

How to prepare a compelling grant application

Как подготовить востребованную заявку на грант

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О чем мы будем говорить

- Что такое грант?
- Как написать письмо потенциальному партнеру/свою научную автобиографию?
- Стилистические секреты написания гранта
- Структура заявки на грант

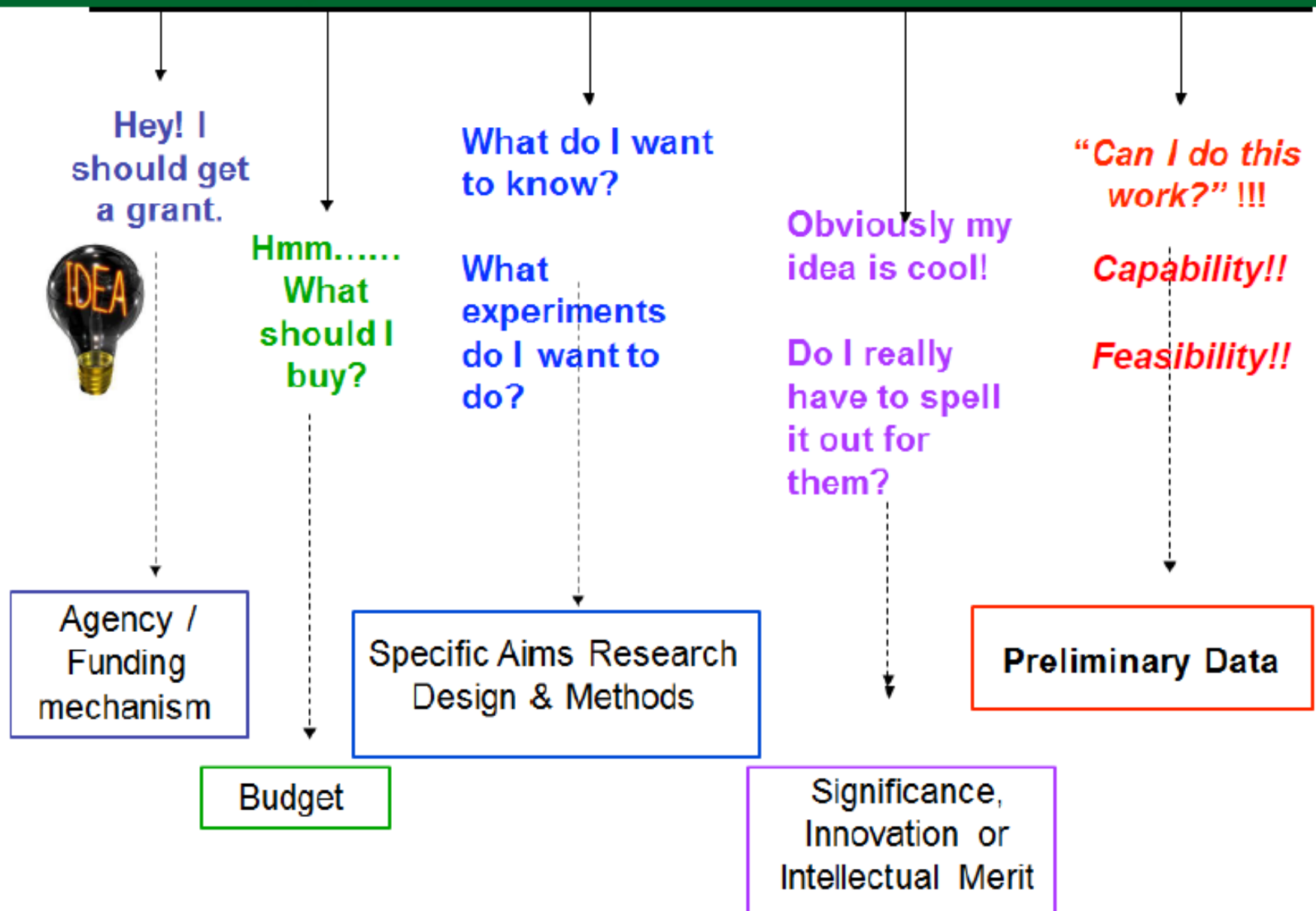
- **Грант** — безвозмездная субсидия в денежной или натуральной форме на проведение научных или других исследований, опытно-конструкторских работ, на обучение, лечение и другие цели с последующим отчетом об их использовании.
- С помощью грантов оказывается необходимая поддержка проектам, которые не являются прибыльными, но **играют важную роль в развитии общества**, города или учебного заведения.

