

The NIH Grant Writing Experience:

Tips, Tricks, & the Importance of Tenacity

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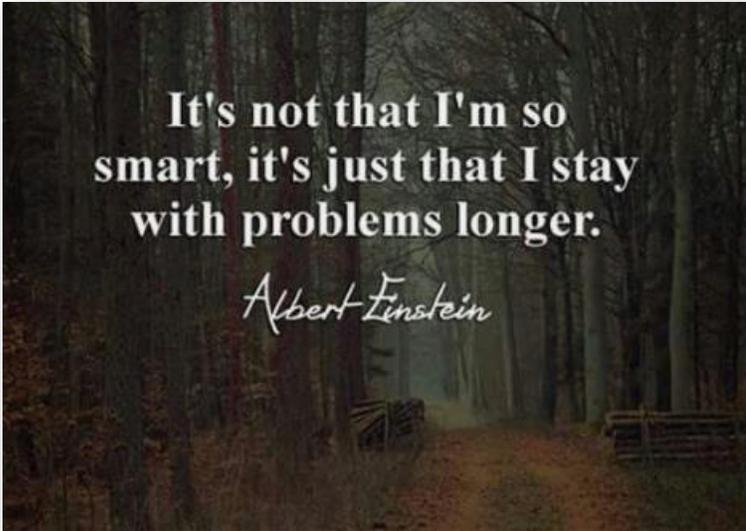
My Grant Writing Journey

- Story: How I learned the importance of clear specific aims and thorough budgeting.
- I think of grants as an entrepreneurial activity and my research program as a small business.
- You are asking NIH to invest in you and your idea and showing that TXST supports this.



The NIH Grant Writing Experience

- The mechanics of the NIH grant experience
- Tips, tricks, and the importance of tenacity



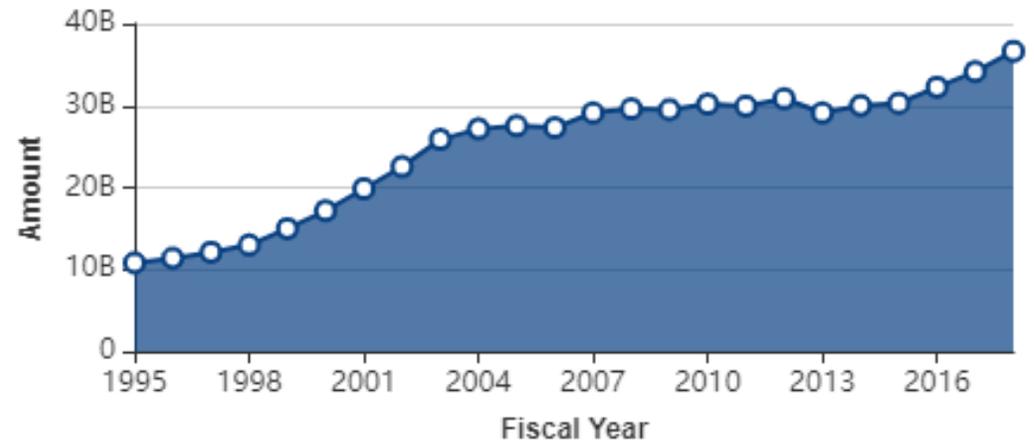
It's not that I'm so
smart, it's just that I stay
with problems longer.

