Grant Writing Guide

This guide is designed to support you through the process of preparing a strong and competitive application for an ANRF grant. In the pages that follow, you will find tips and best practices for each component of the application. We also highlight common pitfalls and offer strategies to help your proposal stand out to reviewers.

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Supporting Plans:

Career Development Plan:

The career development plan is an area to discuss where you would like to see your career take you, and how you got to where you are, and this project, now.

Example:

Career Development Plan – discuss your future plans in the space provided. Include brief history of your (applicant's) association with the research institution, background leading to development of this project, etc.

*** Career Development Plan**

I joined XX University as a postdoctoral fellow in the Division of Rheumatology in 2019, following completion of my MD/PhD training, and was promoted to Instructor in 2023. My research interests have consistently centered on the intersection of immunology and autoimmunity, with a specific focus on T cell dysregulation in Rheumatoid Arthritis (RA). Over the past several years, I have had the privilege of working under the mentorship of Dr. Smith, whose expertise in translational immunology has profoundly shaped my scientific development.

My current project builds upon foundational work I began as a fellow, where we identified a subset of synovial tissue-resident memory T cells that appear to persist in RA joints despite clinical remission. These cells exhibit a unique transcriptional profile suggestive of both cytotoxic potential and long-term survival capacity. My preliminary data suggest that this population may contribute to disease flare and resistance to therapy.

This project represents a natural progression of my research, aiming to define the functional role of these T cells and assess their potential as biomarkers or therapeutic targets. The proposed studies will employ single-cell RNA sequencing and in vitro functional assays using patient-derived samples, leveraging institutional strengths in both bioinformatics and clinical rheumatology.

Looking ahead, my goal is to establish an independent research program focused on tissue-resident immune cells in autoimmune disease. I am committed to a career as a physician-scientist and am deeply motivated by the translational potential of my work to improve outcomes for patients with RA. This grant mechanism represents a critical opportunity to generate the data needed for future R01-level applications and to solidify my transition to independence. I am grateful for the support and scientific community at XX University, and I am excited to continue contributing to advances in autoimmune disease research from this academic home.

Tips:

- Best practice is to frame this section in the past, present, and future for ease of understanding for the reviewer.
- Discuss what makes you uniquely adept at answering the question you're posing. Highlight how past experiences (training, mentorship, key findings) have informed your current research focus.
- Reviewers want to see that you're on a path toward becoming an independent investigator.
- Include accolades, metrics, and partnerships that support your career success.
- Show commitment to a research career. Reviewers want to fund researchers with the potential to become leaders in the field.
- Make it clear you are not simply extending your mentor's work, even if your projects are related.

Project Ownership Plan:

The project ownership plan is an area to discuss how the mentor(s)/PI and the applicant agree upon the ownership of the project and the resources generated.

If you operate your own lab, simply state that you lead an independent laboratory and will have full ownership of the resources generated through the project.

Example #1:

Project Ownership Plan – discuss how the Mentor and the Applicant agree upon the ownership for the project and resources generated therein. Describe what part of the proposed project belongs to the Applicant, and whether the Applicant has overall responsibility for and ownership of this portion of the project. Describe what portions (materials, resources, tools, etc.) of the project the Applicant will take to an independent research position and use to pursue additional grant funding.

*** Project Ownership Plan**

My mentor and I have clearly defined boundaries to ensure my full intellectual and operational ownership of this project. The current proposal—focused on the derivation and phenotype of ANA+ plasma cells in systemic lupus erythematosus (SLE)—was conceived and developed by me, building on my longstanding interest in autoreactive B cell biology and early findings from my independent analyses of SLE patient samples.

As an Instructor, I have primary responsibility for the design, execution, and interpretation of all experiments proposed. While I continue to benefit from my mentor's guidance, particularly in strategic planning and career development, I independently manage all aspects of the project, including data generation, lab coordination, and collaborations. We have agreed that all data, tools, and protocols generated under this proposal will remain with me as part of my transition to an independent research position.

Specifically, I will take with me:

-A biobank of de-identified, IRB-approved SLE patient samples enriched for autoreactive B and plasma cells,

-Flow cytometry panels and sorting strategies optimized for ANA+ plasma cells,

-Single-cell RNA and BCR sequencing datasets,

-Custom bioinformatics pipelines developed in collaboration with our institutional core, and

-Reagents (e.g., recombinant autoantigens, monoclonal antibodies) validated in my work.

