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Writing Grant Proposals: Methodology, Outcomes, Budget, & Timelines

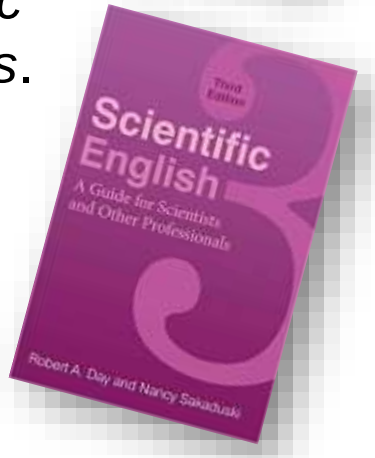
ENGR 361: Scientific Research Communication

https://www.csulb.edu

References

- Alred, G. J., Brusaw, C. T., & Oliu, W. E. (2009). *Handbook of technical writing*. Macmillan.

- Day, R. A., Sakaduski, N., & Day, N. (2011). *Scientific English: A guide for scientists and other professionals*. ABC-CLIO.



Additional References

- Developing Measurable Outcomes
  - https://www.cdfa.ca.gov/specialty_crop_competitiveness_grants/pdfs/developing_measure_outcomes.pdf
- Quick Guide for Grant Applications
  - https://www.niaaa.nih.gov/sites/default/files/publications/Training/Training_Quick_Guide_for_Grant_Applications-rev-2010.pdf
- Examples of Facilities & Other Resources
  - http://www.grantcentral.com/wp-content/uploads/2015/06/Facilities-Other-Resources-Example-NIH.pdf

Grant Proposals

- **Elements of a Study Proposal**
  - I. Title Page
    - i. Table of Contents & Table of Figures
  - II. Abstract
  - III. Research Plan
    - i. Hypothesis & Specific aims
    - ii. Background & Significance
    - iii. Preliminary Results (if applicable)
    - iv. Research Design & Methods
    - **v. Expected Outcomes & Impact**
  - **IV. Budget & Justification**
  - **V. Resources & Environment**
  - **VI. Timeline**
  - VII. References

Zlowodzki *et al*. 2007

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Writing Grant Proposals
Methodology

- **Methodology**
  - Once the goals and objectives of your grant proposal are in place, you need to walk your grant proposal reader through the methods you will use to achieve those goals and objectives
  - There could be an infinite variety of ways to achieve your objectives, so how do you choose just the right approach and, furthermore, justify why you chose those methods?

Writing Grant Proposals
Methodology

- **Methodology**
  - Chosen method works well for the causes of the problem you will attempt to amend
    - Think about how well your approach matches the nature of the problem
  - Methodology selected has already been successful
    - Used the method before, or you know and have access to information from another agency that this method has worked with a similar problem

Writing Grant Proposals
Methodology

- **Methodology**
  - Proposed methodology is a good fit for the professionals involved
  - Modified "best practices" to fit your particular needs
  - Proposed methodology is cost-effective
    - Cost-effectiveness alone is not enough, but if you know the method works and is affordable, that's a strong reason

Writing Grant Proposals
Methodology

- **Methodology**
  - How to Describe Your Methods
    - Firmly tie your methods to the proposed grant's objectives and needs statement
    - Link them to the resources you are requesting in the proposal budget
    - Explain why you chose these methods by including research, expert opinion, and your experience
    - List the facilities and capital equipment that you will use in the project
    - Carefully structure activities so that the program moves toward the desired results

Writing Grant Proposals
Methodology

- **Methodology**
  - How to Describe Your Methods
    - Include a timeline
    - Include information about whom the program will serve and how they will be chosen
    - Don't think of this as "dumbing" it down, but rather as making it crystal clear

Writing Grant Proposals
Methodology

- **Methodology**
  - Once you've written the methods section, look at it again and ask these questions:
    - Do the methods flow logically from the need statement and your goals and objectives?
    - Have you accurately presented the program activities you will develop?
    - Did you explain why you chose these particular methods or activities?
    - Is there a timeline that makes sense?

