Writing effective grant proposals

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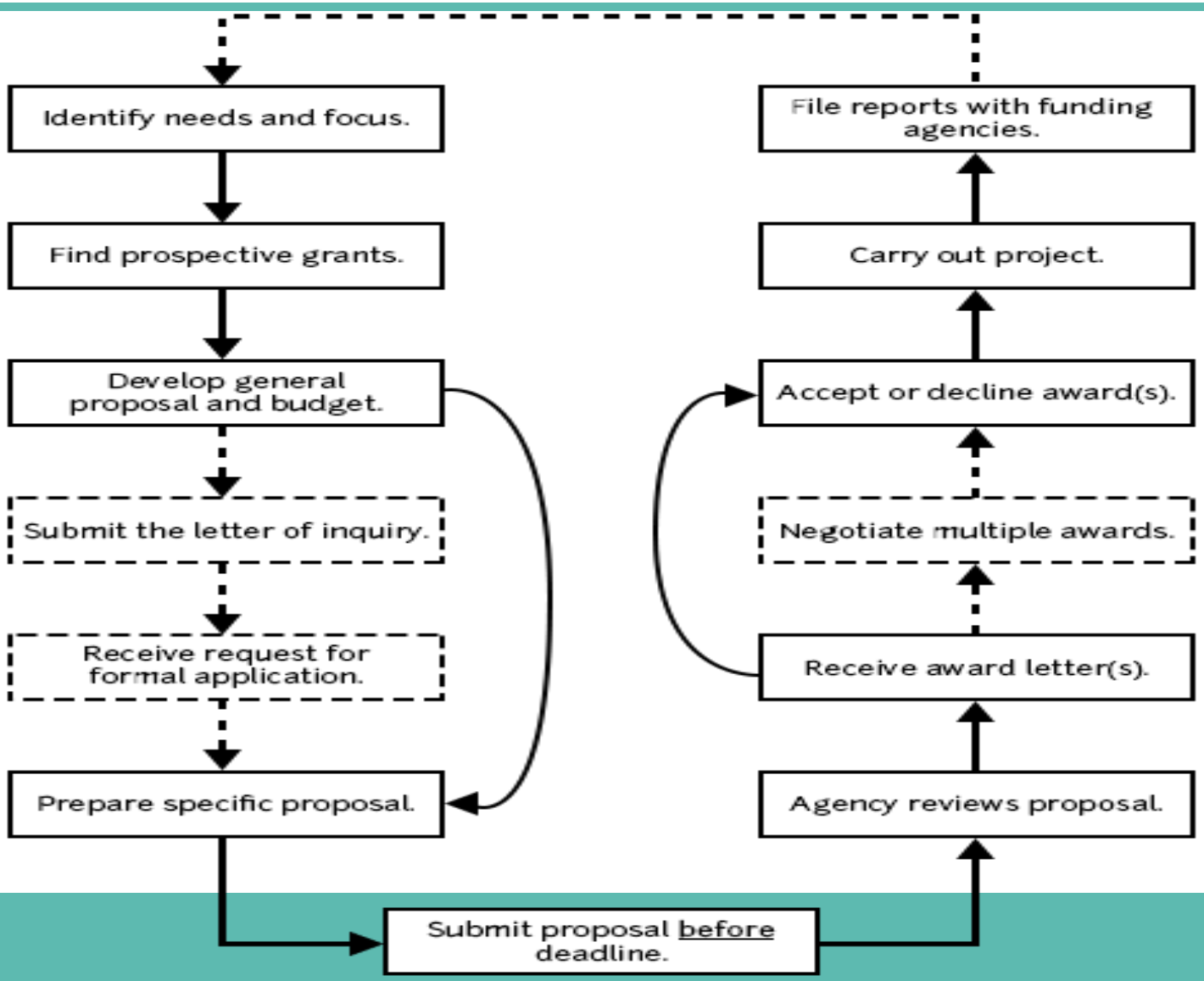
Discussion points….

- **Introduction**
- **Grant writing process**
- **General tips on writing a proposal**
- **Where To Approach For R&D Funds?**
- **Writing a proposal**
- **Budget**
- **Project timeline**
- **Summary**

Introduction

- **PROPOSAL:** a document to support an application for approval from institution to conduct a study and obtain funding
- **PROTOCOL :** a study's detailed methodology
- Writing successful grant applications is a long process that **begins with an idea.**
- Many people start by defining their **research question or questions.**
- You will need to explicitly communicate to the committee reviewing your application
  - What knowledge or information will be gained as a direct result of your project?
  - Why is undertaking your research important in a broader sense?
- This is easier when you know what you plan to achieve before you begin the writing process.

