Grant Proposals:
The Fundamentals

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Objectives

- Importance of Grant Funding
- Grant Basics
  - Sources of Funding
  - Types of Grants
  - Funding opportunities
- Grant Application Process
  - The Application
  - Application Attributes
  - The Review
- Next Steps
- Resources

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Why Grants are Important (Individual)

- Grants = funding
  - Time
  - People
  - Equipment
  - Training
- Grants = expertise
  - From ideas to grants to publications
- Grants = validation
  - Ideas are disseminated
    - Positive press
    - Leadership support

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Why Grants are Important (Institution)

61%

VTFederal Facilities & Administrative (F&A) Rate

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Sources of Grant Funding

- Institutional
  - University, hospital, corporate
- Foundations
  - RWJ, Gates, EMF
- Voluntary Health Agencies
  - AHA, ADA, NKF
- Industry
  - GM, Pharma
- Government
  - Federal, State, Local

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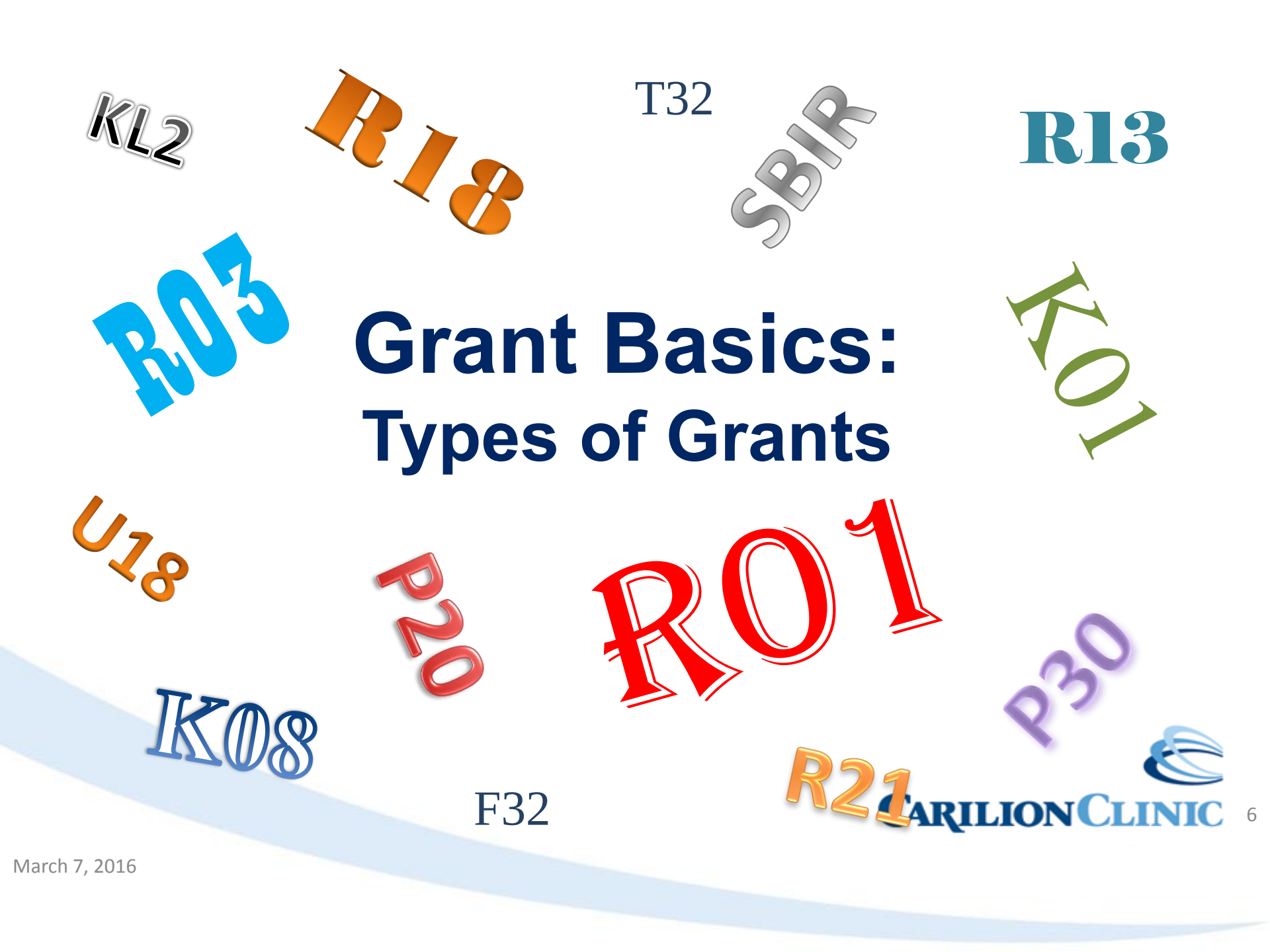

