APPLICATION INSTRUCTIONS

RUNX1 Research Program – American Cancer Society
Leukemia Exploration and Prevention (LEAP) Grant Program

EFFECTIVE AUGUST 2024

ELECTRONIC APPLICATION DEADLINE: October 29, 2024

AMERICAN CANCER SOCIETY, INC.
Extramural Discovery Science Department

Web site: http://www.cancer.org
Email: grants@cancer.org
Program Contact: paul.campbell@cancer.org

MISSION

The **American Cancer Society**'s mission is to improve the lives of people with cancer and their families through advocacy, research, and patient support, to ensure everyone has an opportunity to prevent, detect, treat, and survive cancer.

The ***RUNX1* Research Program**'s mission is to improve the quality of life and prevent blood cancers in individuals with *RUNX1* familial platelet disorder (*RUNX1*-FPD).

LEAP RFA APPLICATION INSTRUCTIONS

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GENERAL INFORMATION

1. GRANT APPLICATION SYSTEM

- Current funding opportunities can be found on our website, here.
- Application materials are available in ProposalCentral after selecting the grant mechanism for which you intend to apply.
- Follow instructions for login/register, completion, and submission.
- Key steps:
  - Filter on the "Grant Opportunities" Tab > "Choose American Cancer Society" > "Review Grant Types" > "Select Grant" > Apply Now"
  - Enter Project Title (unless already displayed) > SAVE. This permits access to other application components.
  - Saved applications are stored under "Manage Proposals".
- See ProposalCentral login page for tutorials and additional details about the grant application process.
- For assistance with issues associated with ProposalCentral, click "Help" or contact ALTUM Customer Service at pcsupport@altum.com or 1-800-875-2562.

2. FORMAT

- Insert Principal Investigator (PI) name in the header for each template of the application. Do not change the footers on the templates.
- Application documents may be single- or double-spaced (if single spacing, enter a space between paragraphs).
- **Type size:** 12-point Times New Roman or 11-point Arial are the minimum font sizes for the text; 10-point Times New Roman or 9-point Arial font type may be used for figures, legends, and tables.
- **Margins:** ≥ 0.5 inches all around unless a form with different margins is supplied in the Application Templates.
- **Page numbering:** Number the pages in upper right corner according to the proposal sections listed in the Table of Contents.
- **Do not number:** Signature Page, Contact Page, General Audience Summary, Structured Technical Abstract, Statement of Cancer Relevancy and Impact, Justification of Alignment with Research Priorities, Budget & Justification, subcontract budget if applicable, or the Appendix.
- **NIH Biosketches:** Use the current NIH format for all NIH Biosketches. If the NIH has modified the NIH biosketch, applicants may use the newly modified template, or the template provided in ProposalCentral.

3. UPDATES OF INFORMATION

The following updates should be communicated via email to Paul Campbell, PhD (paul.campbell@cancer.org), Scientific Director, Cell Biology and Preclinical Cancer Research program.

Withdrawal of Application: Notify of your intent to withdraw your application. Include in your email, the PI name, application number (if assigned), and reason for withdrawal. If the project has been funded by another organization, please list that funding agency.

Change of Address: Notify if a mailing address, email address, or phone number has changed since a submission. Include the PI name and application number (if assigned) on the correspondence and update your information in ProposalCentral.

Change of Institution: If you change institutions between application submission and peer review, contact to inquire how this may impact the review. Update your information in ProposalCentral.

4. REQUIRED INFORMATION

Note: Not all fields are required for all applications; see grant-specific instructions.

Project Title: Do not exceed 150 characters including spaces; avoid abbreviations if possible. **Note:** The title will be truncated after 81 characters on the title page.

Principal Investigator/Applicant Information: Some (or all) of the required information from your Professional Profile may already be displayed. If any information is outdated, ***stop,*** and update the Professional Profile before completing this section and submitting an application. Please keep all contact information current.

- **ORCID Identifier:** ORCID provides a persistent digital number that you own and control, and that identifies you from every other researcher. Please provide an ORCID identifier if you have one. To add the ORCID ID, click Professional Profile and connect/register for an ID. Once connected, return to your proposal, and click Save.
- **Citizenship Status (mandatory):** On ProposalCentral under "Professional Profile", indicate your current citizenship status and country of citizenship.
- **Justification of Eligibility:** Applicants must satisfy all eligibility requirements defined for each application type. Under Professional Profile, indicate the date (months and year) your terminal degree was awarded and when your first independent faculty position (or equivalent) began, if applicable. If you have a letter from the ACS Eligibility Committee, include in the Appendix and indicate this in the Table of Contents.
- **Space:** If applicable, indicate the approximate area of independent research space provided by your institution to support your research program. You must insert a value for square footage under Professional Profile, even if that number is zero.

Institution and Contacts: Provide the required information for the PI's sponsoring institution and institution officials.

- **MSI Designation:** Indicate using the radio buttons whether the PI's institution is a US Department of Education designated Minority Serving Institution (MSI). If yes, then select the type of MSI from the dropdown list. Some common MSI combinations are provided in the dropdown menu, but the list is not exhaustive. Use the text box to enter the type if your institution's MSI or combination is not in the list.

