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5 Common Mistakes That Will Sink Your Grant by Christopher Francklyn, PhD

(Extracted from his article found in the *Principal Investigator Advisor* March 2010 Vol1, No2 www.principalinvestigators.org)

Based on his participation in both writing reviews and listening to other panelists at review meetings, Dr. Francklyn cites 5 common mistakes that recur among the grants of both first time and experienced PIs. He states that “some are inherent in the science itself, while others are more a function of presentation”.

1. The reviewers did not find your central scientific question interesting.

Arguably the single most common reason for a grant receiving a low score is the perception by reviewers that your central scientific question lacks significance. Grants that address significant questions provide reviewers with confidence that the results will have commensurately high impact. Reviewer disinterest in your question could stem from a failure to communicate its significance clearly, an overly narrow focus, or a lack of novelty and originality that suggests you are addressing a problem already solved. A common pitfall is that the applicant is so enamored of a particular technology or set of new observations that he or she fails to explain how the work will transform a field, or fails to highlight important links between the work in question and other fields. In today’s “Omics”-driven scientific world, one may no longer be chained to the single over-arching hypothesis, but it is still necessary to provide your readers with a clearly understandable strategy for organizing and interpreting that mass of high-throughput data. One way to test the significance of your proposal is to provide a non-expert colleague with a three-sentence description; if he or she can appreciate why you are doing the work, then you are on the right track.

2. The preliminary data are weak, and call into question the feasibility of the proposal and the validity of your central hypothesis.

A second flaw that can doom your proposal is an overly large gap between your hypothesis and the actual data available to be cited or displayed (as preliminary data). A highly provocative hypothesis might be just the thing your field needs but, like a good murder mystery, your jury won’t be convinced without detailed evidence. For example, you may have an exciting hypothesis around dinosaur physiology, but if proving your hypothesis requires the results of experiments on fresh dinosaur tissue, you’ve got a problem. Thus, your reviewers must be convinced of the chain of logic that connects your elegant hypothesis to the actual data presented in the grant, whether published or in preliminary form. Along these lines, a second flaw that kills some applications is a gap between the hypotheses presented, and what the results are actually likely to show. If reviewers perceive that the results will actually be quite a bit more mundane than what the central hypothesis is proposing, their scores will reflect this accordingly.

3. The proverbial house of cards: the overall success of the grant is dependent on the outcome of a key experiment, which has yet to be performed.

When one designs a complex research project, there is a natural tendency is to organize the experiments in a linear and sequential fashion, such that the results of each forms the basis of the next in series. As a template for a research grant, however, this strategy can be risky. If the succeeding aims all depend on a positive outcome of Aim One (whose outcome is as yet unproven), then the fate of the whole grant depends on the success of that first experiment. Likewise, if you are applying for a three-year grant, resist the temptation to anchor the grant to a question that will take 20 years before meaningful tests of the hypothesis can be proposed. In general, reviewers have a much easier time advocating for a grant whose aims are independent, but mutually supporting, with experiments that will provide useful information whether or not your starting hypothesis is true.

4. The scope of the project is too ambitious, with multiple hypotheses or rationales that pull the grant in disparate directions.

Another common flaw of novice grant writers is the “spaghetti syndrome”, where every good hypothesis, experiment, or reagent in the PI’s pantry is thrown at the problem. This approach rests on the assumption that reviewers will find at least a few good ideas stuck on the proverbial wall, and this will raise their enthusiasm. In reality, these types of organizational flaws generally diminish enthusiasm, because they signal a PI unable to prioritize among various facets of the project, which down the road can lead to an inefficient deployment of people and resources. Your research plan should portray a realistic balance between what you hope to

accomplish, and the number of junior researchers that you will have available. A tricky scenario that will typically generate a spirited discussion around the table is the grant that has three great aims, but also a fourth and final aim that is less interesting or feasible. A good grant will generally try to strike the correct balance between the conservative/feasible and the risky/adventurous: different reviewers may very well come down at different points along the spectrum.

