

Grantsmanship

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Christian Capitini, MD
Associate Professor
University of Wisconsin-Madison

#SITCWinterSchool

Disclosures

- Advisory Board/Honorarium - Nektar Therapeutics; Novartis

Overview

- Understanding the basic components of grant
- Organizing your work
- Telling/selling your story
- Overcoming barriers and responding to reviews

Know your funder!

Federal

- NIH
- DOD
- NSF

Non-federal

- Private foundations
 - Societies (SITC, AACR, ACS, etc.)
 - Disease specific (American Lung Association, Leukemia & Lymphoma Society, Melanoma Research Foundation, etc.)

NIH vs. DOD

	<u>R21</u>	<u>Idea Award with Special Focus</u>
Similarities	<ul style="list-style-type: none">• Exploratory, high risk, high reward• No preliminary data is required• Typical direct costs \$500,000	<ul style="list-style-type: none">• Exploratory, high risk, high reward• No preliminary data is required• Typical direct costs \$400,000
Differences	<ul style="list-style-type: none">• Preliminary data is almost always in funded applications• Scored on Significance, Innovation, Approach, Investigator and Environment• All reviewers are scientists	<ul style="list-style-type: none">• Preliminary data is almost never in funded applications (cannot support ongoing work in your lab)• Scored on Scientific Merit, Impact and Innovation• Reviewers include scientists, consumers from advocacy communities and military personnel

Basic tips

- Reference the agency/society/foundation's mission in your grant
- Read the RFA (can sometimes be dense but often highlight “Areas of emphasis” that are of interest to the funder)
- Is the juice worth the squeeze?

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Typical Components of an NIH grant

Scored

- Specific Aims
- Research Strategy
 - Significance
 - Innovation
 - Approach

Investigators {

- Biosketches
- Letters of support

Environment {

- Facilities
- Equipment

Unscored but judged

- Project Summary (Abstract)
- Project Narrative (public health/agency relevance)
- Bibliography
- Resource Sharing Plan
- Authentication Plan
- Human Subjects Plan
- Biosafety Plan
- Vertebrate Animals
- Budget/Budget Justification

Write your Specific Aims

- 1 page summary outlining the background, long term objective, your prior work, hypothesis and Aims (what you need the \$ for).
- The number of Aims depends on the amount and length of the award
- Most valuable document during preparation and submission
 - You may need to share it with any letter of support writers, people editing your Research Strategy or with collaborators
 - Only 3 reviewers will critique your grant, but the whole study section will read your Specific Aims prior to discussion

Specific Aims

- Introductory/problem paragraph
 - Provide background (immune cell or the cancer), address the knowledge gap in the field
- Solution paragraph
 - You have the answer (long term objective), you have been preparing to provide the answer (your prior work) and the question you want to ask (hypothesis)
- Research Aims
 - How are you going to answer the question (hypothesis)
 - Briefly describe the Approach/experiments to address the Aims

Aims Dos and Don'ts

- DO
 - Be specific
 - “Enumerate anti-apoptotic proteins within...”
 - Have related but separate Aims
- DON'T
 - Talk in general terms
 - “Characterize the tumor microenvironment...”
 - Propose to discover something in one Aim that will inform direction of another Aim
 - “Overlapping Aims” = Achilles Heel

Identify collaborators and draft your letters

- Collaborators can provide
 - valuable expertise and reagents that you don't have in your lab
 - preliminary data for your grant
 - proofreading
 - a raise to your Investigator score
- Be respectful of people's time, send draft letters of support well in advance of the deadline esp. from academic leaders & industry
- A letter from a Dept chair, Cancer Center Director, other leader can show how much an institution is committed to you/your project

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Writing your Research Strategy Significance

- Review background research, cite seminal studies and assess **rigor of prior work**
- Should be 1-1.5 pages, schematic figures of pathways or concepts are helpful
- Bring the non-expert up to speed but also show the expert you are keeping up with the literature

Writing your Research Strategy Innovation

- State, or even list, how this grant will generate innovative concepts or technical advances
- Should be 1/2 page
- If you are having trouble listing the innovation, you need to think bigger about what you plan to do and/or how you plan to do it!

Writing your Research Strategy Approach

- Preliminary data (some put in a separate section and others weave supporting data into each Aim) can be published or unpublished.
- You have to help build your case that your Aims are going to work, and that you have the assays/animals/reagents to accomplish what you propose
- Write clear legends that describe what is shown! Define abbreviations! Show statistics!

Writing your Research Strategy Approach

- Subaims should include detailed experiments that answer a question. Include control groups.
 - Mechanistic subaims will always “sell” better than descriptive aims
- Show the reviewer that your experiments have **rigor**

Writing your Research Strategy Approach

- Describe all assays/readouts/measures that will be used to interpret intervention
 - Include a statistical plan
 - Describe expected results – do the experiments answer the question?
 - **Consideration of biological variables like sex**
 - Do experiments in both sexes, if no then why not?

