Principles of Research Writing & Design
Educational Series

Reviewing Scientific Literature
&
Grants 101

Alaina Boyer, PhD
Senior Research Associate
Meharry-Vanderbilt Alliance
19 June 2015

Reviewing Scientific Literature

Literature review relevance
Resources
Critically reviewing scientific literature
Tips

Why conduct a literature review

- Helps determine where excess research exist and where new research is needed
- Provides a solid theoretical framework; a proposed study
- Justify a proposed study as one that contributes something new to the body of knowledge
- Framing valid research methodologies, approaches, goals, and questions
- Identify areas of controversy in the literature

Resources

PubMed
National Library of Medicine
NLM

Cochrane Library

Google Scholar

Wolters Kluwer Health | Ovid

CINAHL
Available via EBSCOhost

THOMSON REUTERS
Web of Science

Insert your title and/or abstract here (or, click here to search using keywords)

Scramble | Clear | Show extra options

Find journals | Find authors | Find articles

Welcome to Jane

Have you recently written a paper, but you're not sure to which journal you should submit it? Or maybe you want to find relevant articles to cite in your paper? Or are you an editor, and do you need to find reviewers for a particular paper? Jane can help!

Just enter the title and/or abstract of the paper in the box, and click on 'Find journals', 'Find authors' or 'Find Articles'. Jane will then compare your document to millions of documents in Medline to find the best matching journals, authors or articles.

Keyword search

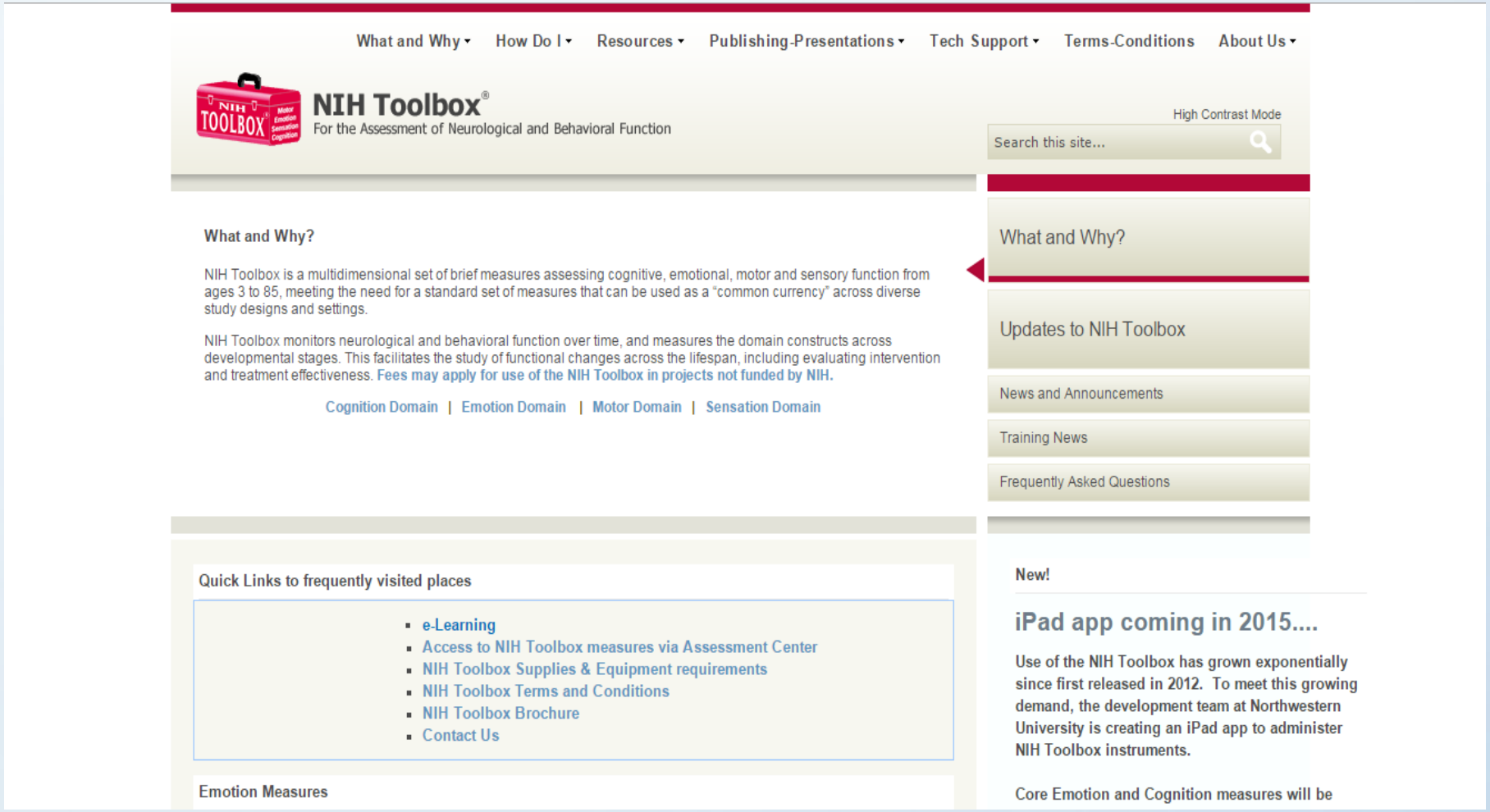
Instead of using a title or abstract, you can also search using a keyword search, similar to popular web search engines. Click here to search using keywords.