  MSIs and Abbreviations:

  - ANNH: Alaska Native and Native Hawaiian
  - AANAPISI: Asian American and Native American Pacific Island Serving Institution
  - HSI: Hispanic Serving Institution
  - HBCU: Historically Black Colleges and Universities
  - NASNTI: Native American Indian Serving Non-Tribal Institution
  - PBI: Predominantly Black Institution
  - TCU: Tribal Colleges and Universities

- **Institutional Official:** Indicate the name and address of the official authorized to sign for the institution. Institutional Officials may electronically sign the application if required by the institution, but this is not required by ACS for submission. The PI must give the Institutional Official access to the application for e-signing to be completed. Provide a mailing address for disbursement of funds, in the event that your grant is awarded funding.
- **Technology Transfer Officer (TTO):** Indicate the name and email address of the TTO. The TTO is responsible for technology transfer and other aspects of the commercialization of research that takes place at a university. The TTO will be responsible for reporting all IP updates to the ACS should the project be awarded funding.
- **Department Chair:** Indicate the name, department, and email address of the Department Chair. The electronic signature of the Department Chair is not required by the ACS.

Key Personnel: Defined as individuals who contribute to the scientific development or execution of a project in a substantive and measurable way (whether or not they receive salaries or compensation under the grant). Key Personnel are personnel that give >0% effort to the project, even if they are not being compensated. Enter the required information for each Key Person, including their designated role. **The PI is always considered Key Personnel, but do not list them under key personnel on ProposalCentral.**

Key Personnel can include individuals at the doctorate, master's, or baccalaureate level (such as postdoctoral fellows, graduate students, and research assistants) if they meet this definition.

Key Personnel are required to designate >0% effort, even if they are not being compensated.

The table below provides information about the documents required for each personnel class. See grant-specific instructions for detailed guidance.

REQUIRED SUPPORTING DOCUMENTS FOR NAMED PERSONNEL

Personnel	Designated "Key"	Biosketch	"Other Support" Documentation	Included in Budget & Justification	Letters
Principal Investigator / Lead PI	Yes[a]	Yes	Yes	Yes	N/A
Team Principal(s)	Yes	Yes	Yes	Yes	Yes
Co-Investigator	Yes	Yes	Yes[b]	Yes[c]	Letter of Agreement/Support[b]
Collaborator	Yes	Yes	Yes[b]	Yes[c]	Letter of Agreement/Support[b]
	No	No	No	No	
Consultant	Yes	Yes	Yes, if paid[b]	Yes, if paid[c]	Letter of Agreement/Support[b]
	No	No	No	Yes, if paid	
Other	No	No	No	Yes	No

[a] The PI is always considered Key Personnel but supporting documents should **not** be duplicated in the Key Personnel section on ProposalCentral.

[b] For postdoctoral fellows, technicians, and graduate students, other support documentation is not required.

[c] If Key Personnel are not being paid, enter $0 for the amount requested; percent effort is required. Note that the percent effort indicated on the budget tool in ProposalCentral can be different than the requested compensation.

Key Personnel Roles and Definitions
The **Principal Investigator (LEAP-RSG) or Lead-PI (LEAP-Team)** assumes the authority and responsibility to direct the project. The ACS does not permit applications to be directed by co-Principal Investigators.

Team Principals (LEAP-Team only) collaborate with the Lead PI. Principals direct specific areas of the scientific and technical work and lead a component of the research based on their areas of expertise. The Lead PI and all Team Principals share authority for scientific leadership.

A **Co-Investigator** is a vital scientific contributor (at the same or a different institution), often bringing a needed expertise to the research team. This person commits some level of measurable effort to the project and is therefore Key Personnel, whether compensated or not.

A **Collaborator** plays a lesser role in the thinking and logistics of the project than co-investigator. Depending on the role and effort, a collaborator may be designated as Key Personnel and may be compensated.

A **Consultant** provides expert advice most often for a fee. If the consultant contributes to the scientific development or execution of a project substantively and measurably, he or she should be designated as Key Personnel.

Other is defined as individuals who are compensated for their contribution to the project but are not considered Key Personnel (e.g., student assistants, technical staff).

5. GENERAL AUDIENCE SUMMARY

The general audience summary provides an overview of the proposed research for people who are ***not*** trained in the sciences. This summary may be read by peer review Community Research Partners, ACS staff members, potential donors, and the public. **Community Research Partners** are individuals without formal scientific or medical training who are full voting members of peer review panels. The Community Research Partner uses the general summary to evaluate how the proposed work will benefit cancer patients and their families.

- **ACS staff members** use these summaries to identify projects that align with the specific interests of **donors** and may share them with donors.
- Staff may use the summary for communicating to local media about ACS-funded studies. Summaries of all grants funded by the Society are also made available to the **public**. Therefore, do not include proprietary/confidential information.

The general audience summary should ***not*** duplicate the structured technical abstract and should be written in an understandable way for the general public. Describe concisely the background, significance, question(s) being asked, information to be obtained, and potential impact of your proposed research. If symbols or Greek characters must be used, they should be spelled out to avoid formatting problems. *See examples of General Audience Summaries in Appendix A.*

This form is limited to 3,100 characters including spaces and will truncate at that point. Comply with the character limit to permit readers (including peer reviewers) to fully appreciate the “big-picture perspective” of the proposal.

6. STRUCTURED TECHNICAL ABSTRACT

The structured technical abstract is a summary of the proposed research or scholarly project for **general scientific** audiences. *See an example of a Structured Technical Abstract in Appendix B.*

Organize the abstract into the following sections:

- Background
- Objective/Hypothesis
- Specific Aims
- Study Design

This form is limited to 3,100 characters, including spaces, and will truncate at that point. Comply with the character limit to permit peer reviewers to fully appreciate the technical synopsis.