Grant writing is a circular process



What's in a grant proposal?

4 four basic information:

1. **Concept:** the compelling issue or problem being addressed and the approach to the solution
2. **Project/activity:** the scope of the intervention and how it will be implemented, including anticipated outcomes, staffing, timeline, monitoring and evaluation
3. **Organizational Capacity:** the capacity of research team and organization to implement the proposed activity
4. **Budget:** the budget must correspond with anticipated outcomes

Before you start writing a proposal

Planning

Before writing a proposal, plan for following:

- Proposed project should reflect the **mission of your organization.** What are **the issues addressed**? Why is it critical to address those issues?
- What are the **goals, objectives, and activities?** What are the intended results? What will research findings change?
- Who are the **stakeholders and how will they be involved?**
- What is the **timeline and required resources** (financial and staffing)? How to **monitor and evaluate** the project?
- What **follow-up** research?

Identify your needs and focus

First, identify your needs.

Answering the following questions may help you:

- Are you undertaking preliminary or pilot research in order to develop a full-blown research agenda?
- Are you seeking funding for dissertation research? Pre-dissertation research? Postdoctoral research? Archival research? Experimental research? Fieldwork?
- Do you want a fellowship in residence at an institution that will offer some programmatic support or other resources to enhance your project?
- Do you want funding for a large research project that will last for several years and involve multiple staff members?

Components of a research proposal

Components of a research proposal

Contact Information	Responsible person's name, organization, address, email, telephone
Overview	Summary of proposal, including a statement on the purpose of the project and why funds are being requested.
Concept	Description of critical issues affecting your community and why project is necessary. Funder may ask for a needs statement which provides a scope of the problem, including statistics. Focus this section on what your intended project is addressing
Project description	How project will be implemented, including: measurable goals and objectives, activities, beneficiaries' involvement, anticipated results, timeframe, collaborating organizations or agencies
Monitoring and evaluation	How project will be monitored and evaluated to ensure that the project is on track and that the results are being achieved.
Budget	Costs for project, amount requested, inkind contributions, and other sources of funding. State currency and exchange rate on which your budget is based.
Organization information	Background, governance structure and composition, mission, past accomplishments, staff qualifications, internal controls, legal status.

Background

General Idea Selection

- Turn to the literature that pertains to your area of interest
- Ideas from courses attended and research discussed
- Ideas from media – news, science magazines, etc.

Once You Have a Topic

- Glean from courses taken in writing, research methods
- Develop a strategy for addressing all relevant components
- **Title** – concise yet sufficiently descriptive
- **Abstract** – e.g. 400 words summarizing the research project
- **Introduction**
  - Background content, Rationale, Research Qs. • Frame the research problem!
    • Develop your hypotheses

Literature review

- Are your ideas novel?
- Sources: academic literature, grey literature
- Where are the research gaps? Be a critical thinker!
- Show you can integrate and synthesize the existing literature
- Nothing is perfect - illustrate some potential issues you may encounter and how you will deal with them (e.g. small N)

“Research Q”(s)

- WHAT do you wish to accomplish?
- As with goals, is the question S.M.A.R.T.?
- Specific, Measurable, Achievable, Relevant and Time Bound
- Is it a feasible question (scope, time, budget)?
- Beware of “scope creep”!

Research Q Example:

- Do socioeconomic factors (income, education, employment) play a role in non-fatal traffic injury incidence and severity?

Methodology

- HOW will you answer your research question?
  - Five ‘W’s & H’: Who, What, When, Where, Why, and How
- Methods must be well thought out and comprehensive
- Research Design –
  - Qualitative or Quantitative or Mixed-Methods?
  - Cross-sectional or longitudinal surveys?
  - Primary or secondary data analysis?
    - If primary - Tool validation: pilot studies, validity statistics?
- Procedures: X Y Z, be logical and sequential
- Inclusion/exclusion vs. leave to “assume”
- Participants – communities, individuals, groups?
- Materials Used: Tools, instruments, equipment
- Key Question: Could someone ELSE carry out this entire project?