Albert Einstein

Introduction to NIH

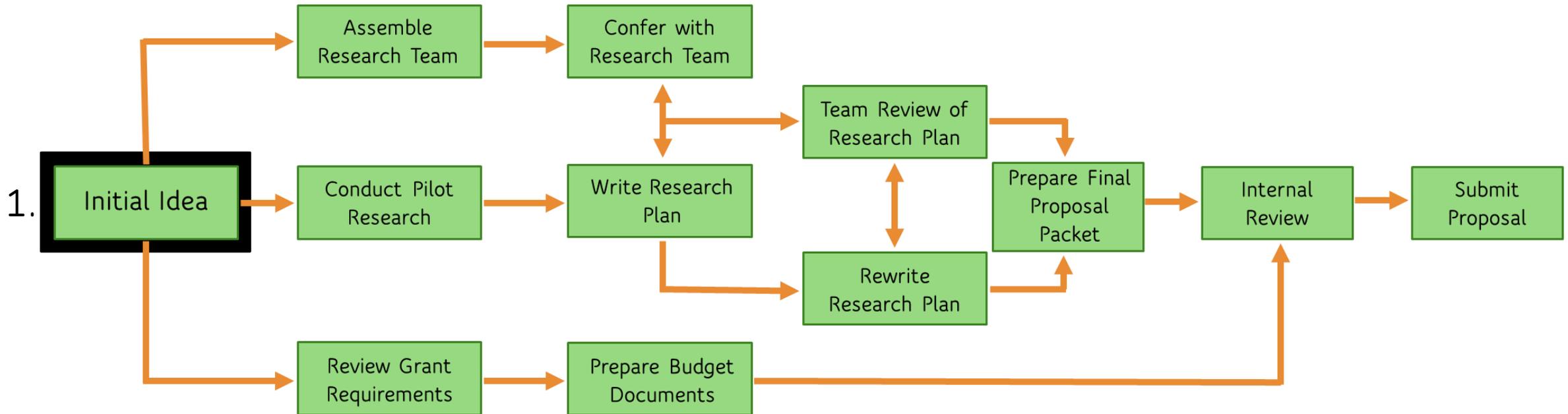
- The mission of the NIH is to improve our nation's health.
- NIH is composed of [27 Institutes and Centers](#) which tend to focus on specific diseases or body systems.
- NIH funded almost \$40 billion worth of activities in 2018.
 - \$20 billion of these funds were directed to extramural research projects like the ones for which we apply.

Amount Trend Total



[NIH, 2021](#)

Writing the NIH Proposal



[Berg et al., 2007](#)

[Horner, 2007](#)

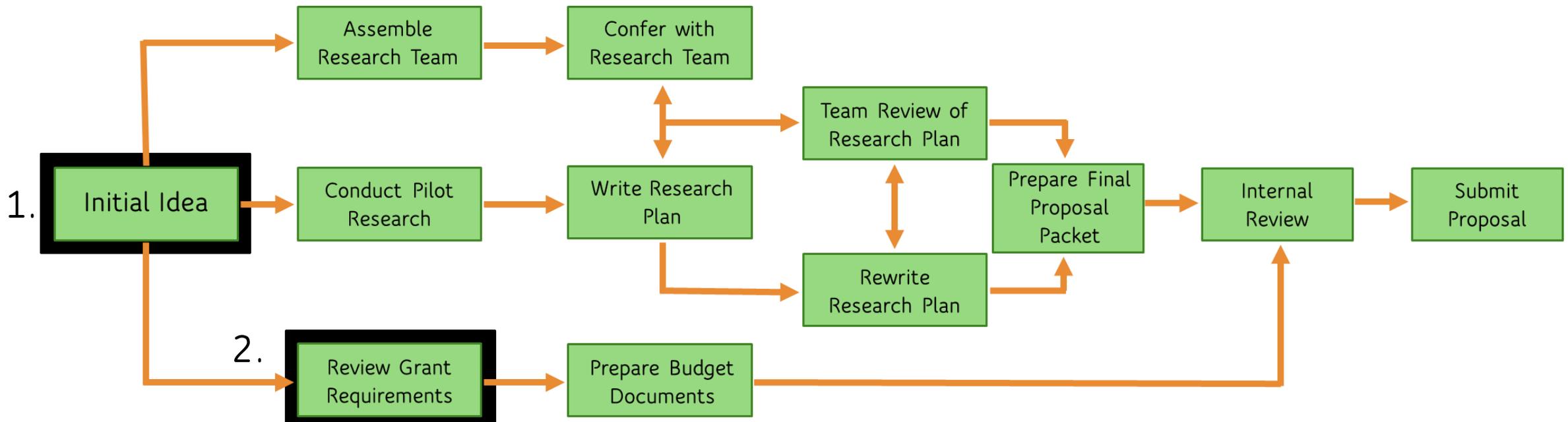
The Initial Idea



- Go to a scientific conference and get inspired! Pay attention to funding priorities in your field.
- Fall down a rabbit hole of scientific literature and discover the gaps!
- Join an [NIH list serve](#) to receive weekly announcements.
- Check out the [NIH RePORT](#) to see what's been getting funded.
- Talk to an NIH Program Officer.

Writing the NIH Proposal

Familiarize yourself with the [due dates](#) for the various NIH grant mechanisms.