The American Cancer Society may share the structured technical abstract under a non-disclosure agreement with a third party. Therefore, do not include proprietary information. Please notify us if you do not wish to have your abstract utilized in this manner.

7. STATEMENT OF CANCER RELEVANCE AND IMPACT

This section is important to the Community Research Partners (non-scientific members of the peer review committee) as well as to several general audiences, including donors. **Avoid the use of technical jargon.** This form is limited to 1,500 characters including spaces and will truncate at that point.

Describe how the project may ultimately contribute to the control of cancer. Explain how the successful completion of the proposed work will lead to a better understanding of the disease or improve our ability to prevent, detect, and treat cancer. Where applicable, explain how this work may inform public health recommendations, policy, and/or clinical care guidelines

8. SELECTION OF RESEARCH PRIORITIES

Select the research priority or priorities to which your proposed project most strongly aligns and indicate the percent alignment. If multiple priorities are selected, the total should equal 100%. You are required to select a research priority area. Descriptions of the research priorities can be found in the LEAP RFA Policies document.

9. JUSTIFICATION OF PROJECT ALIGNMENT TO ACS RESEARCH PRIORITIES

Explain how your proposed project aligns to the selected research priority/priorities **and** the LEAP RFA goals. This form is limited to 1500 characters, including spaces, and will truncate at that point. See here on cancer.org for a listing, descriptions, and specific examples of research that may fall under the ACS priority areas. If your project aligns to multiple priority areas (not a requirement), provide additional justification of the alignment to those areas in this section as well. Please make sure that the priority area or areas are clearly stated.

Organize this justification into the following sections:

- ACS Priority Alignment
- Priority Area(s) and Percent Breakdown (for example: Treatment 50%; Etiology 50%)
- Alignment with RFA Goals

10. PROGRAM OFFICE AND PEER REVIEW COMMITTEE SELECTION

Indicate the scientific program and peer review committee you think best aligns with the proposed science. Applicants will be notified of the assigned committee before peer review begins. The program offices make final committee assignment decisions based on the best fit for the application. If the application is a resubmission, select the program office and peer review committee where the previous application was reviewed.

11. PROJECT CODING: CSO CODES AND CANCER TYPES

Note: Project coding is not considered at peer review. Red asterisks indicate required fields; not all grant types require project coding.

Donors often have interests in funding specific types of cancer research. Your selection of project codes permits identification of proposals for consideration of donor-driven special funding. This information also assists the Society in communicating our research portfolio to the public.

Select the most appropriate Areas of Research (Common Scientific Outline—CSO) and Types of Cancer. Note that relevant items may be included under Resources and Infrastructure Related to [specific area]. See Appendix C for specific terms and examples.

Applicants must also select the type(s) of cancer of relevance to the project; up to 5 cancer types may be selected.

11. ASSURANCES AND CERTIFICATION

All activities involving human subjects and vertebrate animals must be approved by the appropriate institutional committee before the application can be funded. Compliance with current US Department of Health and Human Services and ACS guidelines for conflict of interest, recombinant DNA, and scientific misconduct is also required.

Vertebrate Animals: Every proposal involving vertebrate animals must be approved by an Institutional Animal Care and Use Committee (IACUC), in accordance with Public Health Service Policy on Humane Care and Use of Laboratory Animals before the application can be funded. Enter the date of the most recent IACUC approval in the space provided.

All research supported by the ACS (including subcontracted activities) involving vertebrate animals must be conducted at performance sites covered under an approved Animal Welfare Assurance. It is the responsibility of the institution to immediately report to the ACS any action, including recertification or loss of IACUC approval, that is pertinent to the work described in the grant application.

Human Subjects: All proposed research projects involving human subjects must be approved by an Institutional Review Board (IRB) at an institution approved by the Office for Human Research Protections (OHRP) of the US Department of Health and Human Services (DHHS). Enter the institution's Assurance of Compliance number(s). Copies of the DHHS policy, assured status, and assurance numbers may be obtained from OHRP. Definitions and further clarification can be found at the NIH Office of Extramural Research website.

Submission of Approval Documentation: If institutional review of human or vertebrate-animal subjects has not been finalized before the submission date of the application, you must indicate that approval is pending on the certification page and give the appropriate institutional reference numbers, if available. The Institution Official who signs during the grant activation process is responsible for confirming that approval has been granted for the research to begin. In addition, certification of the approval, clearly labeled with the assigned ACS application number, must be uploaded to ProposalCentral within 3 months of grant activation. Failure to comply may result in withholding of payments and/or cancellation of funding.

If a grant is funded, it is the responsibility of the institution to immediately report to the ACS any action, including recertification or loss of IRB approval, which occurs during the term of the award that is related to the work described in the grant application.

12. PI DATA

The PI demographic information is for use by the Extramural Discovery Science department. While "choose not to disclose" is an option, we **strongly encourage** all applicants to specify their gender, race, ethnicity, and sexual orientation. We use this information for statistical purposes to understand the diversity of our applicant pool. We are committed to investing in a diverse research workforce and this data enhances our ability to develop inclusive policies and new funding opportunities to address current limitations. ***This information is not accessible to peer reviewers and is not considered at peer review.*** By sharing this information with us, you help the American Cancer Society track our progress and identify areas that need improvement.

13. RESUBMISSION

All resubmissions must create a new application on ProposalCentral. The option for resubmissions to the LEAP RFA will depend on the amount of funds available. Resubmission of projects to our standard application mechanisms may be possible depending on eligibility for the mechanism.