Writing your Research Strategy Approach

- Include pitfalls/alternative approaches section
 - Be honest, not everything is going to work! Show you already thought of that and have a backup plan.
 - Future Directions at end of Approach is a nice way to summarize the grant

Biosketch

- Used by NIH and NSF, although require different formats
- Templates are available through myNCBI through the SciEnCV
- Unlike CVs, have strict page limits

SITC Cancer Immunotherapy Winter School

A COMPREHENSIVE CANCER IMMUNOTHERAPY EDUCATION PROGRAM



OMB No. 0925-0001 and 0925-0002 (Rev. 12/2020 Approved Through 02/28/2023)

BIOGRAPHICAL SKETCH

Provide the following information for the Senior/key personnel and other significant contributors.
Follow this format for each person. **DO NOT EXCEED FIVE PAGES.**

NAME: Hunt, Morgan Casey
eRA COMMONS USER NAME (credential, e.g., agency login): huntmc1
POSITION TITLE: Associate Professor of Psychology
EDUCATION/TRAINING *(Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable. Add/delete rows as necessary.)*

INSTITUTION AND LOCATION	DEGREE (if applicable)	Completion Date MM/YYYY	FIELD OF STUDY
University of California, Berkeley	BS	05/2003	Psychology
University of Vermont	PHD	05/2009	Experimental Psychology
University of California, Berkeley	Postdoctoral	08/2013	Public Health and Epidemiology

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Biosketch

- Personal statement
 - Make sure ALL submitted biosketches tailor it to the grant objectives
 - List up to 4 publications for support
 - Consider submitting near completed, preliminary work to a preprint archive – citeable
 - Grant funding (make sure it is current, not grants that ended 2yrs ago)
 - Be aware of overlapping grants!
- Honors/awards +/- professional memberships/service

A. Personal Statement

I am an Associate Professor of Psychology, and my research is focused on neuropsychological changes associated with addiction. 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. 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 2015-2016, 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 the expertise, leadership, training, expertise and motivation necessary to successfully carry out the proposed research project.

Ongoing and recently completed projects that I would like to highlight include:

R01 DA942367

Hunt (PI)

09/01/16-08/31/21

Health trajectories and behavioral interventions among older substance abusers

Citations:

1. Merryly, R.J. & **Hunt, M.C.** (2015). Independent living, physical disability and substance abuse among the elderly. *Psychology and Aging*, 23(4), 10-22.
2. **Hunt, M.C.**, Jensen, J.L. & Crenshaw, W. (2018). Substance abuse and mental health among community-dwelling elderly. *International Journal of Geriatric Psychiatry*, 24(9), 1124-1135.
3. **Hunt, M.C.**, Wiechelt, S.A. & Merryly, R. (2019). Predicting the substance-abuse treatment needs of an aging population. *American Journal of Public Health*, 45(2), 236-245. PMID: PMC9162292
4. Merryly, R. & **Hunt, M.C.** (2020). Randomized clinical trial of cotinine in older nicotine addicts. *Age and Ageing*, 38(2), 9-23. PMID: PMC9002364

B. Positions, Scientific Appointments, and Honors

Positions and Scientific Appointments

2021– Present	Associate Professor, Department of Psychology, Washington University, St. Louis, MO
2020 – Present	Adjunct Professor, McGill University Department of Psychology, Montreal, Quebec, Canada
2018 – Present	NIH Risk, Adult Addictions Study Section, members
2015 – 2017	Consultant, Coastal Psychological Services, San Francisco, CA
2014 – 2021	Assistant Professor, Department of Psychology, Washington University, St. Louis, MO
2014 – 2015	NIH Peer Review Committee: Psychobiology of Aging, ad hoc reviewer
2014 – Present	Board of Advisors, Senior Services of Eastern Missouri
2013 – 2014	Lecturer, Department of Psychology, Middlebury College, Middlebury, VT
2011 – Present	Associate Editor, Psychology and Aging
2009 – Present	Member, American Geriatrics Society
2009 – Present	Member, Gerontological Society of America
2009 – 2013	Fellow, Division of Intramural Research, National Institute of Drug Abuse, Bethesda, MD
2006 – Present	Member, American Psychological Association

Honors

2020	Award for Best in Interdisciplinary Ethnography, International Ethnographic Society
2019	Excellence in Teaching, Washington University, St. Louis, MO
2018	Outstanding Young Faculty Award, Washington University, St. Louis, MO

Biosketch

- Contribution to science (up to 5) – Talk big!
 - This is your bibliography. Make sure a hyperlink to all your publications is there

