

NIH Research Funding from the Inside Out

- Types of Awards
 - Training
 - Research
- What's New At NIH
- **Application Tips**

What's New Now

- Publication Public Access
- Big Data & Data Sharing
- BRAIN Initiative
- NIDA – Cannabis / Development
- Collaborative Research on Addiction
 - ABCD – 10,000 for 10 years
 - Brain Imaging every other year
 - Data release soon as “clean”

What's New Soon

NOT-OD-15-103

“Enhancing Reproducibility through Rigor and Transparency” – Jan 2016

- Scientific Premise
- Rigorous Experimental Design
- Consideration of Sex and Other Relevant Biological Variables
- Authentication of Key Biological and/or Chemical Resources

What's New Soon

NOT-OD-15-103

“NIH expects applicants to describe the general strengths and weaknesses of the prior research being cited by the investigator as crucial to support the application. It is expected that this consideration of general strengths and weaknesses could include attention to the rigor of the previous experimental designs, as well as the incorporation of relevant biological variables and authentication of key resources. “

“For example, basing one's proposed research on previous publications that lacked statistical power, were not blinded, lacked detail on the sex of animals or authentication of cell lines would be considered a weakness of the application if it does not identify these weaknesses and propose ways to improve going forward. Likewise, conclusions drawn from prior research that used a small sample size may not adequately support the next phase of research, such as moving to a higher species of animals or to humans.”

Grant Application ≠ Publication

Grant Application ≠ Research

“Writing winning proposals is
different from building
winning hardware

Albert D. Wheelon

NIH Mission Statement

“NIH’s mission is to seek fundamental knowledge about the nature and behavior of living systems and the application of that knowledge to enhance health, lengthen life, and reduce the burdens of illness and disability.”

Critical Assumption:

*Fundamental mechanism of a disease =
Rational target for intervention
(prevention or treatment)*

IMPACT SCORE

Priority Score => IMPACT/Priority Score
Score Range 10 (Best) - 90 (Worse)

Reflects the reviewers' assessment of the *likelihood* for the project to exert a *sustained, powerful influence* on the research field(s) involved

WHY IMPACT ?

Peer Review Regulations

“In carrying out its review under § 52h.7, the scientific peer review group shall assess the overall impact that the project could have on the research field involved, taking into account, among other pertinent factors...(review criteria)”

Impact Scores

Overall Impact:

The likelihood that a project will have a sustained and powerful influence on science (and/or clinical practice and/or technological developments?)

Overall Impact	High	Medium	Low
Score	1 2 3	4 5 6	7 8 9

Evaluating Overall Impact:

Consider the 5 criteria: significance, investigator, innovation, approach, environment (weighted based on reviewer's judgment)

e.g. Applications are addressing a problem of high importance in the field. May have some or no technical weaknesses.

e.g. Applications may be addressing a problem of high importance in the field, but weaknesses in the criteria bring down the overall impact to medium.

e.g. Applications may be addressing a problem of moderate importance in the field, with some or no technical weaknesses

e.g. Applications may be addressing a problem of moderate/high importance in the field, but weaknesses in the criteria bring down the overall impact to low.

e.g. Applications may be addressing a problem of low or no importance in the field, with some or no technical weaknesses.

12/13/2012

5 is a good medium-impact application, and the entire scale (1-9) should always be considered.

NIH Peer Review (aka Study Sections)

- Original Mission – Screen out poor science (more \$\$ than applications)
- Culture of Skepticism – What could go wrong, NOT how good it could be
 - Journal Club Culture
- Dynamic - Innovation vs. Fear of Failure

Application Structure

Significance – **Gap** or **Controversy**

(not discovery science = just see what happens)

Aims – What will you **RESOLVE**

Hypotheses – What will you **TEST** ?

Approach – How will you **MEASURE** it ?

Interpretation – **Alternative Outcomes & Limitations**

IMPACT V. 2.0

Unsettle Presumptions

Defamiliarize the Familiar

Reveal what is going on beneath and behind appearances (Fundamental Knowledge)

Disorient

Propose ways to Reorient

Harvard Report on Education (quoted by David Brooks NY Times 1/27/09)

SUCCES

- SIMPLE (Background)
- UNEXPECTED (Innovation)
- CONCRETE (Aims & Approach)
- CREDIBLE (CV)
- EMOTIONAL (Significance)
- STORY

“Made to Stick”
C. Heath, D. Heath

5 P's of Successful Applications

- **PRODUCTIVITY**
 - Publications
 - Funding
- **PILOT DATA (Feasibility)**
 - Proof of Concept/Effect
 - Guarantee of detectable signal (avoid Type II Error)
 - Power Analysis
- **PRODUCTION (Factory)**
 - Mechanistic
 - Assembly Line (Directional)
 - No Negative Results
- **PERSEVERANCE (Funding)**
- **PROGRAM OFFICER (Friend)**

Questions ??

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4 **F**'s of Successful Applications

- **FRESH**
- **FEASIBLE**
- **FACTORY**
- **FUNDING**

Barriers to Innovation aka Challenges for Iconoclasts

- Perception -- seeing things for what they are instead of what past experience or other people say
- Fear -- fear of failure and fear of public ridicule
- Social Intelligence – “Everybody knows”...selling your ideas to non-iconoclasts

REVIEW CRITERIA

Core criteria order:

(* - receive individual score 1- 9)

Significance*

Innovation*

Approach*

Investigator(s)*

Environment*

Additional review criteria & considerations
expanded