Resubmission guidelines:

- Submit a complete application electronically via ProposalCentral
- The title of the project can be altered but the application **must** be marked as a first or second resubmission.
- Select the appropriate application number from the list of your prior submissions on ProposalCentral.
- Provide the peer review committee code where the previous application was reviewed. This code should be entered on the Title Page and selected in Project Coding.

14. APPLICATION SUBMISSION AND REQUIRED E-SIGNATURE

We only accept electronic submissions with e-signatures.

- All application attachments, including the Appendix, must be uploaded as .pdf documents.
- Validate the application on ProposalCentral. An application that has not been validated cannot be electronically submitted.
- Applications must be electronically submitted on ProposalCentral by 11:59 PM ET on the specified deadline date. If the deadline falls on a weekend or holiday, applications will be accepted the following business day.
- The applicant's electronic signature is required on the Signature Page. The e-signature of the Institution Signing Official and the Department Head are optional but available for use should the institution require them. In order to e-sign an application, the signees must be included in the application Contacts in ProposalCentral.
- Technical questions regarding the electronic application process should be directed to Altum at https://proposalcentral.com/ or 1-800-875-2562.

Note: After submission, you will not be able to make any changes to the forms or upload any modifications to the files.

SPECIFIC INSTRUCTIONS BY GRANT MECHANISMS

LEAP-TEAM AWARD

I. PREPARING THE APPLICATION

1. COVER PAGES

Complete all fields, which include mandatory e-signature for the PI. We provide text boxes for e-signatures for the departmental chair (or equivalent) and institutional officials to accommodate institution-specific requirements for proposal submissions, but neither is required for submission to ACS. Note: the PI must enable other users' access to the application on ProposalCentral to permit their e-signatures. If you have received a letter from the ACS Eligibility Committee, indicate that in the Program Eligibility information section and upload the correspondence in the Appendix. See the General Instructions for more details.

II. APPLICATION TEMPLATES

Once an application is started on ProposalCentral, all necessary application templates are available to download. Complete off-line (described in individual sections below) and upload as .pdf documents before submitting the online application. *For assistance, see ProposalCentral's FAQ or call support at 1-800-875-2562*.

1. TABLE OF CONTENTS (PAGE 1.1)

The Table of Contents is pre-numbered and should be limited to 2 pages, including an itemized list of contents in the Appendix.

2. BIOGRAPHICAL SKETCH OF APPLICANT (PAGE 2.1)

Complete the NIH Biosketch template. Follow the formats and instructions provided by the NIH.

3. REPLY TO PREVIOUS REVIEW (PAGE 3.1)

IF THE APPLICATION IS A NEW SUBMISSION, upload the provided template with "Not Applicable" in the body.

For resubmissions, address the points raised in the previous critiques and direct the reviewer to the specific sections of the text, figures, or tables where edits have been made. Revisions should be easily identifiable in the revised application (e.g., bold type, italicized, or underline type). This section should not exceed 3 pages.

4. PREVIOUS CRITIQUES (RESUBMISSIONS ONLY)

To access your previous critiques, go to the "Submitted" page, select "View Review Info," click "Print" to save it as a .pdf. Upload the document to your new application with the other proposal sections.

5. RESEARCH PLAN AND ENVIRONMENT (PAGE 4.1)

Section A below should not exceed 1 page. Sections B-E below must not exceed 12 pages. This page limit does not include Sections F-I.

Proposals should be realistic in terms of work to be accomplished for the project proposed for funding. Failure to conform to the guidelines on type size, page length, or project scope may result in the application being returned to the investigator without review.

A. Hypothesis and Specific Aims (1 page max)
List the hypotheses, objectives, and goals of the research proposed and briefly describe the scientific aims.

B. Background and Significance
Concisely summarize and critically evaluate related work done by others. Specifically state how the successful completion of the proposed research will advance scientific knowledge that is relevant to the LEAP grant program. How will the proposed project address the need for cancer interception and/or prevention therapies in the *RUNX1*-FPD patient community?

C. Innovation

- Explain how the proposed project challenges and seeks to shift current research understanding or clinical practice paradigms. Innovation may also be found in the study population by including understudied groups and/or novel aspects of disease.
- Describe how the research question(s) was developed and how insight from team members of various disciplines was used to create study aims, research design, and methods.
- Describe how the research proposes meaningful improvements or addresses critical gaps.
- Describe any novel theoretical concepts, approaches or methodologies, instrumentation, or intervention(s) to be developed or used.
- Explain any refinements, improvements, or new applications of theoretical concepts, approaches or methodologies, instrumentation, or interventions.

D. Preliminary Studies and Previous Experience
Provide results of research accomplished by you or team members that are relevant to this proposal in a sufficiently comprehensive manner to indicate their significance.

- For existing teams, provide a succinct summary of the previous work including specific accomplishments pertinent to the proposed scope of work.
- If the partnership is new, describe how the collective assets of the team will facilitate the success of this study and provide the foundation for future collaboration.

Note that the entire research plan is considered confidential, including reports of unpublished research. Reprints or preprints may be included in the Appendix.

E. Research Design and Methods
Describe your overall hypothesis, proposed methods, procedures, and data analysis in sufficient detail to permit evaluation by other scientists; include your rationale for approaches and analysis. Explain your project's feasibility and how the experiments proposed will address the Specific Aims. Discuss potential difficulties and limitations of your proposed methods and provide alternative approaches. Inclusion of an experimental timeline can be helpful.

F. Experimental Details *(optional – not to exceed 3 pages).*
This section is available if more in-depth descriptions of the experimental design, technologies, or assays are needed to convey the specific approaches and procedures proposed.

