

# Grantspersonship:

## An Instruction Manual



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**Beth A. Fischer and Michael J. Zigmond**

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The Survival Skills and Ethics Program  
University of Pittsburgh  
4K26 Posvar Hall  
Pittsburgh, PA 15260

phone: 412/624-7098  
fax: 412/648-7081  
email: [survival@pitt.edu](mailto:survival@pitt.edu)  
<http://www.pitt.edu/~survival>

## GRANTSPERSONSHIP

**Preface:** This brief instruction manual is the result of a series of workshops that we have provided at the University of Pittsburgh and elsewhere on the subject of how to obtain funding for research and training. It is, in fact, our notes and thus written in a telegraphic form; we hope it will nonetheless be intelligible. A more complete version should be available in late 2001 as part of a manual we are preparing and will published with Academic Press.

The manual is designed to be generic, that is, to be relevant to most grant and fellowship proposals, although it sometimes uses examples of language that are most relevant to applications to the U.S. National Institutes of Health. We have divided the task of obtaining funding into 16 steps, providing you with our best advice on how to deal with each step in turn:

### Sixteen Steps to Funding

<p style="text-align: center;"><b><u>Preparing</u></b></p> <ol style="list-style-type: none"><li>1. establish frame of mind</li><li>2. develop concept</li><li>3. identify funding source</li><li>4. inform your institution</li><li>5. refine concept</li></ol>	<p style="text-align: center;"><b><u>Submitting</u></b></p> <ol style="list-style-type: none"><li>9. get approvals</li><li>10. obtain assignment</li><li>11. submit application</li><li>12. provide add'l material</li><li>13. ensure receipt</li></ol>
<p style="text-align: center;"><b><u>Writing</u></b></p> <ol style="list-style-type: none"><li>6. stock the sections</li><li>7. outline, write, edit</li><li>8. get feedback &amp; revise</li></ol>	<p style="text-align: center;"><b><u>Responding</u></b></p> <ol style="list-style-type: none"><li>14. await review</li><li>15. study report</li><li>16. respond to report</li></ol>

*The "fine print:"* Please keep in mind that this manual represents only one set of opinions on the subject of how best to obtaining funding; seek additional perspectives, as well. Also, remember that each funding agency is slightly different and that many of them frequently modify their objectives and/or mode of operation. Thus, be sure to obtain the most current information before embarking on the preparation of your application. Finally, we invite you to help us improve this document by offering your comments. We can be reached at [survival@pitt.edu](mailto:survival@pitt.edu).

BAF and MJZ

## Phase I: Preparation

1. **Establish the correct frame of mind:** *Grant writing is an opportunity, not a painful chore!*
  - a. start here: no amount of grantspersonship will overcome a weak idea.
  - b. many individuals begin the task with a negative mindset – this cannot help
  - c. preparing a grant application
    - 1) allows time to focus without interruption on your plans for the next few years
    - 2) offers you a chance to get in depth feedback from colleagues while you write and from reviewers after you submit the proposal
  - b. some of the application text may be useful when publishing research articles or as a review
2. **Develop a strong concept that FITS:**
  - a. **F**ills a gap in knowledge
  - b. **I**mportant
    - 1) to the field (and the reviewers)
    - 2) to funding agency
    - 3) to you (or you will not do your best job)
  - c. **T**ests a hypothesis (rather than being descriptive)
  - d. **S**hort-term investment by agency that will lead to long-term gain for field
3. **Identify funding source**
  - a. explore choices and then select funding agency using
    - 1) your local office of research
    - 2) library
    - 3) internet
    - 4) colleagues
    - 5) booths at professional meetings
    - 6) acknowledgments in research articles
  - b. improve your odds of being funded – match your objectives with those of the funding agency
    - 1) support for a particular type of research (e.g., basic versus clinical, specific diseases, etc.)
    - 2) personal characteristics (international collaborations, MDs conducting research, etc.)
  - c. read the instructions – *carefully*, noting:
    - 1) stated objective of agency
    - 2) deadline for application
    - 3) need for prior letter in intent
    - 4) organization and page length

