Closing Remarks

Throughout this book, our focus has been on providing sufficient information for you to decide if grants or contracts are appropriate ways for you to build your academic research career. We introduced you to the basic elements of a successful application or contract proposal and described in general terms how grants and contracts are reviewed and vetted. Our goal has been to enable you to apply tactics and strategies (*grantsmanship*) that will enhance the likelihood of receiving an award to support your research throughout your career.

The very word *grantsmanship* is open to diverse interpretations. Wikipedia defines *grantsmanship* as "the art of acquiring peer-reviewed research funding." Of course, defining grantsmanship as an art suggests that success hinges mainly on innate talent like a Da Vinci painting, a Michelangelo sculpture or I. M. Pei architecture. The term also includes the term "man," which might suggest that there is a "good-ole-boy" network involved. As a researcher, you are part of that network. Art also connotes an evolving skill, which grantsmanship certainly is. A good-ole-boy network also suggests that personal relationships trump merit. However, attributing competitive failure to an unfair system (of which you are a part) merely saves face and relegates *grantsmanship* to gambling, which it is not.

As we mentioned, a record of accomplishment does give seasoned grantees a competitive edge, but not because of who they know; but what they have learned. From what we have observed over a combined period spanning more than 80 years is that strategic thinking and hard work are far more essential to successful *grantsmanship* than any of the negative connotations mentioned.

We hope that we have made it clear that *grantsmanship* is not just about submitting a competitive application. It is a collaborative effort between you and your mentors, colleagues and your project team; your institution; and not infrequently, your target funding institution and other interested funders. Even after your project is reviewed and scored, there are things that you can do to make your project more competitive – including revising and resubmitting your application.

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In closing, we want to remind you that grantsmanship is a developmental process. Both you and the grant environment are always evolving. Thus, continue reading about changes in the priorities and procedures of your target funding institutions, like keeping up with the changing literature in your scientific field. It will help to ensure continued support for your research projects during your entire career. We talk a bit more at length about this topic in Appendix C and offer some helpful hyperlinks. We wish you the best success in your research career and hope that in some way our book will help you stay on that path to success.

Reference

Wikipedia (2017). Grantsmanship. Downloaded on June 06, 2017 from: https://en.wikipedia.org/wiki/Grantsmanship

Appendix A: NIH Research Project Grant Initial Review Criteria

A.1 Significance

Does the project address an important problem or a critical barrier to progress in the field? Is there a strong scientific premise for the project? 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?

A.2 Investigator(s)

Are the PIs, Co-I's, collaborators, and other researchers well suited to the project? If Early Stage Investigators or New Investigators, or 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 project is collaborative or multi-PI, do the investigators have complementary and integrated expertise; are their leadership approach, governance and organizational structure appropriate for the project?

A.3 Innovation

Does the application challenge and seek to shift current research or clinical practice paradigms by utilizing novel theoretical concepts, approaches or methodologies, instrumentation, or interventions? Are the concepts, approaches or methodologies,

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instrumentation, or interventions novel to one field of research or novel in a broad sense? Is a refinement, improvement, or new application of theoretical concepts, approaches or methodologies, instrumentation, or interventions proposed?

A.4 Approach

Are the overall strategy, methodology, and analyses well-reasoned and appropriate to accomplish the specific aims of the project? Have the investigators presented strategies to ensure a robust and unbiased approach, as appropriate for the work proposed? Are potential problems, alternative strategies, and benchmarks for success presented? If the project is in the early stages of development, will the strategy establish feasibility and will particularly risky aspects be managed? Have the investigators presented adequate plans to address relevant biological variables, such as sex, for studies in vertebrate animals or human subjects?

If the project involves human subjects and/or NIH-defined clinical research, are the plans to address 1) the protection of human subjects from research risks, and 2) the inclusion (or exclusion) of individuals on the basis of sex/gender, race, and ethnicity, as well as the inclusion (exclusion) of children, justified in terms of the scientific goals and research strategy proposed?

