Welcome to the Center to Reduce Cancer Health Disparities (CRCHD), Professional Advancement Virtual Engagement Series (PAVES) Webinar!

Hosts: **JoBeth McCarthy, MPH, CPH**
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Katelyn Garfinkel, MBA
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NIH NATIONAL CANCER INSTITUTE

March 2023

AGENDA

- Introductions
- Housekeeping
- Special Announcements
- Developing a Strong NIH Grant Application Presentation
- Q and A

Learning Objectives

LO1: Explore effective approaches to writing a specific aims page

L02: Effective strategies for writing a competitive and convincing research strategy

LO3: Learn how to craft a winning biosketch

Professional
Advancement
Virtual
Engagement
Series

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NCI Paves: How to Build Your Online Presence as a Scientist

April 25, 2023, 3-4 pm EST Register Here

Christa Reynolds, M.A.
(She/Her)
Communications Editor for the NIH Diversity Program Consortium
National Institute of General Medical Sciences (NIGMS) National Institutes of Health [Contractor]

Hansook Oh, M.A.
(She/Her)
Co-Director of Communication & Dissemination
Coordination & Evaluation Center at the University of California, Los Angeles

Ben Andrews-Zapata
(They/Them)
Senior Social Media Analyst
Coordination & Evaluation Center at the University of California, Los Angeles

Objectives

1) Assess needs to identify professional niche for your social media presence as a scientist
2) Learn how to create and implement a social media strategy for your professional brand based on best practices
3) Suggestions for setting goals for your social media and outlining steps to work toward them

For questions, please contact Katelyn.Garfinkel@nih.gov

Developing a Strong NIH Grant Application

Research Strategy

CENTER TO REDUCE
CANCER HEALTH DISPARITIES

Tiffany Wallace, PhD
March 29, 2023

NIH NATIONAL CANCER INSTITUTE

Dr. Tiffany Wallace, PhD

Writing a Competitive and Convincing Research Strategy

Program Director
Office of the Director
Center to Reduce Cancer Health Disparities; NCI

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March 29, 2023

Research Strategy

- The nuts and bolts of the application, describes the rationale and the experiments proposed

- Three main sections:

Significance	Innovation	Approach

Preliminary Data is typically a subsection in Approach but can be integrated across all sections

Research Strategy:

- ✓ ***Significance***
- Innovation
- Approach

Significance

- Length: ½ to ¾ of a page in length
- Explain the importance of the problem or critical barriers to progress that the proposed project addresses
- Describe scientific premise for the proposed research
  - include strengths and weaknesses of published research or preliminary data crucial to support the application
- Describe how the field will be advanced if the proposed aims are achieved

Significance

- Significance should be clear even to those outside the immediate field, show the big picture
- Don’t limit discussion of the significance to just the significance section.
- Emphasize opportunities, gaps, roadblocks, research underway, and debates in the field.

Research Strategy:

- *Significance*
- ✓ **Innovation**
- Approach

Innovation

- Length: ½ of a page in length
- Begin with a clear statement. “The proposed research is innovative because…”
- Present a new and substantially different way of addressing an important human health-related problem
  - How does your proposal challenge current research or clinical practice paradigms
- Describe novel concepts, methods, technologies, or interventions to be developed/used, and the advantage over existing processes
  - *Provide references and cite expertise of investigators to support feasibility*
- Present how the results from this proposal will contribute significantly to existing knowledge-base

Examples From Actual Innovation Sections

- We are the first group to study…
- We have unique access to…(technology, platform, cohort)
- This study will be the first to use single cell transcriptome profiling to investigate differences in…
- Biomarker panels developed by this study will be the first to define…

Significance & Innovation: Application Tips

- Limit both subsections to ~1 page in length
- The purpose of the Significance and Innovation subsections is to help justify the need for the proposed research
- Consider that the reviewers are busy, may not know the field in detail, and may be skeptical (be informative, clear, and persuasive)
- Present your ideas and arguments so they can be comprehended with the least amount of mental effort and time

- Research Strategy:
  - *Significance*
  - Innovation
  - ✓ **Approach**

Approach

- Describe the overall strategy, methodology, experimental plan, and analyses to be used to accomplish the specific aims of the project
- Show how biological variables have been factored into study design
- Include how data will be collected, analyzed, and interpreted
- Discuss potential problems, alternative strategies, and benchmarks for success
- Include power analyses
- Include preliminary data to establish feasibility and support the premise

Suggested Organization of the Approach Subsection

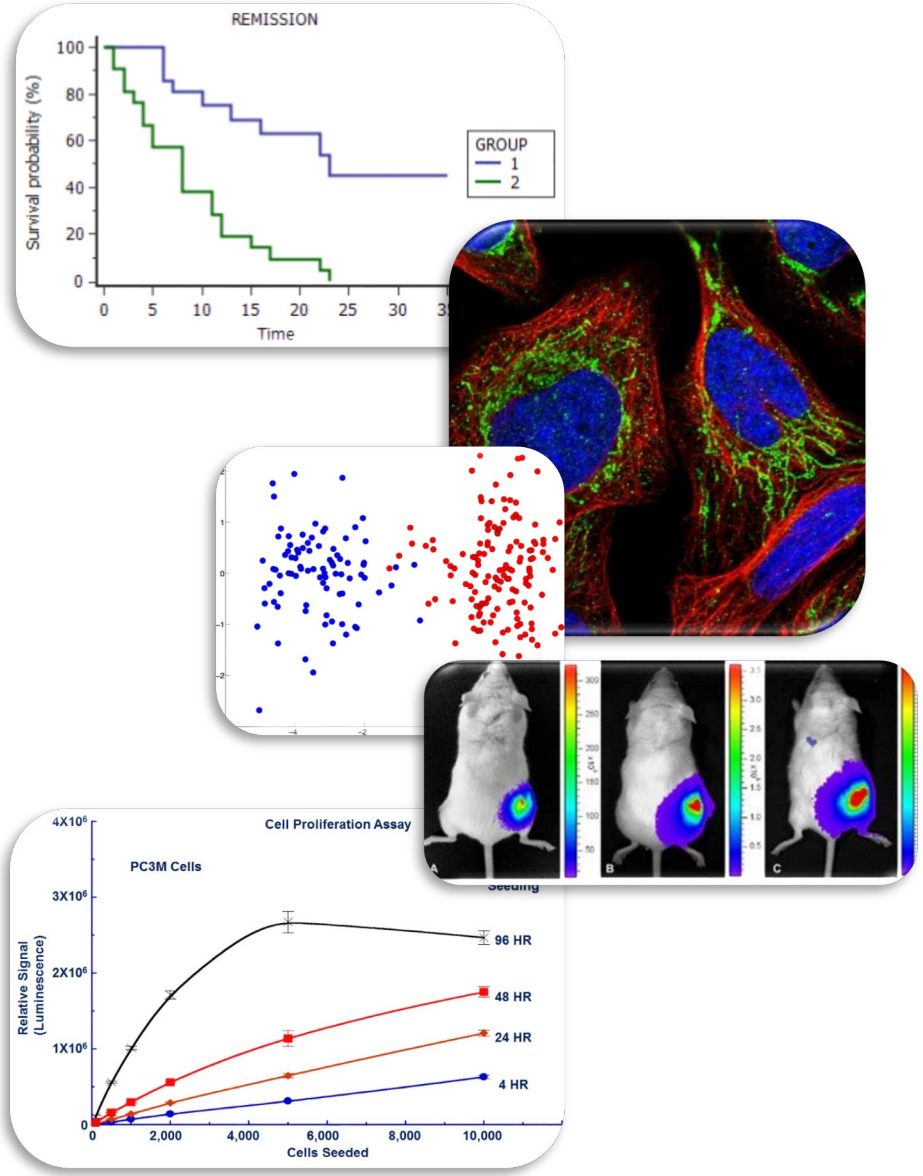
- Introduction
- Background (include graphics for comprehension)
- Preliminary data (legible diagrams and figures)
- Research design for each aim
  - Study design, procedures, methods
  - Data quality control, reproducibility and rigor
- Expected outcomes, benchmarks for success
- Potential problems and alternative approaches
- Timeline of activity
- Future directions to an R01-competitive research program

Suggested Organization of the Approach Subsection

- *Alternatively*, may include each of the following subsections under each aim:
  - Background
  - Preliminary studies
  - Research design, study design, procedures, and methods
  - Data quality, reproducibility, and rigor
  - Expected outcomes and benchmarks for success
- Potential problems and alternative approaches
- Timeline of activity
- Future directions to an R01-competitive research program

Preliminary Data

- Should be relevant to the proposed research plan
- Demonstrate feasibility/availability of resources and critical reagents, ability to recruit proposed population, access to database
- Supports the scientific premise
- Easy to interpret and read



Approach Subsection: Application Tips

- Make this section **well-organized** and **visually appealing**:
  - Add bold headers and/or an outlining or numbering system that is **consistent** throughout
- Organize the Approach section around your Specific Aims
- **Avoid** a narrow focus on a single pathway without appreciation of alternative explanations
- **Refer** to published related work and methodology, and **cite** your preliminary data, if published

Approach Subsection: Application Tips

- When describing a method in the Approach section, state collaborators' experience with it.
- Point out access to a necessary equipment/resources.
- When explaining the field and status of current research, weave in your work and preliminary data.
- *Requirement*: Address **Rigor and Reproducibility** by describing the experimental design and methods proposed and how they will achieve robust and unbiased results.