5. The PI and or research team lacks the experience to carry out the proposed work.

Once reviewers have determined that the work is significant and the approach is valid, they have to answer the question, "Is this the appropriate PI to carry out the work?" For first time and early investigators, the training and accomplishments during the post-doctoral years will provide clues about the likelihood of success. For more senior investigators, past career experience and productivity will be scrutinized carefully. Reviewers will generally accept any approach that you have previously published on, but to move your field forward, you will typically have to display innovation and creativity in adapting and developing new approaches. If a particular approach is unproven with respect to your lab, the most reliable strategies are 1) identifying and soliciting an outside collaborator with a published track record in the method, or 2) devoting existing lab efforts to generate the preliminary data to remove doubts about your ability. In general, this is arguably the most important use of "updates", short progress reports that can be sent to the SRA after the submission of your grant, but before the panel meets to discuss it. *[Dr. Francklyn is a former Study Section Chair and veteran reviewer for NIH and NSF study sections. He is a professor at University of Vermont, where his scientific expertise is in protein synthesis and RNA-Protein interactions.]*

Funding Opportunities: NIH

Request for Applications (RFAs)

RFA-DK-10-002 (R21)

Human Brown Adipose Tissue: Methods for Measurement of Mass and Activity
Application due date(s): 3/10, 11/10/2010
Expiration date: 11/12/2010

Program Announcements Reviewed in an Institute (PARs)

(special receipt, referral and/or review considerations)

PAR-10-112 (R01)

Development of Outcome Measures to Determine Success of Hearing Health Care
Application due date(s): 10/1/10, 6/1/11, 2/1/12
Expiration date: 2/2/12

PAR-09-139 (R21)

NIOSH Exploratory and/or Developmental Grant Program
Application due date(s): Standard dates apply
Expiration date: 9/8/12

PAR-08-045 (R01)

Outcomes, Cost-Effectiveness and the Decision Making Process to Use Complementary and Alternative Medicine
Application due date(s): 5/19/10
Expiration date: 5/20/10

PAR-09-224 (R01)

Improving Diet and Physical Activity Assessment
Application due date(s): 6/5/10, 2/5/11, 10/5/11 6/5/12 (alternating standard R01 receipt dates).
Expiration date: 7/6/12

PAR-08-269 (R21)

Exploratory and Developmental Grant to Improve Health Care Quality through Health Information Technology (IT)
Application due date(s): Standard dates apply
Expiration date: 11/17/11

Program Announcements (PAs - R01s)

PA-10-067 (R01)

Research Project Grant
Application due date(s): Standard dates apply
Expiration date: 1/8/13

PA-10-027 (R01)

Obesity Policy Research: Evaluation and Measures
Application due date(s): Standard dates apply
Expiration date: 1/8/13

PA-09-243 (R01)

Nutrition and Physical Activity Research to Promote
Cardiovascular and Pulmonary Health (R01)
Application due date(s): Standard dates apply
Expiration date: 9/8/12

PA-07-388 (R01)

Identifying and Reducing Diabetes
and Obesity Related Health Disparities
within Healthcare Systems
Application due date(s): Standard dates apply
Expiration date: 7/6/10

PA-08-099 (R01)

Mechanisms of Functional Recovery
after Stroke
Application due date(s): Standard dates apply
Expiration date: 5/8/11

PA-10-042 (R01)

Critical Illness and Injury in Aging
Application due date(s): Standard dates apply
Expiration date: 1/8/13

PA-09-262 (R01)

Health Disparities in NIDDK Diseases
Application due date(s): Standard dates apply
Expiration date: 9/8/12

PA-09-234 (R01)

Diet, epigenetic Events, and Cancer Prevention
Application due date(s): Standard dates apply
Expiration date: 9/8/12

PA-08-124 (R01)

Epidemiology of Drug Abuse
Application due date(s): Standard dates apply
Expiration date: 5/8/11

PA-09-108 (R01)

Women's Mental Health and Sex/Gender
Differences Research
Application due date(s): Standard dates apply
Expiration date: 5/8/12