Grant Basics:
Types of Grants

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Types of Grants (HHS)

- Wide range available
  - Research (R series)
    - Includes Conference Grants
  - Career Development (K series)
  - Research Training & Fellowship (T- and F-series)
    - Dissertation and post-doctoral fellowship
  - Program Project / Center (P series)
  - Small Business (SBIR/STTR)
  - Cooperative Agreements (U series)
- Not all agencies use every type

Types of Grants – R Series

Activity Code	Title	Description
R01	Research Project	- Discrete, specified, circumscribed project - Topic area representing PI's specific interest and competencies - 3-5 years, $250K-$500K/Yr
R03	Small Research Project	- Limited scope and funding to support variety of projects: - Pilot/feasibility studies - Preliminary data collection - Secondary analysis of existing data - Development of new research technology - 1-2 years, $50K/Yr or total $100K

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Types of Grants – R Series

Activity Code	Title	Description
R13	Conference Grant	- Support high-quality conferences/scientific meetings - AHRQ: Symposium, Workshop, or any other organized and formal meeting - Generation of a research agenda - Research design & methodology - Dissemination and implementation - Research training, infrastructure, and career development dissemination - Awards vary in time/amount by Agency
R18	Research Demonstration & Dissemination Project	-Develop, test, and evaluate health service activities, and to foster the application of existing knowledge for the control of categorical diseases - 3 years, $250K-$500K/Yr

Types of Grants – K Series

Activity Code	Title	Description
K01	Research Scientist Development Award – Research & Training	- Provides support and protected time for intensive, supervised career development in biomedical, behavioral, or clinical sciences leading to research independence. - Junior basic scientist faculty
K08	Clinical Investigator Award	- Provides support and protected time to individuals with a clinical doctoral degree for an intensive, supervised research career development experience - Junior faculty with clinical doctoral degree

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Funding Opportunities

FOA	Funding	Receipt & Review Dates	Advantages
Request for Applications (RFA)	Specific funds identified Targeted number of awards	-Single Date -Review by Special Emphasis Panel	Chances of obtaining funding depends on number of apps and amt of funds
Program Announcement (PA)	No specific funds	-Standard Dates (3x year) -Typically Open for 3 yrs -Review by standing Study Section	Competition tied to paylines (payline moves from cycle to cycle)
Parent Announcement	No specific funds	-Standard Dates (3x year) -Typically Open for 3 yrs -Review by standing Study Section	Freedom of topic Competition tied to paylines

Funding Opportunities

- Two approaches to identifying opportunities
  - Have an idea/project, look for the grant opportunity
    - Ideal approach
    - Develop a track record in your area
  - Find a grant opportunity, come up with the idea/project
    - Works, but not as well
      - There are ways to do it!
    - Typically evident to reviewers if not in your target area

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Funding Opportunities

- Find the appropriate Funding Opportunity Announcement (FOA)
- Download the appropriate application

GRANTS.GOV

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Grantsmanship Tip #1

- Read the entire announcement
  - Click on any embedded links
  - Check and double check for any updates
  - This will save you time and effort in the long run
    - Avoid surprises

