

Whenever possible the revision of a research proposal should be a fairly rapid process.

Few donors will consider funding a single research project for greater than three years and many prefer two-year durations.

Shorter-duration projects allow donors to assess research and then encourage successful grantees to submit an extension study.

Donors begin to exhaust their funds by mid year but its never too early to submit something for the following year.

Donors have well established technical review procedures that require several weeks or months to complete.

Approaches to drafting a proposal vary between authors

Some draft the proposal start-to-finish and then insert a summary.

Others start with objectives, a conceptual diagram and a hypotheses, then develop methods, time frame, outputs, budget, introduction and literature review and summary.

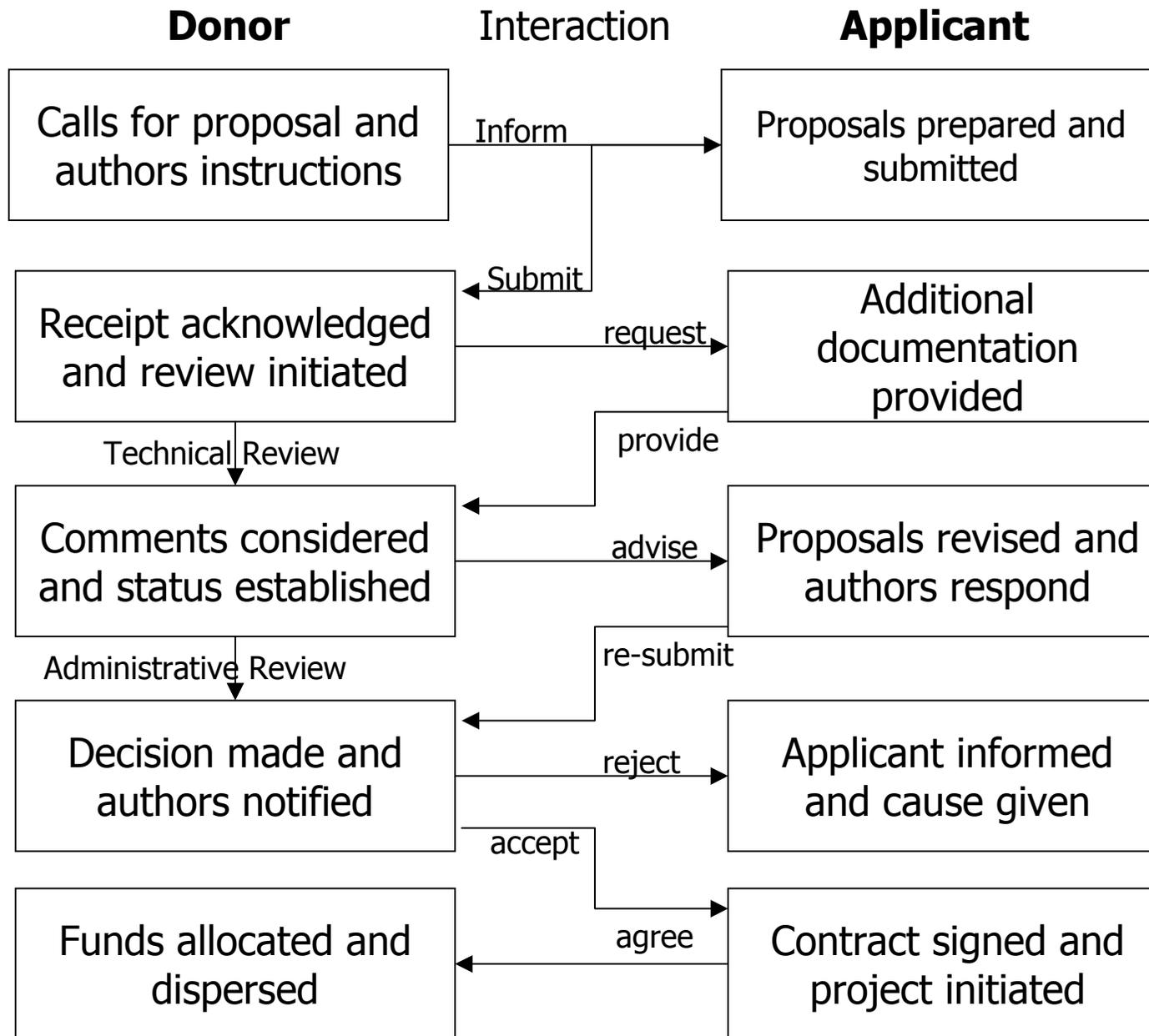
Start with general budget items (e.g. Salary, Equipment, Travel, Communication) and then add more specific sub-items as the proposal develops.