Program Announcements (PAs – R21s)

PA-10-069 (R21)

NIH Exploratory Developmental
Research Grant Program
Application due date(s): Standard dates apply
Expiration date: 1/8/13

PA-09-124 (R21)

Exploratory/Developmental Clinical Research
Grants in Obesity
Application due date(s): Standard dates apply
Expiration date: 5/8/12

PA-09-151 (R21)

Pilot and Feasibility Clinical Research Studies
In Digestive Diseases and Metabolic Nutrition
Application due date(s): Standard dates apply
Expiration date: 5/8/12

PA-08-100 (R21)

Mechanisms of Functional Recovery after Stroke
Application due date(s): Standard dates apply
Expiration date: 5/8/11

PA-09-244 (R21)

Nutrition and Physical Activity Research to Promote
Cardiovascular and Pulmonary Health
Application due date(s): Standard dates apply
Expiration date: 9/8/12

PA-09-109 (R21)

Women's Mental Health and Sex/Gender
Differences Research
Application due date(s): Standard dates apply
Expiration date: 5/8/12

PA-08-125 (R21)

Epidemiology of Drug Abuse
Application due date(s): Standard dates apply
Expiration date: 5/8/11

Faculty and Student Fellowships: NIH

For Faculty: PA-10-111 (Parent F33) Ruth L. Kirschstein National Research Services Awards For Individual Senior Fellows

Application due date(s) Standard dates apply

Expiration date: 1/8/13

Service Awards for Individual Senior Fellows (PA-10-111): The purpose of the senior fellowship (F33) award is to provide senior fellowship support to experienced scientists who wish to make major changes in the direction of their research careers or who wish to broaden their scientific background by acquiring new research capabilities as independent research investigators in scientific health-related fields relevant to the missions of the participating NIH Institutes and Centers.

Kirschstein-NRSA awards provide stipends to senior level fellows determined individually at the time of award. The amount of the stipend is based on the salary or remuneration from their home institution on the date of award. However, in no case shall the NIH contribution to the stipend during the fellowship exceed the NRSA stipend provided for individuals with more than seven years of experience. Relevant experience may include research (including research in industry), teaching, internship, residency, clinical duties, or other time spent in full-time studies in a health-related field beyond that of the qualifying doctoral degree. The awards are not provided as a condition of employment with either the Federal government or the sponsoring institution. For the most recent stipend levels, see the following website:

<http://grants2.nih.gov/training/nrsa.htm>

Research Experience: The individual must have had at least 7 subsequent years of relevant research or professional experience and will have established an independent research career.

Sponsor: Before submitting a fellowship application, the applicant must identify a sponsor (also called mentor or supervisor) who will supervise the training and research experience. The sponsor should be an active investigator in the area of the proposed research and be committed both to the research training of the Fellowship Applicant and to the direct supervision the applicant's research. The sponsor must document the availability of sufficient research support and facilities for high-quality research training. The sponsor, or a member of the mentoring team, should have a successful track record of mentoring. Applicants are encouraged to identify more than one mentor, i.e., a mentoring team, if this is deemed advantageous for providing expert advice in all aspects of the research and training program. In such cases, one individual must be identified as the principal sponsor who will coordinate the applicant's research training program. The applicant must work with his/her sponsor(s) in preparing the application.

For more information on the Senior Research Fellowship, please see the announcement:

<http://grants.nih.gov/grants/guide/pa-files/PA-10-111.html>

For Students:

PA-10-108 (Parent F31)

Ruth L. Kirschstein National Research Service for Individual Predoctoral Fellows

Application due date(s): Standard dates apply

Expiration date: 1/8/13

PA10-110 (Parent F32)

Ruth L. Kirschstein National Research Service Awards Awards (NRSA) for Individual Postdoctoral Fellows

Application due date(s): Standard dates apply

Expiration date: 1/8/13

Funding Opportunities: National Science Foundation

National Science Foundation - Statistics – A Division of Mathematical Sciences

http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=5556

Full Proposal Window: October 23, 2010 - November 7, 2010, October 23-November 7, Annually thereafter

The statistics program has a submission window in from October 23 to November 7. Proposals submitted after 5pm (local time) on November 7 will be returned without review. Conference and workshop proposals should be submitted eight months before the requested starting date.