Grantsmanship
Tip #2

- Identify potential duplication with other funded grants and contracts early in the process
  - Search online databases:
    - NIH Research Portfolio Online Reporting Tools (RePORT)
      - Contains grants from NIH, AHRQ, CDC, SAMHSA, VA, etc.
      - MATCHMAKER (beta testing)
        - Enter text and have the system find similar project
  - Go to Institute/Agency website

Grantsmanship Tip #3

- If you have questions while developing your applications, ask:
  - The Program Official (listed on FOA)
    - Content-related questions
    - Alignment of your project with agency priorities
    - Potential duplication with newly funded grants
  - The Grants Management Specialist (listed on FOA)
    - Administrative-related questions (i.e. budget)
  - For parent announcements, FOA will send you to various Institute (NIH) or Center (other) contacts

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Grant Application Process:

The Application

Grant Application Components

- Project/Performance Sites
- Project Summary/Abstract
- Project Narrative
- Facilities and Other Resources
- Key Personnel
- Biosketches
- Budget
- Budget Justification
- Research Plan
- Letters of Support

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Grant Application Components

- Performance Sites
  - Primary location
    - Applicant organization
  - Other locations
    - Other locations where work will be performed
    - Institutions of key personnel

Grant Application Components

- Project Summary/Abstract
  - Self-contained description of project
  - Contain statement of objectives and methods
- Project Narrative
  - Two or three sentences
  - Describes relevance of research to public health
  - Becomes public information

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Grant Application Components

- Facilities and Other Resources
  - Facilities to be used
    - Capacities
    - Capabilities
    - Extent of availability to project
  - Equipment

Grant Application Components

- Senior/Key Personnel
  - All individuals who contribute in a substantive, meaningful way to the scientific development or execution of the project, whether or not salaries are requested
    - Consultants should be included if they meet this definition
  - Program Director/Principal Investigator (PD/PI)
    - Some agencies allow for Co-PIs (not AHRQ)
  - Other Senior/Key Person profiles
- Other Significant Contributors (OSCs)
  - Individuals who commit to contribute to the scientific development or execution of the project, but don't commit to any specified measurable effort (zero person months)
- BIOSKETCHES FOR ALL OF ABOVE

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Grantsmanship Tip #4

- Chose your team wisely
  - Team members should appropriately represent the work being conducted
    - Example: Research involving pharmacists should probably have a pharmacist
  - Big names not always better
    - Can they really be on 20 grant applications and be able to contribute substantively?
    - Gesture vs. meaningful inclusion

Grant Application Components

- Biosketches
  - New format (starting May 25, 2015)
    - Five Pages
    - Highlights accomplishments as scientists
      - Up to five of most significant contributions to science
      - Description: findings, how it impacted field
      - List up to four relevant peer-reviewed pubs or other non-publication research products
      - Link to full list of published work in MyBibliography

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Grant Application Components

- Budget
  - Direct costs
    - 'Costs that can be identified specifically with a particular sponsored project'
      - Benefit a specific project
      - Examples: PI/Co-Investigators salaries, travel
  - Indirect costs (F&A)
    - 'Costs incurred by a grantee for common or joint objectives'
      - Benefit more than one project
      - Examples: lab space, utilities
    - Rate is negotiated with the Federal Government
  - Direct + Indirect = Total Costs

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Grant Application Components

- Budget (at Carilion)
  - Total Cost = Direct Cost + Indirect Cost
    - $1,000,000/Year = Direct Cost + .60(Direct Cost)
      - Direct Cost = $600,000
      - Indirect Cost = $400,000
  - Base Salary
    - Annual compensation
    - NIH Salary Cap = $185,100 (this changes)
  - Calendar Months
    - Effort devoted to project
    - 30% effort = 3.6 calendar months