“ Many, if not most of us were not trained as grant writers, but have **had to acquire this skill** in order to survive in the changing university environment. ”

Zane R. Helsel, PhD

Rutgers University

Timeline for writing a grant proposal



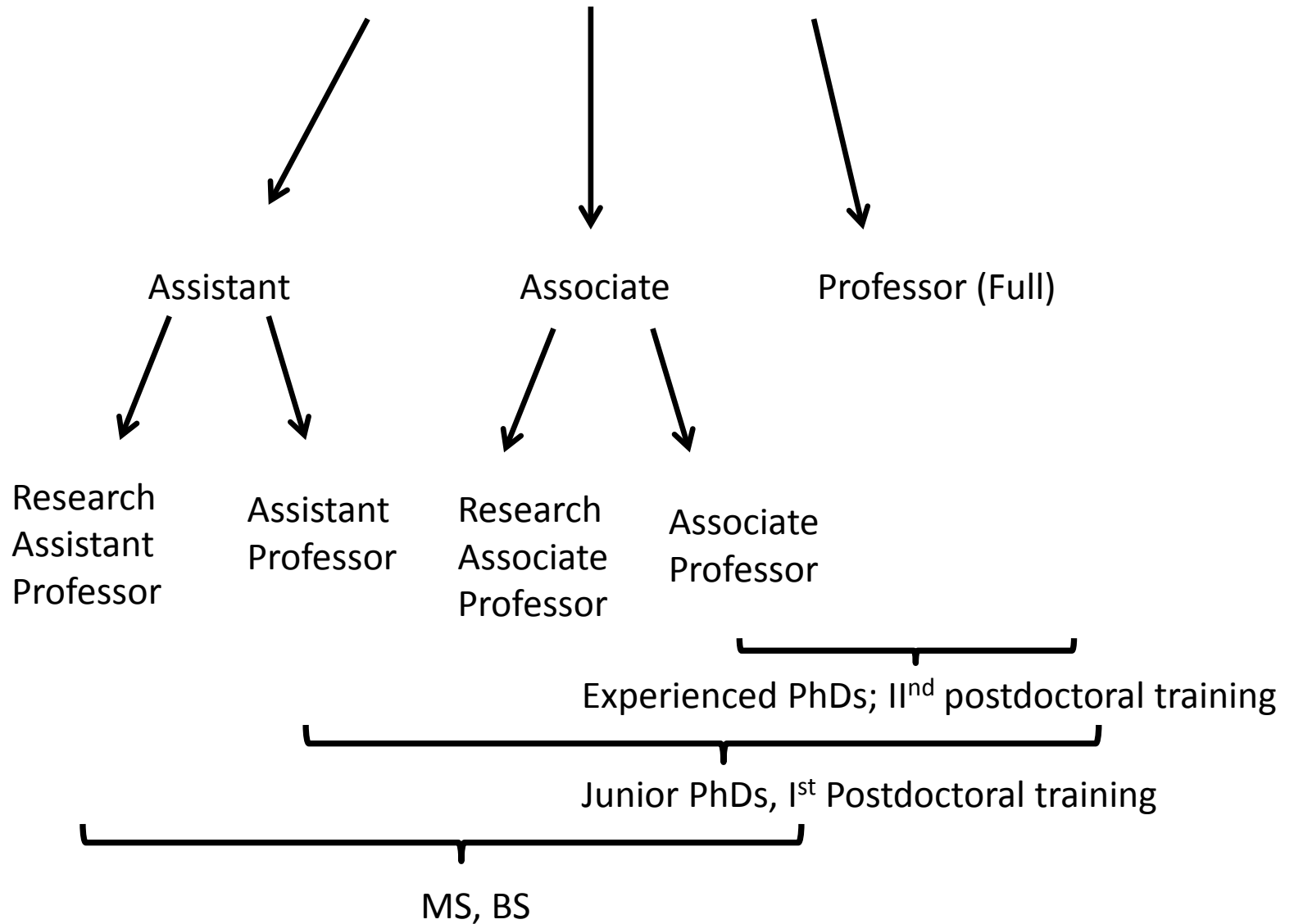
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- 10 шагов успеха при написании гранта
- Структура заявки на грант

Поиск партнера (host institute)

- Это самое легкое!!!
- Используйте Google & PubMed в поисках партнера
- В письме укажите кто вы и что вы хотите
- Будьте предельно четки

Professors



Dear Professor...,

Write your name, where are you from and etc...