G. Plans for the Team and Dissemination of Project Findings (3 pages max)
Use this section for a concise summary of how the team will function, metrics of progress, and what will be actionable from the research-translation to practice and future research plans.

The following details should also be included:

- **Leadership Plans:** Describe how the team will function in an integrated way to achieve their specific aims including team roles and responsibilities; decision making and problem-solving processes; monitoring and reporting progress; meeting mode and frequency; and communication strategy for planning and dissemination.
- **Project Timeline:** Include a timeline with milestones for the project period.
- **Potential for Knowledge Transfer (required):** Clearly define your plan about how the results of the study will be used to inform future translational, clinical, and/or implementation research.

H. Environment

Briefly describe the space and equipment available for you to carry out the proposed research project (e.g., space designated specifically for your research program, shared space and/or core facilities). Investigators must have an institutional commitment of research facilities. The amount of committed space must be verified by the Department Chair. This section is of major importance for applicants whose appointment is not in the tenure stream.

I. References

The list of references should correspond to the citations in the research plan. Each literature citation should include the names of all authors, title, book or journal, volume number, page numbers, and year of publication. There is no page limitation for the list of references.

6. DETAILED BUDGET

Complete the budget page located online at ProposalCentral. Use a start date of September 1, 2025.

A. Personnel

List the name and position of all key personnel and the percentage of time they will devote to the project, even when salary is not requested (in-kind).

- List the **Lead PI** and **Team Principal(s)**.
- List all other **Key Personnel** (defined as individuals who will participate actively in the design and/or execution of the studies and have a level of effort >0%). Details of contractual arrangements with collaborators should be provided in the Justification of Budget section of the application. If the person has not been selected, please list as "vacancy."
- Include **consultants** in the budget as subcontractors. Consultants are not considered key personnel but rather are defined as people who will provide any combination of advice, guidance, and reagents but do not commit any specified measurable effort (i.e., person months).
- Personnel may receive **salary support** up to a maximum that equals the National Cancer Institute salary cap, prorated according to their percent effort on the project. If a Key Person is not receiving salary, you can request $0 for salary, but their percent effort is still required. Their effort and contribution to the project should be outlined in the Budget Justification even if they are not being compensated.
- Give the costs to the institution of **employee fringe benefits** as a percent of the employee's salary. Prorate the amount of fringe benefits requested to the salary

requested. For example, if 10% of a team member's annual salary is requested then no more than 10% of that member's annual cost for fringe benefits can be requested.

- **NOTE:** The Society does not cover the costs of student tuition or fees for graduate or undergraduate students.

B. Equipment

- **Permanent equipment:** Defined as items of nonexpendable property with a purchase cost per unit that equals or exceeds $5,000 with a useful life of more than 1 year. List separately and justify the need for each item of permanent equipment. **Note:** The cost of permanent equipment **is not included** in the Direct Cost total used to calculate Indirect Costs.
- **Small or expendable equipment:** Defined as expendable property with a purchase cost per unit that is less than $5,000 and/or that has a short service life (<1 year). **Note:** The cost of small or expendable equipment **may be included** in the Direct Cost total used to calculate Indirect Costs.
- **General purpose equipment:** Equipment such as computers or laptops used primarily or exclusively in the actual conduct of the proposed scientific project are considered direct cost and may be included in the Direct Cost total used to calculate Indirect Costs. Computers, laptops, or other general-purpose equipment that will be used on multiple projects or for personal use should not be listed as a direct cost and should not be included in the calculation for indirect cost.

C. Supplies. Group into major categories (e.g., glassware, chemicals, radioisotopes, survey materials, animals).

D. Travel. List requested travel expenses. Any foreign travel requires **pre-approval** by your Scientific Office. Domestic travel expenses do not require pre-approval.

E. Miscellaneous Expenditures. List specific amounts for each item; examples of expenditures allowed include publication costs, special fees (e.g., pathology, computer time and scientific software, and equipment maintenance).

F. Subcontracts

If any portion of the proposed research is to be carried out at **another institution,** enter the total direct costs on the online budget detail page on ProposalCentral. Each subcontract should be listed separately. Additionally, provide a categorical breakdown of costs using the Subcontractor Budget and Justification form, using one per subcontractor. Upload the completed subcontractor budget forms in ProposalCentral and use the subcontractor's name in the "describe attachment" field.

- Subcontracts required to complete the research project may be with **public or private** institutions provided they are not in violation of ACS policies.
- Subcontracts involving a **contractor residing outside the borders of the US** are not permitted unless the applicant can document that it is not feasible to have the work performed within the US. Use of any subcontractor outside the US **must be approved in writing** by ACS before any grant-funded work is done.
- **Administrative pages:** Include a Letter of Agreement pertaining to the subcontract in the Appendix.

G. Indirect Costs

To help the institution provide proper laboratory and clinical facilities, an indirect cost (IDC) allowance of up to 10% of the direct costs is permitted, excluding permanent equipment. Indirect costs for a subcontract budget may be claimed by either the primary or the secondary institution, but not both. Indirect costs can be provided to the secondary institution through negotiation with the Principal Investigator's institution but the total amount of indirects, inclusive of subcontracts, may not exceed 10% of the award. If a subcontract is receiving indirect costs, list the indirect costs for each institution separately in the indirect costs section of the budget form.

Note: Applicants should not budget above or below the allowable indirect cost rate.

