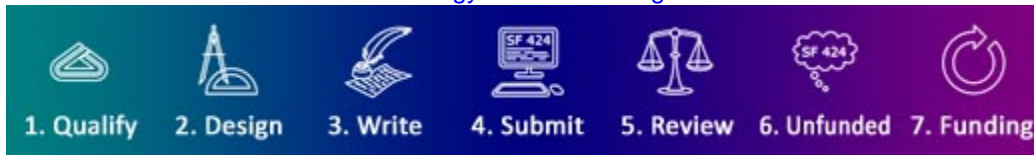1. Qualify 2. Design 3. Write 4. Submit 5. Review 6. Unfunded 7. Funding

Ten Steps to a Winning R01 Application

For your R01 application to succeed, it must meld a highly significant topic with iron-clad feasibility. NIH calls that combination "impact"—which is reflected in an application's peer review results: its overall *impact* score.

When evaluating your application, your reviewers will ask: could the project move the field forward without being too risky? Could you accomplish it within the time and resources at your disposal?

The steps below give you a roadmap for designing a high-impact project that will meet your reviewers' expectations.

Table of Contents

We will add the detailed information for the last steps as we publish the articles in our *NIAID Funding Newsletter*.

Ten Steps—Outlined

If you are a new investigator or entering a new field, start at the beginning. If you are continuing your research, begin with Step 3.

1. Conduct a self evaluation. Assess what field of research you qualify for. To apply for an R01, you'll need significant experience and publications (first or last author) in your field—an area of science like AIDS or TB vaccines or a technology like x-ray crystallography.

To make sure your reviewers agree, evaluate your training, publications, and presentations at scientific meetings.

For more on this topic, read:

- Step 1: Conduct a Self Evaluation below
- Ready for Independent Support? in Part 1. Qualify for NIH Funding in the Strategy for NIH Funding

2. Find a niche. Now that your self evaluation is done, you're ready to identify your own niche in your field.

Your niche is the narrow area in your field (for example, understanding the immune evasion of TB) where you will conduct research and create new knowledge for the next several years. Get our take on finding your niche in:

- Step 2: Find Your Niche below

- Pick a Research Project in Part 2. Pick and Design a Project in the Strategy for NIH Funding

3. Draft two to four (three is most common) Specific Aims you could accomplish in the four or five years of a grant.

In this step, you narrow your niche down to a single project. Create an initial draft of the project's Specific Aims: goals you can accomplish within the timeframe of a grant and with resources you can access.

As you toss around ideas, keep impact in mind. Your Specific Aims need to be able to push the frontiers of knowledge ahead, starting from what's known, as our graphic illustrates.

Expanding the Frontiers of Knowledge

Begin using our Iterative Approach to Application Planning described below.

To further gain more insight into these concepts, visit our Sample R01 Applications and Summary Statements from outstanding funded PIs.

PI	Field	Niches	Project Title
Colin Parrish, Ph.D.	Viral diseases of dogs and cats, concentrating on parvoviruses.	Host range control, receptor binding, antibody binding to viral proteins and capsids, biology of cell entry, and viral evolution for parvoviruses and other viruses.	"Structural controls of functional receptor and antibody binding to viral capsids."
Adam Ratner, M.D., M.P.H.	Pathogenesis of infectious diseases, focused on bacterial diseases affecting children.	Bacterial colonization and host range, evolution and function of bacterial toxins, infectious causes of preterm birth, and epidemiology of pediatric infectious diseases.	"*Gardnerella vaginalis*: toxin production and pathogenesis."

Boris Striepen, Ph.D.	Cell and molecular biology of protozoan parasites.	Function and cell biology of the parasite chloroplast and novel targets for the treatment of cryptosporidiosis.	"Biology of the apicomplexan plastid."
Carolina Wählby, Ph.D.	Methods for high throughput image based screening.	Screening of *C.elegans*, focusing on infectious diseases and fat metabolism.	"Image analysis for high-throughput *C. elegans* infection and metabolism assays."

