**Proposal Component Checklist and Narrative Instructions**

National Institutes of Health

Research (R) Instructions (e.g., R01, R03, R21)

*This document provides a checklist of proposal components for standard NIH Research Grant (R series) proposals (e.g., R01, R03, or R21) on the first page, followed by detailed instructions for completing the narrative attachments. While this document provides summarized instructions, complete instructions can be found by reviewing the relevant Funding Opportunity Announcement (FOA) and the SF424 (R&R) – Version D (Research [R] Instructions).*

**SF424 (R&R) Form**

* Cover Letter Attachment (if applicable)

**PHS 398 Research Plan Form**

* Introduction to Application (Resubmission or Revision only)
* Specific Aims
* Research Strategy
* Progress Report Publication List (Renewal applications only)
* Protection of Human Subjects (if applicable)
* Data and Safety Monitoring Plan (if applicable)
* Inclusion of Women and Minorities (if applicable)
* Inclusion of Children (if applicable)
* Vertebrate Animals (if applicable)
* Select Agent Research (if applicable)
* Multiple PI/PD Leadership Plan (if applicable)
* Consortium/Contractual Arrangements (if applicable)
* Letters of Support (if appropriate)
* Resource Sharing Plan(s) (if applicable)
* Authentication of Key Biological and/or Chemical Resources (if applicable)
* Appendix (if applicable)

**R&R Senior/Key Person Profile (Expanded) Form**

* Biographical Sketch(es)

**R&R Other Project Information Form**

* Project Summary/Abstract
* Project Narrative
* Bibliography and References Cited
* Facilities and Other Resources
* Equipment
* Other Attachments (if applicable)

**Project/Performance Site Location(s) Form**

* No attachments are required

**PHS 398 Cover Page Supplement Form**

* No attachments are required

**PHS 398 Modular Budget Form *or* the R&R Budget Form**

* Budget justification attachment(s)

**R&R Subaward Budget Attachment(s) Form** (if applicable)

* Only used in conjunction with the R&R Budget Form, not the PHS 398 Modular Budget Form

**PHS Inclusion Enrollment Report** (if applicable)

* No attachments are required

**PHS Assignment Request Form** (complete if you wish to make specific assignment or review requests)

* No attachments are require

***Note:*** *Page limits provided throughout are for standard R01, R03, and R21 proposals but may vary for other NIH R mechanisms and specific Program Announcements (PAs) or Requests for Application (RFAs).*

**Formatting Instructions for Narrative Attachments**

* Recommend using Arial font. A font size of 11 points or larger must be used. The font must be no more than 15 characters per linear inch (including characters and spaces) and must be no more than six lines per vertical inch.
* Smaller text in figures, graphs, diagrams, and charts is acceptable as long as it is legible when the page is viewed at 100 percent.
* Text color must be black (color text in figures, graphs, diagrams, charts, tables, footnotes, and headings is acceptable).
* Use English and avoid jargon; spell out acronyms the first time it is used and note the appropriate abbreviation in parentheses. The abbreviation may be used thereafter.
* Use standard paper size (8½” x 11”) and use at least one-half inch margins (top, bottom, left, and right) for all pages. No applicant-supplied information should appear in the margins, headers, or footers.
* Strongly encouraged to use only a standard, single-column format for the text.
* Hyperlinks and URLs are only allowed when specifically noted in the FOA and form field instructions (e.g., biographical sketches or publication lists). It is highly unusual for a FOA to allow links in the Specific Aims, Research Strategy, and other page-limited attachments. Hyperlinks and URLs may not be used to provide information necessary to application review. When allowed, you must hyperlink the actual URL text so it appears on the page rather than hiding the URL behind a specific word or phrase.
* For additional information on standard formatting requirements, see the NIH [Format Attachments](https://grants.nih.gov/grants/how-to-apply-application-guide/format-and-write/format-attachments.htm) page.