- d. communicate with program staff
    - 1) staff members work to find best possible proposals for their agency and then fund them
    - 2) thus, they wish to help you determine if your concept is relevant to them and, if so, to help make the application as strong as possible
    - 3) contact staff members in their offices and/or at professional meetings early on
    - 4) find someone you can ask:
      - a) is my concept relevant to your agency? your program within the larger agency?
      - b) if not, would you recommend
        - (1) a modification of the proposal
        - (2) another source of funding
      - c) do I have the all of the most up-to-date instructions for submission of a grant application to your funding agency?
      - d) what is a reasonable amount of money to request given my history and my concept?
      - e) who will review my application? (try to find out as much about the reviewers as is legitimately possible – their names are almost always public information)
      - f) what are the criteria that will be used in evaluating my proposal?
      - g) what percentage of the proposals that you receive do you fund? what is the level (amount, years) of funding?
      - h) what are the common strengths and weaknesses of the proposals submitted?
      - i) can I submit supplementary materials in addition to the main text of my application?
      - j) can you review an initial draft and provide me with feedback. If so, when would I need to get the document to you?
  - e. ask for help from others, too:
    - 1) you can ask your colleagues and individuals who have previously reviewed grants for the funding agency to provide you with help, but
    - 2) unethical to talk about your application with individuals who *currently* serve as reviewers for the funding agency
4. **inform your institution** that you are planning to submit a grant application to [funding agency] on [date]. Include the following individuals
- a. the chairperson of your department
  - b. the office of research

- c. people whose help you need
  - 1) secretarial
  - 2) fiscal
  - 3) scientific (you may need help to collect pilot data or advice in constructing the proposal)

**5. refine your concept**

- a. do a literature review
- b. talk to colleagues
- c. revise application based on these considerations and your additional hard thinking

## **Phase II: Preparing the application**

**6. Stock the sections of your application** (just like you would for a research article)

a. Typical sections of an application

1) **title**

- a) conform to the agency's guidelines for titles (there may be a limit on length)
- b) make the title an accurate statement of long-term goals
- c) include keywords in the title

2) **abstract**

- a) make your abstract
  - simple (the general public and/or policy makers may read it)
  - accurate
  - not provocative to groups that may not understand your research
  - interesting
- b) include keywords in the abstract

3) **budget and budget justification**

**Justification:**

Personnel

**Ben Aster, Ph.D.**, 20% effort. Dr. Aster is responsible for program evaluation. He develops evaluation instruments, administers surveys, compiles and analyzes the data, initiates follow-up inquiries, and writes evaluation reports.

- a) use the budget forms and categories developed by the funding agency

- b) make your request reasonable
  - for the project
  - for agency (i.e., don't ask for more than the maximum award)
- c) carefully justify if requested to do so
  - all fund & time spent on project
  - animals (quantity, cost at specific age, days housed, cost housing/day)
- c) explain any appearance of overlap with your other sources of funding
- d) cost-share when possible
  - funds
  - services
  - equipment

**Example of Budget:**

salaries	\$50,000
fringe benefits (this example = 20%)	10,000
supplies	25,000
equipment	<u>15,000</u>
Direct Costs (DC)	\$100,000
Indirect Costs (IDC; this example = 42.5%)	42,500
<b>TOTAL AWARD</b>	<b>\$142,500</b>

**4) biographical sketches**

- a) include for critical personnel
  - Principal investigator (PI)
  - Co-Principal Investigator (Co-PI)
  - Co-Investigators
  - Collaborators
  - Consultants
  - Research assistants with special skills
- b) highlight relevant accomplishments
- c) ensure accuracy
  - training, experience
  - publications
    - separate peer reviewed articles, reviews/chapters, and abstracts
    - place in chronological order with complete info re title, vol., and page numbers
    - limit "manuscripts in preparation" to mss you would be willing to send to the committee
  - grant support

## 5) research plan

### a) typical components of a research plan (NIH terminology)

- Specific Aims (short overview of what you aim to accomplish) (~ 5%)
- Background & Significance (why work is important, necessary) (~10-15%)
- Preliminary Data (pilot data) (25%)
- Research Design & Methods (the experiments you will conduct) (55-60%)

### b) general guidelines

(1) state objectives clearly

(2) provide background on the state of the field. Include information about

- general literature (do a thorough but brief review of the literature)
- your previous work related to the topic
- the work of likely reviewers