Anticipate the Reviewers Questions

- Will the investigators be able to get the work done within the project period, or is the proposed work over ambitious?
- Did the PI describe potential pitfalls and possible alternatives?
- Will the experiments generate meaningful data?
- Could the resulting data prove the hypothesis?
- Are others already doing the work, or has it been already completed?

Anticipate the Reviewers Questions

Section V. in every funding opportunity has more information on specific review criteria.

Example from PAR-CA-22-322

Section V. Application Review Information

1. Criteria

Note: Effective for due dates on or after January 25, 2023, the Data Sharing Plan and Genomic Data Sharing Plan (GDS) as part of the Resource Sharing Plan will not be evaluated at time of review.

Only the review criteria described below will be considered in the review process. Applications submitted to the NIH in support of the NIH mission are evaluated for scientific and technical merit through the NIH peer review system.

For this particular announcement, note the following:

Immediate clinically translational potential of the proposed project is NOT a requirement for this FOA.

Overall Impact

Reviewers will provide an overall impact score to reflect their assessment of the likelihood for the project to exert a sustained, powerful influence on the research field(s) involved, in consideration of the following review criteria and additional review criteria (as applicable for the project proposed).

Scored Review Criteria

Reviewers will consider each of the review criteria below in the determination of scientific merit, and give a separate score for each. An application does not need to be strong in all categories to be judged likely to have major scientific impact. For example, a project that by its nature is not innovative may be essential to advance a field.

Significance

Does the project address an important problem or a critical barrier to progress in the field? Is the prior research that serves as the key support for the proposed project rigorous? If the aims of the project are achieved, how will scientific knowledge, technical capability, and/or clinical practice be improved? How will successful completion of the aims change the concepts, methods, technologies, treatments, services, or preventative interventions that drive this field?

Specific for this FOA: Does the proposed research project have the potential to advance the understanding of biological mechanisms contributing to cancer health disparities in underrepresented populations?

Investigator(s)

Are the PD(s)/PI(s), collaborators, and other researchers well suited to the project? If Early Stage Investigators or those in the early stages of independent careers, do they have appropriate experience and training? If established, have they demonstrated an ongoing record of accomplishments that have advanced their field(s)? If the

Fatal Flaws: Common Reviewers' Comments

- The rationale for the experiment is *weak*, or scientific premise is **not** convincing. Feasibility is **not** demonstrated.
- The approach for statistical analysis including all parameters is **not** well described or powered
- The human subjects and research plan are *vague* and **without** clear end-points to evaluate the efficacy of the proposed intervention
- Expectations and potential problems **not** included for each aim
- Proposed research is overambitious and not realistic
- Research strategy is dense and hard to read.

Happy Candidate: Common Reviewers' Comments

- Dr. Doe is a committed strong candidate with high quality prior training, research experience and research productivity
- Proposed research plan is hypothesis-driven, has a feasible, strong premise, and built upon candidate's prior training
- Research plan is supported by strong preliminary data
- Collectively, this strong application will deliver outstanding overall impact

Other Research Plan Subsections

These sections do not count toward the required page limits:

- Resource sharing plans
  - Data Management and Sharing Plans
- Protections for human subjects
- Inclusion of women, minorities, and children
- Vertebrate animals use justification and care: address all 5 points
- Hazardous materials and precautions to be exercised
- Justification if not using an approved human Embryonic Stem Cell line from the NIH hESC Registry

Dr. Behrous Davani, PhD

Effective Approaches to Writing Specific Aims

Chief, Diversity Training Branch
Center to Reduce Cancer Health Disparities; NCI

NIH NATIONAL CANCER INSTITUTE

March 29, 2023

The Specific Aims Page: A Master Plan for the Research Application

- A vital part of many NIH research grant applications
- Often the basis of the first impression the reviewers will have
- Should capture an essence of your entire application

Disclaimer: This presentation includes examples and tips that do not apply to every successful Specific Aims page or grant application. There are multiple effective formats, all of which are not shown here. Attempting to use any of these formats does not ensure success.

Specific Aims - PHS 398 Research Plan Form

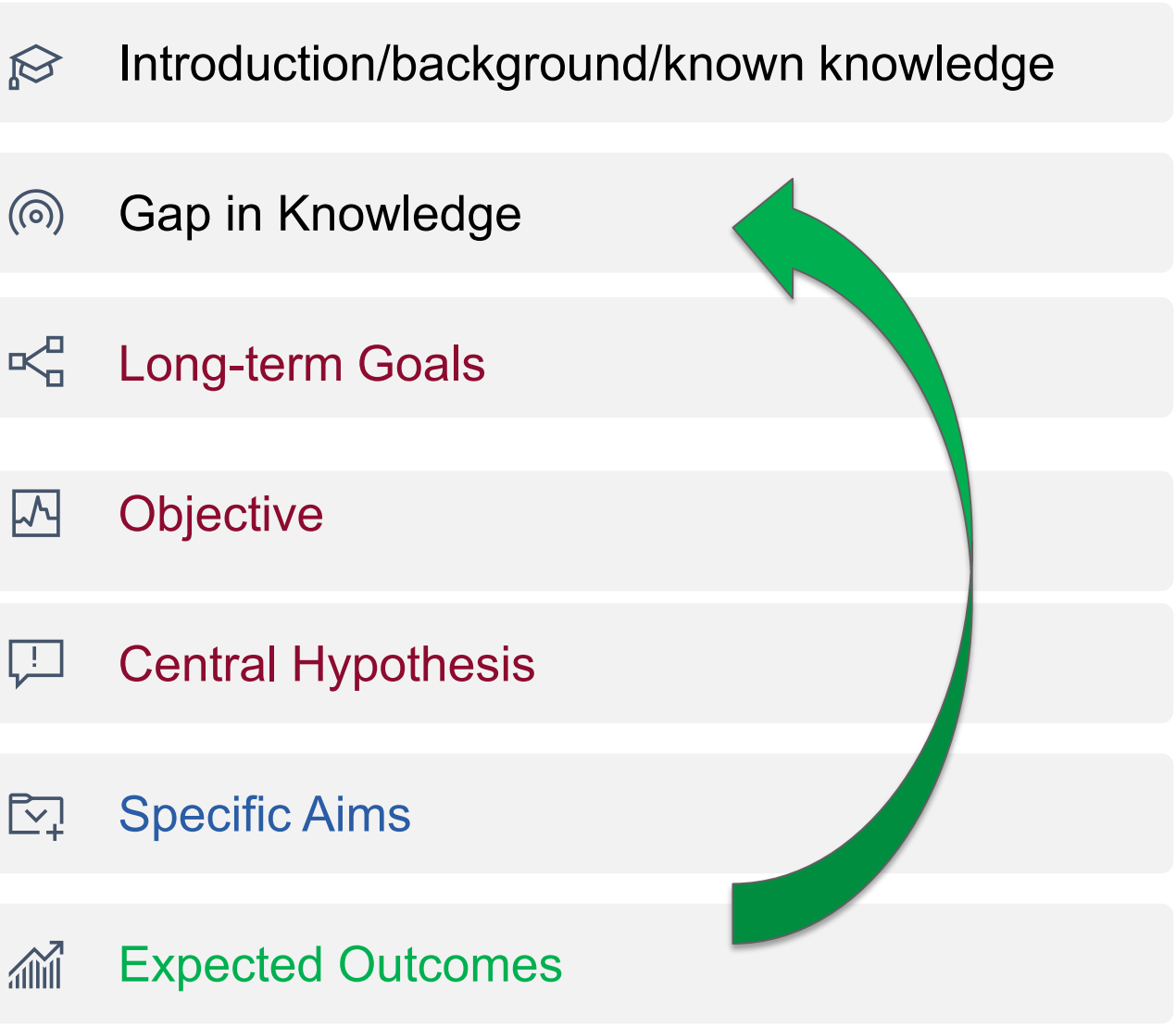
Specific Aims Page Content

- State concisely the goals of the proposed research and summarize the expected outcome(s), including the impact that the results of the proposed research will have on the research field(s) involved.
- List succinctly the specific objectives of the research proposed (e.g., to test a stated hypothesis, create a novel design, solve a specific problem, challenge an existing paradigm or clinical practice, address a critical barrier to progress in the field, or develop new technology).