**Cover Letter Attachment**

* Address the cover letter to the Division of Receipt and Referral.
* The cover letter is for internal use only and will not be shared with peer reviewers. The letter should contain any of the following information, as applicable:

1. Application title.
2. Title of FOA (PA or RFA)
3. For late applications, include specific information about the timing and nature of the delay.
4. For changed/corrected applications submitted after the due date, a cover letter is required, and it must explain the reason for late submission of the changed/corrected application. If you already submitted a cover letter with a previous submission and are now submitting a late changed/corrected application, you must include all previous cover letter text in the revised cover letter attachment. The system does not retain any previously submitted cover letters; therefore, you must repeat all information previously submitted in the cover letter as well as any additional information.
5. Explanation of any subaward budget components that are not active for all periods of the proposed grant (see R&R Subaward Budget Attachment[s] Form).
6. Statement that you have attached any required agency approval documentation for the type of application submitted. This may include approval for applications that request $500,000 or more, approval for Conference Grant or Cooperative Agreement (R13 or U13), etc. It is recommended that you include the official communication from a NIH official as part of your cover letter.
7. When intending to submit a video as part of the application, the cover letter must include information about the intent to submit it. If this is not done, a video will not be accepted.
8. Include a statement in the cover letter if the proposed studies will generate large-scale human or non-human genomic data as detailed in the NIH Genomic Data Sharing Policy.

**Introduction to Application** (for Resubmission or Revision applications only; limited to one page)

* For resubmissions, the introduction should summarize the substantial additions, deletions, and changes to the application. The introduction must also include a response to the issues and criticism raised in the Summary Statement.
* For revisions, the introduction should describe the nature of the revision and how it will influence the specific aims, research design, and methods of the current grant.

**Specific Aims** (limited to one page)

* State concisely the goals of the proposed research and summarize the expected outcome(s), including the impact that the results of the proposed research will exert on the research field(s) involved.
* List succinctly the specific aims of the research proposed (e.g., to test a stated hypothesis, create a novel design, solve a specific problem, challenge an existing paradigm or clinical practice, address a critical barrier to progress in the field, or develop new technology).

**Research Strategy** (limited to 12 pages for R01s; limited to six pages for R03s and R21s)

* Organize the Research Strategy in the order specified below.
* Start each section with the appropriate section heading – Significance, Innovation, and Approach.
* Cite published experimental details in the Research Strategy and provide the full reference in the Bibliography and References Cited section.

1. **Significance**

* Explain the importance of the problem or critical barrier to progress that the proposed project addresses.
* Describe the scientific premise for the proposed project, including consideration of the strengths and weaknesses of published research or preliminary data crucial to the support of your application.
* Explain how the proposed project will improve scientific knowledge, technical capability, and/or clinical practice in one or more broad fields.
* Describe how the concepts, methods, technologies, treatments, services, or preventative interventions that drive this field will be changed if the proposed aims are achieved.

1. **Innovation**

* Explain how the application challenges and seeks to shift current research or clinical practice paradigms.
* Describe any novel theoretical concepts, approaches or methodologies, instrumentation, or interventions to be developed or used, and any advantage over existing methodologies, instrumentation, or interventions.
* Explain any refinements, improvements, or new applications of theoretical concepts, approaches or methodologies, instrumentation, or interventions.

1. **Approach**

* Describe the overall strategy, methodology, and analyses to be used to accomplish the specific aims of the project.
* Describe the experimental design and methods proposed and how they will achieve robust and unbiased results.
* Include how the data will be collected, analyzed, and interpreted as well as any resource sharing plans as appropriate, unless addressed separately in the Resource Sharing Plan document below.
* Discuss potential problems, alternative strategies, and benchmarks for success anticipated to achieve the aims.
* You also may wish to include a discussion of future directions for your research, as well as a project timeline, in this section.
* If the project is in the early stages of development, describe any strategy to establish feasibility, and address the management of any high risk aspects of the proposed work.
* For studies in vertebrate animals and humans, explain how relevant biological variables, such as sex, are factored into research designs and analyses. For example, strong justification from the scientific literature, preliminary data, or other relevant considerations must be provided for applications proposing to study only one sex.
* If your study(s) involves human subjects, the Inclusion of Women and Minorities and Inclusion of Children documents (see below) can be used to expand your discussion on inclusion and justify the proposed proportions of individuals (such as males and females) in the sample, but it must also be addressed here in the “Approach” section of the Research Strategy document.
* Point out any procedures, situations, or materials that may be hazardous to personnel and precautions to be exercised. A full discussion on the use of select agents should appear in the Select Agent Research document below.
* If research on Human Embryonic Stem Cells (hESCs) is proposed but an approved cell line from the NIH hESC Registry cannot be chosen, provide a strong justification for why an appropriate cell line cannot be chosen from the Registry at this time.
* ***Preliminary Studies for New Applications:*** For new applications, include information on preliminary studies. Discuss the PD/PI’s preliminary studies, data, and or experience pertinent to this application. Except for Exploratory/Developmental Grants (R21/R33), Small Research Grants (R03), and Academic Research Enhancement Award (AREA) Grants (R15), preliminary data can be an essential part of a research grant application and help to establish the likelihood of success of the proposed project. Early Stage Investigators should include preliminary data.
* ***Progress Report for Renewal and Revision Applications:*** For renewal/revision applications, provide a Progress Report. Provide the beginning and ending dates for the period covered since the last competitive review. Summarize the specific aims of the previous project period and the importance of the findings, and emphasize the progress made toward their achievement. Explain any significant changes to the specific aims and any new directions, including changes resulting from significant budget reductions. For any studies meeting the NIH definition for clinical research, particularly if relevant to studies proposed in the renewal or revision application, discuss previous participant enrollment (e.g., recruitment, retention, inclusion of women, minorities, children, etc.). You should not submit a PHS Inclusion Enrollment Report unless the enrollment is part of new or ongoing studies in the renewal or revision application.
  + *Do not include* *a list of publications, patents, and other printed materials in the Progress Report. That information should be included in Progress Report Publication List document below.*
  + *Note that the Progress Report falls within the Research Strategy and is therefore included in the page limits for the Research Strategy.*