[Berg et al., 2007](#)

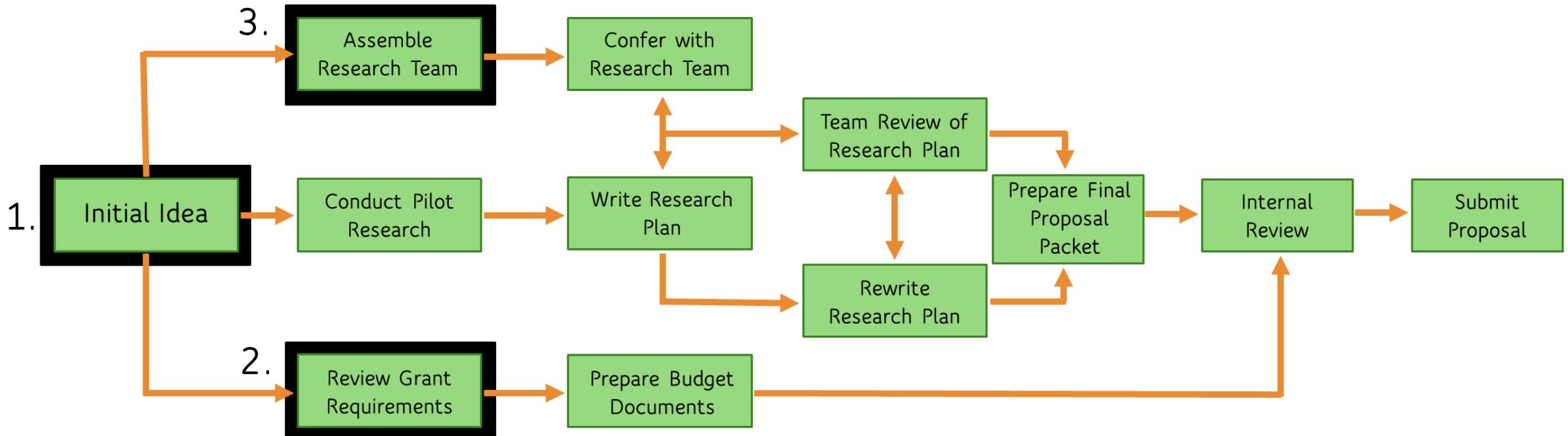
[Horner, 2007](#)

Review Grant Requirements

Let TXST OSP know what your plans are. They can help at each step of the process.

- Which [NIH mechanism](#) is right for you and your idea?
 - Mentored awards (K08, 3-5yrs, \$ varies; K23, 3-5yrs, \$ varies)
 - Pathway to Independence (K99, 2yrs, \$90K / yr; R00, 3yrs, \$249K / yr)
 - Small Grants for Pilots and Secondary Data (RO3, 2yrs, \$50K / yr)
 - Exploratory / Developmental Research (R21, 2yrs, \$275K total)
 - Traditional Research Project (RO1, <5yrs, \$500K / yr)
 - Clinical Trial Planning (R34, 1yr, \$100K)
 - Research Enhancement Award (R15, 3yrs, \$300,000 total)
- Read the [NIH instructions](#) for assembling the grant application.
- Pay attention to any special considerations that might apply to your situation.

Writing the NIH Proposal



[Berg et al., 2007](#)

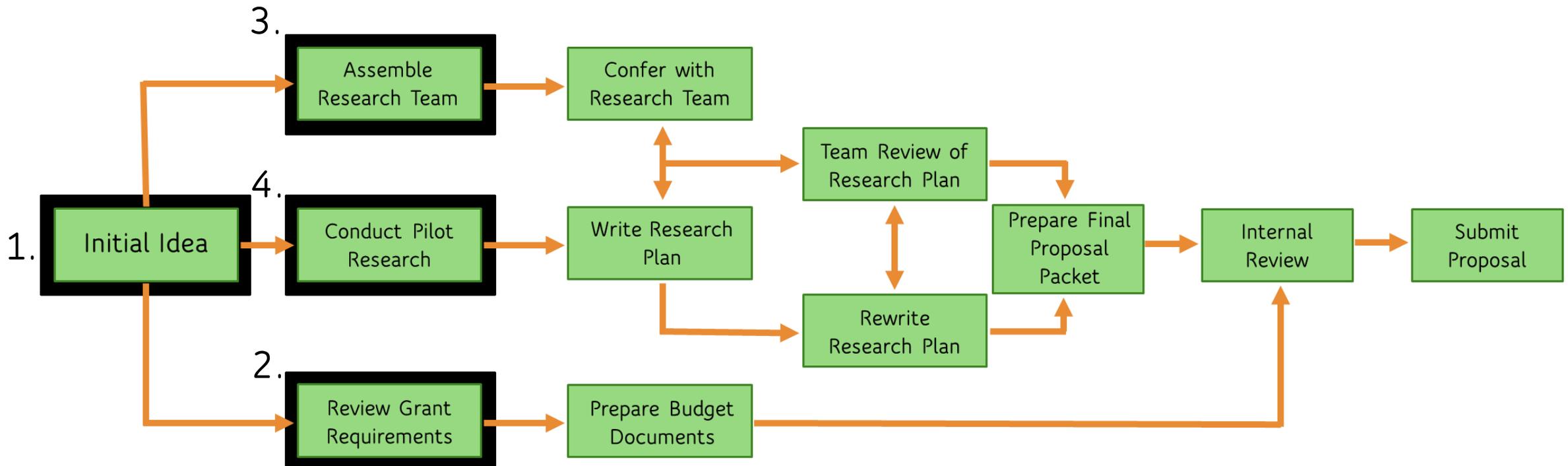
[Horner, 2007](#)