https://grants.nih.gov/grants/how-to-apply-application-guide.html

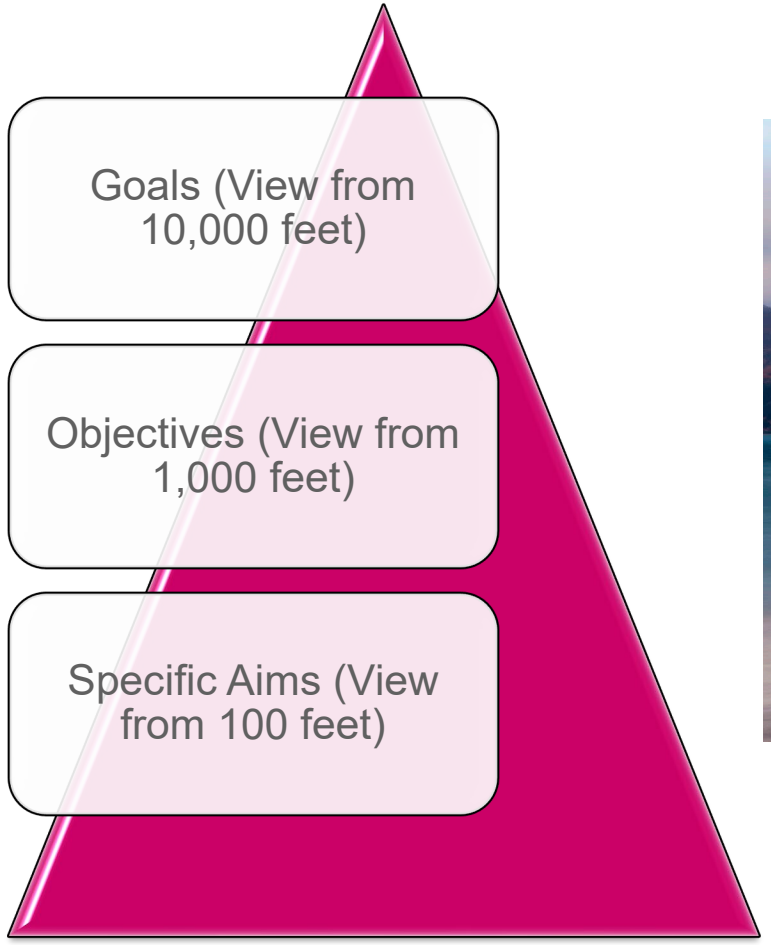
One of Many Effective Structures for Specific Aims Page or Project Description

- ❑ Introductory paragraph
- ❑ Rationale paragraph
- ❑ Specific aims paragraph
- ❑ Overall impact paragraph (Pay-off paragraph)



Possible Components	Issues Briefly Addressed
Introductory Paragraph	• Educates reviewer by summarizing important knowledge
Significant problem, solving problem aligned with mission of sponsor	• Identifies knowledge gap or critical need • Identifies problem created by need that you plan to solve
Rationale Paragraph: What, Why, Who	• Overall project goal addresses identified knowledge gap
Presents solution to the problem that successfully addresses identified need	• Presents central hypothesis or statement of need • Explains why you are pursuing this project • Describes unique qualifications and research environment
Specific Aims	• Aims logically flow to tell the story of the proposed study • Aims consistent with central hypothesis and support overall project goal • Aims related, but not dependent on the success of another aim
Overall Impact Paragraph	• Statement of innovation, novelty • Specific expectations to be fulfilled by project • Positive impact of the findings from proposal, specific future steps/next study

Go from the very big picture...to the very detailed level



Introductory Paragraph

- Latina women in the US have lower incidence of breast cancer compared to African American, or non-Latina white women. However, US Latinas have lower survival rate than non-Latino whites.
- Breast cancer incidence varies greatly across Latin America, and it has been suggested that this variation is due to differences in genetic ancestry, lifestyle and environmental factors. Our own data has shown that higher European ancestry is associated with higher breast cancer risk among US Latinas and Mexicans.
- The degree to which the association between genetic ancestry and breast cancer risk among Latinas is due to genetic vs. non-genetic (environmental, reproductive dietary) factors remains unknown.

Hook Known Information Gap in Knowledge

Rationale /Hypotheses

The main hypotheses driving the present study are:

- Differences in breast cancer risk and mortality between populations are partially driven by the action of multiple common genetic variants with small effects
- These genetic variants affect risk for a particular tumor subtypes
- Some of the genetic variants that affect tumor-subtype specific risk are different from the variants that drive cancer recurrence and metastasis

Specific Aims Paragraph

We will test these hypotheses with the following specific aims:

- **Specific aim 1:** Identify common genetic risk variants for breast cancer subtypes in Latinas. Genotypes from approximately 900,000 experimentally typed and 1,500,000 imputed single nucleotide polymorphisms (SNPs) will be evaluated for association with particular breast cancer subtypes in a sample of 1,600 US Latinas with breast cancer and 1,300 controls.
- **Specific aim 2:** Identify common genetic risk variants for breast cancer stage at diagnosis and breast cancer specific survival in Latinas. Available data on stage at diagnosis and survival from 1,600 Latina women with breast cancer will be analyzed in association with the above-mentioned 2,400,000 SNPs.

Aim Title Experimental Strategy

Overall Impact Paragraph

Our proposal is the first genome wide association study of tumor subtype specific breast cancer risk and survival in Latinas, a population underrepresented in biomedical research. Our findings will contribute genetic predictors of risk and clinical outcomes specific for the different known breast tumor subtypes among US Latinas. We will be able to determine if these predictors are unique for US Latinas or shared with Latinas residing outside the US. If we identify novel genetic variants that are associated with risk and survival, these variants may be in genes and biological pathways previously unrecognized. These pathways may be new targets for breast cancer treatment.

Innovation Impact Rationale

Specific Aims Page Example #1

R21, NCI

SPECIFIC AIMS

Colorectal cancer (CRC) screening is effective in preventing or detecting cancer at an early stage. Yet, the patient populations served by community health centers (CHCs) are screened at lower rates than the general population [1-3]. Poor screening rates in CHCs, in turn, contribute to cancer health disparities for minority, low-income, and uninsured patients. It is w…n recommendation is an influential factor in a patient's decision to undergo cancer …o not have office systems in place (i.e., organizational policies and processes s…nd communication systems) to ensure that every eligible patient is offered screeni…collaboratives, the prevailing model for implementing systems-based changes …) in CHCs, have produced encouraging results, but participation places heavy …hronically overburdened and under-resourced. Given the substantial increa…d when mandatory insurance provisions take effect, an *urgent need* exists for e…implementing office-system changes that take into account the resource, staffing, and time constraints that CHCs face. Until this need is met, CRC screening rates will likely remain low in CHCs, putting thousands of people at unnecessary risk for CRC.

Background and Need

Our *long-term goal* is to improve CRC screening rates in CHCs and in doing so, reduce disparities in cancer outcomes. The *obje*… feasibility of an evidence-informed strategy for implementing office-…CRC screening. The strategy combines an office-systems toolkit (ada…r Roundtable [8]) and an outreach specialist to provide training and …e project, supported by preliminary data, is that CHCs want to increase screening rates, but need simple, evidence-based tools that—with training and technical assistance—they can implement and maintain with the time and resources that they have. The strategy we propose is evidence-informed and promising [7, 9-16], but is novel in this setting and therefore needs to be feasibility tested in this …ale evaluation. Our research team has the necessary b…*al Sketches*), and has access to at least 4 CHCs with 14 c…*of Support*).

Long-Term Goal

We will test the feasibility of the prop…wing *specific aims*:

Aim 1: Assess the extent …t promote CRC screening, using the CRC toolkit …terviews and provider surveys, and guided by an organizational model of innovation implementation, we will examine the number and type of office-system tools that CHCs implement, perceived ease or difficulty of implementing office-system tools, amount and type of outreach support provided, perceived qualit… support, and organizational factors predictive of implementation effectiveness.

Goals, Objective, and Rationale

Aim 2: Estimate the costs of implementing and maintainin…using the CRC toolkit and outreach specialist. Using process maps and mon…mate the cost of implementing changes to the CRC screening process by tracking r…ject, and the net benefit of the new system to the CHC by comparing the costs and…ning processes pre-implementation to the costs and revenues post-implem…

Aim 3: Conduct a limited t…change…CRC toolkit and outreach specialist. We will n…ented p…screening and documented screening results …eline and post-implementation.