Additional information about Jane

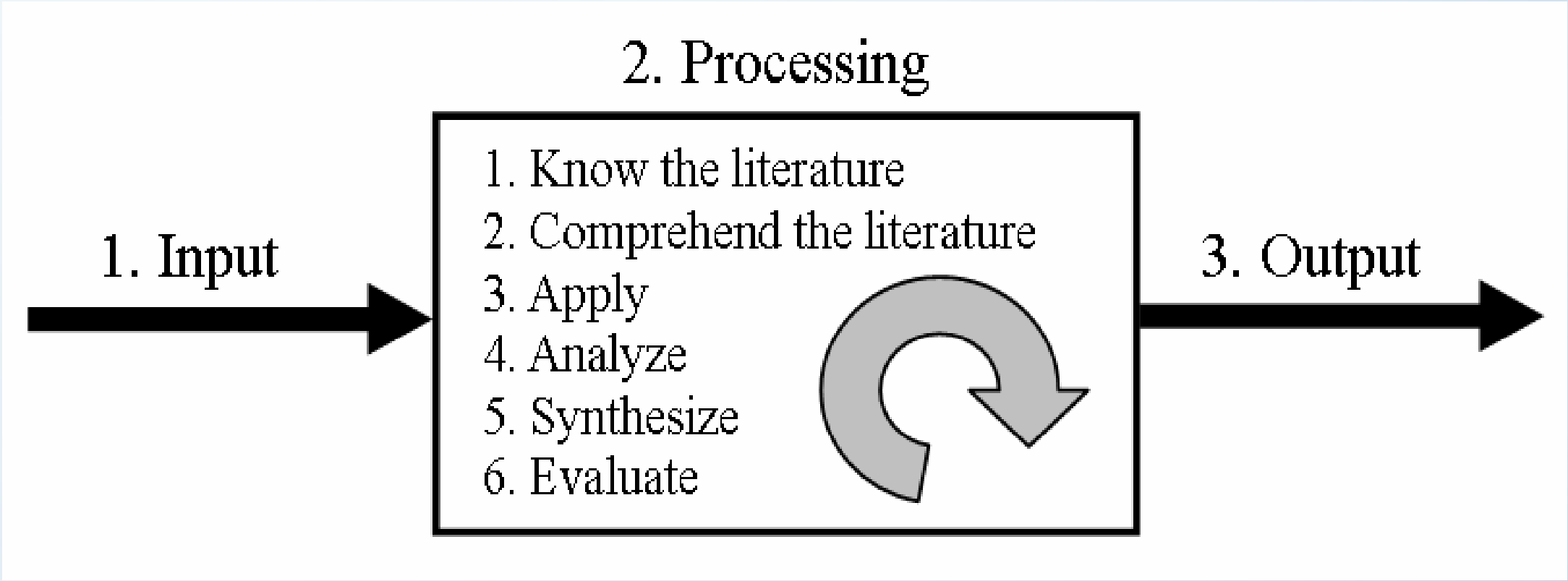
Copyright 2007, The Biosemantics Group. Research funded by NBIC. Created and maintained by Martijn Schuemie

Patient Reported Outcomes Measurement Information System (PROMIS)