(3) be hypotheses-driven

(4) highlight your strengths in the area of research

- your experience and that of collaborators (including publications)
- methodology and equipment available
- unique approach
- strong, testable hypothesis

(5) emphasize the practicality of your proposal

- methods in hand (in your publications?) or easily learned (how?)
- preliminary data available
- time and skills of staff adequate to conduct studies proposed
- time, resources required as compared to that requested

(6) discuss expected outcomes and contingencies: *a series of experiments must does not rely on finding a specific result in prior experiments*

### Example of an organization for a given experiment:

**Expt. 1: This title should match one of the specific aims**

*Hypothesis: Stating your hypothesis up front, in italics, and indented will increase the chance of funding.*

**1: Rationale:** This is why I want to do this experiment.

**2: Protocol:** This is what I will do, *exactly*. I include such details as the number of animals and methods of data analysis.

**3: Comments:** This is what I expect to find. Also, here are some alternative outcomes and/or problems I might encounter along with my plans to deal with these contingencies. Finally, if I end up with a little extra time, this is what I will do with it.

## 6) Subject welfare

- a) adhere to all relevant guidelines (local institution, funding agency, national and international governments)
- b) be clear about appropriateness of
  - species
  - numbers of subjects
  - treatments
  - special conditions

## 7) letters of recommendation or agreement (if appropriate)

- a) letters of recommendations
  - may be required (for certain fellowships, etc.)
  - could be optional (may help establish credibility)
- b) letters of agreement from collaborators and consultants
  - the individual should detail what work they have agreed to do for project
  - help the author make the letter as specific and positive as possible
    - provide a copy of the proposal
    - indicate what you hope the author will include in the letter
    - suggest that they indicate enthusiasm for the proposal and for you

## 8) Supplementary materials

- a) examples
  - color or enlarged figures
  - reprints of your published articles
  - updated information (new results, accomplishments)
- b) find out the funding agency will accept supplementary materials (some do not)
- c) *never* use supplementary materials to circumvent page limits on the application

## 7. Write!

- a. develop a thorough outline of your proposal
- b. write the entire first draft – **before** you start to edit)
- c. revise and refine the text of your application
- d. improve the appearance of your proposal (see example at end of this manual)
  - 1) select a good typeface
    - good = Times Roman, Century Schoolbook
    - never = Courier (unattractive) , Arial (hard to read in quantity)

- 2) select typesize  $\geq 11$  pt (NIH says 10 pt. is ok – it isn't, not if you want happy reviewers.)
- 3) occasionally use special fonts (**bold**, *italics*)
- 4) write in paragraphs
  - a) include only one major idea per paragraph
  - b) make the first sentence in a paragraph a topic sentence
  - c) use headers frequently
- 5) let text B-r-e-a-t-h-e
  - a) indent paragraphs
  - b) skip line between paragraphs
- 6) conform to all instructions! (type size, pages, margins, sections, etc.)

## **8. Get feedback and revise your proposal**

- a. establish mentors early
- b. provide clear instructions as to what type of feedback you are seeking (feedback on science, organization, grammar, formatting, etc.)
- c. take no for an answer (If someone says they do not have time to comment on your manuscript, find someone else who can assist.)
- d. gently remind individuals of the deadline
- e. show appreciation for the feedback you receive

## **Phase III: Submitting Your Proposal**

### **9. Get the required approvals** (this usually takes anywhere from a few days to a month)

Often you need several approvals on your proposal before you can submit it. These may include

- a. use of subjects
  - 1) humans
  - 2) other animals
- b. safety (e.g., use of hazardous reagents; environmental impact)
- c. letters and/or signatures from
  - 1) collaborators
  - 2) consultants
  - 3) chair of department
  - 4) Office of Research or other officials at your institution

**10. Obtain the optimal assignment of your application at the funding agency** (if there is more than 1 one set of reviewers)

- a. why it might matter
  - 1) program relevance
  - 2) availability of funds to support research
  - 3) sympathetic view to your approach
  - 4) competence in evaluating your proposal
- b. ways in which assignment is determined
  - 1) information in the application
    - a) title
    - b) abstract
    - c) specific aims
    - d) cover letter
  - 2) input from program staff

**11. Submit your application**

- a. know deadlines for submission
  - 1) *postmarked* or *arrival data*?
  - 2) how flexible are these deadlines. Can you submit an application late?
- b. be prepared for problems (e.g., computer breaks, bad weather, signator from your institution out of the office)
- c. give yourself extra time to print, collate, copy the application: it always takes longer than you think!
- d. keep a receipt showing when you mailed the materials and (if possible) when they were received by the funding agency.