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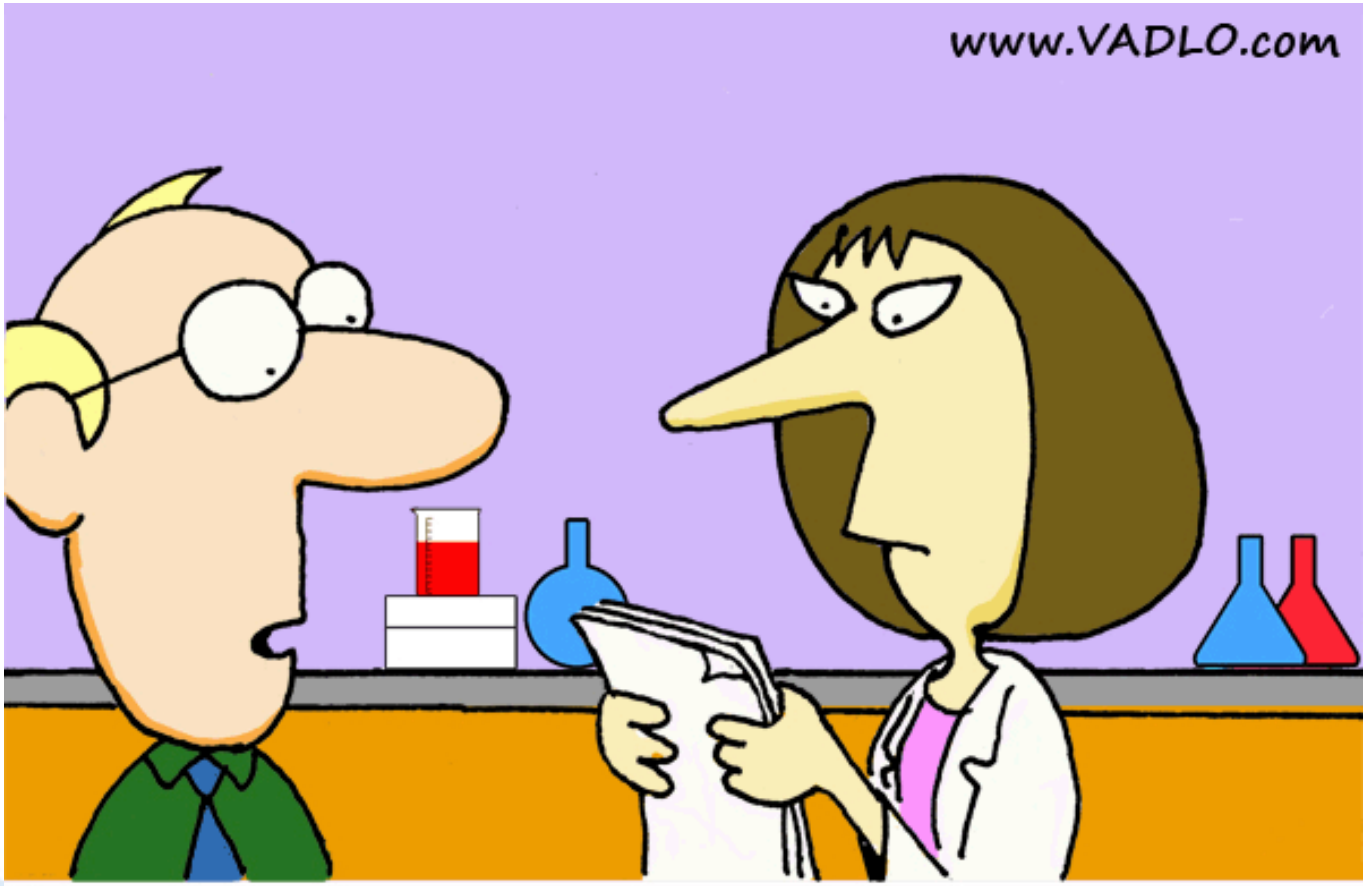
Grantsmanship Tip #5

- Total costs should not exceed the limit set in the FOA
  - Check the FOA (again!)
  - If exceeds limit = automatic rejection of application

Grantsmanship Tip #6

- Only ask for what you need
  - Similar to gases, budgets tend to expand to fit the space you give them
  - Same goes for timeline – if you don't need a fifth year for an R01, then don't ask for it
  - Lends credibility to the application
    - Demonstrates thoughtfulness

Budget



"With this much grant money, only experiment we can do is 'flip a coin'.

