NC Office of Strategic Partnerships

Seeking and Pursuing Federal Grants: Developing a Competitive Proposal

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Resource Materials

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NC Office of Strategic Partnerships

"There is no grantsmanship that will turn a bad idea into a good one, but there are many ways to disguise a good one."

-William Raub, Former Deputy Director, NIH

Proposal Team Considerations

- Expertise and Experience (discipline, right level of experience/leadership)
- Functional positions (program manager, evaluator, advisory board)
- Diversity (demographics, geography, broadening participation in STEM)
- Sectors (Academic, non-profit, industry, government, stakeholders)
- Recruiting: Draft a 1 pager with proposal goals, and clear ask for potential team member (leader, co-leader, collaborator, part time consultant, evaluator)
- Be mindful of communication across sectors: different norms, expectations on money and resources, leadership styles
- Potential Pitfalls: Lack of communication, not honest about competing time constraints and priorities, different norms across sectors,
- Conference or planning grants can be good vehicle

<u>General AFRI Review Criteria for Integrated Projects:</u>

"A **clear plan is articulated for project management**, including time allocated for attainment of objectives and delivery of products, **maintenance of partnerships and collaborations,** and a **strategy to enhance communication, data sharing, and reporting among members** of the project team."

Available NC State Resources

NC STATE UNIVERSITY College of Sciences

The Science House

the engineering place

THE WILLIAM & IDA FRIDAY INSTITUTE FOR EDUCATIONAL INNOVATION

NC State Teaching Faculty

KENAN FOR CURRICULUM FELLOWS AND LEADERSHIP PROGRAM DEVELOPMENT

NC State Proposal Development Unit to identify collaborators on campus https://research.ncsu.edu/rdo/pdu

4-H GROWS HERE

College of Design

Design Lab for K-12 Education

NC STATE UNIVERSITY Zeis Textiles Extension

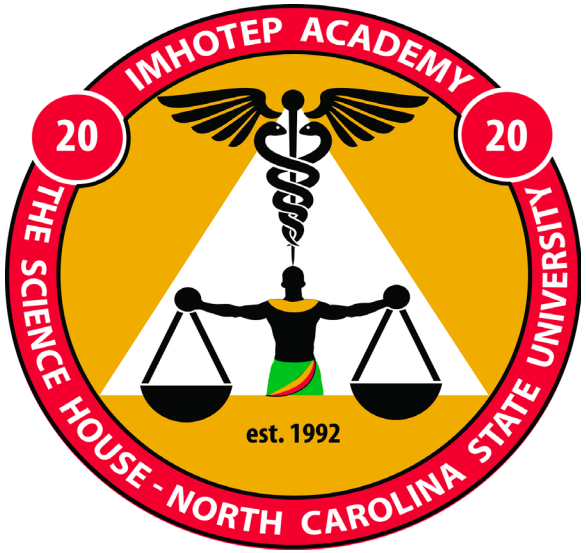
Informal Science Education Opportunities

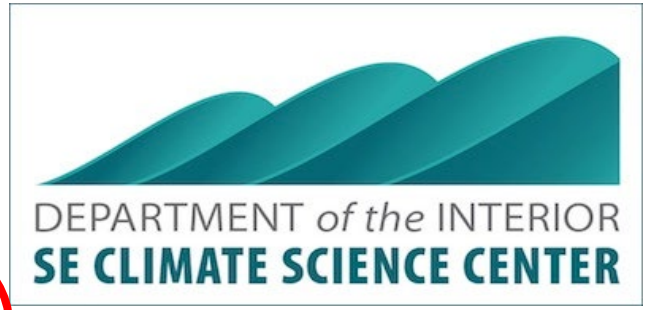
- NC Science Festival, BugFest, NanoDays, Astronomy Days
- NCSU Libraries (Makerspace, etc.)
- NC Museum of Natural Sciences, Grassroots Museums Collaborative, Museum of Life + Science
- Science Cafes (NCMNS, Periodic Tables)

Other areas of emphasis

- **Diversity**: Imhotep Academy, WISE, IMSD Program, Local MSI/HBCUs, Campus students orgs

- **Local Stakeholder Engagement** - SE Climate Science Center, Cooperative Extension, Natural r