Assemble the Research Team

- Establish evidence of collaboration.
- Engage an external, senior consultant.
- Establish your roles early on.
- Check out this [Useful Advice](#) for support letters.
- ✓ If you haven't already, you should tell your Department Chair what you're up to. You'll need a support letter from them later.



Writing the Proposal



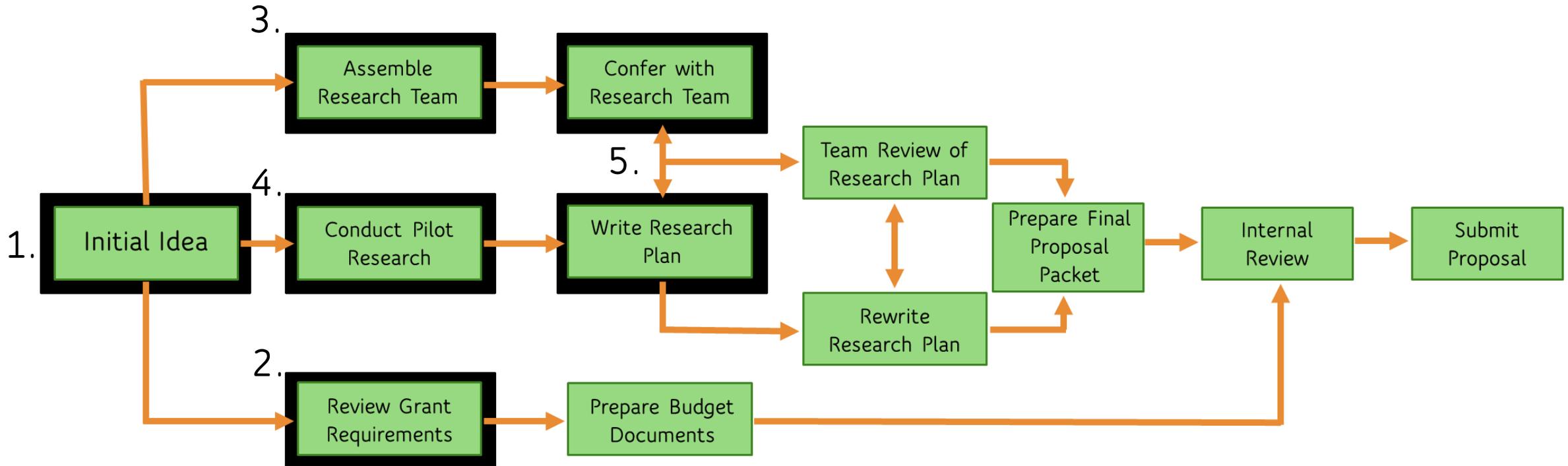
[Berg et al., 2007](#)

[Horner, 2007](#)

Conduct Pilot Research

- Pilot data are always expected.
- Leverage your existing publications; use these to tell a story.
- Show that your idea is feasible.
- Demonstrate that you have already mastered the techniques for the project that you hope to get funded.
- Provide evidence that your team can work together efficiently and produce meaningful results.