Writing Grant Proposals
Methodology

- **Methodology**
  - Have you made it clear who will perform particular activities?
  - Given the resources you expect to have, are these activities feasible?

– Once you have provided a comprehensive, transparent, and useful methods component for your grant proposal, you should move on to the evaluation component

Writing Grant Proposals
Expected Outcomes

- Goals & Objectives outlined in Grant
  - Value of project cannot be measured without DEFINING success
  - TRANSLATE Goals & Objectives into Measurable Outcomes
- Expected Outcomes must be monitored
  - Tracks project's progress throughout grant period
    - Guides any necessary changes
    - Evaluate success at the end of the program year

Writing Grant Proposals
Expected Outcomes

- **Expected/Measurable Outcomes**
  - Outcomes are:
    - Changes in behavior or condition that reflect a positive impact
      - Note: outcomes generally begin with a verb like increase, expand, or improve
    - Specific & Measurable
      - Tracking data to monitor outcomes is practical and timely
    - Achieving an outcome indicates fulfillment of purpose and program toward long-term impact

Writing Grant Proposals
Expected Outcomes

- **Expected/Measurable Outcomes**
  - Outcomes are NOT:
    - Activities or processes
      - Hosting an event versus increasing awareness
    - Immeasurable long-term change

Writing Grant Proposals
Expected Outcomes

- **Expected/Measurable Outcomes**
  - Outcomes are not activity based
    - *Conduct five training workshops*
    - *Install a salad bar in 20 schools*
    - *Develop a new pest testing protocol*
  - Activity outputs do not reflect results achieved
    - Do not demonstrate the value of the project
    - Only activities or products of work that support outcomes
  - Outputs are tasks that the project's personnel have completed, not changes that favorably effect outside beneficiaries

Writing Grant Proposals
Expected Outcomes

- **Developing Expected/Measurable Outcomes**
  - Program personnel should ask what results are expected from each output (performance-based outcome)
    - Performance measures are particular values or characteristics
    - Performance measures are used to observe progress and to measure actual results compared to expected results

Writing Grant Proposals
Expected Outcomes

- **Value -vs- Compliance**
  - Awardees have a responsibility to communicate value through outcome measurement (Value)
    - Outcome measurements provide evidence to support theories of change
    - Data to improve results & demonstrate value delivered
  - Awardees have a responsibility to track funds & activities (Compliance)
    - Measurement is act of compliance
      - Counting up completed activities & monitoring how funds are spent

Writing Grant Proposals
Expected Outcomes

- **Performance-Based Measures**
  - Represent results in terms of their contribution to project goals
    - Not track activities or inputs
  - Demonstrate incremental value in terms of:
    - Effectiveness (increased relevance or quality), scale (increase in reach)
    - Efficiency (reduction in time and/or cost)
    - Sustainability (increase in longevity or impact)
  - Show progress toward the project's intended purpose

Writing Grant Proposals
Expected Outcomes

- **Performance-Based Measures**
  - Determine the baseline for each measure
    - Previously collected data or Literature
  - Set target goals for future performance
    - Absolute level of achievement (Set a target level)
    - Change in level of achievement (Increase/decrease existing level by set amount)
    - Change in relation to the scale of the problem (Change level by a percentage of existing existing)
  - Develop a data collection plan

Writing Grant Proposals
Expected Outcomes

- **Example**
  - **Goal**: Increase the number of low income people in X County who have access to fruits and vegetables
  - **Performance Measure**: Number of people who actively participate in the community garden program
  - **Benchmark**: In 2011, 100 people participated in the community garden program from May through September

Writing Grant Proposals
Expected Outcomes

- **Example**
  - **Target**: In 2012, increase the participation by 50% to 200 people during the same period
  - **Data Collection Plan**: Promotion for the program will start in January
    - Each month from January through April, enrollment records will be reviewed to ensure that participation is increasing
    - If this is not the case, changes to the program promotion plan will be made at the beginning of the month