Grant Application Components

- Budget Justification
  - Information to support budget request
  - Direct Costs
    - Personnel
      - Key Personnel and others
      - Amount of time they will contribute and what they will deliver
    - Equipment
    - Travel
    - Study

Grant Application Components

- Research Plan
  - Specific Aims
  - Research Strategy
    - Significance
    - Innovation
    - Approach
      - Limitations/challenges
      - Timeline
  - Human Subjects Sections
  - Letters of Support

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Grant Application Components

- Research Plan
  - Specific Aims
    - The cornerstone of the proposal
    - One page (Specific Aims page)
      - Builds an argument for proposed work (3-4 paragraphs)
        - Provide brief background/significance setting up critical problem to be addressed
        - Describe the critical problem
        - Propose how you will address critical problem
      - "Specific Aims"
        - Two to three concrete objectives (with 1-2 hypotheses)
    - There is an art to the Specific Aims page
      - Seek out examples from mentors

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Grantsmanship
Tip #7

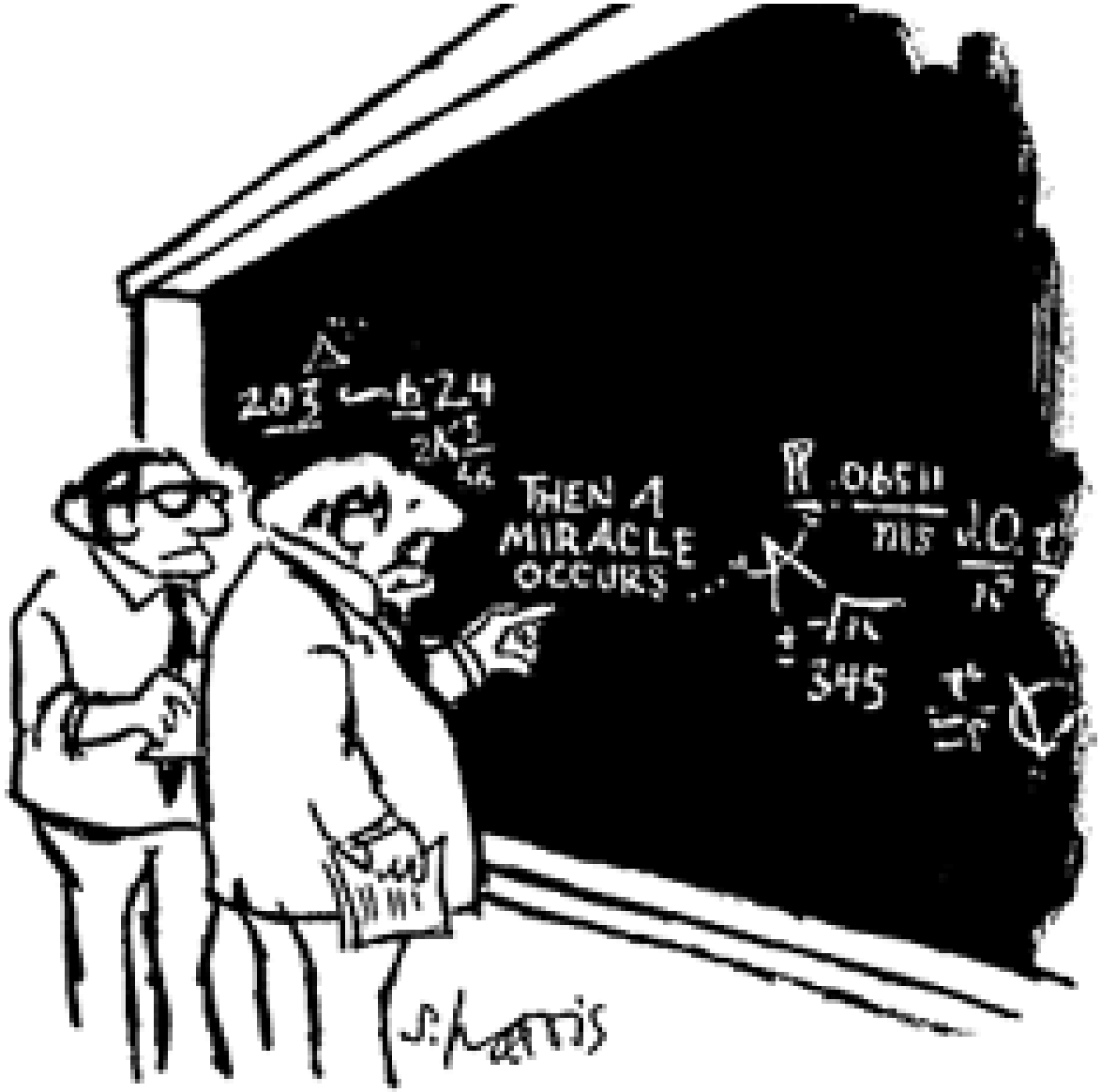
- Prepare a draft of your Specific Aims page first
  - If you contact the Program Official (listed on FOA), they will typically ask for your Specific Aims page before they have a discussion with you
    - Serves to ground the conversation