Writing the NIH Proposal

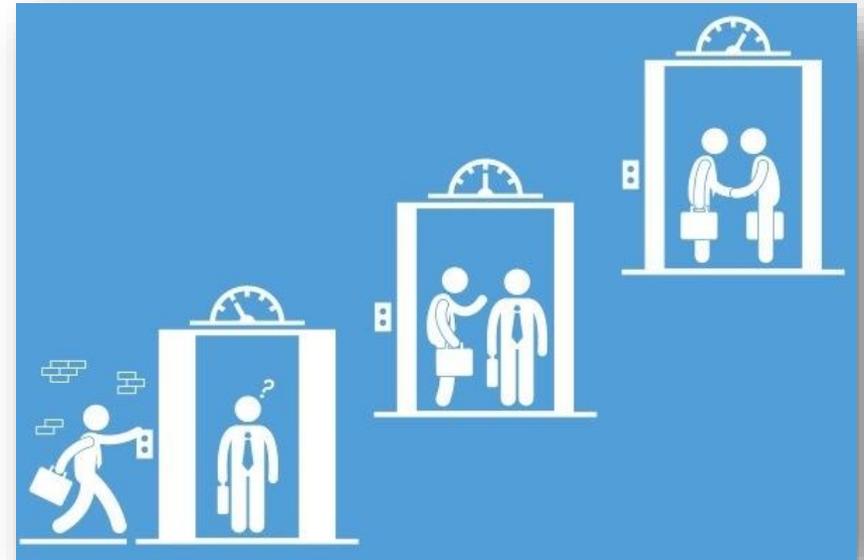


[Berg et al., 2007](#)

[Horner, 2007](#)

Specific Aims

- I think of the specific aims as a polished sales pitch for my project, or my proposal's own "elevator pitch."
- Calmly and clearly tell an unhurried story.
- Draw your reader in. Intrigue them so that they'll be excited to learn more.
- Revise, revise, revise – distill your message . . . what are the key things you want the reviewer to know about your proposal?



Sample Specific Aims

(From R15 grant)

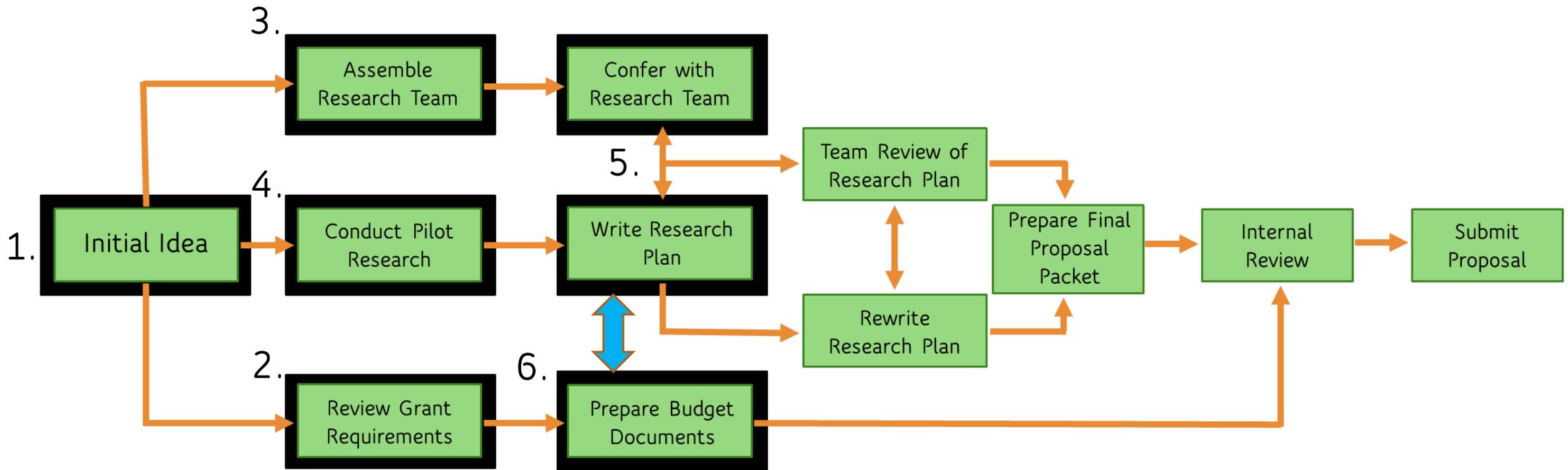
Research Strategy

- Obtain a copy of someone's previously funded proposal for your mechanism.
- Assume the reviewer will not read your proposal from start to finish.
- Address Significance, Innovation, and Approach for your specific aims.
 - Significance: begin section with an overview paragraph identifying gaps in the literature and how your proposal will fill them.
 - Innovation: begin section with a heading literally asking, "How is this proposal innovative?" and then answer this question.
 - Approach: include introduction paragraph, then headings of justification & feasibility (the pilot data), research design & methods (with power analysis), data analysis plan (organized by hypothesis), expected outcomes, potential problems & alternative approaches, and rigor & transparency, and how variables like sex and age will be addressed (if applicable).