See the following resources for details:

- Step 3: Draft Specific Aims below

- Draft Specific Aims to Test Your Hypothesis in Part 2. Pick and Design a Project in the Strategy for NIH Funding

4. Identify an institute, review committee, and potential reviewers. Start by making sure NIH has an institute that would fund the research you are considering. Then, look for a study section and potential reviewers who would appreciate your idea for a project.

Check out study section members and their interests, and keep looking until you find an auspicious group to target your application to.

Get more information in:

- Step 4: Identify a Study Section below

- Pick a Research Project, including Use an Iterative Approach to Plan Your Project, in Part 2. Pick and Design a Project in the Strategy for NIH Funding

If you get a negative result at any step after this point, go back to Step 2 or 3, depending on your circumstances.

5. Start sizing up your Specific Aims. At this point, you need to further assess the high-impact Specific Aims you drafted.

Can you justify these aims with preliminary data? Do they lend themselves to a hypothesis (or hypotheses)? Could you achieve your objectives? If not, choose other aims to achieve your goals.

For more on this topic, read:

- Step 5: Size Up Your Specific Aims below

- Strategy to Design a Project in Part 2. Pick and Design a Project in the Strategy for NIH Funding

6. Outline your experiments. After this initial test of your draft Specific Aims, you're ready to start sketching out experiments, timelines, and anticipated outcomes.

As you work through the next steps, use our Iterative Approach to Application Planning to assess and reassess the feasibility of your aims and research design as it develops.
Take a look at:

- Step 6: Outline Your Experiments below

- Design a Project in Part 2. Pick and Design a Project in the Strategy for NIH Funding

7. Define the characteristics of your research team. Make sure you have the necessary expertise to complete all aspects of the research.

If you need more expertise to complete the experiments, consider using a team approach or hiring consultants.

Learn more in Design a Project and Team Science in Part 2. Pick and Design a Project in the Strategy for NIH Funding.

8. Define the resources you can access and those you will need to secure. Reassess whether the project is still feasible with resources you have.

If you do not have access to equipment you require, explore other options such as sharing it with other investigators in your institution or requesting funds to buy it in your application.

For other facts and advice, go to Design a Project in Part 2. Pick and Design a Project in the Strategy for NIH Funding.

9. Divide your research into projects that fit within a reasonable budget. Continuing that thought, ask yourself whether you can get the work done with a reasonable amount of money.

For an R01, most people prepare and justify a modular budget up to $250,000, especially new investigators or those entering a new area.

Go back and check that your plans are in sync with the budget you are planning. Keep in mind that, for most people, personnel costs are the biggest expense.

Get the full scoop in:

- Step 7: Build Your Team below

- Design a Project in Part 2. Pick and Design a Project in the Strategy for NIH Funding

10. Write an application that will excite your reviewers. Now that you have designed a feasible project that will interest your reviewers, start writing.

Make a strong case to your reviewers—convince them that you understand the problem, can perform the research, and have access to necessary resources and expertise.

And write for both your reviewer audiences: those who are subject matter experts in your field and the others who are experts in related fields.

Follow our Strategy to Write the Research Plan in Part 3. Write Your Application in the Strategy for NIH Funding.

Step 1: Conduct a Self Evaluation

To apply for an independent research grant, you'll need expertise in either a scientific field, an area of science like AIDS or TB vaccines or a technology, like x-ray crystallography.

Your qualifications lay the foundation for your grant-seeking efforts: whatever you write in your application is immaterial unless your reviewers deem you able to complete the work you propose.

They will scrutinize your application for your credentials whether you are a new investigator or an experienced one breaking into a new field.

Take Aim

When picking an area to study, most investigators stay in the field where they are already working.

A proven track record builds the confidence of your peer reviewers in your ability to conduct the research.