NIH Toolbox


What and Why
How Do I
Resources
Publishing-Presentations
Tech Support
Terms-Conditions
About Us
NIH Toolbox®
For the Assessment of Neurological and Behavioral Function
High Contrast Mode
Search this site...
What and Why?
NIH Toolbox is a multidimensional set of brief measures assessing cognitive, emotional, motor and sensory function from ages 3 to 85, meeting the need for a standard set of measures that can be used as a "common currency" across diverse study designs and settings.
NIH Toolbox monitors neurological and behavioral function over time, and measures the domain constructs across developmental stages. This facilitates the study of functional changes across the lifespan, including evaluating intervention and treatment effectiveness. Fees may apply for use of the NIH Toolbox in projects not funded by NIH.
Cognition Domain | Emotion Domain | Motor Domain | Sensation Domain
What and Why?
Updates to NIH Toolbox
News and Announcements
Training News
Frequently Asked Questions
Quick Links to frequently visited places
e-Learning
Access to NIH Toolbox measures via Assessment Center
NIH Toolbox Supplies & Equipment requirements
NIH Toolbox Terms and Conditions
NIH Toolbox Brochure
Contact Us
Emotion Measures
New!
iPad app coming in 2015....
Use of the NIH Toolbox has grown exponentially since first released in 2012. To meet this growing demand, the development team at Northwestern University is creating an iPad app to administer NIH Toolbox instruments.
Core Emotion and Cognition measures will be

The literature review process



Levy & Ellis, 2006, vol 9, Informing Science Journal

Literature Review Tips

- Cite recent literature, unless a seminal body of work
- Be organized- utilize bibliographic management software (endnote, mendely (free), zotero (free), etc)
- Keep records of your findings (template example)

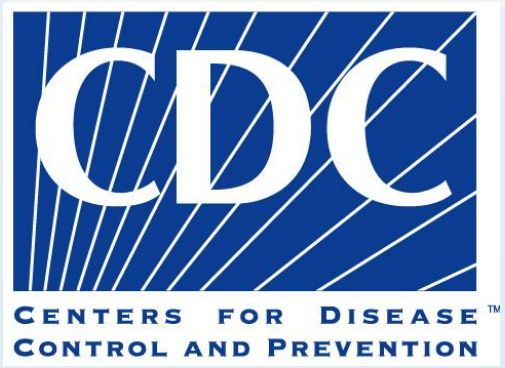
Title & Year	Authors	Topic	Key Points	Relation to your topic

Grants 101

Major grant sponsors
Where to look for grant announcements
Knowing your audience
Major sections of a grant
Grant resources