Sample Research Strategy

(From R15 grant)

Writing the NIH Proposal



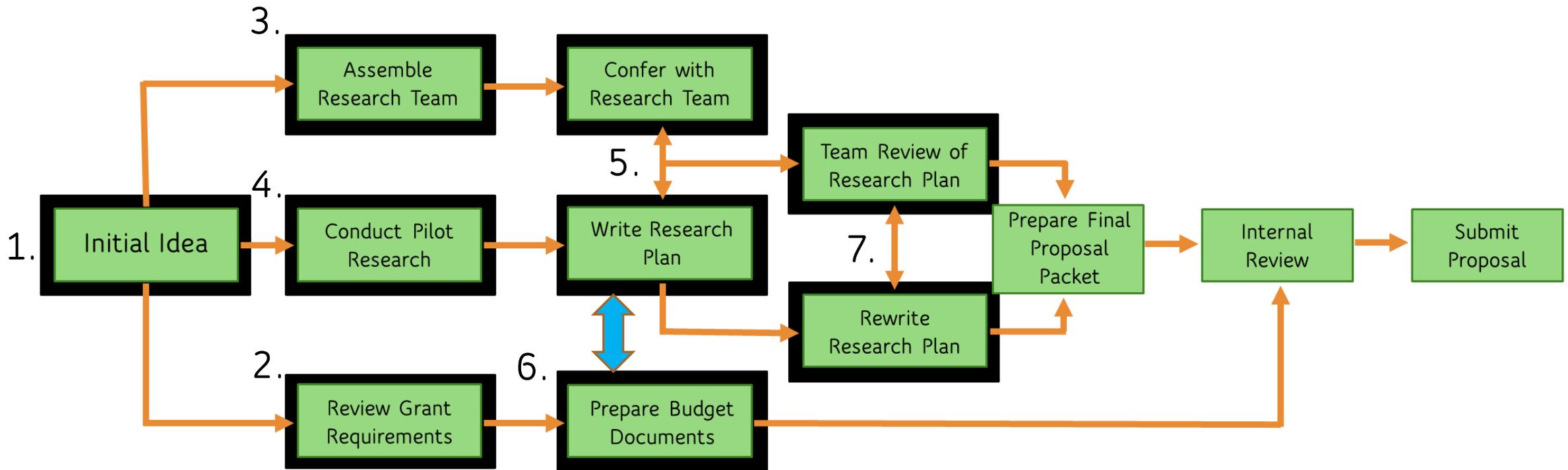
[Berg et al., 2007](#)

[Horner, 2007](#)

Budget Documents

- Obtain budget spreadsheet draft from TXST grants specialist.
- Prepare budget draft in parallel with the research plan.
- Seek external quotes early to allow time for processing, especially in our new COVID reality. .
- Budget an adequate number of course buy-outs to complete the project. (Make sure your Department Chair is aware of your plans early on!)
- Revisit agreements with team members and decide on the distribution of indirect funds.

Writing the NIH Proposal



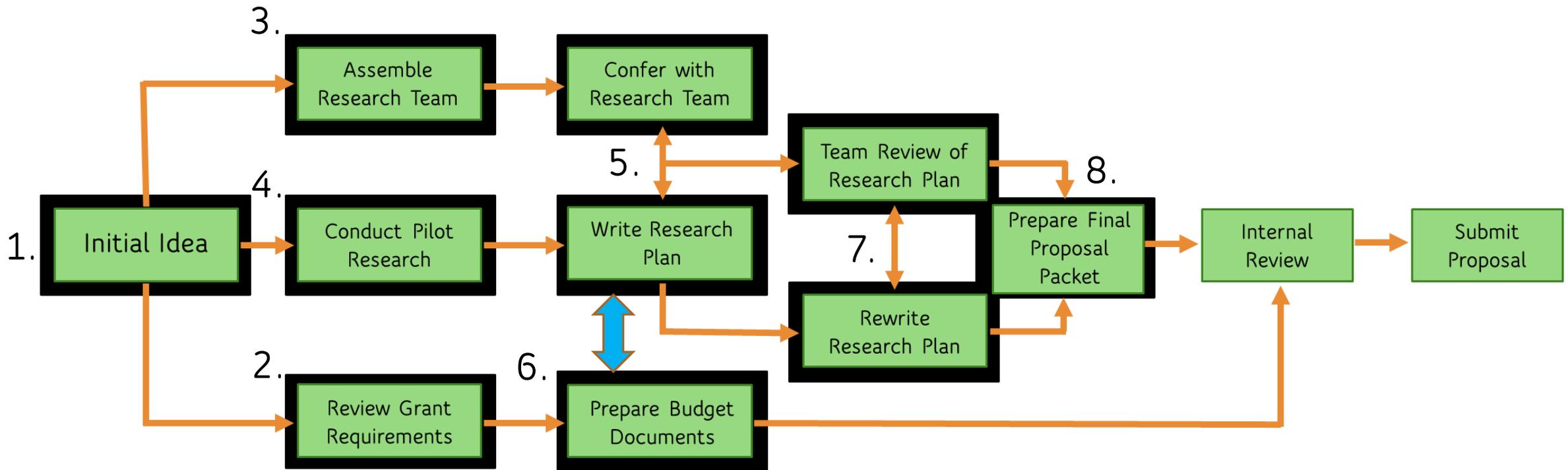
[Berg et al., 2007](#)