**12. Submit supplemental material**

- a. find out in advance whether funding agency will accept supplemental material
- b. they may
  - 1) not want anything
  - 2) want it at same time that the application is submitted
  - 3) accept material up to the day of the review

note: reviewers pay the most attention to material they receive along with the application; late-arriving items may not be examined carefully or at all.

**13. Ensure proper receipt of application**

- a. find out if everything has been received

- b. possible problems
  - 1) proposal does not arrive at funding agency
  - 2) proposal goes to “wrong” review group
- c. if there is a problem, suggest fix
  - 1) different review committee
  - 2) additional reviewers

## **Phase IV: Responding**

### **14. Await review of your application:** what will be happening

- a. review process
  - 1) your application is assigned to a group for review
  - 2) your application may be evaluated by
    - a) staff at the funding agency
    - b) your peers in the field
    - c) a visit to your institution (rare)
  - 3) a report on the evaluation will be prepared. It may
    - a) not be available to you
    - b) need to be specially requested from the funding agency
    - c) take 2-3 months for you to receive a copy
    - d) be an incomplete record of the review
    - e) contain contradictions (i.e., reviewer #1 indicates that [x] is necessary, reviewer #2 indicates that [x] is not necessary)
- b. typical review criteria used to evaluate proposals include
  - 1) significance and originality of proposal
  - 2) adequacy of methodology
  - 3) qualifications of principal investigator and staff
  - 4) availability of resources at institution
  - 5) reasonableness of time and budget
  - 6) relevance to mission of the funding agency
  - 7) compliance with relevant regulations (e.g., human/animal welfare, biohazards)

### **15. Read the evaluation report**

- a. possible results
  - 1) proposal is scored
    - high – funding is likely
    - “gray area” – funding is uncertain
    - low – funding is not likely
  - 2) proposal is rejected

b. major reasons research proposals are not funded (source: National Institutes of Health)

- 1) lack of new, original ideas
- 2) diffuse, superficial, unfocused plan
- 3) lack of knowledge of the published literature
- 4) uncertainty concerning future directions
- 5) questionable reasoning in experimental approach
- 6) absence of acceptable scientific rationale
- 7) unrealistically large amount of work
- 8) lack of sufficient experimental detail
- 9) uncritical approach

c. major reasons why fellowship proposals are not funded

- 1) weakness of candidate
  - a) low productivity
    - (1) too few papers
    - (2) low impact journals
    - (3) unfocused
  - b) poor letters of recommendation
  - c) inadequate training
- 2) poor mentor
  - a) low quantity/quality of research
  - b) poor funding record
  - c) too little training experience
- 3) inadequate proposal
  - a) research
  - b) training plan
- 4) weak institution
  - a) too little support
  - b) inadequate advisors, colleagues

## 16. Respond to report

a. if the proposal is funded but the funding is less than you requested in the budget

- 1) estimate what can be accomplished with the reduced funds
- 2) renegotiate
  - a) your objectives
  - b) the experiments you will do for the amount of funding provided
- 3) save remaining work for a future application

b. if your score is in “gray zone” (i.e., funding is uncertain)

- 1) talk to program officer at the funding agency
- 2) consider providing additional material
  - a) rebuttal to reviewer’s comments
  - b) evidence of feasibility of study

- c. if funding is not provided: your options are to
- 1) quit asking for funding – **NO!**
  - 2) resubmit the same application with rebuttal
  - 3) revise the application and resubmit
  - 4) request different reviewers



### **Example**

The following two pages are designed to represent two versions of some text from a research grant proposal: a poor version and a much improved version. We suggest that you begin with the first version, examining its overall appearance and the content of the first paragraph. Think of ways that that this version might be improved. Then consider the changes we have made in the second version. (Note: In addition to changing the overall appearance, we also have changed the text of the first paragraph.)