Grant Sponsors

Federal Sponsors

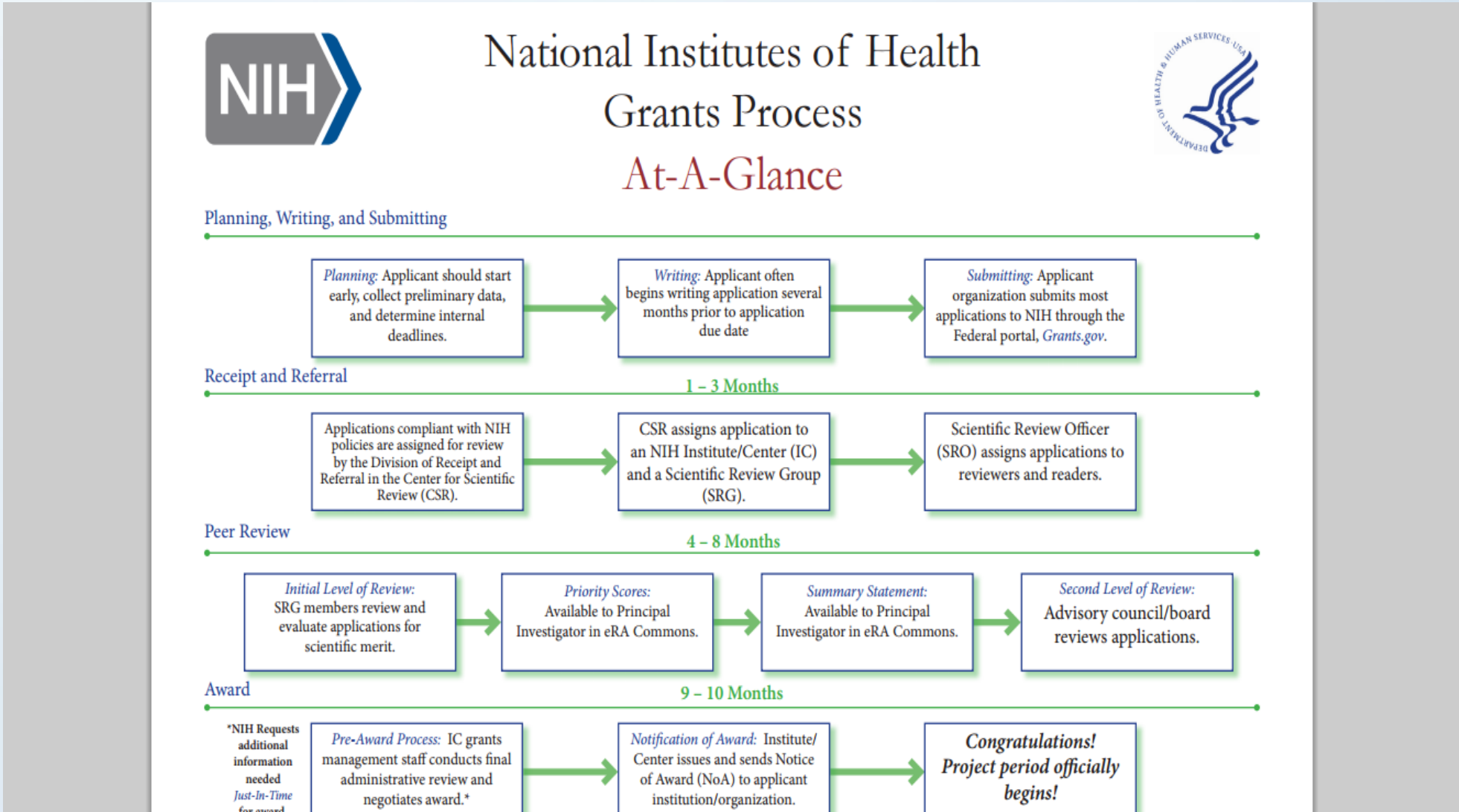


Foundation Sponsors

Foundation Sponsors foundationcenter.org

Federal Sponsors www.grant.gov

NIH Grant Process- At a glance



Know your audience

NIH Institutes & Centers

1. NCI	Cancer Institute	14. NIDA	Drug Abuse
2. NEI	Eye Institute	15. NIEHS	Environmental Health Sciences
3. NHLBI	Heart Lung and Blood	16.NIGMS	General Medical Sciences
4. NHGRI	Human Genome Research	17. NIMH	Mental Health
5. NIA	Aging	18. NIMHD	Minority Health & Health Disparities
6. NIAA	Alcohol Abuse & Alcoholism	19. NINDS	Neurological Disorders & Stroke
7. NIAID	Allergy & Infectious Disease	20. NINR	Nursing Research
8. NIAMS	Arthritis, Musculoskeletal, & Skin Diseases	21. NLM	Library Medicine
9. NBIB	Biomedical imaging & Bioengineering	22.CIT	Center for Information Technology
10. NICHD	Child Health & Human Development	23.CSR	Center for Scientific Review
11.NIDCD	Deafness & other Communication Disorders	24. FIC	Fogarty International Center
12. NIDCR	Dental & Craniofacial Research	25. NCCIH	Center for Complementary & Integrative Health
13.NIDDK	Diabetes, Digestive & Kidney Diseases	26. NCATS	Center for Advancing Translational Sciences

NIH Grants- The Basics

- 1- Start by re(reading) the grant website and request for applications (RFAs)
- 2-Take note of deadlines
- 3- Take note of NIH contact people
- 4- Engage the program officer- his/her job is to assist you with the grant process
  - Begin with an email
  - Arrange a meeting (by phone, at a conference, when you are in DC, etc)

Types of NIH Grants

R03

- Provides limited funding for a short period of time
- (2 years maximum)
- Supports variety of projects: pilot studies, collection of preliminary data, secondary data analysis.
- Budget generally up to $50,000 per year
- Not renewable

R21

- Exploratory/discovery research
- Encourages new, exploratory and developmental research projects
- Limited to up to two years of funding
- Combined budget for direct costs for the two year project period usually may not exceed $275,000.
- No preliminary data is generally required

Types of NIH Grants

K99/00

- Up to five years of support consisting of two phases
- 1-2 years mentored support for postdocs
- 3 years of independent support
- Awardees expected to compete successfully for independent R01 support during transition period
- Budget generally up to $249K (R00 phase)

Secondary Data Analysis

- R21 –type of grant
- Focus on facilitating research that explores innovative hypotheses through the use of existing data sets
- 2 year maximum
- Great way to increase publication record
- Budget vary by NIH institute/center