These resources will form the backbone of my independent research program aimed at understanding the ontogeny, persistence, and therapeutic targeting of autoreactive plasma cells in SLE and related autoimmune diseases. I plan to use this project as the foundation for future RO1 and foundation-based grant proposals.

Our mutual understanding is also formalized through a written letter of support, affirming my ownership of the project's intellectual property and associated resources. This approach ensures a clean and supportive transition as I move toward full independence, with both scientific continuity and ethical clarity.

Example #2:

Project Ownership Plan – discuss how the Mentor and the Applicant agree upon the ownership for the project and resources generated therein. Describe what part of the proposed project belongs to the Applicant, and whether the Applicant has overall responsibility for and ownership of this portion of the project. Describe what portions (materials, resources, tools, etc.) of the project the Applicant will take to an independent research position and use to pursue additional grant funding.

*** Project Ownership Plan**

As I have recently launched my independent research program as an Assistant Professor at the XX Institute, the work proposed in this project will be conducted in my laboratory, the Smith Lab. The project will be carried out by myself and Dr. Jones, a research specialist in the lab. Full ownership of the project and any resources generated will reside with me as the Principal Investigator. These resources—including preliminary data, protocols, and materials—will serve as the foundation for future grant applications and the continued development of my independent research.

Tips:

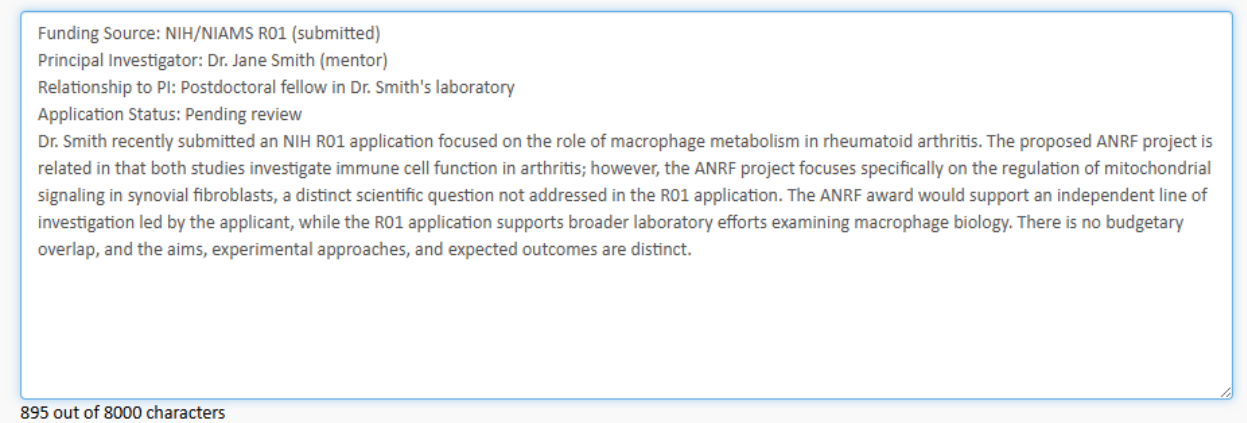
- Have a proactive, transparent conversation with your mentor about intellectual property, data, tools, and materials and translate that conversation into a clear summary for reviewers to understand.
- If there is overlap in the research you conduct with your mentor, be explicit about ownership and the expectations of the research outcomes as you move towards independence.
- Make sure your plan doesn't conflict with your institution's policies or IP agreements.
- Demonstrate that you're thinking about the long-term sustainability of your research.
- Be specific but concise.
- Show reviewers you're planning for independence and establishing your own lab.

Related Funding:

The purpose of this question is for reviewers to understand how you are branching out from your mentor and where else dollars may be coming in to fund your project.

If you have spoken with your mentor and PI and have found no overlap, please type 'no' into the textbox.

Example:



Tips:

- Err on the side of disclosure. If your mentor or another senior investigator has submitted, received, or plans to submit funding for research that shares scientific themes, methods, or aims with your project, please disclose it.
- Related projects do not necessarily constitute overlap. Applicants should disclose any mentor- or laboratory-led applications or awards that share scientific themes, resources, or research objectives with the proposed project.
- This section differs from the current and pending support section in that this section is limited to funding provided to others, *not your own.*

Abstracts:

Lay Abstract:

The purpose of the lay abstract is to explain your research in simple, non-technical language so that people without a scientific background—like patients and donors—can understand what your project is about and why it matters.

Example:

Please provide a general audience summary below: 1,750 characters max, including spaces (approximately 250 words). Text only. No special characters or formatting. See instructions for details.