Proposed Budget and Timeline

Criteria for approval

Criteria for approval

- **Relevance and effectiveness**
- **Feasibility and efficiency**
- **Impact**
- **Sustainability**
- **Capacity**
- **Financials**

Relevance and effectiveness

- Do the objectives and goals match the problems or needs that are being addressed?
- How will the intervention achieve its objectives?
- How are stakeholders involved?
- How will the changes be measured, monitored, and evaluated?

Feasibility and efficiency

- Has the approach been attempted elsewhere?
- Is the proposed approach practical?
- What is the timeframe for the project? Is it realistic?

Impact

- What will happen as a result of the project?
- How will it make a difference in the community?
- Does the proposed activity have influence beyond its aims?

Sustainability

- Are there lasting benefits after the intervention?
- Will key partnerships be developed to sustain the project?
- Have funds from other sources been identified?
- How will the project continue after funding?
- What is the plan for the project's future?

Capacity

- Has the investigators succeeded in similar endeavors of equal size, scale, and focus?
- What relevant skills does the research team bring to the project?
- How do each organization contribute to the research?

Financials

- Does the budget include income, expenses, and contributions (in-kind, financial)? Note: some funders require a specific percentage of in-kind contributions.
- Are the budget items reasonable and justifiable?
- What percentage of budget request is for salaries? Is this sustainable?
- What percentage of budget request will go directly to beneficiaries?
- What are the internal controls? How are funds spent, what kind of tracking system is in place, how are decisions made?

What constitutes a research project budget?

Direct costs

- Personnel
- Recurring expenses
- Non-recurring expenses
- Traveling expenses

Indirect costs

- Overhead charges - about 5 to 15%

Budget justification

Budget summary outline

Sample Budget sheet

Items	Total	1st year	2nd year	3rd year	Balance10% of the total
Salary (research fellow)	7,19,200	2,30,000	2,30,000	2,59,200	
Equipment	6,40,000	6,40,000	–	–	
Books	15,000	15,000	–		
Other non-recurring expenditure	–	–	–		
Recurring expenditure	9,95,000	3,92,000	5,87,000	16,000	
TA/DA	90,000	30,000	30,000	30,000	
Institutional support	97,260	–	–	97,260	
Fee of PI and CoI	90,000	–		90,000	
Miscellaneous expenses	36,000	18,000	18,000		
Total	26,82,460	13,25,000	8,65,000	4,92,460	2,68,246

How to plan a simple research budget?

- List of what is essential and would add value for research.
- The instructions, format of the application and rules of the funding agency should be read thoroughly.
- A list of items should be made and categorized into recurring and non-recurring expenses.
- Item-wise and year-wise justification of the requirement in a same sequence of format should be provided.
- In the last, review the budget and verify the costs and calculation.

Useful information about funders

- **Funding priorities.** What priorities? Research concept must match priorities of funder
- **Focus areas.** What focus area(s) within the priorities?
- **Populations served.** If this information is not available, examine projects that have been funded previously.
- **Region.** Any specific geographic location? National or international impact?
- **Size of grants.** Maximum amount? Part or complete funding?
- **Application requirements.** What is the entire application process, including what required attachments and timelines.

Where To Approach For R&D Funds?

Sl. no.	Funding agencies	Website
1.	ICMR (Indian Council of Medical Research)	www.icmr.nic.in
2.	DHR (Department of Health Research), Ministry of Health and Family Welfare	www.dhr.gov.in
3.	Ministry of AYUSH (Ministry of Ayurveda, Yoga and Naturopathy, Unani, Siddha and Homeopathy)	www.ayush.gov.in
4.	Central Council for Research in Yoga and Naturopathy	www.ccryn.org
5.	Central Council for Research in Ayurvedic Sciences	www.ccras.nic.in
6.	Central Council for Research in Unani Medicine	www.ccrum.ne
7.	Central Council for Research in Siddha	www.siddhacouncil.com
8.	Central Council for Research in Homeopathy	www.ccrhindia.org
9.	DBT (Department of Biotechnology)	www.dbtindia.nic.in
10.	DST (Department of Science and Technology)	www.dst.gov.in
11.	Science and Technology of Yoga and Meditation, Ministry of Science and Technology	www.dst.gov.in/science-and-technology-yoga-and-meditation
12.	SERC (Science and Engineering Research Council)	www.serb.gov.in
13.	CSIR (Council for Scientific and Industrial Research)	www.csir.res.in
14.	UGC (University Grants Commission)	www.ugc.ac.in
15.	DAE (Department of Atomic Energy)	dae.nic.in
16.	DRDO (Defense Research and Development Organization), Life sciences research board.	www.drdo.gov.in/drdo/boards/lsrb/fplsrb.htm
17.	VGST (Vision Group of Science and Technology, Karnataka)	www.vgst.in
18.	INSA (Indian National Science Academy)	insaindia.res.in
19.	Wellcome trust-DBT Alliance India	www.wellcomedbt.org