Diversity Supplements

- Goal is to enhance diversity and re-entry in to the research workforce (two different grants)
- Administrative supplement (provides salary support) for a race/ethnic minority investigator
- Research project must work within the scope of the parent grant (larger NIH grant such as an R01)
- Provides short-term and long-term funding support

NIH Standard Due Dates

New Applications

	Cycle 1	Cycle 2	Cycle 3
RO3	February 16	June 16	October 16
R21	February 16	June 16	October 16
K99/00	February 12	June 12	October 12

Renewal, Resubmission, Revision

	Cycle 1	Cycle 2	Cycle 3
RO3	March 16	July 16	November 16
R21	March 16	July 16	November 16
K99/00	March 12	July 12	November 12

NIH Application –Major Sections

- **Specific Aims**
- **Research Strategy**
  - Sub-sections (Significance, Innovation, Approach)
- Environment
- Protections for Human Subjects
  - Inclusion of Women, Minorities, and Children
  - Targeted Planned Enrollment Table
- Budget
- Budget Justification
- Biosketches
- References
- Letters of support*
- Key personnel documents

Specific Aims & Research Strategy

Specific Aims (1 pg)

- Opening paragraph, current state of the knowledge and summary of gaps
- Innovation of proposed research and how it fills some gaps
- List objectives e.g., test hypotheses, create a novel design, solve a specific problem, challenge an existing paradigm, address barrier in the field, or develop new technology.
- Finish with summary of the potential broad impact of the proposed research will have.

Research Strategy- Significance (1.5pg for R03)

- Explain the importance of problem or critical barrier to progress in the field
- Explain how proposed project improves scientific knowledge.
- Describe how concepts, methods, treatments, or preventative interventions that drive this field will be changed if the proposed aims are achieved.
- Cite seminal, persuasive work from high impact factor journals

Research Strategy

Innovation (approx. 1.5pg)

- Explain how the application challenges and seeks to shift current research
- Describe novel/improvements methods, advantages over what currently exists
- State why you are so enthusiastically proposing the research and why the work should be done
- State what is novel and gaps that will be filled

Approach (2.5-3pgs)

- Describe the overall strategy, methodology, and analyses to be used to accomplish the specific aims
- The data to be analyzed – source, descriptive for sample, etc,
- Variables to be used
- Analysis strategy and procedures
- Discuss potential problems, alternative strategies, and benchmarks for success anticipated to achieve the aims

Tips for Early Stage Investigators

- Describe institutional investment in the success of the investigator,
  - Resources for classes, travel, and training
  - Collegial support such as career enrichment programs
  - Availability of organized peer groups
  - Logistical support such as administrative management , oversight ,and best practices training