3 Aims to Test Hypothesis

This project is *innovative* in that it a…paradigm for making systems-based changes that promote cancer screening in C…approach to one that promises greater feasibility given resource constraints of CHCs…se of the R21 funding mechanism, the *expected outcomes* of the project will provide…cale trial of the implementation strategy. Results from Aims 1 and 2 will indicate whic…CHCs were able to implement, how much and what type of support they needed, a…d resources it took to implement office-system changes using this approach. Aim 3…stimates to inform the development of a larger-scale trial. In addition to advancing implementation science, the project is expected to have a *positive impact* on the health of minority and underserved populations by helping CHCs improve their CRC screening rates.

Final Summary Paragraph

https://cancercontrol.cancer.gov/is/funding/sample-grant-applications

Example 1: Goal, Objective & Rationale (R21)

Our **long-term goal** is to improve CRC screening rates in Community Health Centers (CHCs) and in doing so, reduce disparities in cancer outcomes. The **objective** of this R21 application is to test the feasibility of an evidence-informed strategy for implementing office-system changes in CHCs that promote CRC screening. The strategy combines an offices systems toolkit (adapted from the National Colorectal Cancer Roundtable [8]) and an outreach specialist to provide training and technical assistance. Our **rationale** for the project, supported by preliminary data, is that CHCs want to increase screening rates, but need simple, evidence-based tools that—with training and technical assistance—they can implement and maintain with the time and resources that they have. The strategy we propose is evidence-informed and promising [7, 9-16], but is novel in this setting and therefore needs to be feasibility tested in this challenging organizational context prior to larger-scale evaluation. Our research team has the **necessary breadth of expertise and experience** (see Biographical Sketches), and has access to at least 4 CHCs with 14 clinic sites that are willing to participate (see Letters of Support).

We will test the feasibility of the proposed implementation strategy by pursuing the following specific aims:

https://cancercontrol.cancer.gov/is/funding/sample-grant-applications

Example 1: Overall Impact Paragraph (R21)

This project is **innovative** in that it attempts to shift the current paradigm for making systems-based changes that promote cancer screening in CHCs from the collaborative approach to one that promises greater feasibility given resource constraints of CHCs. Consistent with the purpose of the R21 funding mechanism, the **expected outcomes** of the project will provide a solid basis for a larger-scale trial of the implementation strategy. Results from Aims 1 and 2 will indicate which office-system tools the CHCs were able to implement, how much and what type of support they needed, and how much staff time and resources it took to implement office-system changes using this approach. Aim 3 will generate effect-size estimates to inform the development of a larger scale trial. In addition to **advancing implementation science**, the project is expected to have a **positive impact** on the health of minority and underserved populations by helping CHCs improve their CRC screening rates.

https://cancercontrol.cancer.gov/is/funding/sample-grant-applications

Specific Aims Pag
Example #2

R01, NIAID

HYPOTHESIS AND SPECIFIC AIMS:

The transcription fac [illegible] e regulation of numerous debilitating human immune-mediated disease [illegible] ogether affect over 8.5 million people (1 in 31 U.S. residents). In Inflan [illegible] 3D) chronic intestinal inflammation indicates aberrant *in vivo* FOXP3+ T regulatory (Treg) cell function (1). Similarly, proinflammatory signals *in vitro* impair Treg function (2). Our lab was the [illegible] histone methyltransferase (HMT) EZH2 in the epigene [illegible] ed work extended our observations indicating a key role [illegible] however the regulation and biological impact of the FOXF [illegible] owledge is important given the apparent loss of function of Treg cells in inflammation.

Our *l* [illegible] tic mechanisms regulating Treg cellular differentiation and functi [illegible] f GI inflammatory diseases; as these discoveries will facilitate de [illegible] or IBD. Consequently, the *objective* of this grant is to characteriz [illegible] gulator EZH2 [illegible] tion. These investigations are strongly supported by preliminary data der [illegible] required for Treg suppressive function; 2) IL6 signaling leads to phos [illegible] f EZH2; 3) lymphocytes isolated from the intestine of IBD patients dem [illegible] duced gene networks and loss of EZH2 HMT function; and 4) conditional knockout of EZH2 in FOXP3+ T cells leads to *in vivo* immune dysfunction. Based upon these compelling data we propose the **CENTRAL HYPOTHESIS** [illegible] **omeostasis of Treg cells, and the disruption of** [illegible] **pathways contributes to IBD.** Our rationale is tha [illegible] reg suppressive function in the setting of intestinal infl [illegible] es within the field of IBD. Our specific aims will test the following hypotheses:

Background

Gap in Knowledge

Long-term Goal

Objectives

Central Hypothesis

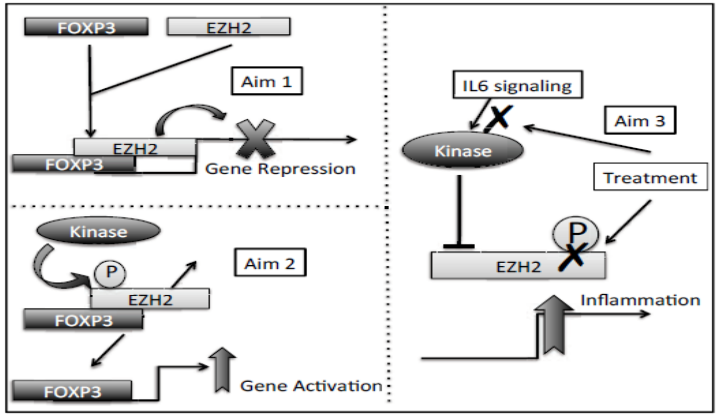


Figure 1: Conceptual framework. Through the mechanistic experiments designed in the following aims we will identify the role for FOXP3 in the recruitment of EZH2 to core target genes required for Treg function (Aim 1). We will define the signaling network responsible for phosphorylation of EZH2 and disrupted HMT function (Aim 2). Finally, we will perform pre-clinical studies of innovative therapy designed to generate Treg cells resistant to disruptive modifications in the setting of inflammation (Aim 3).

Aim 1: Repression of immunoregulatory gene networks by FOXP3 requires the formation of a comp [illegible] iption factor and EZH2 [illegible]

Aim [illegible] such as IL6 lead to [illegible] nd thereby disrupt the [illegible] epigenomic regulator.

Aim [illegible] 6 to EZH2 signaling [illegible] ained Treg suppressiv [illegible] of intestinal inflammation.

Upon conclusion, we will understand the role for EZH2 in Treg loss of function in the setting of active inflammation. This discovery will stimulate [illegible] ental therapeu [illegible] atory diseases [illegible] and Chromat [illegible] with the Dep [illegible] Mayo Clinic m [illegible] this objective given the extensive collective experience of histone methyltransferase biology, proinflammatory signaling networks, and *FOXP3* gene regulation.