- SYNOPSIS:** The Statistics Program supports research in statistical theory and methods, including research in statistical methods for applications to any domain of science and engineering. The theory forms the base for statistical science. The methods are used for stochastic modeling, and the collection, analysis and interpretation of data. The methods characterize uncertainty in the data and facilitate advancement in science and engineering. The Program encourages proposals ranging from single-investigator projects to interdisciplinary team projects.

Check the following link to see what has previously been funded by the NSF:

http://www.nsf.gov/awardsearch/progSearch.do?WT.si_n=ClickedAbstractsRecentAwards&WT.si_x=1&WT.si_cs=1&WT.z_pims_id=5556&SearchType=progSearch&page=2&QueryText=&ProgOrganization=&ProgOfficer=&ProgEleCode=1269&BooleanElement=true&ProgRefCode=&BooleanRef=true&ProgProgram=&ProgFoaCode=&RestrictActive=on&Search=Search#results

Funding Opportunities: Department of Defense

Fiscal Year 2010 Department of Defense **Breast Cancer Research Program** Reference Table of Award Mechanisms and Submission Requirements

Innovator Award Program Announcement: http://cdmnp.army.mil/funding/archive/10bcrrpinn_pa.pdf

Award Mechanism	Eligibility	Key Mechanism Elements	Funding	Submission Deadlines
Innovator Award Grants.gov Funding Opportunity Number: <u>W81XWH-10-BCRP-INNOV</u>	Associate Professor or above (or equivalent)	Supports visionary individuals who have demonstrated creativity, innovative work, and leadership in any field Provides opportunity to pursue novel, visionary, high-risk ideas that could ultimately lead to the eradication of breast cancer	Maximum funding of \$5M for direct costs Maximum period of performance is 5 years	Pre-application (Letter of Intent): March 24, 2010 5:00 p.m. Eastern time Confidential Letters of Recommendation: April 7, 2010 5:00 p.m. (EST) Application: April 7, 2010 11:59 p.m. (EST)
Idea Award Program Announcement: http://cdmnp.army.mil/funding/archive/10bcrrpidea_pa.pdf				
Idea Award Grants.gov Funding Opportunity Number: <u>W81XWH-10-BCRP-IDEA</u>	Investigators at all academic levels (or equivalent) Postdoctoral-level investigators are eligible and encouraged to apply	Supports conceptually innovative, high risk/high-reward research from all areas of basic, translational, clinical, behavioral, and epidemiological research Innovation is the most important review criterion	Maximum funding of \$375K for direct costs Maximum period of performance is 2 years. For Collaborative Option: Maximum funding of \$550K for direct costs Maximum period of performance is 2 years.	Pre-application (Letter of Intent): April 21, 2010 5:00 p.m. (EST) Application: May 5, 2010 11:59 p.m. (EST)

**Fiscal Year 2010 Department of Defense Prostate Cancer Research Program
Reference Table of Award Mechanisms and Submission Requirements**