Example: Budget Cost Totals Year 1 for LEAP-Team

Primary Direct	$330,000	Primary IDC	$33,000
Subcontract Direct	$100,000	Secondary IDC	$10,000
Total Direct Costs	$430,000	Total Indirect (10%)	$43,000
Total Costs Year 1		$473,000	

H. Total Amount Requested

Budget totals should reflect a maximum duration of four years inclusive of direct and indirect costs. The maximum allowable budget is $1.892 million: $430,000 per year and 10% indirect costs for the 4-year project period. Enter the sum of all years of requested support including indirect costs, and round to the nearest thousand dollars.

Note: For budgets that do not request the maximum allowable amount, if the grant is funded, the ACS will round the total to the nearest thousand dollars. We encourage applicants to request a budget amount that is rounded to an even thousand dollars.

7. JUSTIFICATION OF BUDGET

Justify the need for personnel, supplies, travel, miscellaneous items, and all items of permanent equipment costing over $5,000. If the budget includes a request for funds to be expended outside the US, its territories, or the Commonwealth of Puerto Rico, this section should include an explanation of why such costs are essential for the successful conduct of the project, and why there are no alternatives.

8. BIOGRAPHICAL INFORMATION OF KEY PERSONNEL (PAGE 5.1)

Provide an NIH Biosketch template for named Key Personnel. **Note:** Follow the formats and instructions provided by the NIH.

9. OTHER SUPPORT (PAGE 6.1)

Applicants should ensure that they include all requested items listed below, especially when modifying Other Support documents that were prepared for other funding agencies.

The ACS does not require applicants and Key Personnel to sign their Other Support document.

Provide the following information separately for the PI and all other Key Personnel:

A. Current Support. List all current funding from intramural and extramural sources (e.g., institutional awards and grants from for-profit and not-for-profit agencies, including other grants from the ACS). Provide for each award:

a. Source of funds
b. Grant number
c. Project title
d. Inclusive dates of approved or proposed project. For example, in the case of NIH support, provide the dates of the approved or proposed competitive segment.
e. Total **direct** costs
f. Role (e.g., PI, co-PI, co-I) and percent effort or person-months. For an active project, use person months, even if unsalaried for the current budget period. Classify person-months as academic, calendar, and/or summer.
g. An outline of the goals of the project in a brief paragraph.
h. A clear indication of overlap and differences between this grant and the proposed study. If necessary, include an explanatory letter in the Appendix.

B. Pending Support. List all pending applications for funding from intramural and extramural sources (e.g., institutional awards and grants from for-profit and not-for-profit agencies, including other grants from the ACS).

a. Source of funds
b. Project title
c. Inclusive dates of approved or proposed project. For example, in the case of NIH support, provide the dates of the approved or proposed competitive segment.
d. Total **direct** costs
e. Role (e.g., PI, co-PI, co-I) and percent effort or person-months. Classify person-months as academic, calendar, and/or summer.
f. An outline of the goals of the project in a brief paragraph.
g. A clear indication of overlap and differences between this grant and the proposed study. If necessary, include an explanatory letter in the Appendix. In such cases, you may accept only one award if both are approved for funding. The ACS does not negotiate partial funding of grants with overlapping specific aims.

Please notify our Director of Research Special Programs and Projects if a pending extramural grant, that affects the feasibility of the PI's proposed effort or imposes scientific overlap, is funded during ACS peer review.

C. Institutional Support. *Only required for the Lead PI and Team Principal(s).*

a. For early-stage investigators, a description of any start-up funds provided by the institution to the applicant. If an applicant has received start-up funding from a source outside their institution, this should be including here as well, or appropriately marked as start-up funding in the current support section. An award of start-up funds does not decrease the likelihood of ACS support and can be important evidence of institutional commitment.
b. Details of the institutional commitment to support the applicant's salary.
c. The current term of the applicant's appointment.

10. LIST OF LETTERS OF SUPPORT FROM COLLABORATORS/CONSULTANTS (PAGE 7.1)

Provide a list of collaborators, co-investigators, and consultants on the template and upload the letters of support provided by each. The letter should outline the role that person will play with sufficient detail for evaluation of the value of the individual contribution. Upload the template with "Not Applicable" in the body if there are no collaborators, co-investigators, etc.

11. COMPLIANCE STATEMENTS (PAGE 8.1)

Human Subjects

Selection of study population. When conducting research on humans, provide the rationale for selecting your target population. Include the involvement of children, minorities, and especially vulnerable populations such as neonates, pregnant women, prisoners, institutionalized individuals, or others who may be considered vulnerable populations or others who may be considered vulnerable populations. The institution is required to ensure IRB approval is obtained for the grant to start, and the approval documentation is uploaded into ProposalCentral within 3 months of grant activation.

On the planned enrollment form, estimate the total number of subjects by primary ethnicity and race, race/ethnicity subgroup (if applicable), and gender. Include a rationale for excluding any population. Estimate the planned enrollment based on these calculations.

Also include estimates of the sample distribution by gender, race, and ethnicity (if available). For example, if your sample size is 200, to complete the *total number of subjects* column by race (based on what you know about the population demographics or the existing dataset you plan to analyze), multiply by the estimated percentage.

Estimated percentage of the population by race	Estimated total number of subjects
50% White	100 (200 x 0.50)
49% AA	98 (200 x 0.49)
1% Asian	2 (200 x 0.01)

For applicants performing research with non-human subjects, check the box that most appropriately describes your research.