3 Aims to Test Hypothesis

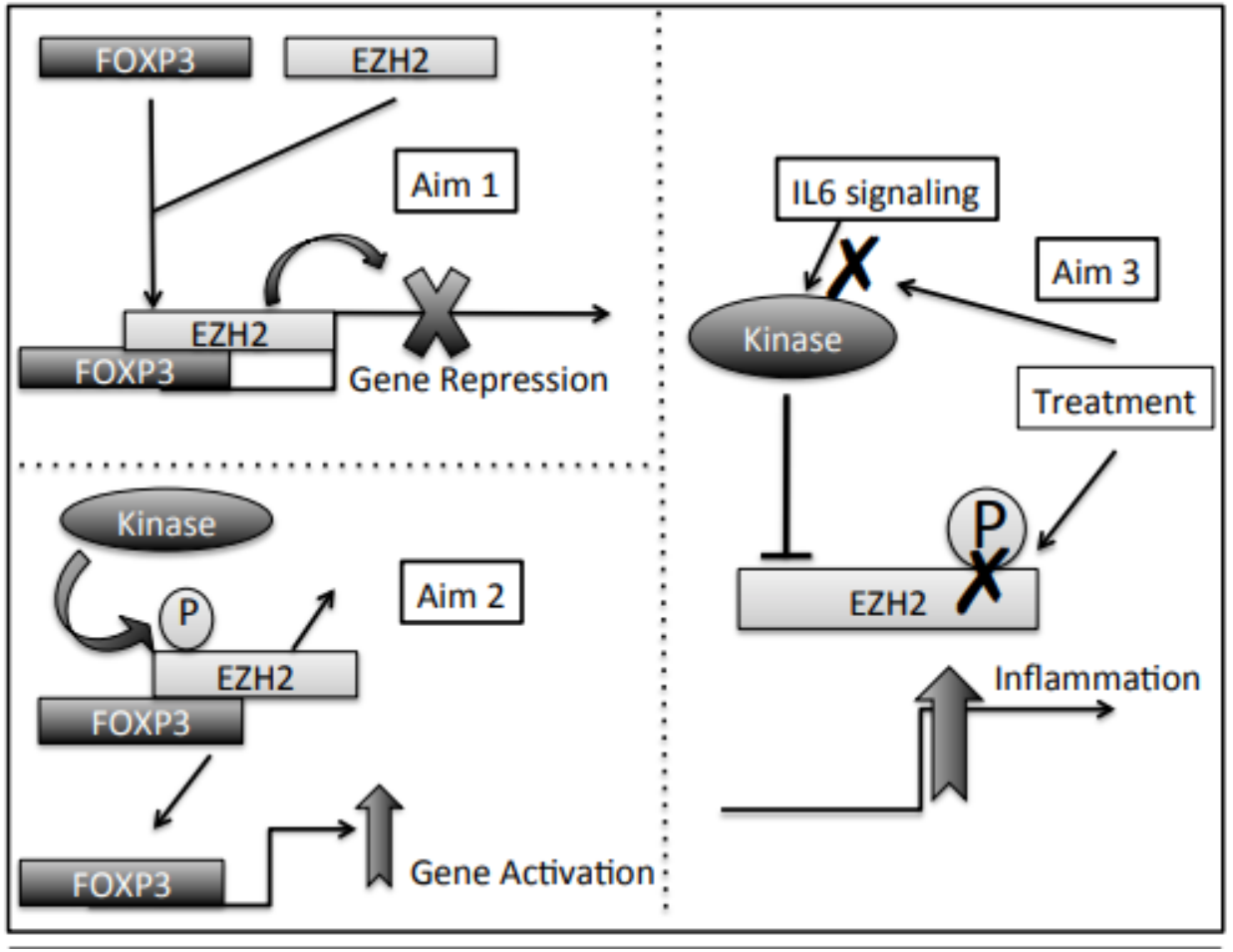
Final Summary Paragraph

You do not have to have 3 aims!

https://www.niaid.nih.gov/grants-contracts/sample-applications#r01

Example 2: Specific Aims (R01)

Figure 1: **Conceptual framework**. Through the mechanistic experiments designed in the following aims we will **identify** the role for FOXP3 in the recruitment of EZH2 to core target genes required for Treg function (**Aim 1**). We will **define** the signaling network responsible for phosphorylation of EZH2 and disrupted HMT function (**Aim 2**). Finally, we will **perform** pre-clinical studies of innovative therapy designed to generate Treg cells resistant to disruptive modifications in the setting of inflammation (**Aim 3**).



https://www.niaid.nih.gov/grants-contracts/sample-applications#r01

Specific Aims/Project Description: Overall Tips

- Start by setting the context, funnel down to the problem, and solution
- Create a solid hypothesis with a strong scientific premise
- The aims should collectively test the central hypothesis or accomplish the objective
- Use 2-4 realistic aims over 2-to-5-year funding period, with the resources available
- Discuss your Specific Aims with colleagues
- Write, discuss, revise, write (repeat)
- Avoid “over-ambitious” or “incremental” aims
- Conclude with an impact statement or expected outcome
- Use italics, bold, underline to emphasize key points in the Specific Aims page (in moderation) and be consistent throughout the application
- Gain the reviewers’ confidence while convincing them that your proposal is important to support

Common Weaknesses of Specific Aims/Project Description

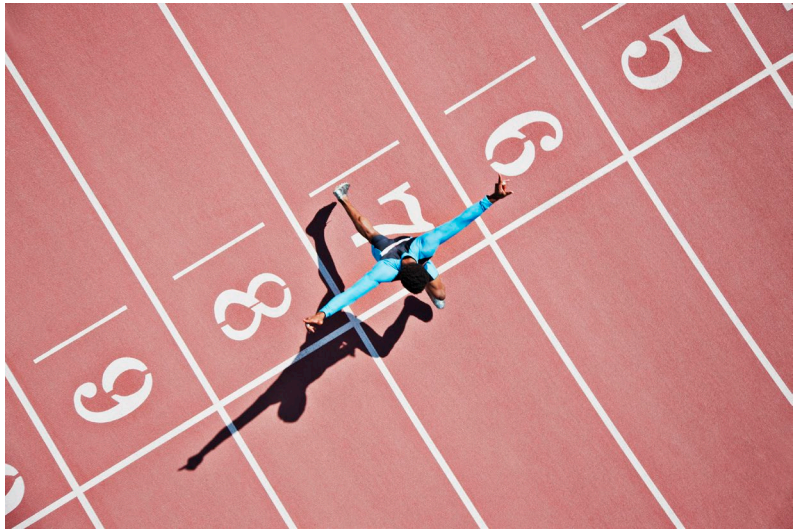
- Aim/Goal 1: Does A cause B?
  - It can be problematic if a major aim depends on specific outcomes of a prior aim
- Aim/Goal 2: To use models of process A to predict markers of condition B.
  - This aim/goal is descriptive. Suggested revision: To predict markers of condition B using models of process A and determine what role X plays in the progression of B
- Aim 3/Goal: We will measure levels of X in 1000 samples of Y to characterize the pattern of expression of X.
  - Some descriptive findings may be too detailed for a specific aims page or project description

Consider Word Choice

Strong Verbs	Descriptive
Determine	Describe
Identify	Compare
Develop	Correlate
Evaluate	Explore
Define	Investigate
Systematically adapt…	Study
Assess the feasibility and acceptability…	Observe
Dissect	
Implement	

Prepare for Success

"Chance favors the prepared mind"



Thank you!

References and Resources

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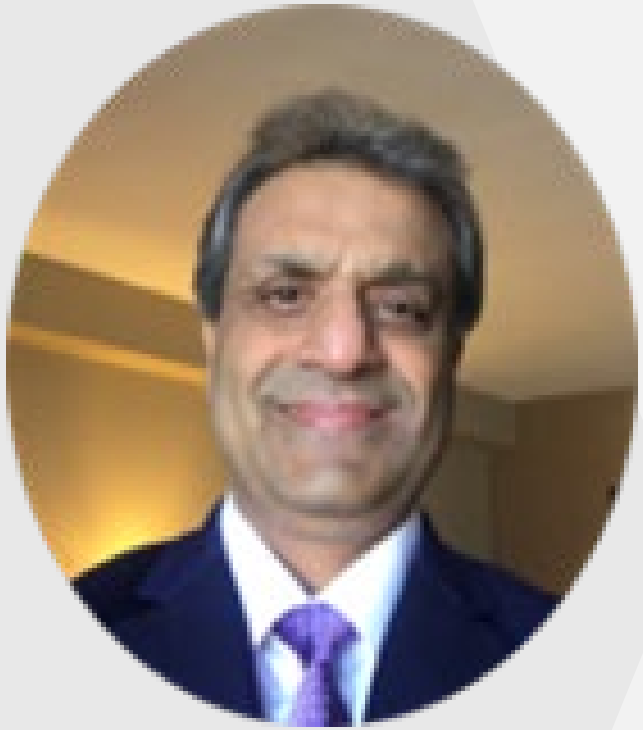
- The Jewel in the Crown: Specific Aims Section of Investigator-Initiated Grant Proposals *J Endocr Soc*, 2017 Aug 17;1(9):1194-1202
- Thirty-two steps for getting your R01: advice to early career investigators, *Pediatric Research*, 2022
- https://www.niaid.nih.gov/grants-contracts/sample-applications
- https://cancercontrol.cancer.gov/is/funding/sample-grant-applications
- https://www.biosciencewriters.com/NIH-Grant-Applications-The-Anatomy-of-a-Specific-Aims-Page.aspx
- https://www.niaid.nih.gov/grants-contracts/draft-specific-aims
- https://grants.nih.gov/grants/how-to-apply-application-guide.html
- https://grants.nih.gov/grants/oer.htm
- https://public.csr.nih.gov/ApplicantResources/Pages/default.aspx



Dr. Anil Wali, PhD

Crafting a Winning Biosketch

Program Director
Integrated Networks Branch
Center to Reduce Cancer Health Disparities; NCI