Writing Grant Proposals
Resources & Environment

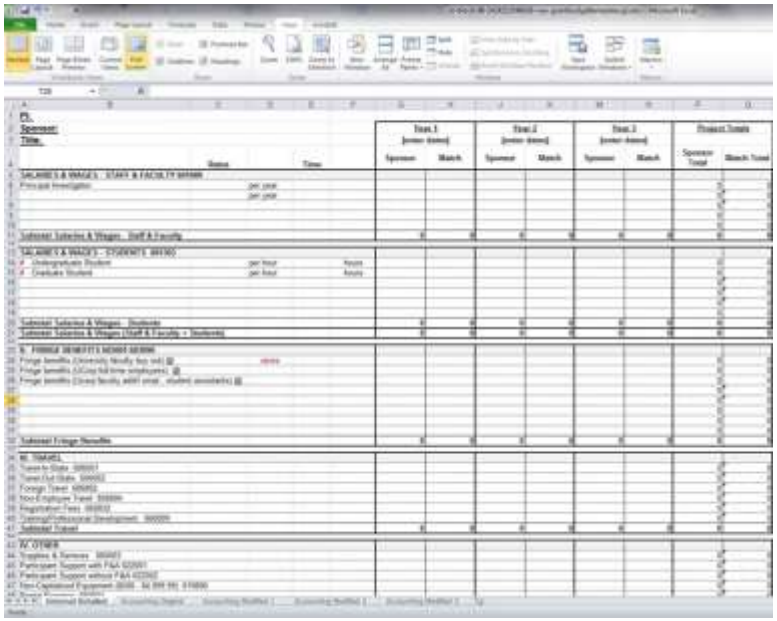
- **Resources & Environment**
  - Section describing the resources, facilities, and support available to the researcher
    - No recommended length, but be succinct

Writing Grant Proposals
Resources & Environment

- **Resources & Environment**
  - Resources & environment section addresses all requirements of the proposed research plan
  - Justify any reliance on external resources
  - Subcontractors & consortium members have the capability to perform the tasks assigned to them
    - Appropriate letters of collaboration are included
  - Resources & budget requests are consistent

Writing Grant Proposals
Budget Justification

- **Budget Justification**
  - A short narrative that presents & justifies all expenses required to achieve project aims and objectives



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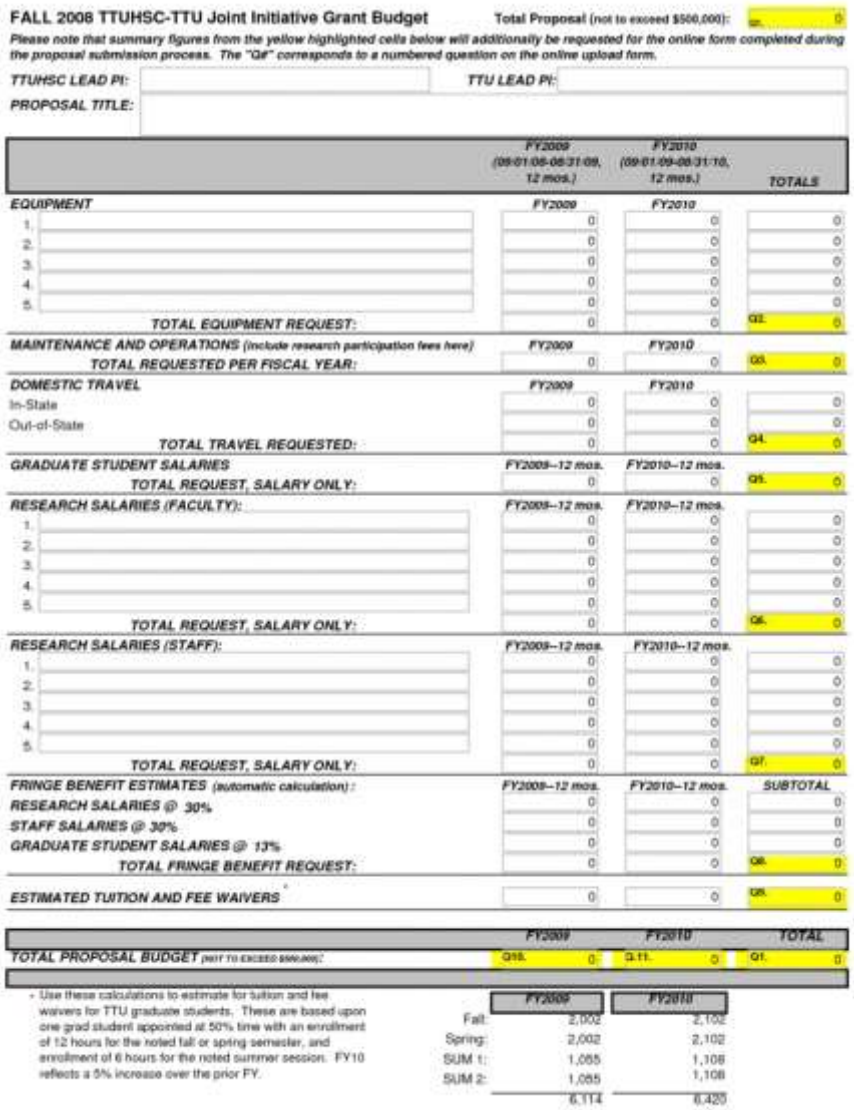
Writing Grant Proposals
Budget Justification