*

Scleroderma is a disease where the body makes too much scar tissue, causing the skin and organs to become stiff and painful. The cells that make this scar tissue are called fibroblasts, and in people with scleroderma, these cells don't turn off like they should. This research project will study how fibroblasts become overactive and what signals in the body keep them turned on. By understanding these signals, we hope to find new ways to block or slow down scar tissue from forming. The long-term goal is to help develop better treatments that improve quality of life for people living with scleroderma. Support from the foundation makes this important early-career research possible.

Tips:

- Assume your audience has no scientific training and write the lay abstract at the 7th grade reading level.
- Start with a statement about the problem or disease you are addressing.
- Help readers understand the basic goals, methods, and potential impact of your work.
- Make it easy to understand how your research could help people—even if it's in the early-stage.
- Try to stay away from very technical language.
- Remind the reader what the research could lead to—new treatments, better understanding, earlier diagnosis, etc.

Scientific Abstract:

Reviewers use the scientific abstract as one of their first touch points with your research project. It sets the tone, summarizes your entire project, and helps reviewers quickly understand the importance, approach, and potential impact of your work.

Example:

Please provide a technical/scientific summary below: 1,750 characters max, including spaces (approximately 250 words). Text only. No special characters or formatting. See instructions for details.

*

Osteoarthritis (OA) is a leading cause of disability worldwide, driven by the progressive breakdown of articular cartilage. Chondrocytes—the sole cell type in cartilage—are responsible for maintaining cartilage structure and function. However, increasing evidence suggests that chondrocyte apoptosis (programmed cell death) is a central mechanism in OA progression, leading to irreversible cartilage degradation. Despite this, the upstream signals that drive chondrocyte apoptosis in OA remain poorly defined, limiting the development of targeted therapies.

This project aims to identify and characterize the molecular pathways that promote chondrocyte apoptosis in early-stage OA. Using a combination of mouse models of post-traumatic OA and primary human chondrocytes, we will: (1) define the temporal pattern of apoptosis during OA initiation and progression, and (2) dissect the role of stress-activated signaling pathways—specifically the p38 MAPK and JNK cascades—in triggering chondrocyte death. We will also test whether pharmacologic inhibition of these pathways can preserve chondrocyte viability and slow cartilage loss.

The long-term goal of this work is to uncover novel molecular targets that could be leveraged to develop disease-modifying treatments for OA, particularly during the early stages when intervention may be most effective. As an early-career investigator, this project also supports my transition to research independence by establishing a focused and translational research program in OA pathobiology.

Tips:

- Keep technical terms but avoid too much jargon. Ensure the research aims and methods are understandable to an informed but general scientific audience.
- Stay within the word limit while ensuring key information is clear. It's crucial that reviewers don't feel lost or overwhelmed by unnecessary complexity.
- Provide a brief but specific outline of the methods and experimental models.
- Highlight the importance of the problem you are looking to solve to show the reviewer why they should prioritize funding your project.

Budget:

Reviewers will evaluate the budget to ensure that the costs are reasonable, adhere to ANRF policy laid out in the grant's Program Guidelines, and align with the work being proposed.

Example of Budget Justification:

Please provide a detailed justification of your proposed budget (8,000 characters maximum, including spaces).

*** Budget Justification**

1. Personnel: $160,000 total ($80,000 per year)
Personnel costs support the applicant (Assistant Professor) and a research technician.
-Applicant Effort: Dr. Smith will devote 50% effort (6 calendar months) to this project, overseeing experimental design, data analysis, manuscript preparation, and progress reporting. Dr. Smith is currently using the institution's start up funding to support his salary.
-Research Technician: The remaining funds support, Jane Doe, BS, a full-time technician who will assist with bench work, including sample processing, flow cytometry, cell culture, and data collection. She is currently funded through Dr. Smith's start up funding.

2. Supplies: $84,000 total ($42,000 per year)
Funds will cover consumable supplies critical for the successful execution of the project, including:
-Flow cytometry antibodies and reagents - $15,000
-RNA extraction kits and qPCR reagents - $17,000
-Tissue culture media, supplements, and plasticware - $8,000
-Sample collection and storage materials (e.g., cryovials, tubes, PPE) - $2,000
These supplies directly support the project's goal of identifying immune phenotypes in axial spondyloarthritis.

3. Travel: $6,000 total ($3,000 per year)
Funds will support travel to one scientific conference annually, the American College of Rheumatology (ACR) meeting, to present research findings, receive feedback from experts in the field, and build collaborations. Travel includes airfare, lodging, and registration fees.