Grantsmanship
Tip #8

- Do not expect the Program Official to tell you what to propose or to assist you in developing the methodology
  - They can provide early feedback on strategy and guide you to the best mechanism
  - May even suggest a more appropriate Institute/Agency

Grantsmanship
Tip #9

- Use your application to tell a story
  - Need to generate enthusiasm during peer review
  - Leave no-room for misinterpretation of that story
    - No guessing, no assuming, no reading between the lines


THEN A
MIRACLE
OCCURS

Grant Application Components

- Research Plan
  - Research Strategy
    - Significance
      - Use subsection headings to provide high-level outline
        - Lead reviewers along the story leading up to the critical question
    - Innovation
      - Innovation is not the same as significance
      - Novel combination of approaches or the application of accepted approaches to a new problem

Grant Application Components

- Research Plan
  - Research Strategy
    - Approach
      - Start out with a one-paragraph overview to orient reviewer
        - Include a diagram/flow chart
      - Site Selection
      - Participant recruitment
        - Inclusion/exclusion criteria
      - Research procedures
      - Methods
      - Power analyses
        - Based on prelim data (best)
        - Based on published data (good)
      - Statistical Methods
        - Data management

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Grant Application Components

- Research Plan
  - Research Strategy
    - Approach
      - Anticipated results
      - Anticipated challenges and possible solutions
      - Future directions
      - Timeline (Gantt chart)

Grant Application Components

Sample Timeline - Gantt Chart

		Month											
	Pre-Award	1	2	3	4	5	6	7	8	9	10	11	12
IRB Application													
Staff education													
Aim 1: Active surveillance - data collection													
Aim 1: Active surveillance - data analysis													
Aim 2: Comparison of active surveillance data to data from standard reporting mechanism													
Aim 3: FMEA of high risk medication management processes													
Research team meetings													
AHRQ conference calls													
AHRQ quarterly reports													
Publications/dissemination/AHRQ meeting													

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Grantsmanship Tip #10

- The research strategy and the grant mechanism should align
  - Have you chosen the appropriate FOA and mechanism?
  - Re-read the FOA (again!)

Grant Application Components

- Research Plan
  - Human Subjects Sections
    - Protection of Human Subjects
      - Subjects can be patients AND staff
    - Inclusion of Women & Minorities
    - Targeted/Planned Enrollment Table
    - Inclusion of Children
  - Letters of Support
    - Demonstrate institutional backing of proposed work

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Grantsmanship
Tip #11

- The grant application process is iterative
  - As you hone your application, go back and make sure that all of the pieces (the who, what, when, where, how) are aligned

Application Attributes

- The Applicant
- The Science
- The Communication

Application Attributes

- The Applicant
  - Proper match between applicant and grant
    - R01 shouldn't be first grant application
  - Level of educational training
  - Track record
    - Demonstrate successful completion of projects
      - In area of grant application
    - Complete publications in peer-reviewed journals
  - Institutional support
    - LOS from institution
    - Release from clinical work