Exploratory-Hypothesis Development Award Program Announcement: http://cdmnp.army.mil/funding/archive/10pcrpehda_pa.pdf				
Award Mechanism	Eligibility	Key Mechanism Elements	Funding	Submission Deadlines
Exploration –Hypothesis Development Award Grants.gov Funding Opportunity Number: <u>W81XWH-10-PCRP-EHDA</u>	Investigators at or above the postdoctoral fellow (or equivalent)	Supports highly innovative, untested, potentially groundbreaking concepts in prostate cancer Emphasis is on innovation,; potential impact may be unknown Preliminary data are not allowed	Maximum funding of \$75K for direct costs (plus indirect costs) Period of performance cannot exceed 1 year	Pre-application (Letter of Intent): March 10, 2010 5:00 p.m. (EST) Application: March 31, 2010 11:59 p.m. (EST)
Impact Award Program Announcement: Impact Award http://cdmnp.army.mil/funding/archive/10pcrpimpact_pa.pdf				
Impact Award (NEW!) Grants.gov Funding Opportunity Number: <u>W81XWH-10-PCRP-IA</u>	Independent investigators at or above the level of Assistant Professor (or equivalent)	Preproposal is required: application submission is by invitation only Areas of interest include but are not limited to: biomarkers, optimal measures for follow-up and assessment of progression, and cancer care outcomes research (e.g., quality of life, survivorship) and surveillance. Multidisciplinary teams inclusive of clinical specialists are a key feature. Preliminary data required	Maximum funding of \$750K for direct costs (plus indirect costs). Period of performance cannot exceed 4 years.	Pre-application (Preproposal): March 17, 2010 5:00 p.m. (EST) Application: June 9, 2010 11:59 p.m. (EST)

**Fiscal Year 2010 Department of Defense Multiple Sclerosis Research Program
Reference Table of Award Mechanisms and Submission Requirements**

Concept Award Program Announcement: http://cdmnp.army.mil/funding/archive/10msrpca_pa.pdf				
Award Mechanism	Eligibility	Key Mechanism Elements	Funding	Submission Deadlines
Concept Award Grants.gov Funding Opportunity Number: <u>W81XWH-10-MSRP-CA</u>	All investigators	Supports the exploration of a highly innovative new concept or untested theory that addresses an important problem relevant to MS	Maximum funding of \$75,000 in direct costs (plus indirect costs) Period of performance not to exceed 1 year	Pre-application (LOI): March 25, 2010 5:00 p.m. (EST) Application: April 8, 2010 11:59 p.m. (EST)
Idea Award Program Announcement: http://cdmnp.army.mil/funding/archive/10msrpia_pa.pdf				
Idea Award Grants.gov Funding Opportunity Number: <u>W81XWH-10-MSRP-IA</u>	Investigators at or above the level of an Assistant Professor (or equivalent)	*Supports conceptually innovative, high-risk/potentially high-reward research that could ultimately lead to critical discoveries toward understanding the causes and progression of MS and/or improvements in patient care and/or quality of life * Preliminary data that is relevant to MS and the proposed research project should be included * Clinical trials are not allowed	Maximum funding of \$450,000 in direct costs (plus indirect costs) Period of performance not to exceed 3 years	Pre-application (preproposal): Mar 11, 2010 5:00 p.m. (EST) Preproposal is required; Application submission is by invitation only. Application: June 10, 2010 11:59 p.m. (EST)

Detailed information regarding those highlighted in this newsletter and other DOD announcements can be found at: https://cdmnp.org/Program_Announcements_and_Forms/index.cfm?prg=BCRP&prg_fy=2010

Funding Opportunity: US Environmental Protection Agency

Exploring New Air Pollution – Health Effects Links in Existing Datasets

http://epa.gov/ncer/rfa/2010/2010_star_air_poll.html

This is the initial announcement of this funding opportunity.

Funding Opportunity Number: EPA-G2010-STAR-B1

Catalog of Federal Domestic Assistance (CFDA) Number: 66.509

Solicitation Opening Date: January 25, 2010

Solicitation Closing Date: April 27, 2010, 11:59:59 pm Eastern Time

Synopsis of Program: The U.S. Environmental Protection Agency (EPA), as part of its Science to Achieve Results (STAR) program, is seeking applications proposing to use existing datasets from health studies to analyze health outcomes for which the link to air pollution is not well established, or to evaluate underlying heterogeneity in health responses among subgroups defined by susceptibility or extent and/or composition of exposure.