To assess your qualifications to work in a field, we suggest following these steps.

- Evaluate your training, publications, and presentations at scientific meetings in the field.
- Be critical: look at yourself through the eyes of your future reviewers.
- Ask colleagues or advisors to make the same assessment of you.

If you are still developing your career, take the time to learn about different fields.

Got the Creds?

To get nods from reviewers, you'll need significant experience and a publication record (first or last author) in respected journals or a history of overseeing projects in your field.

If you are trying for your first independent grant, your reviewers will also ask whether you will be able to lead a major research project in that area.

Seasoned grantees wishing to enter a new field may want to start with a small grant type such as an exploratory/developmental research grant (R21) or a small grant (R03) before trying for an R01.

Anyone needing more experience or wanting to change fields should also consider getting more training in the new area.

> Anyone needing more experience or wanting to change fields should also consider getting more training.

You may also want to look into our Career Development Awards (K), which are especially helpful for postdocs.

For example, the NIAID Research Scholar Development Award (K22) lets you gain experience with support. For other institutes, look into the NIH Pathway to Independence Award (K99/R00). NIAID makes very few of these awards, but some other institutes fund a good number of them.

We also support mentored K awards:

- Mentored Research Scientist Development Award (K01)
- Mentored Clinical Scientist Development Award (K08)
- Mentored Patient-Oriented Research Career Development Award (K23)
- Mentored Quantitative Research Development Award (K25)

Read Advice on Mentored Career Development Awards.

Related Links

Find publications

- NLM Databases and Electronic Resources

Find funded projects, experts in your field, their publications and grants, and study sections that reviewed their applications

- NIH RePORTER

Find training opportunities

- Career Development Awards (K)
- Training and Career portal

Strategy for NIH Funding

- [Ready for Independent Support?](#) in [What Funding May You Qualify For?](#) in Part 1. Qualify for NIH Funding
  - Read more about eligibility at:
    - [How to Qualify for NIH Funding](#)
    - [Steps to Determine Eligibility](#)
- [Pick a Research Project](#) in Part 2. Pick and Design a Project, see how to [Hatch a Plan for Your Career](#)
- [Small and Exploratory/Developmental Research Grants](#) SOP

Step 2: Find Your Niche

In this step, we help you find a research niche in your field where you can make a difference.

If "niche" conjures up your own little nook in the world, you're on the right track.

Your niche is an exclusive corner of your field where you could conduct research for the next, let's say, 10 years. (To determine whether you have the expertise needed to apply in a research field for an R01, see [Step 1: Conduct a Self Evaluation](#) above.)

Finding your own niche takes you on a quest:

- Locate the most promising research needs and opportunities in your field.
- Assess whether you have the skills to make an impact.
- Look at the other players and judge whether you can compete.

Your two means to achieving these objectives are networking with people who are in-the-know and searching the literature online.

In the Related Links section below, we give you links to useful research tools.

Look Wide, Dig Deep

In your field of science, you want to work in a unique area (for example, understanding the immune evasion of TB) where you can create important new knowledge.

To home in on one, learn all you can about your broader field (e.g., HIV vaccines).

Start by networking: talk to colleagues and meet new people at scientific meetings to get ideas for opportunities in your field. Listen to the buzz and brainstorm ideas with the experts.

Take notes as you gather information about the research interests of people in your field—some of them may end up as your reviewers.

> Review the literature. See what research has been done and what remains to be done in your area of interest.

As you interact, make an impression, so people will remember you:

- Request something: advice, help, a reagent.
- Inquire about the other person's work.
- Ask questions about the field.
- Follow up with email.

You want to begin networking as early in your career as you can, even while still in school if possible. That way, you can start matching your experience, interests, and abilities with opportunities in science.

After you have some ideas to follow, review the literature to check out your findings and glean ideas for hot topics in the field. See what research has been done and what remains to be done in your area of interest.