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Application Attributes

- The Science
  - Key component of any application
  - Topic
    - Originality & Impact
    - Advances the science in a particular area
  - Appropriate methods for question being asked
  - Qualified researchers
    - Sufficient expertise
  - Feasible
    - Can do what you say you can
      - Staff effort, budget, timeline

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Application Attributes

- The Communication
  - Most critical piece
    - Need a hook
      - Quickly convince a group of strangers that your life interest is the most important thing in the world
      - For funding agencies: hot-button political issues
    - Reviewers read a lot of applications
      - Need to stand out
  - Selling the project
    - Refer to documents, products from granting agency
    - Letters of support from important people
    - Explain how this will benefit the agency
    - Create a long-range vision for the work

Application Attributes

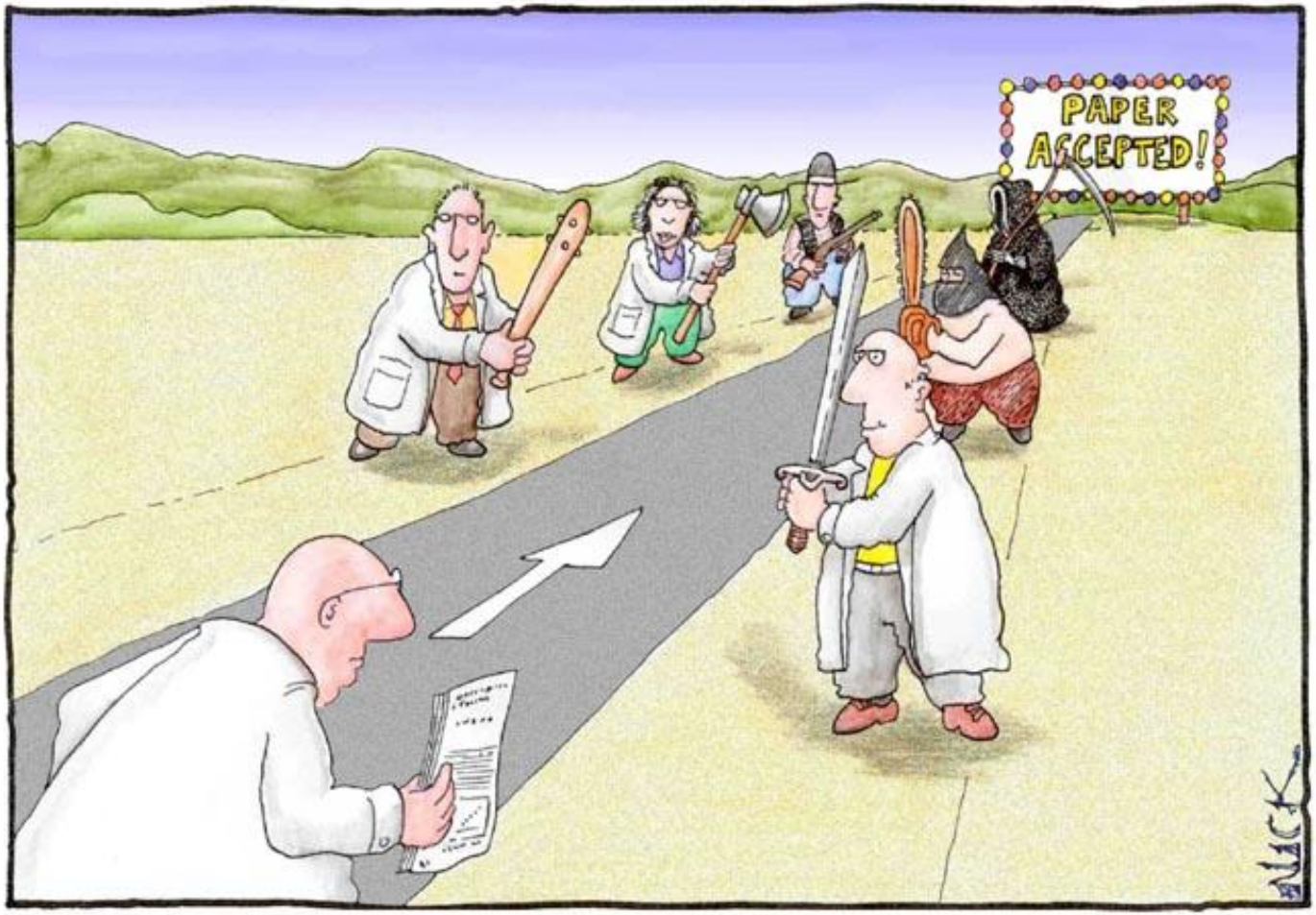
- The Communication
  - Write well
    - Clear, short sentences
    - Specific
    - Reviewers are reading quickly
  - Organize well
    - Logical flow
    - Headings/subheadings
    - Graphics/graphs/outlines