PI: Initial Review of RFP

Read RFP for Key Information:

- Alignment (Will the proposal achieve your goal and advance the agency's mission?)
- Eligibility and any limitations (Institutional and PI)
- Due dates, Letter of Intent requirements, etc
- Budget guidelines (max award, cost share, f&a rates)
- Submission instructions (grants.gov, online agency portal, email)
- Sign up for RFP related notifications

Homework

Learn as much as you can about what has been funded recently:

- Check agency website for recent awards
- Consult currently funded colleagues?
- Ask for copies of successful proposals
- Be honest, is your project a good fit? Many project might be eligivle for funding without actually being a good fit. Talk to program manager.
- Go or no go decision? Talk to peers and likely collaborators.

Unsolicited White Paper

Purpose: Pitch an idea to a funding agency, solicit team members, solicit letters of support.

Answer these questions: WHY THIS PROPOSAL? WHY NOW? WHY YOU?

- High level 1-2 pages outlining your goal, objectives, and potential impacts in terms of funders priorities and greater good.
- Clear, concise language, no acronyms or technical terms,
- Highlight experience of the team and ability to work together (past successful collaborations)

→ Ideal Feedback: good fit for agency goals and hopefully a specific program, information on future solicitations, contacts with complimentary teams or projects.

Tools for Understanding RFP

Reviewing Proposal Requirements

- Proposal preparation instructions (Might be referred to separate document, but RFP takes precedence over general guidelines)
- Watch for items that require extra time (institutional/community data, LOS, subawards, institutional reference letters)
- Review Criteria valuable despite being at the end of most RFPs (illuminates agency's priorities, window into what reviewers will be focused on)
- Create a list of required docs

Proposal Checklist

- ❑ Abstract or Project Summary
- ❑ Narrative
- ❑ PI Docs (biosketch, c&p, coi)
- ❑ Facilities
- ❑ Equipment
- ❑ Data Mgt Plan
- ❑ Logic Model
- ❑ List of Project Personnel
- ❑ Postdoc Mentoring Plan
- ❑ Project Management Plan
- ❑ Sustainability Plan
- ❑ Budget and Justification
- ❑ Subaward docs
- ❑ Letters of Support (if allowable)

- Note page limits & expected content for each component
- Allocate responsibilities to team members
- Prepare outline/template for project narrative (TIP: use review criteria when possible to ensure meet sponsors expectations and also as a guide for how many pages per subheading)

Sample Proposal Timeline

- Include internal and federal agency deadlines
- 2 months tight for large team science grant. 4 months better.

(DB=Lead PI in this case.)

AFRI SAS Proposal Timeline		*Updated*	*12/16/2020*
Task	**Due Date**	**Responsible**	**Status**
Project Narrative, References and Project Summary			
Writing assignments to team	2/1/2021	DB	
1st (rough) draft of all sections	2/22/2021	Team	
Complete 2nd draft	3/8/2021	Team	
Complete 3rd draft (near final)	3/22/2021	DB/CS	
Final editing and formatting complete (15 pages)	3/29/2021	DB/CS/PDU	
Complete references	3/26/2021	DB	
Project Summary - Draft for Review by All	3/12/2021	DB	
Project Summary complete	3/26/2021	DB/PDU	
Add docs to Grants.gov	3/30/2021	PDU	
CVs, C&Ps, and COIs			
Identify team members (final list)	1/18/2021	DB	
Request CVs, C&Ps and COIs	1/20/2021	PDU	
Docs returned to PDU	2/3/2021	Team	
CVs, C&Ps and COIs formatted/completed	3/3/2021	PDU	
Docs uploaded to Grants.gov	3/30/2021	PDU	
Budget			
Initial (rough) budget estimate	2/5/2021	PDU/DB	
1st draft of budget and justification complete	2/19/2021	PDU	
Request subaward documents	2/26/2021	PDU	
2nd draft of budget and justification complete	3/5/2021	PDU	
Subaward documents due to NCSU	3/12/2021	Team	
Revise budget and justification, as needed	3/16/2021	PDU	
Add budget documents to Grants.gov	3/30/2021	PDU	
Other Supplementary Documents			
Request Letters of Support	2/1/2021	Team	
Facilities and Other Resources, Equipment - initial drafts	2/8/2021		
Logic Model - initial draft	2/10/2021	DB/PDU	
Data Management Plan- initial draft	2/17/2021		
Facilities and Other Resources, Equipment - final drafts	2/22/2021		
Management Plan - initial draft	2/25/2021		
Data Management Plan- final draft	3/3/2021		
Letters of Support Due	3/8/2021	Team	
Logic Model - final draft	3/10/2021	DB/PDU	
Management Plan - final draft	3/11/2021		
Key Personnel Roles	3/19/2021		
Add docs to Grants.gov	3/30/2021		
PINS and Proposal Submission			
Create PINS and notify CROs	1/18/2021	PDU	
Route PINS	3/16/2021	PDU	
Grants.gov application package complete	3/30/2021	PDU	
Submit Proposal	**3/31/2021**	**CRO**	
PINS approvals complete	**4/1/2021**	**CRO**	
Due date is 5 PM on Thursday 4/1/2021		PINS #	
Next actions & ongoing activities			