Potential benefits, risks, and knowledge gained. Succinctly describe the potential benefits and risks to subjects (physical, psychological, financial, legal, or other). Explain why the risks are reasonable in relation to the anticipated benefits, both to research participants and others. Where appropriate, describe alternative treatments and procedures, including the risks and potential benefits to participants.

Research specimens and data. If the proposed research involves biospecimens, explain how the research material will be obtained from living subjects and what materials will be collected. List any specific non-biological data, such as demographic information, and how it will be collected, managed, and protected. Specify who will have access to such data and what measures you will maintain to keep personally identifiable private information confidential.

Collaborating sites. Where appropriate, list any collaborating sites where research on human subjects will be performed and describe the role of those sites and collaborating investigators in performing the proposed research. Explain how data from the site(s) will be obtained, managed, and protected.

Note: See the Department of Health and Human Services Office of Research Protection Subparts B-D for additional protections for vulnerable populations.

http://www.hhs.gov/ohrp/policy/populations/index.html.

Vertebrate Animals

IACUC approval must be obtained before animal work begins. An IACUC approval letter must be uploaded to ProposalCentral immediately upon approval.

Provide your rationale for using live vertebrate animals including the:

1. Necessity for using the animals and species proposed;
2. Appropriateness of the strains, ages, genders of the animals to be used;
3. Justifications for, and appropriateness of, the numbers of animals proposed. When completing the Targeted Enrollment Table, select non-human subjects research and check the box that most appropriately describes your research.

Biohazards

Briefly describe whether any materials or procedures proposed are potentially hazardous to research personnel, equipment, and/or the environment. What protections will mitigate such risks? Include biological and chemical hazards, if applicable.

Authentication of Key Biological and/or Chemical Resources

Briefly describe methods to ensure the identity and validity of key biological and/or chemical resources to be used in the proposed studies. These resources may or may not be generated with ACS funds and:

- may differ from laboratory to laboratory or over time;
- may have qualities and/or qualifications that could influence the research data; and
- must be integral to the proposed research.

These may include, but are not limited to, cell lines, specialty chemicals, antibodies, and other biologics. Researchers should transparently report how they have authenticated key resources, so consensus can emerge.

Standard laboratory reagents that are not expected to vary do not need to be included in the plan (e.g., buffers and other common biologicals or chemicals). After reviewers assess the information you provide in this Section, their questions will need to be addressed prior to an award.

In this section, focus only on authentication and/or validation of key resources to be used in the study. Include all other information within the page limits of the research strategy. Applications that fail to comply may be dismissed.

12. STATEMENT OF INSTITUTIONAL SUPPORT (PAGE 9.1)

The Lead PI must include a letter from the Department Chair (or equivalent) with the application. This letter should clearly state the commitment of the institution to support the PI and their research program. Details should include, but are not limited to, salary support, start-up funds, the current term of the applicant's appointment, dedicated space for the research proposal, startup funds, and the amount of protected time for clinical researchers (if applicable). The letter should also describe the Department's long-term goals for the PI's career.

If any start-up funds have been provided from an extramural source, this should be included here as well.

A letter of institutional support is *optional* for the Team Principal(s), but highly encouraged, especially if there are considerations beyond the information included in the Team Principal's support documents or if these they are at different institutions than the Lead PI.

13. APPENDIX TO APPLICATION

You may upload and submit other key documents as part of your application. However, applicants are urged to keep this section as brief as possible. Appended materials may include:

- Letters of support
- Recent reprints or preprints (optional)
- Clinical Protocols (if applicable)

It is not necessary to number the pages of the Appendix, but please list by categories (i.e., reprints, preprints, etc.) in the Table of Contents of the application**.**

III. REVIEWER GUIDELINE CRITERIA

For each section, reviewers are directed to focus on the strengths and weaknesses. Your final score should align with your written critique.

1. ALIGNMENT WITH ACS RESEARCH PRIORITY AREAS AND LEAP RFA GOALS

Has the team identified and appropriately justified how their project fits within one or more ACS research priority areas? Evaluate the alignment of the proposed project with the goals of the LEAP RFA and RRP's mission?

2. LEAD PI AND RESEARCH TEAM

Provide an overall evaluation of the candidacy of key research team members. Specifically, do the Lead PI and Team Principal(s) bring a diversity of skills, expertise, and perspectives to the team that are complementary and critical to the success of the proposed project? Assess the Lead PI's academic, clinical, and/or scientific qualifications and their commitment to cancer-related research. Evaluate their qualifications considering the following items: education; training (board-eligible or board-certified, if applicable); research experiences; and scholarly successes including the number and impact of peer-review publications. Does their education, training, research program, and collaborations (past and current) provide evidence of productivity and distinction? Does the research team have the training and experiences needed to carry out the proposed research? Are there feasible and well-articulated plans for communicating as well as the sharing resources and data amongst the team?

3. REPLY TO PREVIOUS REVIEWS [IF APPLICABLE]

Note whether this is a resubmission and comment on adequacy of response to critiques.

4. RESEARCH PLAN

Provide a brief overview of the project.

5. RESEARCH PLAN – SIGNIFICANCE AND CANCER RELEVANCE

Does the project address an important problem or a critical barrier to progress in the field? If the aims of the project are achieved, how will scientific knowledge, technical capability, and/or clinical practice improve? How will successful completion of the aims change the concepts, methods, technologies, treatments, services, or preventative interventions that drive this field? How is this research relevant to the *RUNX1*-FPD patient community and their families/caregivers?