Grantsmanship Tip #12

- Have others (non-experts) read your application
  - Avoid writing an application that creates a high reviewer burden
    - Have to read sentences over and over
    - Need to diagram the approach to understand
  - The more varied your readers, the better the feedback
    - Can you explain what you are doing, in a clear, concise manner to someone who is not a domain expert?

Grant Application Process:

The Review



Most scientists regarded the new streamlined peer-review process as "quite an improvement."

The Review

- Study Section
  - Group of experts convened to review grants
- Meetings typically held three times per year
  - Coincides with grant application cycle
- Not open to the public

The Review

- Significance
- Investigators
- Innovation
- Approach
- Environment

The Review: Score Criteria

Impact	Score	Descriptor	Additional Guidance on Strengths/Weaknesses
High	1	Exceptional	Exceptionally strong with essentially no weaknesses
	2	Outstanding	Extremely strong with negligible weaknesses
	3	Excellent	Very strong with only some minor weaknesses
Medium	4	Very good	Strong but with numerous minor weaknesses
	5	Good	Strong but with at least one moderate weakness
	6	Satisfactory	Some strengths but also some moderate weaknesses
Low	7	Fair	Some strengths but with at least one major weakness
	8	Marginal	A few strengths and a few major weaknesses
	9	Poor	Very few strengths and numerous major weaknesses

The Review

- Two possible outcomes:
  - Application is not discussed ('triaged')
    - Numerical cutoff determined
    - Fall below that cutoff = triaged
    - Only receive scores from three main reviewers
      - Receive a Summary Statement
  - Application is discussed
    - 1^{o} reviewer presents grant (10-15 minutes)
    - 2^{o} & 3^{o} reviewers give additional comments [READERS]
    - All members discuss/comment [SKIMMERS]
    - Receives a score from each reviewer
      - You see a Priority Score and Percentile
      - Receive a Summary Statement

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Grantsmanship Tip #14

- If you feel your application is suited to a particular study section, suggest that in your cover letter
  - Not guaranteed, but cannot hurt

Grantsmanship Tip #15

- The Bottom Line
  - "The only grants that makes it through are ones that have good science, but also tell good stories. They need to make sense, be easy to read, and tell a story in a meaningful and compelling way."
    - Daniel Masys, July 2012
      Chair, NIH Biomedical Computing and Health Informatics Study Section

Next Steps

Next Steps

- Be persistent
  - Getting to the first money is the hardest
    - Good mentorship helps
  - Don’t take comments personally
    - “… sounded like a bunch of old men sitting around a table chatting.”
    - If they don’t get it, you need to say it differently
  - Reviewers take their job seriously
    - You may think they are wrong, but that means your communication wasn’t correct

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Resources

Resources

- Mentors
- Grants.gov
- NIH RePORT
- Agency Websites
- Rief-Lehrer, Liane. Grant Application Writer's Handbook.
- Hulley SB. Designing Clinical Research.
- Ries JB. The Research Funding Guidebook.

You cannot get a grant

if you do not apply!

Thank You