Developing the Proposal

You have already:

- Identified a problem and solution
- Identified a funding opportunity and dissected the RFP
- Written a white paper
- Spoken to the program manager about alignment
- Developed your core team
- Made a list of proposal components & supplemental docs
- Made proposal development timeline working backwards from due date

Project Summary

- Most important page of proposal. More than just a summary.
- Pitch your idea in a way that grabs reviewers attention. Have to convince them that there is an an important need.
- Create a since of urgency. Why now, why you?
- 1st Paragraph: Why (problem statement)
- 2nd paragraph: What are you doing (what, hypothesis)
- 3rd Objectives: How are you going to do it. And Why are you able to do it (expertise, capacity, facilities)
- 4th Impact -- what will be the outcomes.
- Some choose to write this last, but I prefer a solid draft to begin that can be update when project fully developed and narrative complete.

The Introductory Paragraph

- First sentence: Briefly describe the problem you are addressing (What and Why)
- What is known: Background and significance of the problem (3-5 sentences)
- Knowledge gap: What is holding the field back (1-2 sentences)
- The critical need: The critical need is the reason your proposal should be funded.

Highlighting/Outlining Your Summary Page

- Every sentence should fall into a category.

Overview (What)

Background

Knowledge Gap

Critical Need (Innovation)

Project Summary from a Funded USDA AFRI FACT Program

Big data analytics show huge promise to advance agroecological and natural resources management by uncovering hidden linkages between human, agricultural, and natural systems from vast and diverse datasets. However, utilizing analytics to study agroecosystem dynamics and develop decision-support platforms remains a significant challenge for the agricultural and environmental management communities. The overall goal of this project is to address this analytical bottleneck with the development of an open-access and readily useable package of novel computational tools ("*cultivatr*") that will enable users to "cultivate" their agroecological data to generate predictive data-driven decision support tools. Specific project objectives include: (1) identify stakeholder priorities and current knowledge gaps in decision-support capabilities; (2) develop and apply *cultivatr* functions in R to create an open-access data-driven decision-support tool that addresses stakeholder needs by blending flexible statistical, machine learning, data management, and high-performance computing approaches; and (3) extend the data analytics platform to other agricultural and environmental systems that have extensive observational datasets and decision-support needs in order to validate *cultivatr's* transferability and scalability. The proposed project addresses the FACT priorities of developing decision-support tools that use diverse data sources and big data analytics, integrating visualization with statistical methods and other analytic techniques in order to support discovery and analysis, and connecting multiscale data, among others. This work will be executed by a multidisciplinary team of researchers who have expertise in data analytics, statistical modeling, geospatial and temporal analysis, integrated modeling, and agroecosystem, food, and natural resource management.

Why	What	Impact	Impact/Innovation
Background	Overview	Knowledge Gap	Critical Need (Innovation)

The Summary Paragraph

- Innovation
- Expected outcomes
- Emphasize Impact

The *expected outcome* of this work is a comprehensive understanding of what structures and mechanics develop in biofilm infection of chronic wounds, and the degree to which these structures and mechanics give rise to pathogenicity, antibiotic resistance, and evasion of the immune system. The results will have an important *positive impact* because they lay the groundwork to develop a new class of targeted treatments.