Council of Scientific and Industrial Research (CSIR)

Name of the program	Specific areas of research supported	Nature of support	Duration of support	Amount/Grant
CSIR[5]				
CSIR Sponsored Research Scheme	Medicine-both basic and clinical sciences (priority to multidisciplinary projects)	JRF, SRF and RA, contingencies and equipment	3 years (rarely extendable up to 2 years)	Maximum 20 lakhs (for the other CSIR research scheme, the maximum is 10 lakhs)
Emeritus Scientists		Contingencies, JRF, SRF and RA	3 years (extendable to 2 years up to 65 years of age)	Scientist allowance of Rs. 20,000 pm during the tenure and variable contingency grant

Department of Biotechnology (DBT)

Name of the program	Specific areas of research supported	Nature of support	Duration of support	Amount/Grant
DBT Research Associateship Program	Frontier areas of biotechnology and life sciences Coordinated by Indian Institute of Sciences, Bengaluru	Contingencies	2 years	Stipend: Rs. 47,000 – 54000 per month Research grant : Rs. 50,000 per year
TATA Innovation Fellowships	Biological sciences and biotechnology	Consumables, equipment, international and domestic travel, manpower and other contingent expenditure	3 years (extendable up to 2 years)	Rs. 25000 pm Contingency grant: Rs. 6 lakhs per annum
Har Gobind Khorana - Innovative Young Biotechnologist award	Frontier areas in biotechnology/ biotechnology related fields	Equipment/software, consumables, contingencies and travel grant	3 years	Rs. 75,000 pm for candidates not in regular employment Rs. 1 lakh per year for regularly employed candidates Contingency grant: Up to 10 lakhs
S Ramachandran – National Bioscience Award for career Development	Basic and applied research in biological sciences including medical sciences	Contingencies	3 years	Cash prize: Rs. 2 lakhs Research grant: Rs. 5 lakhs per year Citation and trophy

Department of Science and Technology (DST)

Name of the program	Specific areas of research supported	Nature of support	Duration of support	Amount/Grant
INSPIRE faculty fellowship	All areas of science including medical science	All recurring and non-recurring budgets (man power, consumables, equipment, overheads)	5 years	Fellowship: Rs. 125,000 per month Research Grant: 7 Lakh per year for 5 years
SATYAM	Investigations on the effect of Yoga and Meditation on physical and mental health and wellbeing	All recurring and non-recurring budgets (man power, consumables, equipment, overheads, etc.)	3 years	Variable (Up to 15 lakhs in the special call for COVID 19 projects in the year 2020)
Swarnajayanthi Fellowship	Frontier areas in science and engineering	Equipment, computational and communication facilities, consumables, contingencies, administrative support, national and international travel and other special requirements will be covered	5 years maximum	Fellowship: Rs. 25,000 per month Research grant: Rs. 5 lakh per annum
WOS	WOS-A: Research in basic/applied science WOS-B: S and T interventions for societal benefit	Small equipment, contingencies, travel, consumables etc.	3 years	Variable (maximum 30-20 lakhs) depending on the qualification of the researcher

Indian Council of Medical Research (ICMR)