FALL 2008 TTUHSC-TTU Joint Initiative Grant Budget — Total Proposal (not to exceed $500,000): Q0. 0

Please note that summary figures from the yellow highlighted cells below will additionally be requested for the online form completed during the proposal submission process. The "Q#" corresponds to a numbered question on the online upload form.

TTUHSC LEAD PI: TTU LEAD PI:

PROPOSAL TITLE:

	FY2009 (09-01-08-08-31-09, 12 mos.)	FY2010 (09-01-09-08-31-10, 12 mos.)	TOTALS
EQUIPMENT	FY2009	FY2010	
1.	0	0	0
2.	0	0	0
3.	0	0	0
4.	0	0	0
5.	0	0	0
TOTAL EQUIPMENT REQUEST:	0	0	Q2. 0
MAINTENANCE AND OPERATIONS (include research participation fees here)	FY2009	FY2010	
TOTAL REQUESTED PER FISCAL YEAR:	0	0	Q3. 0
DOMESTIC TRAVEL	FY2009	FY2010	
In-State	0	0	0
Out-of-State	0	0	0
TOTAL TRAVEL REQUESTED:	0	0	Q4. 0
GRADUATE STUDENT SALARIES	FY2009--12 mos.	FY2010--12 mos.	
TOTAL REQUEST, SALARY ONLY:	0	0	Q5. 0
RESEARCH SALARIES (FACULTY):	FY2009--12 mos.	FY2010--12 mos.	
1.	0	0	0
2.	0	0	0
3.	0	0	0
4.	0	0	0
5.	0	0	0
TOTAL REQUEST, SALARY ONLY:	0	0	Q6. 0
RESEARCH SALARIES (STAFF):	FY2009--12 mos.	FY2010--12 mos.	
1.	0	0	0
2.	0	0	0
3.	0	0	0
4.	0	0	0
5.	0	0	0
TOTAL REQUEST, SALARY ONLY:	0	0	Q7. 0
FRINGE BENEFIT ESTIMATES (automatic calculation) :	FY2009--12 mos.	FY2010--12 mos.	SUBTOTAL
RESEARCH SALARIES @ 30%	0	0	0
STAFF SALARIES @ 30%	0	0	0
GRADUATE STUDENT SALARIES @ 13%	0	0	0
TOTAL FRINGE BENEFIT REQUEST:	0	0	Q8. 0
ESTIMATED TUITION AND FEE WAIVERS *	0	0	Q9. 0

	FY2009	FY2010	TOTAL
TOTAL PROPOSAL BUDGET (NOT TO EXCEED $500,000):	Q10. 0	Q11. 0	Q1. 0

* Use these calculations to estimate for tuition and fee waivers for TTU graduate students. These are based upon one grad student appointed at 50% time with an enrollment of 12 hours for the noted fall or spring semester, and enrollment of 6 hours for the noted summer session. FY10 reflects a 5% increase over the prior FY.