Expected Outcomes Innovation Impact

Developing the Proposal (Narrative)

- Outline narrative using headings from RFP. Typically introduction, rationale/significance, approach/methodology, impacts (what will be possible that is not possible now). Start with required sections, enter bullets under each section. In approach, bullet points for objectives activities that you will do under each objective and who will lead each objective and activity.
- Logic model also a good tool for program design
    - Problem statement
    - Inputs (resources)
    - Strategies and activities
    - Short and long term outcomes
    - Impacts
    - Outputs
    - Assumptions

Common Narrative Tips & Pitfalls

- PITFALLS:
- Name it, but don't explain it. Ex: "Stakeholder will inform project planning." Reviewer will want to know how and when.
- "Plan to address soil health" What aspect of soil health? How are you defining soil health? Too ambiguous.
- Curse of Knowledge refers to assumption that if something is obvious to you it is obvious to your audience. Too technical with lots of acronyms and jargon.
- Overly ambitious (too much work for time period or budget)
- Writing proposal you want, not proposal agency wants. (USDA cares about impact on US agriculture, not how many peer reviewed journals will result.)
- Figures/tables duplicate text and are too small or hard to read.
- Narrative not aligned with budget. (Ex: Propose outreach but don't budget for gas or transportation.)
- Poison Pill (if early phase of methodology fails, the project fails. Need a plan B on tricky or risky approaches/activities).

TIPS

- Active versus passive language (We collected samples vs. Samples were collected)
- Less is more. If you need to cut, start with details of experimental design, things in parentheses or commas, compound/complex long sentences, large paragraphs can be rewritten shorter, white space around figures or graphics.
- Left aligned print easier to read than justified because of uniform spacing between words.
- TED TALK: Talk Nerdy to Me by Melissa Marshall
- https://www.ted.com/talks/melissa_marshall_talk_nerdy_to_me?language=en