Along the way, allow yourself to benefit from serendipity: follow new scientific leads even if they take you in a surprising direction.

Assess Your Competitiveness

Just as you scrutinized your field in light of your qualifications, you'll do the same for your niche.

Ask yourself: do I have the skills to make an impact in this area? For the research needs and opportunities you uncover:

> It's important to carve out your own space, but be aware of the caveats.

- Determine whether you would be competent to pursue them.

- Get opinions on that judgment from people you respect.

- Make sure your strengths match up with potential projects that can move the field forward.

It's also important to carve out your own space, so explore opportunities in empty spaces.

While it's usually a good idea to bypass crowded areas where it's hard to compete with established investigators, make absolutely certain that the area is important to your field—some niches are untouched because they are inconsequential.

In making your decision, get help from colleagues, mentors, and an NIH program officer.

After settling on a research niche to study, you'll be well served by a plan that focuses on a broad goal you'd like to accomplish during the next 10 or so years.

Then you can divide those goals into discrete projects you can accomplish within the four or five years of a grant. Those objectives will become your Specific Aims, which we cover in the next step.

Related Links

Strategy for NIH Funding

- Ready for Independent Support? in What Funding May You Qualify For? in Part 1. Qualify for NIH Funding

- Part 2. Pick and Design a Project

    - Pick a Research Project—see how to Hatch a Plan for Your Career

Find publications

- NLM Databases and Electronic Resources

Find funded projects, experts in your field, their publications and grants, and study sections that reviewed their applications

- NIH RePORTER

Step 3: Draft Specific Aims

After you make up your mind on what area of research to pursue, you are ready to start designing a high-impact project for an application that you can complete within the four to five years of an R01 grant.

Your project will tackle important research within your niche: it must be able to move your field forward without being too risky.

At the Drawing Board

You'll start to hone your ideas by drafting objectives, known in NIH lingo as Specific Aims.

Thinking high level, ask yourself what objectives you could achieve within the timeframe of a grant.

Your goal is to create aims that are achievable in that period and have clear endpoints your reviewers can readily assess.

While you could design a project around two to four Specific Aims, most people create three.

Limiting your application to few Specific Aims keeps you clear of the very common mistake of being overly ambitious. It's much better to think small and propose less than to do the opposite.

Like your topic, your Specific Aims should build on your previous experience.

Form a Gestalt

Although it may seem an early stage to think about experiments and resources, these variables go hand-in-hand with picking a project.

You can't plan experiments with expertise, resources or funds you won't have, so you must take into account all aspects of your research.

Because you have a lot of items to juggle, we recommend using the iterative process shown in the box.

Your goal is to make sure at the planning stage that your aims will excite potential reviewers and be feasible within the time and resources you are planning to request.

If the project is untenable, you will need to rethink your experiments or even your Specific Aims.

Hypothetically Speaking . . .

Why do you need a hypothesis (or multiple hypotheses)? Because that's what reviewers expect!

Some people write their Specific Aims first and then develop a hypothesis; others do the reverse—use the approach that works best for you.

A strong hypothesis should be well-focused and testable by the Specific Aims and experiments.

Iterative Approach to Application Planning

1. Staying in your niche, propose a project that:
   - Addresses a highly significant problem.
   - Is innovative—can create new knowledge.

2. Outline draft Specific Aims and one or more hypotheses.

3. Identify a potential funding institute and a study section that would likely embrace your research.

4. Outline experiments.

5. Assess feasibility.
   - See whether you have access to all needed resources and expertise.
   - Make sure the project is not growing too big for your targeted time and budget.

6. If you hit a roadblock, go back to the failure point and revise your plans.

After you create your hypothesis, go back and take stock again of your prospective reviewers in light of your draft aims and hypothesis to gauge whether you think they will applaud your ideas.

Your reviewers must believe that your hypothesis is sound and important so your research can make a high impact on its field, a topic we'll explore in the next step.