## RESEARCH PLAN

### 1. Objectives

Although the binding of pepperoni (Pe) to pizza (Pi) has been well established, the nature of the binding site (BS) remains elusive, as does the relation between Pe binding and the reward experienced by ingesting food. In this study we sought to explore both of these issues. Our hypothesis is that Pe will bind to Pi and the nature of that binding will affect the reward value of the product. First, we will determine the binding characteristics of Pe and other ligands (LIG) to Pi. We will explore several variables including (a) which Pi surface is exposed, (b) the method of target preparation, and (c) nature, concentration, and size of the ligands. Second, we will use a quantitative structure-activity model and show that there is a strong relation between Pi conformation and reward value. We will use a rodent model to examine how variables explored in our first aim impact on the reward value of the product.

### 2. Background

Addiction is a serious problem in the United States and around the world. The National Institute on Drug Abuse reported that in 1992 alcohol and drug abuse in the United States resulted in a cost of approximately \$276 billion to society (6). Moreover, drug and alcohol addiction is only one type out of a myriad set of addictions. Other addictions that are present in our society include addictions to food, gambling, sex, danger, and religion. In the United States, research into addiction has focused to a large part on addiction to alcohol and other types of drugs. Little research has been done into mechanisms of other types of addictions. This proposal aims to fill that void by examining carbohydrate addiction. Carbohydrate addiction has been defined as a "compelling hunger, craving, or desire for carbohydrate rich foods; an escalating, recurring need or drive for starches, snack foods, junk food, or sweets" (3). Understanding carbohydrate addiction is important for several reasons. Carbohydrate addiction can lead to obesity, which is a major problem in the United States. It has been estimated that 55% of Americans are overweight (5). Obesity is one of the major risk factors in a number of diseases including heart disease, stroke, and cancer. It has been estimated that in the United States as of 1988, the health care costs directly attributable to the treatment of obesity totaled \$44.6 billion, which represented 7.8% of the national healthcare costs (2). Thus, understanding the nature of carbohydrate addiction and learning how to treat and prevent it could result in tremendous economic savings as well as quality of life improvement for Americans.

Not only is understanding carbohydrate addiction important for the prevention and treatment of obesity, but it may teach us something about the basic nature of addiction itself, and may provide us with insights into new treatments for the abuse of other addictive substances including alcohol, cocaine, and marijuana. Moreover, understanding carbohydrate addiction is particularly relevant to successful treatment of drug addicts and alcoholics, since it is not uncommon for addicts to simply switch addictions to a different substance or behavior rather than eliminating addictive behavior from their lives. For example, a recovering alcoholic may avoid alcohol but become addicted to overeating. Thus understanding carbohydrate addiction becomes all the more pertinent in the treatment of illicit drug abuse.

# RESEARCH PLAN

## A. SPECIFIC AIMS

Although the binding of pepperoni (Pe) to pizza (Pi) has been well established, the nature of the binding site remains elusive, as does the relation between Pe binding and the reward experienced by the individual who is ingesting the food. In this study we sought to explore both of these issues.

***Hypothesis:** Pe will bind to Pi at a single site and the affinity of that binding for a given Pi substrate will be inversely related to the reward value of the product, reward being defined in an animal model as the number of level presses an animal will make to obtain a Pe-Pi pellet*

**Aim 1: To determine the binding characteristics of Pe and other ligands to Pi.** We will explore several variables including (a) which Pi surface is exposed (dorsal versus ventral), (b) the method of target preparation (including baking and boiling), and (c) nature, concentration, and size of the Pe ligands.

**Aim 2: To use a quantitative structure-activity model to determine the relation between Pi conformation and reward value.** We will use a rodent model to examine how variables explored in Aim 1 impact on the reward value of the product, with reward defined in terms of rate of lever pressing.