	FY2009	FY2010
Fall:	2,002	2,102
Spring:	2,002	2,102
SUM 1:	1,055	1,108
SUM 2:	1,055	1,108
	6,114	6,420

- NIH Budget Form

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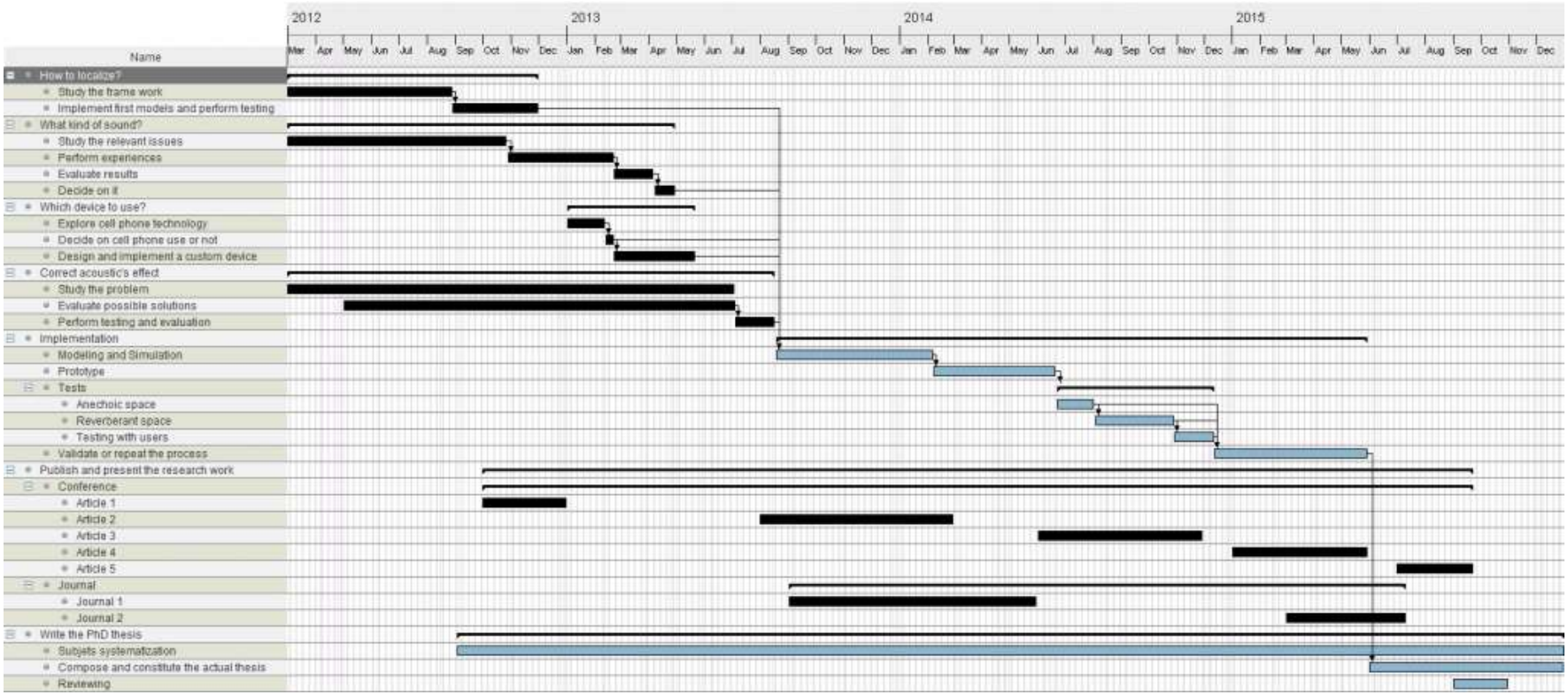
Writing Grant Proposals
Timeline

- **Timeline**



Writing Grant Proposals
Timeline

- **Timeline**

Activity	GY1				GY2			
	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.								

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Tips for Writing Educational Research Grant Proposals

ENGR 361: Scientific Research Communication

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References

- Alred, G. J., Brusaw, C. T., & Oliu, W. E. (2009). *Handbook of technical writing*. Macmillan.