I am an early-stage investigator making my first grant (fellowship) application, the goal of which is to establish a new paradigm for

My preparation for this study began during my first training in the laboratory of **Professor (or Dr) His/Her studies focus on...** Important to the proposed study, I have monitored the role.... In addition, I have been trained in multicolor flow cytometry and data analysis. In the course of my (**Your research FIELD**) study, I performed...., which will be the **key** methodology employed in the proposed studies.

Building on my training and research experience in parasitology, I continued my training as a under the mentorship of I have been studying the locomotion of OCPs and osteoclast formation in response to inflammatory stimuli. To accomplish this, I have established the surgical techniques for IVM of circulating OCPs in an experimental calvaria osteolysis mouse model. In addition, I have been trained in the protocols required to carry out the proposed study, namely (**Techniques**). I have also obtained intensive training for sample preparation and data analysis using....

My most recent findings involving that ...**Describe** ... were presented at the meeting in March, 2015, and I was a finalist in the ... Award competition. I am now preparing a manuscript related to....

In summary, my extensive prior experience inhas provided me with the skills and knowledge required to carry out the proposed project, and I look forward to having the opportunity to do so.

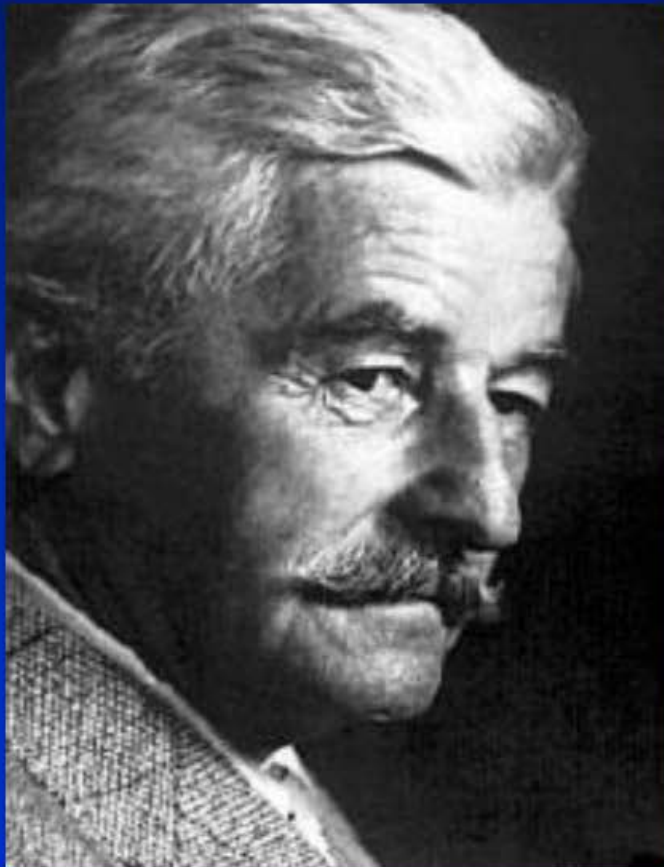
Best wishes or regards, (Do not use Sincerely yours)

Name

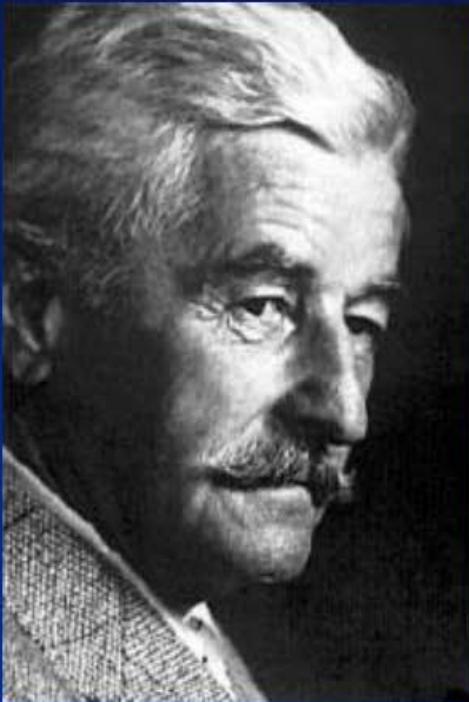
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William Faulkner
vs.
Ernest Hemingway



Faulkner: The Artist



“Loving all of it even while he had to hate some of it because he knows now that you don’t love because: you love despite; not for the virtues, but despite the faults.”