This RFA is intended to take advantage of previous investments in health and exposure data collection, to explore new health - exposure questions by emphasizing the use of existing data from health studies to analyze health outcomes for which the link to air pollution is not well established, or to identify “new” at-risk populations. For example, while air pollution associations with respiratory and cardiovascular disease have been studied most extensively, evidence is beginning to emerge of possible air pollution impacts on additional health conditions including diabetes, neurological disorders, and reproductive and developmental outcomes. Studies also might evaluate factors that confer increased sensitivity to air pollution effects such as compromised health status, genetic variants, social and neighborhood conditions, higher exposure and others. In addition, some research groups have developed innovative methods and models to characterize exposure that might be applied to health effects analyses in other cohorts to understand whether certain sources or atmospheric components contribute to observed geographic heterogeneity in health-exposure associations. A variety of datasets may be appropriate to address the goal of the RFA including those from human population, panel or clinical studies, and animal studies. The research will provide scientists and policy decision makers with a better understanding of the health effects of exposure to air pollution, improving health risk assessments and cost-benefit analyses.

Award Information:

Anticipated Type of Award: Grant

Estimated Number of Awards: Approximately 5

Anticipated Funding Amount: Approximately \$1.4 million total for all awards

Potential Funding per Award: Up to a total of \$300,000, including direct and indirect costs, with a maximum duration of 3 years. Cost-sharing is not required. Proposals with budgets exceeding the total award limits will not be considered.

Application Materials:

The necessary forms for submitting a STAR application will be found on the National Center for Environmental Research (NCER) web site, <http://epa.gov/ncer/rfa/forms/>. NOTE: This is an Electronic submission.



Funding Opportunities: Foundations/Associations

American Foundation for Suicide Prevention Grant Application Review Cycle

http://www.afsp.org/index.cfm?page_id=0535FDA2-FA7D-AAE8-D7A9A6BCFFE3574B

Eligibility: AFSP research grants support studies that aim to increase understanding of the causes of suicide and factors related to suicide risk, or to test treatments and other interventions designed to prevent suicide. Investigators from all academic disciplines are eligible to apply, and both basic science and applied research projects will be considered, providing the study has an essential focus on suicide or suicide prevention. AFSP grants are awarded for one or two-year periods. Grant **applications are not accepted from for-profit organizations, or from federal or state government agencies.**

AFSP has two unique web addresses for grant activities:

- grants@afsp.org are for all grant submissions and questions related to grant submissions.
- grantsmanager@afsp.org are for all correspondence and report submissions from funded applicants. All forms for grant activation, financial report and progress reports must be downloaded from this website.

REVIEW CYCLE	DUE DATE	REVIEW DATES	FUNDING DECISIONS	EARLIEST START DATE
CYCLE I	JUNE 1	SEPTEMBER - OCTOBER	DECEMBER	JULY
CYCLE II	DECEMBER 1	MARCH - APRIL	MAY	JANUARY

American Heart Association National Program Funding Opportunities

<http://www.americanheart.org/presenter.jhtml?identifier=3004142>

The next application deadlines will be as follows:

- Innovative Research Grant - July 13, 2010
- Scientist Development Grant and Clinical Research Program - July 16, 2010

Innovative Research Grant (National)

To support highly innovative, high-risk, high-reward research that could ultimately lead to critical discoveries or major advancements that will accelerate the field of cardiovascular and stroke research.

Applicant Information: The American Heart Association funds research broadly related to cardiovascular disease and stroke. The association supports research in clinical and basic sciences, bioengineering, biotechnology and public health. National program investigators are also encouraged to submit applications related to obesity, women and heart disease, and resuscitation. No specific percent or dollar amount of national research funds has been set aside for these focused research areas. Proposals will go through the customary peer review process with fundability determined by peer review criteria, independent of the science areas of interest. Awards are limited to non-profit institutions such as medical, osteopathic and dental schools, veterinary schools, schools of public health, pharmacy schools, nursing schools, universities and colleges, public and voluntary hospitals, and other non-profit institutions that can demonstrate the ability to conduct the proposed research. (last update: September 2009)

Words to live by: "We are what we repeatedly do. Excellence, then, is not an act, but a habit."-- Aristotle