Related Links

Strategy for NIH Funding

- Part 2. Pick and Design a Project
    - Strategy to Pick a Project
        - Pick a Research Project
    - Strategy to Design a Project
        - Design a Project

Sample R01 Applications and Summary Statements

Step 4: Identify a Study Section

Whereas the first three steps view your funding quest from the vantage point of your qualifications and resources, this step looks at how your idea dovetails with the NIH peer review system.

Then it peers even further, into the minds of your reviewers.

Tell It to the Judge

Not only are your reviewers the main audience for your application, they are its judge and jury too.

At the end of the day, the primary basis for our funding decision—your percentile rank for an R01—is the result of their deliberations.

Propose research that both you and your prospective reviewers will care or, even better, be excited about.

Since only a small percentage of applications succeed, you'll want yours to stand out.

When submitting an investigator-initiated application (i.e., not through a request for applications), you will lay the groundwork for success by proposing research that both you and your prospective reviewers will care or, even better, be excited about.

Try to adopt their perspective to figure out what they would regard as new and important, so they'll sit up and take notice. That approach will put you on that path of creating an application that appeals to the people who, more than anyone, will determine its fate.

You've Got Homework

NIH's Center for Scientific Review (CSR) manages more than two hundred review committees.

They cover the gamut of scientific pursuits from basic to clinical and behavioral research, technology-based studies, and applied research for all human diseases and a plethora of scientific disciplines.

Rethink the project if reviewers would be unlikely to appreciate the significance of your field and project or share your scientific perspective.

If you are submitting an investigator-initiated application, you'll be well served by taking the time to learn about the committees most relevant to you so you have that critical knowledge at all steps of application planning.

You'll need to assess and reassess your potential reviewers when you:

- Choose a project
- Evaluate your choice of project
- Write the application

Here's how to find committees and people.

- Review CSR's Descriptions of the Integrated Review Groups, Study Sections, and Small Business Activities of CSR or use the Roster Index for Regular Standing Study Sections and Continuing SEPs.
- Find roster links at the top of the study section pages.

After homing in on a few study sections, assess whether the members would appreciate the significance of your field and project and whether they would likely share your scientific perspective. If not, rethink the project.

Identify the three to five people who would most likely be your assigned reviewers. For each one, answer this question: would this person be enthusiastic about my project?

Then conduct some research of the committee members—visit their Web sites and read their publications so you can choose the study section that's right for you.

While you can't know for certain who your reviewers will be, you can identify people who would either serve as your assigned reviewers (primary and secondary reviewers and readers) or who have similar expertise.

Play It Safe

Nothing about this process is assured.

But having your application reviewed by people who will appreciate your research is so critical that we strongly advise you to do the analysis we've described.

> For multidisciplinary work and highly innovative work, it can be very hard to find a study section that combines expertise from many disciplines.

Make sure the needed expertise will be there.

- Request the required expertise (not named people) in your cover letter.
- After you apply, check the final roster online. It's posted around 30 days after the receipt date—you may want to add this important event to your calendar.

For multidisciplinary work and highly innovative work, it can be very hard to find a study section that combines expertise from many disciplines, and you can't count on the addition of ad hoc reviewers.

(If you go that route, you'll need to spend more thought and time explaining areas that might be unfamiliar to most of the reviewers in your application.)

If you don't think NIH has an appropriate study section for the research you are contemplating, rethink the project.

Related Links

CSR

- Descriptions of the Integrated Review Groups, Study Sections, and Small Business Activities of CSR
- Roster Index for Regular Standing Study Sections and Continuing SEPs

Strategy for NIH Funding

- Design a Project in Part 2. Pick and Design a Project

- Investigate Committees and Members in Know Your Audience in Part 3. Write Your Application

- Create a Cover Letter in Part 4. Submit Your Application

- Part 5. Assignment and Review

Sample R01 Applications and Summary Statements—find examples of outstanding funded applications

NLM Databases and Electronic Resources—find publications

NIH RePORTER—find funded projects, experts in your field, their publications and grants, and study sections that reviewed their applications

Step 5: Size Up Your Specific Aims

Here we show you how to put to the test your draft objectives—Specific Aims—you have planned for your project.