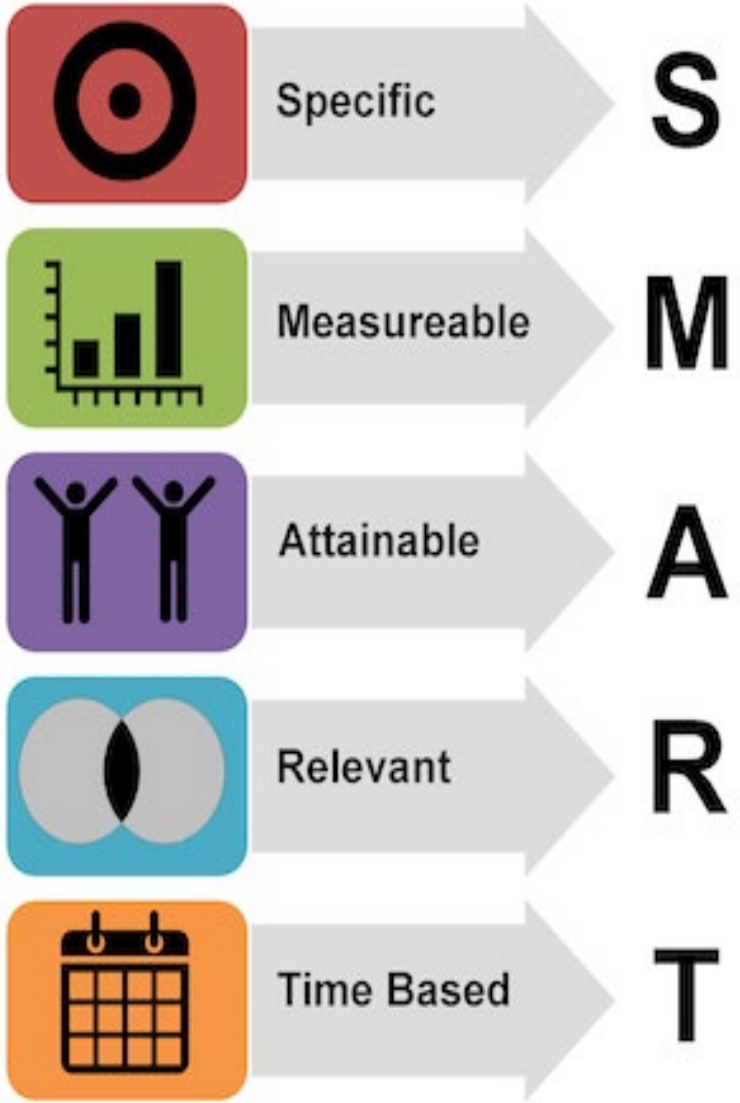
Goals = Purpose

The goal of this class is ensure students achieve a better understanding of how to develop and write a successful research funding proposal.

→Broad and general in scope.

Objectives (AIMS)

Students will use funding databases to identify at least two potential funding opportunities relevant to their research by the middle of the term.



ACTIVITIES (APPROACH, METHODOLOGY)

- What you will do to achieve each objective.
- Details, but also have to tell us why you chose this approach.
- Scuba versus snorkeling: If you go deep (scuba diving) into a activity that is complex, that is ok, as long as you come up for air (snorkeling) and tell us why it matters (what will it advance or enable you to do next?).

ACADEMIC WRITING VERSUS GRANT WRITING

ACADEMIC WRITING	GRANT WRITING
Scholarly Pursuit: Individual passion	**Sponsor Goals: Service attitude**
Past Oriented: Work that has been done	Future Oriented: Work that should be done
Theme-centered: Theory and thesis	Project-Centered: Objectives & activities
Expository rhetoric: Explaining to the reader	Persuasive rhetoric: "Selling" the reader
Impersonal Tone: Objective, dispassionate	Personal tone: Conveys excitement
Individualistic: Primarily a solo activity	Team-Focused: Feedback needed
Few Length Constraints: Verbosity rewarded	Strict Length Constraints: Brevity rewarded
Specialized Terminology: Jargon	Accessible Language: Easily understood

Porter, R. (2007, November 2). Why academics have a hard time writing good grant proposals, *Journal of Research Administration*, Volume XXXVIII.

Best Practices in Proposal Development

- Start early 4-6 months before due date
- Dissect and BELIEVE the RFP, FOA, RFA, etc…
- Talk to the program manager and more importantly listen
- Talk to colleagues previously funded and listen
- Rely on mentors and more senior colleagues to review early drafts and listen to your elevator pitch
- Make sure you understand the review criteria and who will review (expert panels, ad hoc individuals)

Sample Work Plan/Project timeline

Major Objectives and Deliverables	Key Tasks	Person Responsible	Start Date	End Date
I. **Recruit 15 long-term trainees committed to career in MCH nutrition, > 50% from diverse and underserved backgrounds** **Deliverables:** 15 long-term trainees graduated from LEAFF **Proposed Outcomes:** 15 RDNs competent in breastfeeding support added to workforce	1. Disseminate recruitment information & material	PD, AD, LEAFF faculty, MCH nutrition professionals	07/2018 *Ongoing*	09/2022
	2. Select trainee participants to be HRSA/LEAFF Scholars	PD, AD, LEAFF faculty, MCH nutrition professionals, and in years four and five, LEAFF alumni	08/2018 *Ongoing*	09/2022
	3. Assign trainees to field placement sites	PD, AD, community leaders, community members	03/2019 *Annually spring*	06/2023
	4. Assign trainees to faculty advisor and mentors.	PD, AD, LEAFF faculty	07/2018 *Ongoing*	09/2022
II. **Implement an enhanced mentoring plan for scholar support and retention** **Deliverables:** Retention of > 95% of long-term trainees in LEAFF **Proposed Outcomes:** LEAFF scholars will have a positive and supportive experience in the program.	1. Establish a mentoring team for each LEAFF scholar	PD, AD, LEAFF faculty, MCH nutrition professionals, other trainees	07/2018 *Ongoing*	09/2022
	2. Mentors participate in mentor training and cultural awareness training	PD, AD, LEAFF faculty, MCH nutrition professionals, LEAFF scholars	07/2018 *Ongoing*	09/2022
	3. Plan MCH Nutrition seminar series and cohort building activities	PD, AD, LEAFF faculty and scholars, community leaders, community members	07/2018 *Ongoing*	06/2023
	4. Participate in MCH Nutrition seminar series and cohort building activities	PD, AD, LEAFF faculty and scholars, community leaders, community members	07/2018 *Ongoing*	06/2023