A.5 Environment

Will the scientific environment in which the work will be done contribute to the probability of success? Are the institutional support, equipment and other physical resources available to the investigators adequate for the project proposed? Will the project benefit from unique features of the scientific environment, subject populations, or collaborative arrangements?

Appendix B: Review Criteria for Regulatory Compliance

Protections for Human Subjects, Vertebrate Animals, and Biohazards
These all represent potential showstoppers in review because in the majority of cases your application will require revision before it can receive a score.

- If proposing a clinical trial, a data and safety monitoring plan (DSMP) must be included. Guidelines are available for DSMPs on NIH websites.
- If using animals, explain why you are using animals vs human subjects and defend your selection of species to study. For example, if most studies have been using Norwegian rats, explain why your study is using stray cats.

Inclusion of Women, Minorities and Children
This topic must be addressed in all applications involving Human Subjects. Skipping this topic in an application because the disease under study normally afflicts one group (e.g., breast cancer) is a mistake. Explain why your sample does not include other groups or expect a higher score.

B.1 Additional Review Considerations

B.1.1 Applications from Foreign Organizations

Applications from foreign organizations must present special opportunities for furthering research programs through the use of unusual talent, resources, populations, or environmental conditions unique to the applicant's country. That is, they either are not readily available in the United States or augment existing U.S. resources.

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B.1.2 Biological Select Agents or Toxins

Reviewers will assess the information provided in this section of the application, including (1) the Select Agent(s) or toxins to be used in the proposed research, (2) the registration status of all entities where Select Agent(s) will be used, (3) the procedures that will be used to monitor possession use and transfer of Select Agent(s), and (4) plans for appropriate biosafety, biocontainment, and security of the Select Agent(s). Any omissions or vague descriptions will result in an unfundable score.

B.1.3 Resource Sharing Plans

You must include a Resource Sharing Plan or provide a rationale for not sharing your data. Keep in mind that your plan does not undermine patient privacy or other human subject vulnerabilities.

B.1.4 Authentication of Key Biological and/or Chemical Resources

For projects involving key biological and/or chemical resources, comment on the brief plans proposed for identifying and ensuring the validity of those resources.

Appendix C: Funding Institution Interests

Applicants take a big risk when trying to pursue projects that seem to be "hot" at the moment. Nevertheless, all agencies have **emergent** AND **standing** priorities. If your lab is already tooled up to jump on an emergent crisis – then by all means go for it. In most cases, the standing priorities are still your best bet.

Nearly all federal agencies publish their priorities. Alas, they are often broadly written and offer little insight about what the agency really wants. For example, most NIH Program Announcements almost read like "Guess what we want to fund." That is where agency program staff can be helpful. Every PO has a matrix of possibilities they would like to see in the portfolios they administer. You are likely to be more successful if a program or project staff member is eager to see your project in their portfolio. Keep in mind that it is the PO who is responsible for getting research completed for public health, national defense, public safety needs, etc.

POs have an understanding of the big picture as it applies to research. Not only do they sit on National Advisory Council meetings, they sit in on most peer review meetings, and listen to the give and take between leaders in their field as they discuss applications, and regularly attend NIH symposia presented by world leaders in their field.

Another helpful source of information about grant priorities comes from program announcements, requests for proposals, agency plans, email and word of mouth.

Identifying Areas of Interest

http://grants.nih.gov/grants/guide/pa-files/index.html
http://nsf.gov/funding/
https://www.onr.navy.mil/Contracts-Grants/Funding-Opportunities

- Primary portal for all **grant** applications: https://www.grants.gov/
  OR
- Primary portal for all federal **contracts** is FedBizOps: https://www.fbo.gov/index?s=main&mode=list&tab=list

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Looking for COLLABORATORS? Want to know who in your university, city, or state is doing work in your area? Want to find colleagues working in the same area of interest? Search https://projectreporter.nih.gov/reporter.cfm

Overviews most NSF Grant processes: https://www.nsf.gov/funding/preparing/

Appendix D: Outline for a Grant or Contract Letter of Support

Opening Paragraph

- LOS Writer's role/title; institution/organization (Chair, Department of Engineering, University X; Senior Key personnel on the project)
- Why they are writing?