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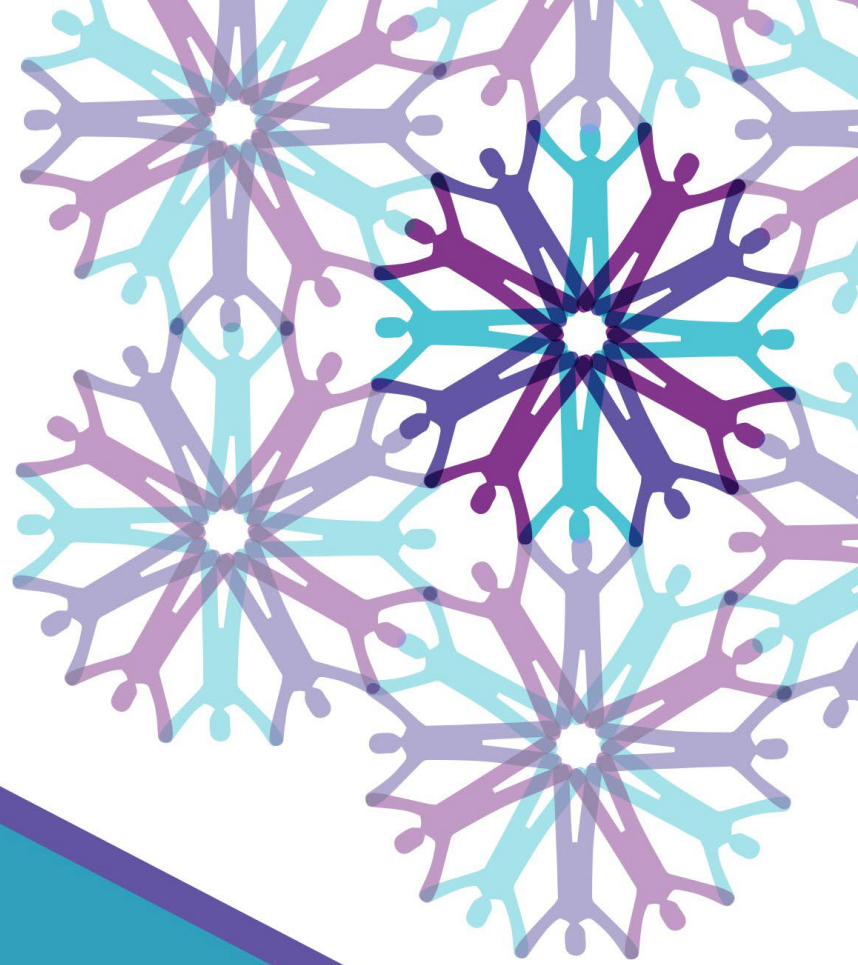
March 29, 2023

Outline

1. *Biosketch Overview*
2. *Biosketch Components*
3. *Examples*
4. *Available Resources*

Application Alignment with Review Criteria

Review Criteria	Application Sections
• Significance	• Research Aim & Purpose
• **Investigators**	• **Bio-sketches**
• Innovation	• Research Strategy
• Approach	• Research Methods & Analysis
• Environment	• Resources



Biosketch Overview

What it is and Why You Need One

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What is NIH Biographical Sketch?

- Highly formatted component of a grant proposal that captures and communicates the PI's accomplishments and activities as clearly and effectively as possible
- A concise "personal narrative" of education, training, experiences, contributions, and leadership in profession/field

Why is the NIH Biographical Sketch Needed?

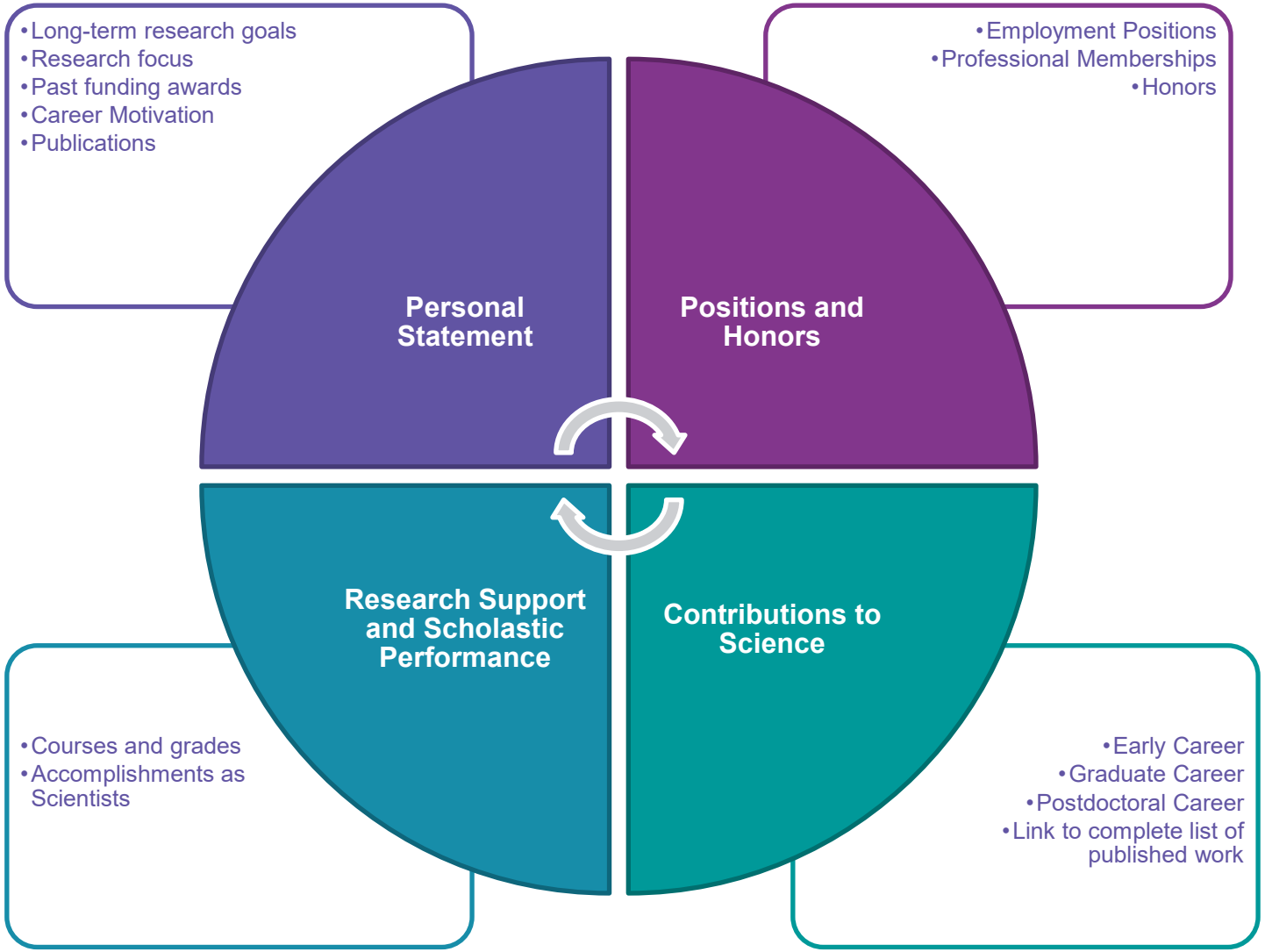
- Allows **PIs** to:
  - Highlight their education, training, experiences, and qualifications
  - Describe the magnitude and significance of scientific contributions (including publications)
  - Provide their significant contributions, relevant experiences, and/or qualifications in the context of the proposed project
- Enables reviewers to evaluate the qualifications and experience of the PI and scientific team that will be executing the grant