Hemingway: The Journalist



“All you have to do is
write one true sentence.

Write the truest
sentence that you
know.”

The importance of good writing

- Write like Hemingway, not like Faulkner
- Be clear and concise
- Balance clarity and depth
- Be succinct, yet thorough
- Use correct grammar and punctuation
- Proofread! Make a good first impression

Шрифт для написания вашего будущего проекта и статей

- US: Arial, 11-12 pt, 1 line space
- Europe: Arial or Times Roman, 12 pt, 1.5 line space
- **Arial – практичнее, занимает меньше места**

Word Choice

Use the word that conveys your meaning most accurately. When deciding between two such words, choose the shorter word:

Approximately

About

Commence

Begin

Finalize

Finish

Prioritize

Rank

Terminate

End

Utilize

Use

Word Choice

- Use common words outside of the scientific terminology
- Define technical words early
- Never assume that your reader will understand “jargon”
- Always spell out abbreviations at first mention
- Don’t trust spell check
- Proofread, proofread, proofread!

Use strong verbs, not nouns

Make an adjustment

Adjust

Make a judgment

Judge

Make a decision

Decide

Perform an investigation

Investigate

Make a referral

Refer

Reach a conclusion

Conclude

Write tight

At the present time...

Now

Due to the fact that...

Because

It may be that...

Perhaps

In the event that...

If

Prior to the start of...

Before

On two separate occasions...

Twice

Sentence Structure

Sentences are clearest, most forceful, and easiest to understand if they are **simple and direct**.

**Румынский и Русский языки очень мелодичны и красивы,
но ...**

- **Рецензенты – самые ключевые фигуры в вашей заявке**

Write for your reviewers

- Who are they?
 - Intelligent, but may be uninformed about your specific field
 - Have 10 other grants to review
 - May read only your Specific Aims page – not your entire grant proposal
 - Are often reading quickly, under distracting, sub-optimal conditions

Write for your reviewers

- How do you write for them?
 - Provide them with answers to the questions/criteria they are judging
 - » “This proposal is innovative because...”
 - » “The impact of this study is...”
 - No grammatical or typographical mistakes, attractive and clean graphics, legible figure legends, section headings, well-written

Write for your reviewers

- How do you make their lives easier?
 - Use easy-to-read sans serif font (e.g., 11pt Arial)
 - Use section and sub-section headings with distinct formats (e.g., headings in bold 14pt arial, sub-headings in underlines 12pt Arial)
 - Include easy to interpret graphics with appropriately sized text
 - Include white space and figures throughout

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The Ultimate Workflow



Building your Scientific Argument

Data interpretation

Pitfalls and alternative approaches

Advocate for your proposed work

All hats combined

Propose a strategy which best supports your hypotheses (Experimental design)