Funding Targets

Well written research proposals in the area of resource management that seek between \$15,000 US to \$30,000 US per year for 2 or 3 years are most readily awarded.

Feel free to ask for less (\$45,000) but be reluctant to ask for more (\$90,000) especially if the grant is your first proposal with a particular donor.

Given the relatively low expense of field experimentation and cost of technical and field labor, this level of funding is enough to keep a research team very busy and to partially re-equip a laboratory.



Applicants should.....

- Inform themselves of donor program objectives and author's instructions
- Respond to requests for additional information promptly
- respond to reviewer's comments in a constructive, interactive manner
- revise and resubmit proposals in a timely manner

Applicants should not.....

- Submit proposals without a fellow cooperator's knowledge
- Send frequent, unsolicited inquiries concerning proposals progress
- respond to reviewer's comments in a dismissive or defensive manner
- Present superficial changes as major revisions

Grantee ethics

All scientific ethics apply to grantsmanship, including the requirements to accurately cite and fully acknowledge the ideas and contribution of others and not to misrepresent or obscure contrary evidence.

Additional considerations:

It is ethical to submit the same or similar proposals to more than one donor at the same time, but unethical to accept funds from more than one donor for a single or similar research project.

Grant contracts are legal documents and the grantee should feel legally and ethically bound to complete these contracts to the best of their abilities.

Grantee ethics (continued)

Avoid double reporting. Double reporting results when investigators report all research activities to all funding agencies, regardless of which agency actually funded each individual study.

Different donors have specific acknowledgement conditions with which the grantee must familiarize themselves and comply.

Researchers who fully acknowledge sources, cite contrary findings, recognize the limitations of their findings and assert claims only as strongly as warranted not only avoid moral dilemma but establish scientific credibility! (after Booth *et al.*, 1995)

Indicators of a healthy and weak proposal preparation

-----Research Environment-----

Healthy

Weak

**Joint Proposal preparation by
PL and Cooperators**

**Prepared without Cooperator
knowledge or inputs**

**Proposal is reviewed
internally**

**No feedback prior to
submission to donor**

**Reviewers' comments are
circulated to others**

**Reviewers' comments
considered in isolation**

**Correct citation from leading
journals**

**In-country and grey literature
cited**

Indicators of a healthy and weak project management

-----Research Environment-----

Healthy

Weak

Regular project meetings are held

Few or no project meetings are held

PL assumes research responsibilities

PL operates through subordinate delegation

Cooperators assigned research tasks

Cooperators exist in name only

Cooperators provided budget and funds

PL withholds budgetary information and funds

Indicators of a healthy and weak student relations

-----Research Environment-----

Healthy

Weak

Complete proposal is provided to students and financial tasks assigned

Proposal or some sections of it are withheld from students and cooperators

Students assigned desk and laboratory workspace

No assigned work space due to vaguely worded "policies"

Students regularly access project vehicles and computers

Vehicles operated as PL's personal "property", computers locked away

Students work only on thesis and project goals, stipend timely and sufficient

Students distracted from thesis by outside employment

Indicators of a healthy and weak project accomplishment

-----Research Environment-----

Healthy

Weak

PL meets all project goals

PL ignores or redefines project goals

Informative and timely project reporting

Late and lax project reporting

Project leads to publication in a leading journal

Project results in technical report only

PL assumes active role in preparing publications

PL co-authorship an expected "courtesy"