Though we are following the steps shown in Iterative Approach to Application Planning above, this step provides an extra check of your aims in light of the study section you identified.

Take Aim

Start assessing your Specific Aims by taking a hard look at the significance and innovation of your planned research.

Ask yourself:

- Would my reviewers see my proposed project as tackling an important problem in a significant field?

- Would they view my Specific Aims as capable of opening up new discoveries in my field?

- Would my reviewers regard the work as new and unique?

You'll want to get outside opinions for a fresh perspective. Don't assume others, including your reviewers, will consider a research area to have the same priority that you do.

Target those who are in your field and those who are not. It's highly likely that at least one of your assigned reviewers will not be in the field.

Also discuss your draft aims with colleagues who also aren't in your field. If they can understand your project and get excited about it, you have a better chance your reviewers will as well.

At this point, you may want to go back to Step 3: Draft Specific Aims, so you can be as certain as possible that the committee will appreciate your research plans.

Be Innovative but Stay Mainstream

Although innovation is one of the five peer review criteria, many experienced investigators report that it's difficult to succeed in review with highly innovative research.

Heed these words from an investigator who is a PI of an NIH New Innovator Award.

"It's always more difficult to convince people against commonly held beliefs (even though they may not be based on experimental data). Moreover, due to the higher risk of our work, we may also have a higher failure rate," says Sanjay K. Jain, M.D., of Johns Hopkins University School of Medicine and Bloomberg School of Public Health.

As you scrutinize your Specific Aims, make sure your reviewers will view them to be within the scientific mainstream.

You can think of your research as a fish in the river of scientific knowledge. While you can swim anywhere, you have to stay in the water.

Reviewers expect the same idea: your research can be somewhat innovative—at the water's edge—but not so innovative that it's out on the bank.

So the research you propose should be new and unique and able to push forward the frontier of knowledge just ahead starting from what's known, as the Expanding the Frontiers of Knowledge graphic we showed above illustrates.

When you write your application, you'll put the information about your project's importance and innovation in the Significance and Innovation sections.

Get an idea of how investigators who wrote outstanding applications balanced these complexities by viewing our Sample R01 Applications and Summary Statements, and read more advice on the pages linked below.

Related Links

Strategy for NIH Funding

- Design a Project in Part 2. Pick and Design a Project
- Investigate Committees and Members in Know Your Audience in Part 3. Write Your Application

Find publications

NLM Databases and Electronic Resources

Find funded projects, experts in your field, their publications and grants, and study sections that reviewed their applications

NIH RePORTER

Step 6: Outline Your Experiments

This step goes further into the iterative approach that helps you design an innovative and feasible project in a highly significant research area.

Mapping It Out

Now that you have assessed your Specific Aims and are confident they are up to snuff, it's time to sketch out two or three sets of experiments, each likely taking several weeks to complete.

As you work, keep the following questions in mind:

- What are the anticipated outcomes of the experiments?
- Can they conclusively accomplish the aim?
- Is the scope of the project (number of experiments, complexity, money) appropriate to my demonstrated (relevant preliminary data and publications) skill level?

It will help to start a running tab of "who, what, when, where, and how (much money)." That approach gives you a reality check as you plan and ultimately can save you time.

Research usually takes longer than people think it will, so plan your research design with that thought in mind.

Get help if you have never judged timing before or are unsure how long some of your planned experiments are likely to take.

Use a "Wholistic" Approach

Your experimental design—the nitty-gritty of what you will actually do—must enable you to achieve the Specific Aims you describe and test your hypothesis.

For planning purposes, your Specific Aims and research design work in a feedback loop: your aims lead to your experiments, which determine your budget and personnel needs.