The geek hat

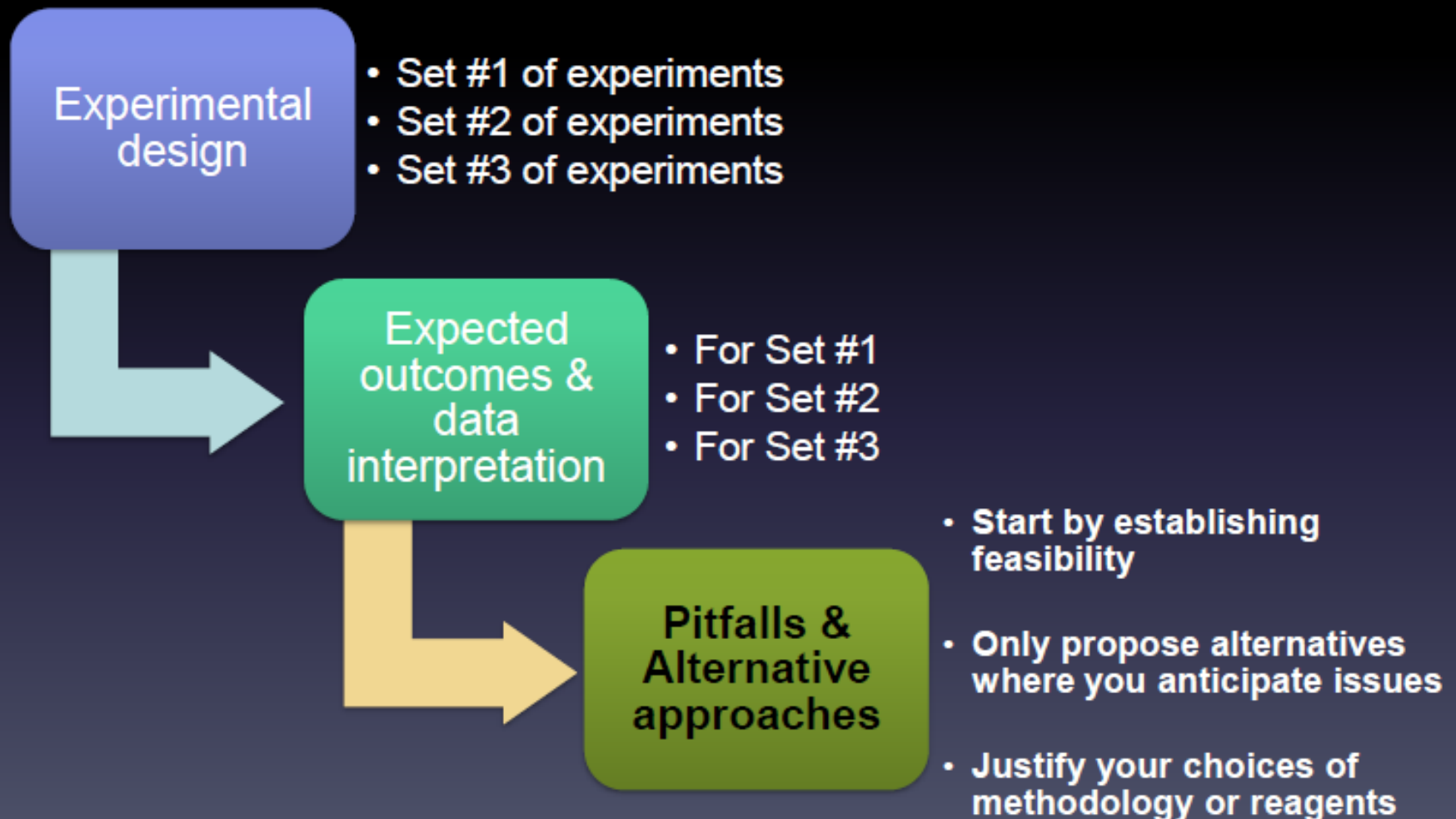
Build an argument that whatever you propose is justified “Rationale”

Advocate hat

Feature your ideas and concepts:
Hypothesis, Significance & Innovation

Salesman hat

Structure and Logic are Key



Specific Aims Overview

- Often considered the most important section in the grant
- The logic of each aim must be compelling
- The impact to the field must be clear
- Whenever possible – test a hypothesis in the specific aim title
- The Specific Aims should be detailed but far reaching – the Aims should not be a list of experiments
- 3 – 4 Specific Aims for a 4 to 5 year grant

Specific Aims Template – Paragraph 1

- What is your project about? State your goal/objective/outcome
- Why is it important? State the significance and overall impact
 - Medical significance
 - Long-term goal/objective of the project

Specific Aims Template – Paragraph 2

- What is known? Provide background related to your research question.
 - This could include data from your lab as part of this background
- What is unknown? What do you hope to accomplish?
- Why is the gap in this knowledge a problem and how do you propose to address it?
 - Rationale of this study – why are you doing THIS project
 - What have you accomplished to date that suggests this approach?
(Preliminary Data)

- Hypothesis driven
- The goal of the aim should be to understand a mechanism, not to just describe a phenomenon

Example:

- **Specific Aim (Version 1):** Perform mechanical tests to examine the role of fibrocartilage on the attachment of tendon to bone
- **Specific Aim (Version 2):** Determine if fibrocartilage is necessary for a functional attachment of tendon to bone
- **Hypothesis:** Loss of fibrocartilage results in reduced attachment toughness

Specific Aims Template – Paragraph 3

- What is your overall hypothesis/hypotheses?
 - Objective of this application
- Explain how you will address your hypothesis using your Specific Aims
- Suggested transition sentence to this section: “We proposed to address this hypothesis using the following specific aims:”
- You may also list a hypothesis for each aim here.
- Address “why” questions rather than “what”
- Aims should be very succinct and include expected outcomes
- If you can briefly include an indication of the expected outcome/significance here, do so

Specific Aims Template – Paragraph 4

- Summary paragraph: what you propose to do,
 - Why it is relevant/SIGNIFICANT to medical science and the field
 - Why your research team is the best team for the project
 - INNOVATION
 - Other salient features (e.g., multidisciplinary investigative team, outstanding clinical and/or laboratory environments)

**Approach - Это непосредственно
детали вашей заявки**

Approach Template

- Major headings

- | | | |
|----------------------------|---|-----------------------------|
| • The research team | ➡ | Investigator score |
| • Overview of the approach | ➡ | Give the big picture |
| • Aim 1 | ➡ | Details of Aim 1 approach |
| • Aim 2 | ➡ | Details of Aim 2 approach |
| • Aim 3 | ➡ | Details of Aim 3 approach |
| • Detailed methods | ➡ | Cite papers for credibility |
| • Statistics | ➡ | Include details |
| • Timeline | ➡ | Required |

Anticipated Results & Data Interpretation

DO's

Discuss anticipated results for all proposed experiments

Cite your own data as a scientific argument for your anticipated results

Use your preliminary data as evidence for feasibility

Cite published work to support your argument

DON'T's

Forget to have an anticipated result section

Pick and choose what you feel like discussing

Speculate without scientific arguments

Save space by shrinking this section

Pitfalls & Alternatives

DO's

Emphasize that no major issues are anticipated

Disclose potential limitations of your approach

Justify the choices you made (perfection does not exist)

Give a sense that you thought about everything

DON'T's

Omit to have pitfalls & alternatives

Be disorganized, contradictory or illogical

Talk about absolute truth

Have a pitfall section that is 10 times more than anticipated results

Example of a Proposed Approach

- **First set of experiment:**

We will perform gain and loss of function in vitro using adenoviral vectors to over-express or abrogate gene X expression in the Y cells.

- **Second set of experiments:**

We propose to perform signaling analyses to identify the pathways used by growth factor Z to regulate the expression of gene X

Bad Example of Data Interpretation

- **First set of experiment:**

We have never performed these experiments before.

Therefore, we do not know what to expect. However, we will find something interesting.

- **Second set of experiments:**

We anticipate that factor Z will use the non-canonical signaling pathway because it is unlikely that the canonical pathway will be involved.

Good Example of Data Interpretation

- **First set of experiment:**

Based on our preliminary data in Figs. ABC, we anticipate that loss of factor X will inhibit cell differentiation. Conversely, we expect enhanced differentiation in the gain of function studies.

- **Second set of experiments:**

Based on the preliminary data presented in Fig D we anticipate that Factor Z will activate both the NFAT and NFkb pathways to respectively induce and inhibit gene X expression in Y cells.

Good Example of Pitfalls & Alternatives

Based on our preliminary data in Figs A-E and our published work, we do not anticipate any difficulty in performing the proposed experiments as outlined.

We acknowledge that some inhibitors may lack specificity. A potential alternative would be to employ a dominant negative form of protein V if we face any non-specificity issues.

Bad Example of Pitfalls & Alternatives

Viral infections are done routinely in the literature so the gain and loss of function will be easily accomplish.

We are using a cell line because it is a widely accepted model.

We know that the inhibitors of pathway X is not specific but it is what everyone uses.

Summary

- A **good** grant is a grant you like; a **competitive** grant is a grant the review panel likes.
- Be the primary reviewer of your own work; you are THE expert in the studies you are proposing.
- Avoid listing the limitations of your study if you cannot providing solutions.
- It is not wise to send a grant for the sake of making a deadline.
- Peer mentorship is as important as senior/junior mentorship when it comes to grantsmanship.

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