In a Nut Shell: Your Biosketch Tells Your Story

- Who you are
- What makes you great
- What contributions you have made

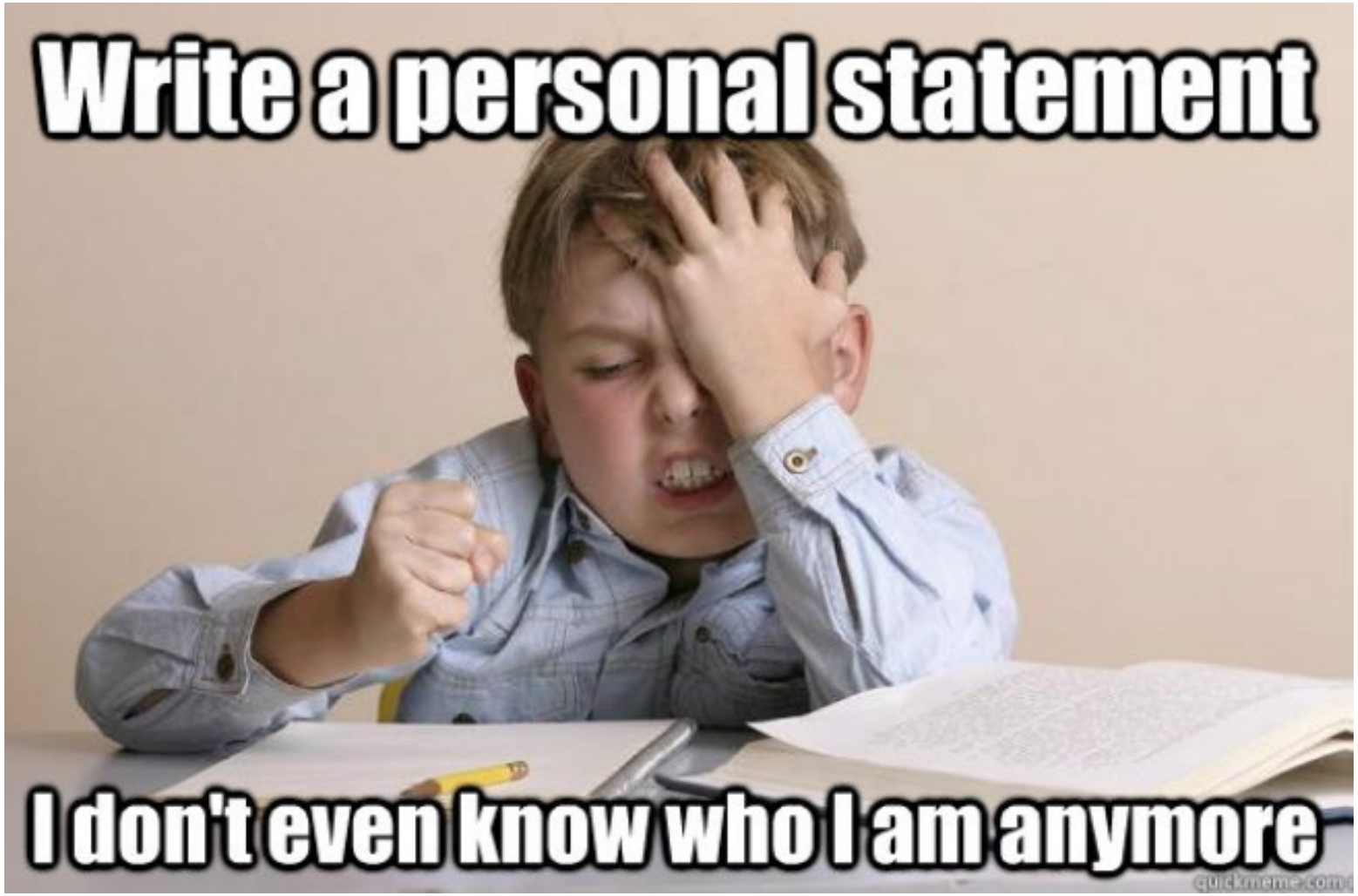
Biosketch Components

Biosketch Components



Personal Statement

A. Personal Statement



Personal Statement: Content

- Describe why are you well-suited for your role(s) in this project
  - Any relevant training
  - Previous work on this specific topic or related topics
  - Technical expertise
  - Collaborators or scientific environment

- Biosketch Components:
  - ✓ ***Personal Statement***
  - Positions and Honors
  - Contributions to Science
  - Research Support

Personal Statement: Content (Cont.)

- If you choose, briefly explain impediments to your past scientific productivity, for example:
  - Family care responsibilities
  - Illness
  - Disability
  - Active duty military service
- You may cite up to four publications or research products that highlight your experience and qualifications

- Biosketch Components:
  - ✓ ***Personal Statement***
  - Positions and Honors
  - Contributions to Science
  - Research Support

Personal Statement: Tip 1

- Craft a three-paragraph personal statement with the following subheadings:
  - Proposal Goal
  - Relevant Experiences
  - Leadership Qualifications

- Biosketch Components:
  - ✓ ***Personal Statement***
  - Positions and Honors
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Personal Statement: Tip 2

- Tailor your Personal Statement to the grant application
- In the first sentence, mention the mechanism of the grant application (e.g., R01, R21, K01, etc.)
- Speak directly to the purpose of the funding mechanism and proposal goal
  - Example: My goal for this proposed R01 grant application is to conduct basic, translational, or clinical research to study … while further developing and expanding my (training and) career growth in the field of …(or as a…) or etc.

- Biosketch Components:
  - ✓ ***Personal Statement***
  - Positions and Honors
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Personal Statement: Tip 3

- Sell your role in the proposed research
  - Why are you a good fit?
  - What strengths do you have for the proposal?
- Identify yourself – New Investigator – and discuss your future research direction if you are a new investigator
- Consider writing in first person and limiting your personal statement to 300–400 words (about half a page)
- If someone is mentoring/collaborating with you, include this in the personal statement

- Biosketch Components:
  - ✓ ***Personal Statement***
  - Positions and Honors
  - Contributions to Science
  - Research Support

Sample of Personal Statement

The goal of the proposed research is to investigate the interaction between drug abuse and normal aging processes. Specifically, we plan to measure changes in cognitive ability and mental and physical health across a five-year period in a group of older drug users and matched controls.

I have the expertise, leadership and motivation necessary to successfully carry out the proposed work. I have a broad background in psychology, with specific training and expertise in key research areas for this application. As a postdoctoral fellow at Berkeley, I carried out ethnographic and survey research and secondary data analysis on psychological aspects of drug addiction. At the Division of Intramural Research at the National Institute on Drug Abuse (NIDA), I expanded my research to include neuropsychological changes associated with addiction. As PI or co-Investigator on several university- and NIH-funded grants, I laid the groundwork for the proposed research by developing effective measures of disability, depression, and other psychosocial factors relevant to the aging substance abuser, and by establishing strong ties with community providers that will make it possible to recruit and track participants over time. In addition, I successfully administered the projects (e.g. staffing, research protections, budget), collaborated with other researchers, and produced several peer-reviewed publications from each project. As a result of these previous experiences, I am aware of the importance of frequent communication among project members and of constructing a realistic research plan, timeline, and budget.

The current application builds logically on my prior work, and I have chosen co-investigators (Drs. AB and XY) who provide additional expertise in cognition, gerontology and geriatrics. During 2005-2006 my career was disrupted due to family obligations. However, upon returning to the field I immediately resumed my research projects and collaborations and successfully competed for NIH support. In summary, I have a demonstrated record of accomplished and productive research projects in an area of high relevance for our aging population, and my expertise and experience have prepared me to lead the proposed project

1. Hunt, MC (2004). Independent Living Among elderly. Psychology and aging, 23(4), 10-22.

Sample Personal Statement

I have the expertise, leadership, training, expertise and motivation necessary to successfully carry out the proposed research project. I have a broad background in psychology, with specific training and expertise in ethnographic and survey research and secondary data analysis on psychological aspects of drug addiction. My research includes neuropsychological changes associated with addiction. As PI or co-Investigator on several university- and NIH-funded grants, I laid the groundwork for the proposed research by developing effective measures of disability, depression, and other psychosocial factors relevant to the aging substance abuser, and by establishing strong ties with community providers that will make it possible to recruit and track participants over time as documented in the following publications. In addition, I successfully administered the projects (e.g. staffing, research protections, budget), collaborated with other researchers, and produced several peer-reviewed publications from each project. As a result of these previous experiences, I am aware of the importance of frequent communication among project members and of constructing a realistic research plan, timeline, and budget. The current application builds logically on my prior work. During 2005-2006 my career was disrupted due to family obligations. However, upon returning to the field I immediately resumed my research projects and collaborations and successfully competed for NIH support.

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3. Hunt, M.C., Wiechelt, S.A. & Merryle, R. (2008). Predicting the substance-abuse treatment needs of an aging population. American Journal of Public Health, 45(2), 236-245. PMCID: PMC9162292 Hunt, M.C., Newlin, D.B. & Fishbein, D. (2009). Brain imaging in methamphetamine abusers across the life-span. Gerontology, 46(3), 122-145.

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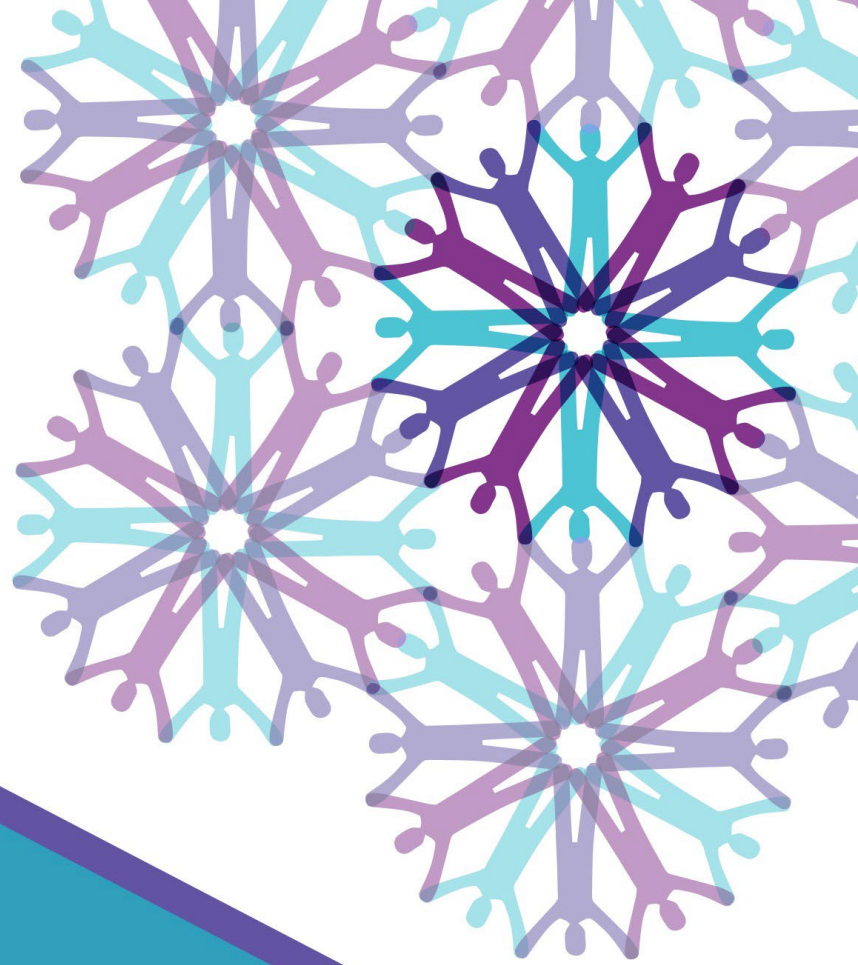
Positions and Honors