**Progress Report Publication List** (Renewal applications only)

* List the titles and complete references to all appropriate publications, manuscripts accepted for publication, patents, and other printed materials that have resulted from the project since it was last reviewed competitively.
* Follow the NIH Public Access Policy regarding PMC submission identification numbers.

**Protection of Human Subjects**

* **Complete this section if you answered “yes” to the question “Are human subjects involved?” on the R&R Other Project Information Form.**
* **If the answer is “No” to the question but the proposed research involves human specimens and/or data from subjects, applicants must provide a justification in this section for the claim that no human subjects are involved.**
* See the Office of Proposal Development (OPD)’s separate “Instructions for Human Subjects Narrative Components” document for an outline.

**Data and Safety Monitoring Plan**

* Complete this section if you answered “Yes” to the question “Clinical Trial?” on the PHS 398 Cover Page Supplemental Form.
* See OPD’s separate “Instructions for Human Subjects Narrative Components” document for an outline.

**Inclusion of Women and Minorities**

* **Complete this section if you answered “Yes” to the question “Are human subjects involved?” on the R&R Other Project Information Form and the research does not fall under Exemption 4.**
* See OPD’s separate “Instructions for Human Subjects Narrative Components” document for an outline.

**Inclusion of Children**

* **Complete this section if you answered “Yes” to the question “Are human subjects involved?” on the R&R Other Project Information Form and the research does not fall under Exemption 4.**
* See OPD’s separate “Instructions for Human Subjects Narrative Components” document for an outline.

**Vertebrate Animals**

* **Complete this section if you answered “Yes” to the question “Are vertebrate animals used?” on the R&R Other Project Information Form.**
* **Address each of the following criteria:** 
  + ***Description of Procedures:*** Provide a concise description of the proposed procedures to be used that involve vertebrate animals in the work outlined in the Research Strategy document. Identify the species, strains, ages, sex, and total numbers of animals by species to be used in the proposed work. If dogs or cats are proposed, provide the source of the animals.
  + ***Justifications:*** Provide justification that the species are appropriate for the proposed research. Explain why the research goals cannot be accomplished using an alternative model (e.g., computational, human, invertebrate, in vitro).
  + ***Minimization of Pain and Distress:*** Describe the interventions, including analgesia, anesthesia, sedation, palliative care, and humane endpoints, that will be used to minimize discomfort, distress, pain, and injury.
* Identify all project/performance or collaborating site(s) and describe activities of proposed research with vertebrate animals in those sites.
* If applicable, explain when and how animals are expected to be used if plans for the use of animals have not been finalized.