[Horner, 2007](#)

Feedback and Revision

- Send draft of specific aims and research plan to all members of the research team, your external consultants & experts.
- Mentally prepare yourself for some constructive feedback.
- Set aside enough time to make meaningful revisions to the proposal.
- There is no great writing, only great re-writing!

Writing the NIH Proposal



[Berg et al., 2007](#)

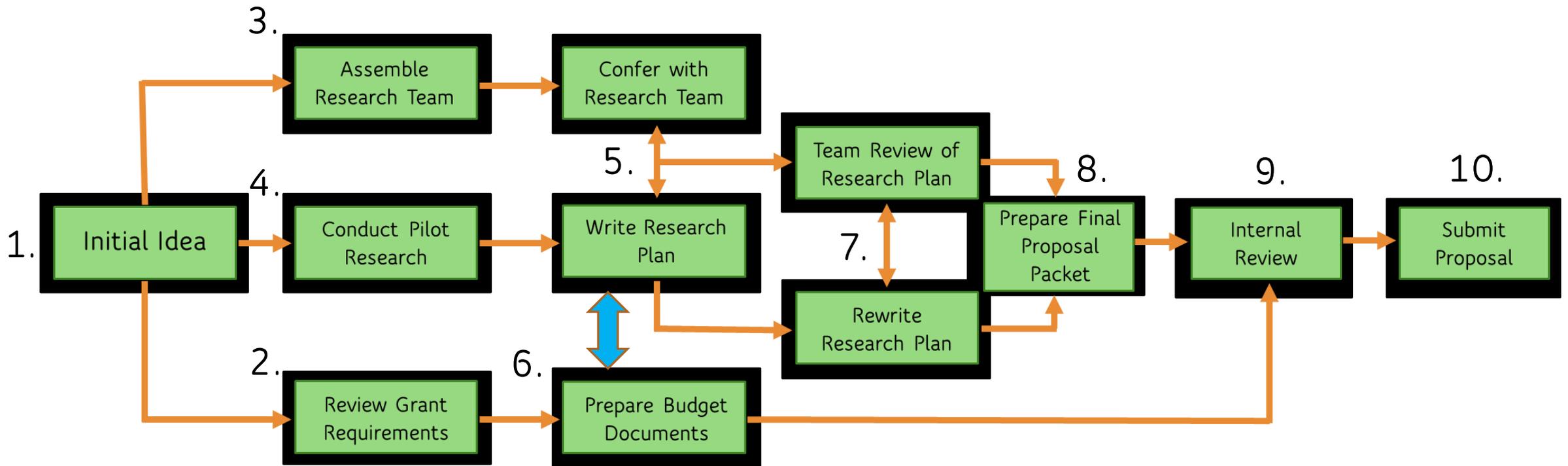
[Horner, 2007](#)

Prepare the Proposal Packet

- Review the NIH Guidance again and make sure you have all required components of the proposal.
 - Biosketches in [latest format](#).
 - Support letters from everyone involved with the project.
 - Support letter from your Department Chair and anything else that would demonstrate “institutional support.”
 - Cover letter indicating which NIH institute(s) and [study section](#)(s) would be appropriate for the application.
 - Don’t forget to address any extra components that might be unique to your specific target mechanism (example: student mentoring plan for an R15).