But the experiments you can design are limited by the accessibility of people and resources and desired scope of the project.

Using our Iterative Approach to Application Planning is key to ensuring that all aspects of your application stay in sync and in scope as you plan the various parts.

For example, let's say you have an idea for a project that you believe your review committee would judge to be highly significant.

You sketch out a reasonable number of Specific Aims, but when you start designing the experiments you find you cannot gather all the expertise needed to conduct them.

- First, go back to Step 3 and see if there are different experiments that would meet your objectives with the expertise at your disposal.

- If that doesn't work, return to Step 2 and create new aims or even to Step 1 and start over with a new project.

Note that your experimental design is a proposal whose goal is to convince your reviewers that you can create a cogent plan.

Your research may ultimately take you down a different path, which you may do as long as you are contributing to scientific knowledge. Read more on that topic in What Is a Grant?

Set Boundaries

How do you know whether the scope of project is appropriate to your skill level?

If you are new to grant writing, you may want to get advice from your program officer or other respected sources.

Creating a conservative timeline together with the running tab we described above will help you keep expectations in line with reality.

> If you find yourself trying to squeeze too much into your Research Plan, i.e., overloading on Specific Aims, now is the time to step back and reassess.

If you find yourself trying to squeeze too much into your Research Plan, i.e., overloading on Specific Aims, now is the time to step back and reassess.

Be realistic about what you can accomplish. But know that even if you are a new investigator, it's fine to ask for five years—the maximum—for an R01 as long as you can fill the time productively.

Related Links

Strategy for NIH Funding

- What Is a Grant? in Getting a Grant for Innovative Research
- Part 2. Pick and Design a Project
  - Strategy to Pick a Project
    - Pick a Research Project

Step 7: Build Your Team

Top-notch expertise lies at the heart of your project's feasibility, so expect your reviewers to scrutinize your team's credentials closely.

For an R01 application to succeed in peer review, you'll need to convince them your team is able to complete your proposed research.

In this step, we show you how to meet that expectation.

Here we take you further into the design, focusing on people, while working within the iterative framework you've been relying on to plan effectively.

Make the Pieces Fit

Most projects rely on various types of expertise to carry out the different parts of the research.

For each experiment, you'll need to figure out the know-how required and make sure you can secure it.

To get there, go through the Iterative Approach to Application Planning shown above.

As you design your Specific Aims and experiments, you'll assess the expertise you'll need, while making sure you stay within your targeted budget.

Though we don't delve into budget planning until Step 9, you will need to consider money when you plan for personnel, your biggest expense.

In these times of tight budgets, your best bet is a modular budget—up to $250,000 in annual direct costs—if you can accomplish your goals within that limit. Most people request $250,000; some ask for $225,000.

In a typical scenario, you can figure personnel will come in at about 80 percent of your budget, and equipment and supplies at around 20 percent.

Even so, you will be able to hire only a limited number of people.

Once you have determined who they are, your institution can give you the salary levels for each type of worker. Then you can calculate costs based on their level of effort (which you will also need for your application's Budget Justification).

In the application, you will specify all key personnel (including collaborators and consultants) by name; for technical staff, note the position only.

Use the Credit Card

Get commitments from collaborators at the planning stage, so you don't waste time designing work you cannot

Most of the technical staff you hire will likely work on your grant full-time.

Others, especially senior-level collaborators, will work part-time for credit (e.g., the potential of future publications), rather than pay.

> deliver.

It's often a good idea to expand your pool of expertise by recruiting expert consultants and collaborators, especially those who are known and respected in the field.

If you are a new investigator, adding these highly experienced people to your team will help build your reviewers' trust in your future success.

But while collaborations are common, there are some drawbacks.

For one, you will not have control over the execution of that part of the research, for example, the timing of your collaborators' actions. Or something may come up and they may back out at the last minute.