– To support the proposal or agree to participate (advisory board, preceptor, etc.)
– To commit resources
– To provide cost share/matching funds

- Proposal identifier

– Project Title
– Grant number (only if a revision)
– Type of grant (e.g., R01, K23, P01)

Body Paragraph(s)

- Overview perceived project strengths

– Scientific plan/your own fit in the project, if participating/advisory board
– Proposal leadership
– Team of scientists/staff
– Mentorship (if applicable)
– Track record of publications or training of proposal PI

- Briefly describe institutional strengths relevant to proposal

– Proposal aligns with organization strategic plan
– Leadership/faculty expertise
– Resources/facilities for the project
– Achievements that demonstrate high caliber

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- If relevant, specifically outline commitment – what their organization is contributing (Include rate/charge for any services)

– What are they contributing to the project (e.g., time, resources, analyses, assays, fabrication, code writing – the more specific; the better)?
– Experience & expertise

Concluding Paragraph/Close

Appendix E: Acronyms Used in Grants/ Contracts Administration

AE	Adverse Event
AOR	AOR (Authorized Organization Representative) – aka Signing Official
AREA	Academic Research Enhancement Award
ARF/ PHS-ARF	Assignment Request Form used to indicate a peer review panel preference
BAA	Broad Area Announcement (contract or grant opportunity; also RFP, RFA, FOA, PA)
CO	Contracting Officer
CO-I	Co-Investigator, a collaborating colleague of any academic rank. Co-Is are not PIs
CO-PI	Co-principal Investigator (NIH only recognizes one PI/grant. Co-PI is thus a Co-I)
COTR	Contracting Officer's Technical Representative (Usually a scientist)
CSR	Center for Scientific Review
DSMB	Data & Safety Monitoring Board
DSMP	Data & Safety Monitoring Plan
DSP/DSRP	Data Sharing Plan / Data & Resource Sharing Plan (For GWAS projects)
ERC	European Research Council
ESI	Early Stage Investigator
FOA	Funding Opportunity Announcement
FWA	Federalwide Assurance
GAO	Government Accountability Office
GMO	Grants Management Officer (oversees compliance with regulations)
GWAS	Genome-wide Association Study (study involving the human genome)
HS	Human Subjects
IC	Institute/Center (refers to NIH institutes)
IRB	Institutional Review Board
IRG	Initial Review Group, also Study Section, also peer review panel

(continued)

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(continued)

LOE	Level Of Effort
LOS	Letter of Support
ND or NS	Not Discussed also NS (not scored)
NDA	Nondisclosure Agreement
NGA	Notice of Grant Award (formal grant award)
NI	New Investigator
NRFC	Not Recommended For Further Consideration (banned from re-application)
OBE	Overcome By Events
PA	Program Announcement (NIH or NSF standing FOA)
PD	Program Director (Develops and administers portfolio of grants in specified areas)
PDW	Professional Development Workshop
PHS	Public Health Service
PI	Principal Investigator
PO	Project Officer
PO	Program Official (Develops and administers portfolio of grants in specified areas)
R&D	Research and Development
RFA	Request for Applications (special grant announcement)
RFP	Request for Proposals (type of contract announcement)
RPG	Research Project Grant
SAE	Serious Adverse Event
SBIR	Small Business Innovation Research grant
SO	Science Officer (government-assigned co-investigator/Co-I)
SRO	Scientific Review Officer (coordinates peer reviews)
STTR	Small Business Technology Transfer Research grant
TBA	To Be Assigned/Arranged (some post-award activity)

Note: List does not include federal departments and agency abbreviations

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