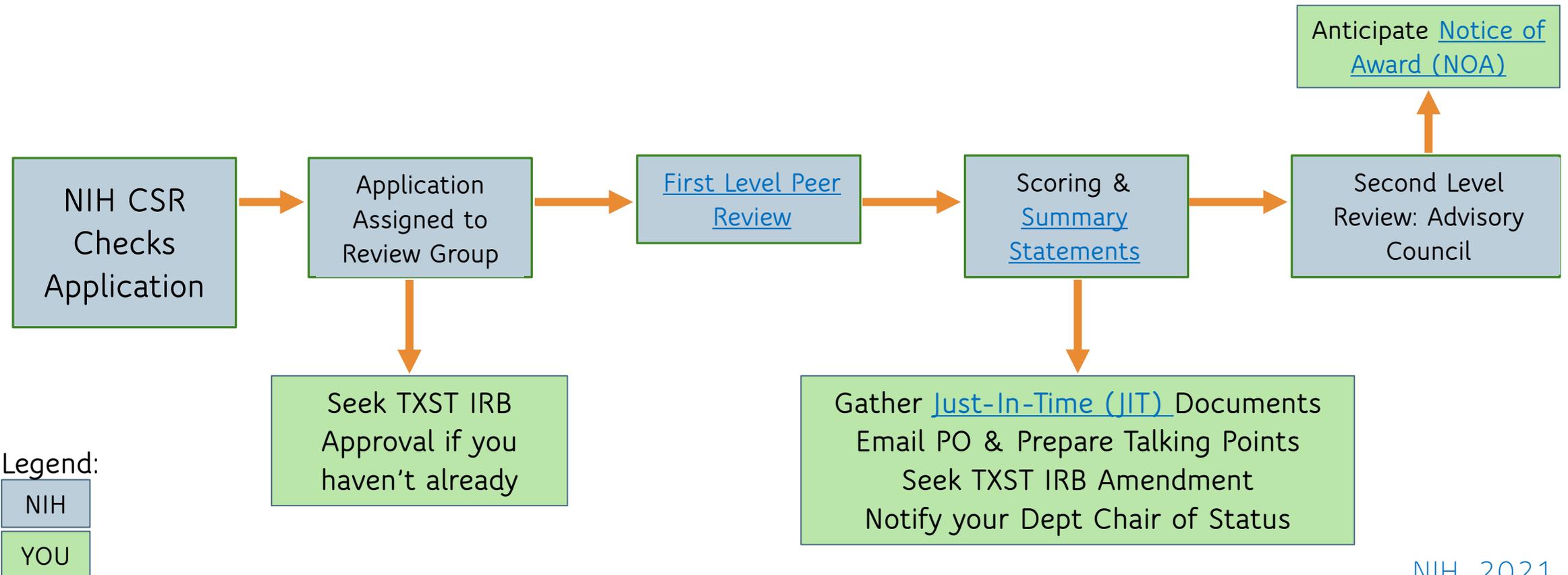
Give them plenty of notice of this earlier in the process!

Writing the NIH Proposal



The NIH Review Process

ALERT: You may be asked to reduce your budget by a certain percentage, especially in our current reality.



I didn't get funded, now what?

- You are not alone.
 - [In 2020](#), there were 43,871 NIH grant applicants, and only 13,130 of these were funded.
 - It's usually worse. At 30%, this was the highest NIH funding rate since 2004.
- In summary, most people don't get funded on the first try.
 - I know senior-level PIs, who have been continuously funded for 30 years, whose proposals go unscored. They just revise and try again.
 - My personal funding ratio is 12:1 (twelve proposals submitted for every one that gets funded). I am not alone in this.

Revise and Resubmit

- Check the [latest guidelines](#) for NIH grant resubmission.
- Pay attention to the reviewers' comments and address as many as possible in the revised proposal. Be respectful in cases where you disagree.
- Write a very compelling introduction to your revision. I think of this as my second chance at the “elevator pitch” and approach it thusly.
 - Here are some [Tips for Revising NIH Proposals](#).
 - Again, make it easy for the reviewer to spot your changes throughout the proposal.

Promote your Research Agenda

- Network. Get out there and meet some people!
 - We are scientists. Some of us are introverts by nature.
- Attend your national organization's conference.
 - Find a PO at the meeting. Talk to them. Be ready to answer the direct question, "why should we fund this work?"
 - Use professional and scholarly social media platforms to make new contacts.

Questions?