Sample Project Timeline

Table 1: Timeline

Title: Project objectives and tasks	Fall 2016	Spring 2017	Summer 2017	Fall 2017	Spring 2018	Summer 2018	Fall 2018	Spring 2019	Summer 2019
Objectives 1-3: Increase knowledge of inclusivity, increase knowledge of challenged faced by diverse students, and increase personal biasis with forms of diveristy									
Project meetings with PDs & partners									
Product development (Podcases, FDM)									
Create Center for Inclusivity									
Objective 4: Develop open and inclusive attitudes toward all students									
Select first Inclusion Leadership Academy Cohort									
Beta test all products with first cohort									
Collect formative evaluation data									
Refine products									
Objective 5: Create inclusive learning, mentoring, advising spaces									
Select second Inclusion Leadership Academy Cohort									
Conduct trial with second cohort									
Disseminate with partners									
Refine products for final time									
External Evaluation Conducted									
Final Reporting									

Sample: USDA Standard Logic Model

GOAL: Advance sustainable management of agroecosystems and natural resources by equipping managers and scientists with open-access and readily useable computational tools for extracting actionable information from big datasets.

Inputs	Outputs: Participants and Activities	Short & Mid-term Outcomes/Impacts	Long-term Outcomes/Impacts
Personnel: PD, Co-PDs, graduate students (1 MS, 1 PhD), Advisory Group **Resources:** Historical datasets provided by the Water Quality Portal (EPA), NOAA, USGS, and UW SILVIS Lab Computational analysis resources (R, High Performance Computing)	Novel data-to-decision framework consisting of integrated statistical, machine learning, data management, and high-performance computing approaches Two data-driven decision-support tools deployed on the web (one tool in support of shellfish agroecosystem management, the other in support of bollworm management) Computational functions and tutorial materials in a "*cultivatr*" R package published on the Comprehensive R Archive Network and advertised through USDA Ag Data Commons Journal article that presents the *cultivatr* R package, published in an applied peer-reviewed journal (e.g., Agriculture, Ecosystems & Environment) Journal article on statistical methodologies for handling big data collected through preferential sampling, published in a peer-reviewed statistical journal Peer-reviewed articles (3 to 5) in applied peer-reviewed journals that summarize the use of data-to-decision framework to address specific resource management issues in shellfish mariculture and cotton bollworm systems Extension publications (2 to 4) on *cultivatr* and data-driven decision-support methods in agroecosystem, food, and natural resource management Oral presentations delivered at conferences for statistics/data science and agroecosystem/natural resources audiences Symposium on data mining and predictive data-driven modeling for approximately 60 attendees in Year 4	Increased access to products that demonstrate the utility of data analytics in agroecosystem and natural resources management and research Expanded and enhanced portfolio of computational tools and tutorials that are open, accessible, and designed for agricultural and natural science applications Increased engagement among students, researchers, and professionals in private, non-profit, governmental, and academic communities on the topic of data science applications in agroecological and natural resources management Increased number of professionals who are adept in data-driven and interdisciplinary problem-solving A team that is well-positioned to create additional computational platforms and advance the utilization of data science in agricultural and natural resources management	Increased capacity among agroecosystem and natural resource practitioners and researchers to interact with data and create data-driven decision-support systems Novel data-driven discovery of national- and regional-scale relationships between drivers and agroecological responses revealed from analyzing underexplored historical datasets Development of locale-specific management practices informed by historical and contemporary data records

Assumptions:	External Factors:
The agriculture, food, and natural resource communities lack access to analytics and computational tooling Barriers to the use of data analytics include data-specific challenges (e.g., bias, heterogeneity, size), poor accessibility to computational tools and training, and limited knowledge transfer between data scientists and agricultural/natural resources scientists and managers	Change in data access policies across federal agencies (i.e. USGS, NOAA) R transitions away from an open-access model Team member experiences personal life event that requires a leave of absence from project

Sample Logic Model