## B. BACKGROUND AND SIGNIFICANCE

### Addiction

Addiction is a serious problem in the United States and around the world. The National Institute on Drug Abuse reported that in 1992 alcohol and drug abuse in the United States resulted in a cost of approximately \$276 billion to society (NIDA, 1998). Moreover, drug and alcohol addiction is only one type out of a myriad set of addictions. Other addictions that are present in our society include addictions to food, gambling, sex, danger, and religion. In the United States, research into addiction has focused to a large part on addiction to alcohol and other types of drugs. Little research has been done into mechanisms of other types of addictions. This proposal aims to fill that void by examining carbohydrate addiction. Carbohydrate addiction has been defined as a “compelling hunger, craving, or desire for carbohydrate rich foods; an escalating, recurring need or drive for starches, snack foods, junk food, or sweets” (Heller & Heller, 1997). Understanding carbohydrate addiction is important for several reasons. Carbohydrate addiction can lead to obesity, which is a major problem in the United States. It has been estimated that 55% of Americans are overweight (NHLBI, 1998). Obesity is a one of the major risk factors in a number of diseases including heart disease, stroke, and cancer. It has been estimated that in the United States as of 1988, the health care costs directly attributable to the treatment of obesity totaled \$44.6 billion, which represented 7.8% of the national healthcare costs (International Obesity Taskforce). Thus, understanding the nature of carbohydrate addiction and learning how to treat and prevent it could result in tremendous economic savings as well as quality of life improvement for Americans.

Not only is understanding carbohydrate addiction important for the prevention and treatment of obesity, but it may teach us something about the basic nature of addiction itself, and may provide us with insights into new treatments for the abuse of other addictive substances including alcohol, cocaine, and marijuana. Moreover, understanding carbohydrate addiction is particularly relevant to successful treatment of drug addicts and alcoholics, since it is not uncommon for addicts to simply switch addictions to a different substance or behavior rather than eliminating addictive behavior from their lives. For example, a recovering alcoholic may avoid alcohol but become addicted to overeating. Thus understanding carbohydrate addiction becomes all the more pertinent in the treatment of illicit drug abuse.

## Selected Resources on Grantpersonship

### *Books*

- Bauer, DG. *The "How To" Grants Manual: Successful Grantseeking Techniques for Obtaining Public and Private Grants*, 3<sup>rd</sup> edition. Phoenix: Oryx Press. 1995.
- Bowman, JP, and Branchaw, BP. *How to Write Proposals That Produce*. Phoenix: Oryx Press, 1992.
- Ferguson, J, Drake-Major, L, Gershowitz, MV. *The Grantseeker's Answerbook: Fundraising Experts Respond to the Most Commonly Asked Questions*, 2<sup>nd</sup> edition. Gaithersburg, MD: Aspen Publishers, 1999.
- Lefferts, R. *Getting a Grant in the 1990s*. New York: Fireside, 1990.
- Locke, LF, Spirduso, WW, and Silverman SJ. *Proposals that Work: A Guide for Planning Dissertations and Grant Proposals*, 3<sup>rd</sup> edition.. Newbury Park, CA: Sage Publications, 1993.
- Miner, LE, and Griffith, J. *Proposal Planning & Writing*. Phoenix: Oryx Press, 1993.
- Ogden, TE, and Goldberg, IA. *Research Proposals: A Guide to Success*, 2<sup>nd</sup> edition. New York: Raven Press, 1995.
- Pequegnat, W, and Stover, E. (eds.) *How to Write a Successful Research Grant Application: A Guide for Social and Behavioral Scientists*. New York: Plenum Press, 1995.
- Reif-Lehrer, L. *Grant Application Writer's Handbook*. Boston: Jones and Bartlett Publishers, 1995.
- Ries, JB, and Leukefeld, CG. *Applying for Research Funding: Getting Started and Getting Funded*. Thousand Oaks, CA: Sage Publications, 1995.

### *On the Internet (All links current as of 10/21/00)*

**Catalog of Federal Domestic Assistance (CFDA):** <http://www.cfda.gov>

**Community of Science:** <http://www.cos.com/>

A searchable database of funding opportunities, with links to major granting agencies.

**Foundation Center:** <http://fdncenter.org/grantmaker/>

Links to about 200 national, community, and corporate foundations.

**Federal Register:** <http://www.nara.gov/fedreg/>

**GrantsNet** <http://www.hhs.gov/grantsnet/>

Information about funding opportunities available through Health & Human Services and other federal granting agencies.

**TRAM Research Funding Opportunities & Admin.** <http://tram.east.asu.edu>

Information about funding opportunities from federal agencies, foundations, and associations. Also offers on-line versions of many agency's forms.

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