**Select Agent Research**

* Complete this document if your proposed activities involved the use of select agents at any time during the proposed project period, either at the applicant organization or at any performance site.
* Select agents are defined as hazardous biological agents and toxins that have been identified by Health and Human Services (HHS) or the U.S. Department of Agriculture (USDA) as having the potential to pose a severe threat to public health and safety, to animal and plant health, or to animal and plant products.
* See the SF424 (R&R) – Version D (Research [R] Instructions) for hyperlinks to lists of select agents.
* Address the following three points for each site at which select agent research will take place:
* Identify the select agent(s) to be used in the proposed research.
* Provide the registration status of all entities (i.e., any government agency [Federal, State, or local], academic institution, corporation, company, partnership, society, association, firm, sole proprietorship, or other legal entity) where select agent(s) will be used. If the performance site(s) is a foreign institution, provide the name(s) of the country or countries where select agent research will be performed.
* Provide a description of all facilities where the select agent(s) will be used. Describe the procedures that will be used to monitor possession, use, and transfer of select agent(s). Describe plans for appropriate biosafety, biocontainment, and security of the select agent(s). Describe the biocontainment resources available at all performance sites.
* *If the activities proposed in the application involve only the use of a strain(s) of select agents that has been excluded from the list of select agents and toxins as per 42 CFR 73.3*, the select agent requirements do not apply. Use this document to identify the strain(s) of the select agent that will be used and note that it has been excluded from this list. The CDC maintains a list of exclusions, which is available on the Select Agents and Toxins Exclusions website.
* *If the strain(s) is not currently excluded from the list of select agents and toxins but you have applied or intend to apply to HHS for an exclusion from the list*, indicate the status of your request or your intent to apply for an exclusion and provide a brief justification for the exclusion.

**Multiple PD/PI Leadership Plan**

* For applications designating multiple PD/PIs *only*, a Multiple PD/PI Leadership Plan must be included.
* A rationale for choosing a multiple PD/PI approach should be described.
* The governance and organizational structure of the leadership team and the research project should be described, including communication plans, processes for making decisions on scientific direction, and procedures for resolving conflicts.
* The roles and administrative, technical, and scientific responsibilities for the project or program should be delineated for the PD/PIs and other collaborators.
* If budget allocation is planned, the distribution of resources to specific components of the project or the individual PD/PIs should be delineated in the Multiple PD/PI Leadership Plan.

**Consortium/Contractual Arrangements**

* If you have consortiums/contracts in your budget, explain the programmatic, fiscal, and administrative arrangements to be made between the applicant organization and the consortium organization(s).
* If consortium/contractual activities represent a significant portion of the overall project, explain why the applicant organization, rather than the ultimate performer of the activities, should be the grantee.

**Letters of Support**

* Attach all appropriate letters of support, including any letters necessary to demonstrate the support of consortium participants and collaborators, such as Senior/Key Personnel and Other Significant Contributors, included in the grant application.
* Letters are not required for personnel (such as research assistants) not contributing in a substantive, measurable way to the scientific development or execution of the project.
* Letters should stipulate expectations for co-authorship, and whether cell lines, samples or other resources promised in the letter are freely available to other investigators in the scientific community or will be provided to the particular investigators only.
* For consultants, letters should include rate/charge for consulting services and level of effort/number of hours per budget period anticipated.
* Letters ensuring access to core facilities and resources should stipulate whether access will be provided as a fee-for-service.

**Resource Sharing Plan(s)**

* ***Data Sharing Plan:*** Investigators seeking $500,000 or more in direct costs (exclusive of consortium F&A) in any budget period are expected to include a brief one-paragraph description of how final research data will be shared or explain why data-sharing is not possible (e.g., human subject concerns, the Small Business Innovation Development Act provisions, etc.).
* ***Sharing Model Organisms:*** Regardless of the amount requested, all projects where the development of model organisms is anticipated are expected to include a description of a specific plan for sharing and distributing unique model organisms or state why such sharing is restricted or not possible.
* ***Genomic Data Sharing (GDS):*** Applicants seeking funding for research that generates large-scale human or non-human genomic data are expected to provide a plan for sharing of these data. Examples of large-scale genomic data include genome-wide association studies (GWAS), single nucleotide polymorphisms (SNP) arrays, and genome sequence, transcriptomic, epigenomic, and gene expression data.

**Authentication of Key Biological and/or Chemical Resources** (a maximum of one page is suggested)

* If applicable to the proposed sciences, briefly describe methods to ensure the identity and validity of key biological and/or chemical resources used in the proposed studies.
* Key biological and/or chemical resources may or may not be generated with NIH funds and: 1) may differ from laboratory to laboratory or over time; 2) may have qualities and/or qualifications that could influence the research data; and 3) are integral to the proposed research. These include, but are not limited to, cell lines, specialty chemicals, antibodies, and other biologics.
* Standard laboratory reagents that are not expected to vary do not need to be included in the plan. Examples are buffers and other common biologicals or chemicals.