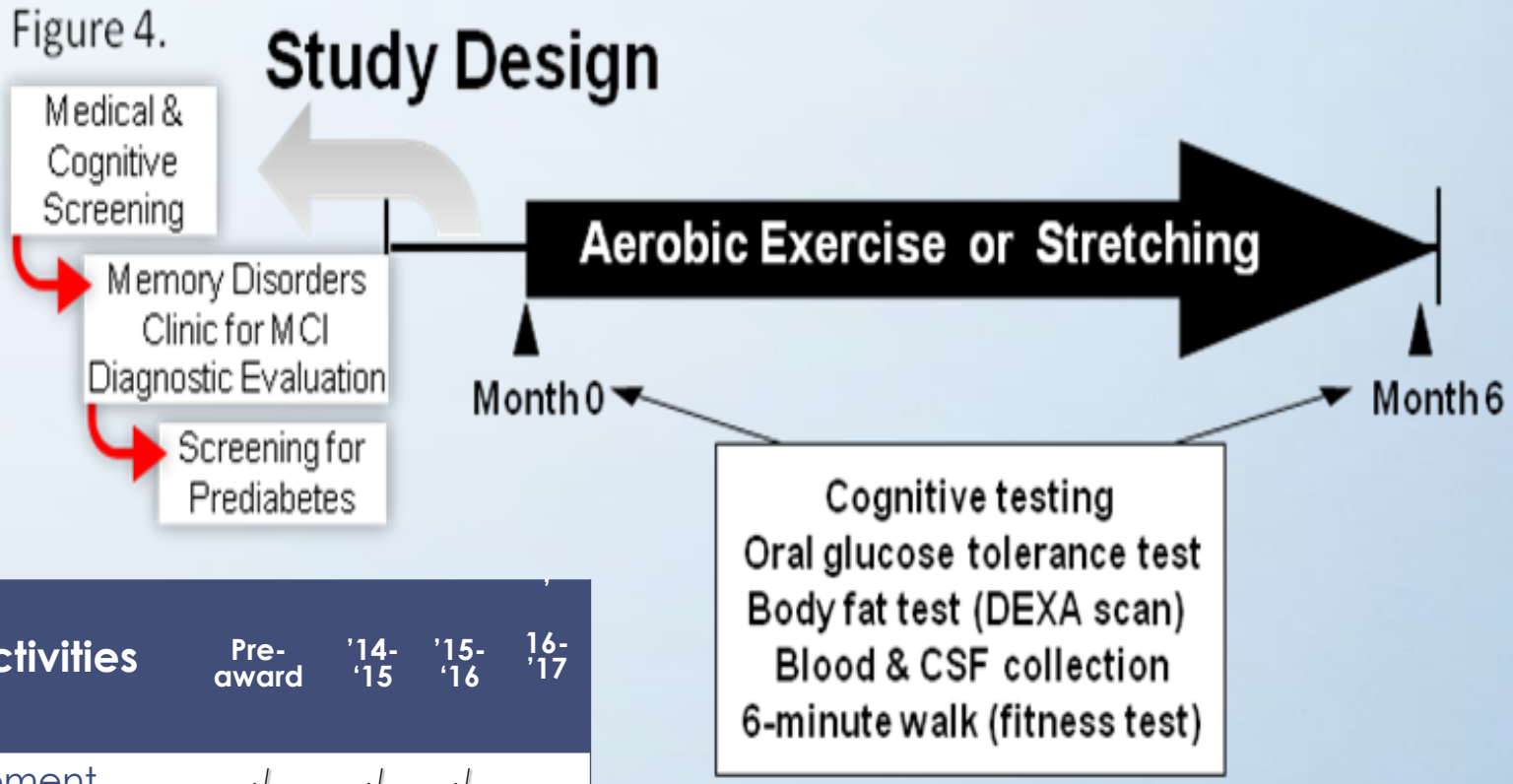
Overview of how grants are scored

- Scored on a 9-point scale
- **1** indicates exceptionally strong application with essentially no weaknesses.
- **9** indicates an application with serious and substantive weaknesses with very few strengths
- **5** considered an average score
- Scale used by all study group review members to provide overall impact/priority score for each application.
- Scale used by assigned reviewers to score five individual criteria (e.g., Significance, Investigator(s), Innovation, Approach, Environment)

Grant Writing Tips

- 1- Start early- at least 4-5 months to write a grant proposal
- 2- Use short declarative sentences, minimize use of complex sentences
- 3- Cite sparingly in the specific aims section
- 4-Recruit reviewers (experts in the field, in statistics/methods, style (English, grammar, etc) to review your grant prior to submission
- 5- Obtain a copy of a funded grant application
- 6- Become familiar with the grant submission process at your institution
- 7- Avoid jargon
- 8- Include a schematic of grant timeline (even if not requested)

Examples of timelines



Aim	Research Activities	Pre-award	'14-'15	'15-'16	16-'17
Determine the association between measures of PA and brain health.	Cohort development	√	√	√	
	Data collection		√	√	
	Data Analysis & preparation of results for publication			√	√

Additional Resources

- (Literature review)- The Literature Review: A Few Tips On Conducting It (word document)
- (Grants) NIH Website http://grants.nih.gov/grants/oer.htm
- (Grants) YouTube video of a NIH grant review session http://public.csr.nih.gov/aboutcsr/contactcsr/pages/contactorvisitcsrpages/nih-grant-review-process-youtube-videos.aspx
- (Grants) NIH Reporter http://projectreporter.nih.gov/reporter.cfm

Please complete evaluation forms prior to leaving- Thanks!

Session Schedule

All sessions held at the MVA from 12pm-1pm

Date	Topic
June 19	Literature Reviews & Grants 101
June 26	Writing a Scientific Manuscript (Part 1)
July 10	Writing a Scientific Manuscript (Part 2)
July 17	Fundamentals of Study Design
July 24	Fundamentals of Biostatistics (Part 1)
July 31	Fundamentals of Biostatics (Part 2)

To RSVP call (615) 963-2820 or email **mva@Meharry-Vanderbilt.org**