Tips:

- Only include costs you plan to spend using the award.
- Clearly breakdown how the funding will be spent in both years, and in total.
- Explain how the personnel and materials directly relate to the work being done.
- Adhere to funding limits and keep costs reasonable and realistic.
- ANRF will not prioritize applications that request less than the full funding amount. Plan to spend the maximum funding offered by the grant mechanism.

Current and Pending Support:

Although not everyone will have current or pending support to share, it's important to disclose all grant funding you've applied to or received. This should NOT include grant funding from your mentor or lab PI; only grants you, personally, have applied to as PI or been included in as co-PI.

ANRF requires that there be significant difference in other funded research projects. Discussing how the scope of your research differs from the proposed project will be key in this section.

Example of Overlap Statement:

* **Describe how the two projects are or are not related.**	There is no scientific or budgetary overlap between my ANRF application and the K08 grant award from NIAMS. While both projects are broadly focused on B cell signaling, the current proposal is centered on the role of inhibitory receptors and their interaction with the Lyn–SHP-1 axis in the maintenance of peripheral B cell tolerance. In contrast, the NIAMS project investigates how CD79A phosphorylation modulates positive signaling thresholds and B cell activation, particularly in early antigen engagement. The two projects address distinct signaling pathways and utilize complementary but non-overlapping experimental models and aims.

Tips:

- If you are currently funded, please make sure your funding is in alignment with ANRF policies before proceeding.
- This section is reviewed by grant administration staff to ensure adherence to funding policies. Limit the support to only what you have applied to or are listed as co-PI.
- Best practice is to briefly describe both projects in the overlap statement, even if you've marked that there is no overlap.
- There may be no scientific overlap between funded projects. Specifically discuss how this project differs from your ANRF proposal by addressing shared themes and how the projects ask different questions, use different approaches, or generate non-redundant data.

Biographical Sketch:

Use the biographical sketch to provide a concise overview of your qualifications, experience, and scientific contributions, demonstrating your suitability for the proposed project. It helps reviewers assess the applicant's expertise, productivity, and ability to conduct the research effectively.

The personal statement section is an opportunity to speak directly to the reviewers in your own voice. You can use this space to discuss your commitment to science and explain how the proposed project supports your path toward independence.

Example of Personal Statement:

A. Personal Statement

My scientific journey began in the biomechanics lab of my undergraduate institution, where I first became fascinated by the complexity of joint structure and function. As I moved through medical school and later clinical training in rheumatology, I found myself drawn not just to treating joint disease, but to understanding its molecular drivers. That passion led me to pursue postdoctoral training in immunology, where I focused on cytokine signaling pathways involved in chronic inflammation. Today, as an Assistant Professor, I lead a research program investigating the role of IL-36α in osteoarthritis—a cytokine whose emerging relevance in inflammatory arthritis suggests a previously underappreciated role in cartilage breakdown and joint pain.

My work integrates clinical insight with molecular approaches, leveraging patient-derived tissues and murine models to explore how IL-36α shapes the inflammatory milieu of the osteoarthritic joint. The proposed project represents a well-developed and independent research plan rooted in my long-standing interest in joint disease and my lab's preliminary findings. It is also a foundational step in building a research program aimed at identifying new therapeutic strategies for osteoarthritis, a condition for which few disease-modifying treatments currently exist. I am committed to a career as a physician-scientist and to translating basic discoveries into meaningful benefits for patients.

Looking ahead, my long-term goal is to establish a comprehensive research program that defines the molecular pathways driving joint degeneration and chronic pain, with the aim of uncovering biomarkers and therapeutic targets that can guide precision medicine approaches in osteoarthritis. I also aim to contribute to the training of future physician-scientists and to foster multidisciplinary collaborations that bridge basic science and clinical care. Through this work, I hope to help shift the paradigm of osteoarthritis treatment from symptom management to disease modification.

Tips:

- Reviewers look at publication records to provide context into your career trajectory. Include and highlight first author publications and significant contributions to science.
- If you're early in your publication record, highlight quality and impact over quantity.
- Reviewers want to understand your scientific arc—where you've been, where you're going, and how this grant fits in.
- Reviewers look at the bio-sketch to assess readiness, independence, and alignment with the proposed project – make sure this is clearly discussed.
- Demonstrate your long-term commitment to research.
- Tailor your personal statement to the ANRF grant you are applying for. Emphasize publications, collaborations, or skills that are relevant to the research project.
- Write in first person, use an active voice and confident language: *"I developed...", "I led...", "I discovered..."*

Letters of Support:

Letters of Support should add credibility to your project and demonstrate that you have the resources, collaborations, and institutional backing needed to carry out your research successfully.