**Appendix**

* The only allowable appendix materials are:
  + Blank informed consent/assent forms.
  + Blank surveys, questionnaires, and data collection instruments.
  + FOA-specified items.
  + *For applications proposing clinical trials only*, clinical trial protocols and investigator’s brochure from Investigational New Drug (IND), as appropriate.
* A maximum of 10 PDF attachments is allowed in the Appendix. If more than 10 appendix attachments are needed, combine the remaining information into attachment #10.
* For materials that cannot be submitted electronically or materials that cannot be converted to PDF (e.g., medical devices, prototypes, DVDs, or CDs), applicants should contact the Scientific Review Officer following notification of assignment of the application to a study section. Applicants are encouraged to be as concise as possible and submit only information essential for the review of the application.
* Use file names for attachments that are descriptive of the content.
* A summary sheet listing all of the items included in the appendix is encouraged but not required. When including a summary sheet, it should be included in the first appendix attachment.

**Biographical Sketch(es)** (limited to five pages per biographical sketch)

* OPD can provide a biographical sketch template.

**Project Summary/Abstract** (no longer than 30 lines of text)

* State the application’s broad, long-term objectives and specific aims, making reference to the health relatedness of the project (i.e., relevance to the mission of the agency).
* Describe the research design and methods for achieving the stated goals.
* Should be informative to other persons working in the same or related fields and understandable to a scientifically literate reader.
* Be sure that the document reflects the key focus of the proposed project so that the application can be appropriately categorized.
* Must not include any proprietary/confidential information or trade secrets.
* Meant to serve as a succinct and accurate description of the proposed work and should be able to stand on its own (separate from the application).
* Avoid describing past accomplishments and the use of the first person.
* If the application is funded, the project summary will be entered into an NIH database and made available on the NIH Research Portfolio Online Reporting Tool (RePORT) and will become public information.

**Project Narrative** (no more than three sentences)

* Describe the relevance of this research to public health. For example, NIH applicants can describe how, in the short or long term, the research would contribute to fundamental knowledge about the nature and behavior of living systems and/or the application of that knowledge to enhance health, lengthen life, and reduce illness and disability.
* If the application is funded, this public health relevance statement will be combined with the project summary (above) and will become public information.

**Bibliography and References Cited**

* Should include any references cited in the PHS 398 Research Plan Form.
* When citing articles that fall under the Public Access Policy, were authored or co-authored by the applicant, and arose from NIH support, provide the NIH Manuscript Submission reference number (e.g., NIHMS97531) or the PubMed Central (PMC) reference number (e.g., PMCID234567) for each article. If the PMCID is not yet available because the journal submits articles directly to PMC on behalf of their authors, indicate “PMC Journal – In Process.”
* Citations that are not covered by the Public Access Policy, but are publicly available in a free, online format may include URLs or PubMed ID (PMID) numbers along with the full reference.
* References should be limited to relevant and current literature.

**Facilities and Other Resources**

* Describe how the scientific environment in which the research will be done contributes to the probability of success (e.g., institutional support, physical resources, and intellectual rapport).
* In describing the scientific environment in which the work will be done, discuss ways in which the proposed studies will benefit from unique features of the scientific environment or from unique subject populations or how studies will employ useful collaborative arrangements.
* If there are multiple performance sites, describe the resources available at each site.
* Describe any special facilities used for working with biohazards or other potentially dangerous substances. *Note: Information about select agents must be described in the Select Agent Research document of the Research Plan.*
* *For Early Stage Investigators (ESIs)*, describe institutional investment in the success of the investigator. The description may include the following elements:
  + Resources for classes, travel, or training.
  + Collegial support such as career enrichment programs, assistance and guidance in the supervision of trainees involved in the ESI’s project, and availability of organized peer groups.
  + Logistical support such as administrative management and oversight and best practices training.
  + Financial support such as protected time for research with salary support.

**Equipment**

* List major items of equipment already available for this project and, if appropriate, identify the equipment’s location and pertinent capabilities.

**Other Attachments** (if applicable)

* Attach a file to provide additional information only in accordance with the FOA and/or agency-specific instructions.
* If you answered “Yes” to the question “Does this project involve activities outside of the United States or partnerships with international collaborators?” on the **R&R Other Project Information Form,** attach a “Foreign Justification” document here. The document should describe special resources or characteristics of the research project (e.g., human subjects, animals, disease, equipment, and techniques), including the reasons why the facilities or other aspects of the proposed project are more appropriate than a domestic setting. In the body of the text, begin the section with a heading indicating “Foreign Justification” and name the file “Foreign Justification.”