B. Positions and Honors

- You can load info into My NCBI
  - Online tool (via SciENcv) to support building/storing your personal data including linking to all your publications
- Be thorough
- Clarify what specific awards/honors were for
- Sometimes you might want to add an alternative (unique) sub-header if the grant supports it

- Biosketch Components:
  - Personal Statement
  - ✓ ***Positions and Honors***
  - Contributions to Science
  - Research Support



Contribution to Science

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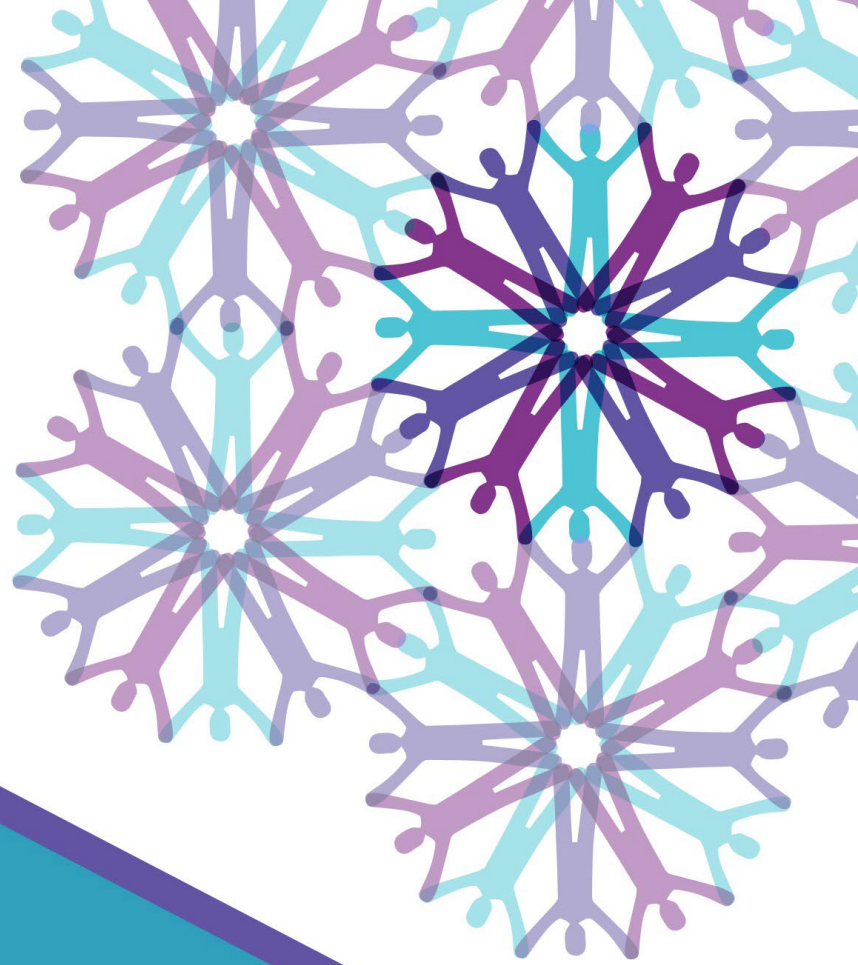
C. Contribution to Science

- **Format:**
  - Briefly describe up to 5 most significant contributions to science
  - Description of each contribution should be no longer than half a page, including citations
- **Content:** for each contribution, indicate the following:
  - Historical background that frames the scientific problem
  - Central finding(s)
  - Influence of the finding(s) on the progress of science or the application of those finding(s) to health or technology
  - Your specific role in the described work

- Biosketch Components:
  - Personal Statement
  - Positions and Honors
  - ✓ ***Contributions to Science***
  - Research Support

Research Support



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D. Research Support

- "Research Support" highlights your accomplishments, and those of your colleagues
- List ongoing and completed research projects from the past 3 years
- Briefly indicate the overall goals of the projects and your responsibilities
- **Do not** include the number of person-months or direct costs
- **Do not** confuse "Research Support" with "Other Support"

- Biosketch Components:
  - Personal Statement
  - Positions and Honors
  - Contributions to Science
  - ✓ ***Research Support***

Resources

- Current (FORMS-D) application forms: grants.nih.goc/grants/how-to-appl-application-guide.htm
  - Important: You must use the correct forms to be eligible for funding consideration
- NIH Biographical Sketch form, instructions, and samples: grants.nih.gov/grants/forms/biosketch.htm
- SciENcv (Science Experts Network Curriculum Vitae): ncbi.nlm.nih.gov/sciencv
- NCBI My Bibliography: ncbi.nlm.nih.gov/books/NBK53595/

Resources (Contd.)

https://grants.nih.gov/grants/forms/biosketch.htm

https://www.betteratthebench.com/week-4-how-to-prepare-a-stellar-nih-biosketch

https://www.niaid.nih.gov/grants-contracts/create-biosketches

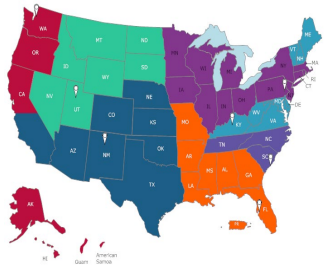
https://grants.nih.gov/faqs#/biosketches.htm

Resources (Contd.)

Checklist

- My personal statement showcases my skills.
- I convince reviewers that I am the right person to lead the research.
- The other biosketches will convince reviewers that members of my team can all perform the roles I need them to play on the project.
- I highlight each person's accomplishments in the research support section.
- The publications I choose reveal my skills and those of my team.
- My biosketches are consistent with other parts of the application.

Additional Resources: Geographic Management of Cancer Health Disparities Program



Uses a regional approach to support disparities research, diversity training & outreach activities.

Information

- Monthly e-newsletter
- **Funding opportunity announcements**
- **Job Announcements**
- NIH/NCI career development opportunities

Interpersonal

- Conference meet-ups
- Regional peer matching
- Mentor-mentee Matches
- Partnership Development

Career/Professional Support

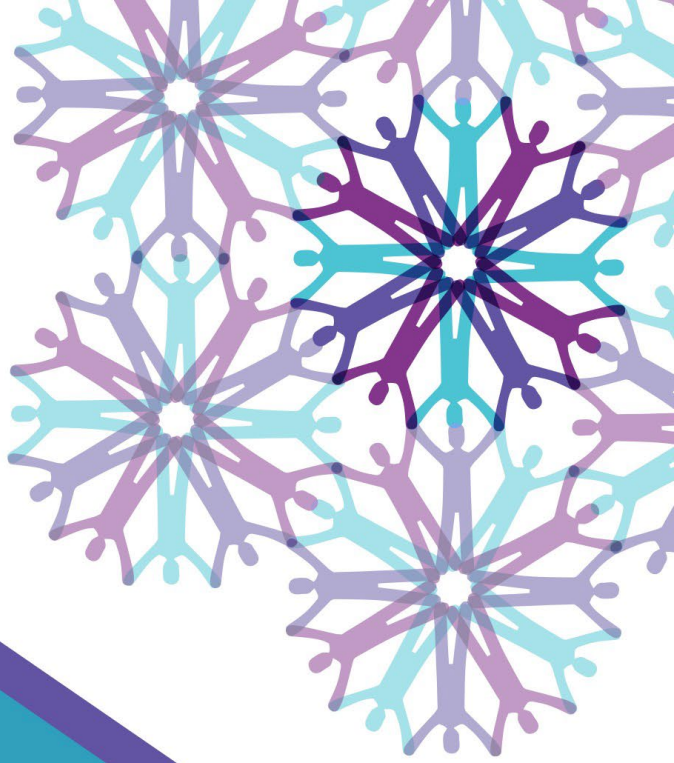
- Webinars
- Workshops
- **Travel Scholarships**
- **Pilot Grants**
- **Expert Application Review**

Regional Resources

- **Researcher Connections**
- **Regional Resources and Tools**

Questions?

Thank you!



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