C. Contributions to Science

1. My early publications directly addressed the fact that substance abuse is often overlooked in older adults. However, because many older adults were raised during an era of increased drug and alcohol use, there are reasons to believe that this will become an increasing issue as the population ages. These publications found that older adults appear in a variety of primary care settings or seek mental health providers to deal with emerging addiction problems. These publications document this emerging problem and guide primary care providers and geriatric mental health providers to recognize symptoms, assess the nature of the problem and apply the necessary interventions. By providing evidence and simple clinical approaches, this body of work has changed the standards of care for addicted older adults and will continue to provide assistance in relevant medical settings well into the future. I served as the primary investigator or co-investigator in all of these studies.
 - a. Gryczynski, J., Shaft, B.M., Merrylye, R., & **Hunt, M.C.** (2013). Community based participatory research with late-life addicts. American Journal of Alcohol and Drug Abuse, 15(3), 222-238.
 - b. Shaft, B.M., **Hunt, M.C.**, Merrylye, R., & Venturi, R. (2014). Policy implications of genetic transmission of alcohol and drug abuse in female nonusers. International Journal of Drug Policy, 30(5), 46-58.
 - c. **Hunt, M.C.**, Marks, A.E., Shaft, B.M., Merrylye, R., & Jensen, J.L. (2015). Early-life family and community characteristics and late-life substance abuse. Journal of Applied Gerontology, 28(2),26-37.
 - d. **Hunt, M.C.**, Marks, A.E., Venturi, R., Crenshaw, W. & Ratonian, A. (2018). Community-based intervention strategies for reducing alcohol and drug abuse in the elderly. Addiction, 104(9), 1436-1606. PMCID: PMC9000292

Complete List of Published Work in MyBibliography: <https://www.ncbi.nlm.nih.gov/myncbi/1ICifFFV4VYQZE/bibliography/public/>

Facilities

- Often boilerplate templates are available from colleagues at your institution
- Make sure to include any core facilities that may be involved in your proposal (include letter of support if necessary)
 - Assume reviewers have never been to your institution. We don't know how state-of-the-art it is!
- Don't forget to list facilities outside of your institution if they are collaborating

Budget

- Personnel
 - Make sure you include sufficient % effort so reviewers believe you are serious about the project
 - PIs 5% for each \$50,000, can be less if you are heavily funded
 - Include the people who will do the work
- Equipment
- Supplies
- Travel
- Tuition remission
- Other costs

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The Elevator Pitch

- Practice telling people in 15 seconds
 - What you study
 - Why you study it
 - How you are going to change the field
- Have 2 versions
 - Lay people (=lay abstracts, project summary/narrative)
 - Scientists (=technical abstracts, specific aims)
- Repetition throughout grant of “the pitch” is good

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Technical vs. Lay abstracts

- CAR T cells are genetically engineered T cells that are used to treat relapsed/refractory B cell ALL. While 82% of patients achieve remission after 3 months, the durability decreases over time. The purpose of this study was to examine factors that contribute to relapse after CAR T cells, including loss of B cell aplasia and prior blinatumomab exposure.
- CAR T cells are “supercharged” cells from our immune system that help fight leukemia. Sometimes they do not work because they go away. This study will try and make them last longer and fight better.

Law and Order

- Pretend your scientific area/hypothesis is on trial in court
- Present your “evidence” (preliminary figures/tables) to the “jury” (reviewers)
- You want to convince the jury you know what happened (Significance) and what will happen if the Aims are successful (Approach)

Clues to solving a crime

- Essentially all research is a “whodunit?”
- Imagine reviewer saying “so what?” paragraph after paragraph
- Propose 2 different ways of answering the same question if need be
 - Will analyze cytotoxicity by X and verify results by Y
 - If you think of a 3rd way, add it to the alternative experiments section

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Writer's block

- Draw your way out
 - “A picture is worth a thousand words”
- Record a voice memo
 - Many times it is easier to say what you want to do than write it down
 - You can play it back and write it down in a more professional manner (or use software that dictates your speech into writing)
- Work on unscored sections

Technology failure

- Save, save, save your documents repeatedly, even if they auto-save
 - A surprise crash is a rite of passage in academia
- Take the time to learn a graphics program, or use a professional illustrator
 - Word is not suited for grant writing. The bigger the document, the more figures jump around spontaneously
- Make the institution request your grant a week before the deadline, so in case something happens you have a buffer to correct it

You get the reviews back...

- Highlight the key points from each reviewer
- Organize common themes esp if from multiple reviewers
- Do NOT dismiss a criticism. Even if they are wrong, it is likely because you did not make your case clearly or explain the concept well
- Be prepared to generate more preliminary data! Show progress toward the Aims you have not yet been paid to do.

Conclusions

- Begin by writing a lay abstract of the question you want to ask and how you want to answer it
 - Expand this into a 1 page Specific Aims page
 - Send your Aims to collaborators
- Draft supportive documents (letters of support, budget)
 - Send to your institutional director, collaborators, consultants, etc.
- Organize your science
 - Background, Innovation, Approach
 - Proofread!

Useful websites

- NCI - Preparing grant applications:
<https://deainfo.nci.nih.gov/extra/extdocs/apprep.htm>
- NIH – Writing your application: <https://grants.nih.gov/grants/how-to-apply-application-guide/format-and-write/write-your-application.htm>
- NIAID – Sample applications: <https://www.niaid.nih.gov/grants-contracts/sample-applications>
- NIH peer review videos:
<https://public.csr.nih.gov/NewsAndPolicy/PeerReviewVideos>