Another issue—which you should decide on at the outset—is the order of authors on future publications. Your collaborators will want to use the data they generate for their grant too and may see themselves as the lead.

Note that collaborators differ from consultants:

- Consultants usually provide advice or services that fill small gaps, for example, supplying software. They usually receive a fee rather than a salary from your grant.

- Collaborators play an active role in the research. A grant may pay part of their salary through a subaward (or not as we noted above).

If you decide to include outside consultants or collaborators (or both), secure a written agreement at the planning stage, so you don't waste time designing work you cannot deliver. You'll include this agreement in your application.

Here are some questions to consider:

- Is the collaborator in your institution?
    - If not, what inter-institutional agreements may be necessary?
    - You might want to look at multiple PI agreements as an example.
- What intellectual property arrangements do you need to make?

Read more about these arrangements in Consultants or Collaborators—How They Differ in the Strategy for NIH Funding.

Up for a Multiple PI Application?

Another way to beef up expertise or create a research team is to be part of a multiple PI application.

Think carefully before you decide to go this route especially if you are a new investigator.

> If your application includes an established PI, it will not qualify for the new investigator payline.

Unless all the PIs on a multiple PI application are new, you will not benefit from your new investigator status, and you will lose it for future applications. Read more in Are You "New"? in our New Investigator Guide to NIH Funding.

We can think of a number of reasons that multiple PI applications are often better suited to people who already have grants.

- It's important that new investigators establish their own identity, which can be more difficult in a multiple PI situation.

- It can be more challenging to write a multiple PI application because it is more complex. It can be harder to manage too.

- You are more locked into the research you proposed when another person is involved than you are when you are on your own. (Read more on that topic in What Is a Grant? linked below.)

Note that the multiple PI option is for collaborative, usually multidisciplinary, research and is usually appropriate only if you are in different fields and could not complete the research without the other person.

(When you apply you'll need a detailed leadership plan that describes the governance of the project and justifies use of multiple PIs.)

Despite these caveats, a multiple PI application can be useful for research that needs a team science approach. Learn more about the pros and cons of working on a team on our Team Science page in the Strategy for NIH Funding.

If you are conducting multidisciplinary research, make sure NIH has a review committee that will be able to effectively review all aspects of the application.

Not yet ready for an R01? Explore other ways of participating on a grant besides being a principal investigator, such as leading a project on a program project grant. Read more in Not Ready for Independent Support? in the Strategy for NIH Funding.

Related Links

Strategy for NIH Funding

- Part 2. Pick and Design a Project
  - o Strategy to Design a Project
  - o Design a Project
    - Consultants or Collaborators—How They Differ
    - Assess Feasibility
      - What About Expertise?
      - Should You Consider a Multiple PI Application?
- What Is a Grant? in Getting a Grant for Innovative Research

Sample R01 Applications and Summary Statements—find examples of outstanding funded applications

Next Steps
We will add the next steps as we publish the articles in our *NIAID Funding Newsletter*.

- Step 8: Define Resources—to come February 29, 2012

- Step 9: Nail Your Budget—to come March 14, 2012

- Step 10: Write to Excite—to come March 28, 2012

Strategy for NIH Funding

1. Qualify 2. Design 3. Write 4. Submit 5. Review 6. Unfunded 7. Funding
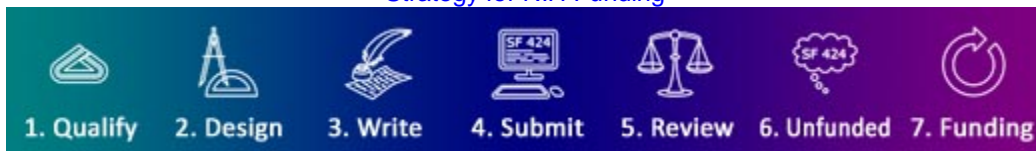
We welcome your comments, questions, or suggestions. Email deaweb@niaid.nih.gov.

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