- Day, R. A., Sakaduski, N., & Day, N. (2011). *Scientific English: A guide for scientists and other professionals*. ABC-CLIO.

Additional References

- Blanco, M. A., & Lee, M. Y. (2012). Twelve tips for writing educational research grant proposals. Medical teacher, 34(6), 450-453.

Writing Research Grant Proposals
Tips for Success

1. Identifying Funding Agencies & Resources
2. Getting to Know the Funding Agency
3. Talking to the Program Officer
4. Reading & Following the Directions
5. Writing Clearly
6. Making a Case for the Need of the Project
7. Stating the Relevance to the Literature & the Degree of Innovation of the Project
8. Designing Appropriate Methodology
9. Planning a Feasible Project Development & Implementation Timeline
10. Allocating Funds Appropriately
11. Sustaining the Project after the Grant Period
12. Disseminating the Project & Extent of Impact on the Field

Writing Research Grant Proposals
Tips for Success

1. **Identifying Funding Agencies & Resources**
   - Contact Department Office at current Institution
   - Your school's offices of educational or faculty affairs may be able to assist you with finding funding resources and refining your proposal
   - Internal programs are a valuable venue to pilot-test your project
   - Initial data and results from the pilot can inform the next-stage proposal to expand your project and seek external funding resources

Writing Research Grant Proposals
Tips for Success

1. **Identifying Funding Agencies & Resources**
   - Professional organizations are good venues to learn about funding resources and to network with colleagues
   - By participating in professional meetings, you can learn from colleagues' educational research grantsmanship experiences, and they can provide you with constructive feedback on your project
   - Furthermore, sharing educational research initiatives with colleagues provides an opportunity for collaborative projects

Writing Research Grant Proposals
Tips for Success

1. **Identifying Funding Agencies & Resources**
   - Some of these professional associations offer Educational Research/Innovations Grant programs
   - Professional specialty & sub-specialty organizations sponsor various education scholars programs that include early career support and project funding

Writing Research Grant Proposals
Tips for Success

2. **Getting to Know the Funding Agency**
   - Understand their mission and goals
   - Check their website, annual report and prior grant holders to evaluate whether your project is a good fit
   - Do you match the profile of prior grant holders?
   - Does your project address their goals?
   - Private funders need to be approached in partnership with your development office, since these are generally by invitation only

Writing Research Grant Proposals
Tips for Success

3. **Talking to the Program Officer**
   - Establish communication with the program officer and verify the "fit"
   - Inquire about any special requirements or exceptions
   - Talking to the program officer can provide insights on how to refine your project to better match the funding agency's interests, goals, and mission

Writing Research Grant Proposals
Tips for Success

4. **Reading & Following the Directions**
   - Read carefully through all the directions, and make a checklist
   - Have someone else confirm your checklist, and quickly notify everyone involved including accounts departments, letters of support writers, critical readers, etc.
   - For annually recurring grants, talk with a prior successful applicant for things to pay attention to or avoid

Writing Research Grant Proposals
Tips for Success

4. **Reading & Following the Directions**
   - Note the required order, length, and format of documents such as addenda and curriculum vitae
   - Some prescribe whom the letters of support should be from and how many are allowed. More is not always better
   - Letters of support generally are best from the highest ranking administrator who needs to approve the project

Writing Research Grant Proposals
Tips for Success

5. **Writing Clearly**
   - Reviewer unlikely to be from your field and typically will be a busy person
   - Critical to write clearly and avoid jargon
   - If the formatting rules permit, create headings that contain the ‘‘take-home message’’ for each section
   - Topic sentences should contain the key points for quick reading
   - Use bullets, key diagrams, or charts to highlight other key points

Writing Research Grant Proposals
Tips for Success

5. **Writing Clearly**
   - Test diagrams or charts with someone unfamiliar with your project to insure that they are self-explanatory and enhance your message
   - Allow time to ask mentors or colleagues to provide feedback on a latest draft to insure clarity

Writing Research Grant Proposals
Tips for Success

6. **Making a Case for the Need of the Project**
   - Provide a convincing argument that clearly shows that your project will address a problem or answer a research question that is timely and relevant to the field
   - Reviewer should quickly be able to answer several key questions
     - Why is your project important to the funder? Why should the funder care?
     - Was a case made for the project's need? What's new, different, better?