Name of the program	Specific areas of research supported	Nature of support	Duration of support	Amount/Grant
Senior Research Fellowship	All areas of Life Sciences	Contingencies	3 years	Fellowship: Rs. 28,000 Research grant: Rs 20,000 per annum
Research Associateship	All areas of Life Sciences	Contingencies	3 years	Fellowship: Rs. 36,000 (with Rs. 2000 yearly increment) Research grant: Rs 20,000 per annum
Short-Term Low-Cost Proposals	Thrust areas in health research	Contingencies	One year or less	Up to 10 lakhs
Extramural Ad Hoc	Thrust areas in health research	Staff, contingency, travel, equipment, and overhead charges	3 years	Up to 1.5 crores
ICMR Emeritus Scientist	Biomedical Sciences	One project assistant Contingencies	Initially 3for 2 year. Extendable up to 3 years	Honorarium: Rs. 60,000 per month Contingent grant Rs. 1 lakh per annum
Task Force Projects	National priority areas of research Usually multicentric projects	Staff, contingency, travel (if approved), equipment (if approved) and overhead charges	3 years	Up to 5 crores for the total duration per center
Support for MD/MS/ DM/MCh and MDS thesis and postdoctoral fellows	-	-	Open twice a year	50,000 per candidate for a maximum of 100 candidates per year
Support for postdoctoral fellows	-	HRA, NPA, contingencies, travel	2 years (extendable up to 3 years)	Fellowship of Rs. 50,000 per month plus HRA, NPA, contingency grant of Rs. 3.0 lakhs per annum, 25% of which can be used for travel

Department of Health Research

Name of the program	Specific areas of research supported	Nature of support	Duration of support	Amount/Grant
Fellowship program for young scientist Fellowship program for Women scientist	Biomedical/health research	Contingencies	3 years	Stipend: Rs. 60–70,000 depending on the qualification of the researcher Research grant: Up to Rs. 10 lakhs per year
Startup grant for fellows undergone short-term/ long-term fellowship	Public health issues and activities National priority areas	Contingencies	3 years	Rs. 30 lakhs per project

Project Timeline

Project Timeline – Gantt Chart

	GY1				GY2			
Activity	**Q1**	**Q2**	**Q3**	**Q4**	**Q5**	**Q6**	**Q7**	**Q8**
• Develop items for survey								
• Review and revise items with experts' panel.								
• Pre-test items with representative sample of target population.								
• Program software to administer survey.								
• Prepare survey sites for study.								
• Recruit and train Study Reps.								
• Recruit 1,000 subjects and administer survey at 5 sites.								
• Statistical analysis of data.								
• Preparation and submission of manuscripts to peer-reviewed journals.								

Major issues with grant proposals

Major issues with grant proposals

General issues –

- The proposal is technology driven rather than hypothesis driven (i.e., a method in search of a problem).
- Research depend on success of an initial phase so all remaining phases may be worthless if the first is not successful.
- No budget breakdown, justifications and do not adhere to funding guidelines
- Layout poor (typographical, grammatical errors)
- Use of jargon, abbreviations, undefined terms
- (For revision) Inadequately responsive to previous reviewers' comments

Major issues with grant proposals

Specific aims/hypotheses

- Goals overstated, overly ambitious or unrealistic
- Poorly focused or inadequately conceptualized
- Hypotheses not clearly articulated

Background / significance

- Need for study not well justified
- Too much background, insufficient room for methods,
- Extraneous information
- Overstatement of significance of study.

Methods

- Poor description of target and study populations
- Poor and flawed Inclusion criteria and Exclusion criteria
- **Data collection/procedures**
  - Inadequate description of study instruments or variables
  - Concerns about validity or reliability of data collection methods
- **Outcome**
  - Concerns about adequate blinding of outcome assessment
  - Outcome measure inadequately described, defined, or specified

Major issues with grant proposals

- **Intervention**
  - potential bias in selection of samples
  - Concerns about dosage or concentration of intervention
  - Poorly described interventions or tools for data collection
  - Unblinded administration of intervention that lead to bias in analysis
- **Controls**
  - Lack of or inadequate description of control group.
- **Data analysis**
  - Inadequate control for important confounders
  - Insufficient description of analytic approach
- **Sample size/power**
  - Lack of or inadequate description of sample size or power calculations
  - Sample size too small leading to poor power (rejecting null hypothesis when it is true)

Summary

Summary: Good research starts with a good idea

Checklist for effective writing a grant proposal

- What is the problem to be addressed? → Define the question
- Is the question unanswered? → Literature research
- Formulate hypothesis
- Choose appropriate study design
- Identify team and collaborators
- Determine environmental and financial needs
- Write study protocol
- You should propose an appropriate budget and a realistic timeline

“Lastly, you should tailor their grant application towards the granting agency's goals and use the requested format for their application as that might differ from agency to agency”

“Know the culture of the funder • Follow the instructions • Know the assessment criteria • Treat the application like an argument and present it with confidence • Use the appropriate disciplinary concepts and methods”

THANK YOU