Tips:

- Letters should show that you're in a supportive environment that's invested in your success.
- Be strategic about your letters of support. Tailor each letter to match a specific element of the proposal—it should feel customized, not generic.
- There, at minimum, should be two letters of support included with your application:
    - A letter from your institution verifying they are aware of and support your proposed project and can attest to the availability of any specialized resources. If you are a physician scientist, this letter should also confirm your percentage of protected research time.
    - A letter from your mentor or colleagues endorsing your credibility, assuring the reviewers that you're capable of the defined project and worthy of investing the foundation's limited resources.
- Reviewers value strong letters of support from well-regarded experts in the field, as they add credibility to the proposal by endorsing the applicant's potential and reinforcing the project's relevance and feasibility.

Research Plan:

Specific Aims:

The Specific Aims page is arguably the most important page of the grant application, and one of the first pages prioritized by reviewers. It's your first chance to show that you have a clear, focused, and fundable research direction.

Tips:

- Provide this data on the first page of your research plan.
- Clearly define the significance, gap, hypothesis, and impact of the work being proposed.
- Consider the timeline of the grant and the amount that can reasonably be accomplished. Reviewers will note when they feel the work is overly ambitious.
- Use text formatting (bold, underline, italics) strategically to highlight your main points, without visually cluttering the page.

Research Strategy:

This section serves as an opportunity to share background information, significance, the impact of the proposed work, and preliminary data that supports your aims. Include relevant information that speaks to the importance of your work and the thought that's been put into your project to justify funding this over other proposals.

Tips:

- Do not assume your reviewers have a background in your studies. Provide enough information to understand your proposed work.
- Be careful to follow the formatting guidelines in the grant's Program Guidelines. If formatting requirements are not met, your application may not be reviewed.
- Be explicit about the work that has already gone into this project and any preliminary data that you've collected.
- Consider including potential pitfalls and alternate approaches in order to show how you plan to pivot if the hypothesis does not hold up as expected.
- Be sure your references are up to date.

Experimental Design:

Experimental Design section is where you show reviewers that your study is well-conceived, logical, and doable. This section provides space to elaborate on your aims, methods, and anticipated results, and should explain the why and how of the items outlined on your specific aims page.

Tips:

- Tables and figures may be smaller than required font sizes but must be clear and legible to reviewers.
- Be clear and transparent about your decisions in your experimental design—explain why you chose specific methods, sample sizes, and approaches.
- Discuss your expected outcomes and how they will inform your next steps.

Project Timeline:

The project timeline should take up a very modest amount of space in your proposal and provide a clear picture of milestones for each aim.

Tips:

- Consider showing this visually in a graphic in order to reserve more space for your research and experimental design.
- Be realistic about the amount of work to be completed and the time it will take to accomplish your goals.

Overall Tips:

- Transparency is key – be honest about your expectations and any limitations or potential challenges, and explain how you plan to address them.
- Take advantage of the resources ANRF has to offer to guide you through the process.
- Make sure your research plan fits into ANRF's mission and scope of the grant mechanism.
- Look at previously funded ANRF awardees for a sense of what types of research projects reviewers prioritize funding.
- Review the Application Scoring Criteria document (page 2) on the ANRF website to understand the grant applications ANRF typically funds.
- Repeat your main points over many areas of the application. Reviewers tend to jump around when reading the application, and key information should be clear throughout.
- Don't assume your reviewer will infer information – lay everything out clearly so they don't leave with any questions.
- How you lay out the information in the research plan is up to you, make sure your information progresses in a way that makes sense and is easy to understand by the reader.
- If you're early in your journey towards independence, reviewers like to see that you're receiving adequate support from your mentor. Solicit sincere feedback on your proposal from your mentorship team and submit strong letters of support that show a commitment to your continued progress.
- Visit the ANRF Scientists page and consider reaching out to any former awardees that share similar research interests—they may be willing to share helpful insights or advice about their experience applying for an ANRF grant.

Questions:

We are happy to help! Please do not hesitate to reach out with any questions or comments. Contact grants@curearthritis.org or call 1-800-588-2873 x103.

The Arthritis National Research Foundation's mission is to provide initial research funding to brilliant, investigative scientists with new ideas to cure arthritis and related autoimmune diseases.