Writing Research Grant Proposals
Tips for Success

6. **Making a Case for the Need of the Project**
   - Was the hypothesis or purpose clearly identified, does the hypothesis or purpose address the need?
   - Do the specific aims address the purpose?
   - What track record do you have to accomplish your aims/goals?
   - Do you have prior related work, experience, and grants?
   - Who have been your collaborators?

Writing Research Grant Proposals
Tips for Success

7. **Stating the Relevance to the Literature & the Degree of Innovation of the Project**
   - Cite appropriate literature
   - Elicit help from your reference librarian to conduct an additional search of the relevant literature
   - Reviewing related literature will help to better identify the problem or research question related to your project that has not yet been addressed by others and to tailor your project accordingly
   - Is the proposed project contributing to the field with innovation in content, instruction, or assessment?

Writing Research Grant Proposals
Tips for Success

8. **Designing Appropriate Methodology**
   - Clearly explain your methodology and evaluation methods
   - Select the appropriate sample size
   - If human subjects involved, state that you will seek Institutional Review Board (IRB) approval and consider the IRB application process when you design your project timeline
   - Identify potential measurable outcomes of the project and the type of data you need to collect

Writing Research Grant Proposals
Tips for Success

8. **Designing Appropriate Methodology**
   - Do you need to collect qualitative data, quantitative data, or both?
   - Describe the strategies and instruments you will use to collect the data, followed by the methods of data analysis you will perform
   - Methods must test the hypothesis
   - Assess whether or not you have the appropriate team available to carry out this methodology

Writing Research Grant Proposals
Tips for Success

9. **Planning a Feasible Project Development & Implementation Timeline**
   - Map a realistic and feasible timeline within the grant time period
   - Account for extra time in case the implementation process does not run as smoothly as planned, particularly if you cannot commence necessary start-up activities prior to the official start date
   - Projects that involve multiple sites and programs typically demand more time

Writing Research Grant Proposals
Tips for Success

9. **Planning a Feasible Project Development & Implementation Timeline**
   - If your project involves human subjects, the IRB process must be factored in, especially if participants are hosted at different sites, which may require going through the IRB at each site
   - Check your proposed timeline with experienced colleagues
   - "*Less is often more*"
   - Succinct timeline that is self-explanatory and highlights project milestones or deliverables is often most effective

Writing Research Grant Proposals
Tips for Success

10. Allocating Funds Appropriately

- Level of budget detail required and what is fundable vary widely by agency
  - Check with the program officer to insure that your budget items are eligible for funding
- Budgetary items where agencies differ include travel, faculty support, overhead rate, equipment, student stipends, and expectation for in-kind contributions

Writing Research Grant Proposals
Tips for Success

11. **Sustaining the Project after the Grant Period**
    - Funding agencies seek projects with products that will endure beyond the grant period and may stipulate community involvement and/or impact
    - State how the outcomes of the project will be sustainable beyond the funding period in your department, school, institution, or field
    - Anticipate how you will maintain and even expand the outcomes of your project after the grant period

Writing Research Grant Proposals
Tips for Success

11. **Sustaining the Project after the Grant Period**
    - The outcomes of your project should not require extra funds to insure their sustainability, unless this is a pilot being used to pursue the next level of funding
    - The explicit support of your higher ranking administrator may serve as a testament of the sustainability of your project

Writing Research Grant Proposals
Tips for Success

12. **Disseminating the Project & Extent of Impact on the Field**
    - Describe your plans for disseminating the outcomes of your project, including to non-academic audiences
    - Explain the difference your project will make to the field and what future initiatives your project might give rise to
    - Consider using *openaccess* venues to disseminate your work more widely and to enable others to more easily build on your work

Writing Research Grant Proposals
Tips for Success

- As the faculty and educational scholars who joined our educational research grantsmanship efforts suggested, these educational efforts, as well as generating more funding for research in medical education are needed