6. RESEARCH PLAN – INNOVATION/IMPROVEMENT

What is the potential that the proposed team science will challenge and seek to shift current research understanding or clinical practice paradigms by utilizing novel theoretical concepts, approaches or methodologies, instrumentation, or interventions? Does the research propose meaningful improvements or address critical gaps?

7. RESEARCH PLAN – APPROACH

Are the study design, methods for implementation, data collection and analysis appropriate for answering the research question(s)? Where appropriate, are proposed recruitment and/or case ascertainment methods well developed? Is the sample size adequate? Is the research timeline realistic? Are potential pitfalls, alternative approaches, and future plans articulated and appropriate?

8. RESEARCH PLAN – ENVIRONMENT AND RESOURCES

Will the scientific environment and institutional support contribute to the probability of success? Will the project benefit from unique features of the scientific environment, subject populations, or collaborative arrangements? If the Lead PI or Team Principals are early-stage researchers, are there competitive start-up funds to support the proposed subproject(s)?

9. BUDGET

NOT TO BE CONSIDERED IN SCORING

Evaluate the overall budget and individual budget categories with respect to the award cap and the project aims. Are the budget items justified, specified, and accurate? Is the percent effort of key personnel appropriate? Is there potential overlap with other funded research of the Lead PI or Team Principal(s)? If the budget includes a request for funds to be expended outside the United States or its territories, is there an explanation of why such costs are essential for the successful conduct of the project, and why there are no alternatives?

10. COMPLIANCE STATEMENTS

NOT TO BE CONSIDERED IN SCORING

1. **Human Subjects:** If applicable, evaluate the plans for protection of human subjects from research risks justified in terms of the scientific goals and research strategy proposed. For example, are the potential benefits and risks to subjects articulated reasonable and appropriate given the study design? Are their plans for conducting sub-analysis by group, data security and confidentiality, biohazards and data and safety monitoring adequate?
2. **Inclusion of Women, Minorities, and Children:** When the proposed project involves human subjects, evaluate the adequacy of the proposed plans for inclusion or exclusion of minorities, male and female genders, as well as children.
3. **Vertebrate Animals:** Evaluate the plan for live, vertebrate animals as part of the scientific assessment according to the following points: 1) necessity for the use of the animals and species proposed; 2) appropriateness of the strains, ages, and gender; 3) justifications for, and appropriateness of, the numbers of animals.

4. **Biohazards:** Assess whether materials or procedures proposed are potentially hazardous to research personnel and/or the environment, and if needed, determine whether adequate protection is proposed.

RESEARCH SCHOLAR GRANT

INSTRUCTIONS

I. PREPARING THE APPLICATION

1. COVER PAGES

Complete all fields, which include mandatory e-signature for the PI. We provide text boxes for e-signatures for the departmental chair (or equivalent) and institutional officials to accommodate institution-specific requirements for proposal submissions, but neither is required for submission to ACS. Note: the PI must enable other users' access to the application on ProposalCentral to permit their e-signatures. If you have received a letter from the ACS Eligibility Committee, indicate that in the Program Eligibility information section and upload the correspondence in the Appendix. See the General Instructions for more details.

II. APPLICATION TEMPLATES

Once an application is started on ProposalCentral, all necessary application templates are available to download. Complete off-line (described in individual sections below) and upload as .pdf documents before submitting the online application. *For assistance, see ProposalCentral's FAQ or call support at 1-800-875-2562.*

1. TABLE OF CONTENTS (PAGE 1.1)

Complete the Table of Contents by indicating the appropriate page numbers for the Research Plan section; limit the length of the Table of Contents to 2 pages.

2. BIOGRAPHICAL SKETCH OF APPLICANT (PAGE 2.1)

Complete the current NIH Biosketch template, following the formats and instructions provided by the NIH. The Biographical Sketch may not exceed 5 pages.

3. REPLY TO PREVIOUS REVIEW (PAGE 3.1)

IF THE APPLICATION IS A NEW SUBMISSION, upload the provided template with "Not Applicable" in the body.

For resubmissions, address the points raised in the previous critiques and direct the reviewer to the specific sections of the text, figures, or tables where edits have been made. Revisions should be easily identifiable in the revised application (e.g., bold type, italicized, or underline type). This section should not exceed 3 pages.

4. PREVIOUS CRITIQUES (resubmissions only)

Go to the "Submitted" page, select "View Review Info," click "Print" to save it as a .pdf. Upload the document to your new application with the other proposal sections.

5. RESEARCH PLAN AND ENVIRONMENT (PAGE 4.1)

Section (A) below (Specific Aims) should not exceed 1 page. Sections (B) through (E) below must not exceed 12 pages. This page limit does not include Sections (F) through (H).

A. Specific Aims *(not to exceed 1 page)*. List the objectives and goals of your proposed research and briefly describe the scientific aims.

B. Background and Significance. Concisely summarize and critically evaluate relevant work done by your laboratory and others. Specifically state how the successful completion of the work proposed will advance scientific knowledge that is relevant to the LEAP RFA. How will the proposed project address the need for cancer interception and/or prevention therapies in the *RUNX1*-FPD patient community?

C. Innovation.

- Explain any ways in which the application challenges and seeks to shift current research or clinical-practice paradigms. Innovation may also be found in the study population by including understudied groups and/or novel aspects of disease.
- Describe any novel theoretical concepts, approaches, methodologies, instrumentation, or intervention(s) to be developed or used, and the advantage they offer over existing ones.
- Explain any refinements, improvements, or new applications of theoretical concepts, approaches, methodologies, instrumentation, or interventions.

D. Preliminary Studies. Provide results of your prior research that are relevant to this proposal; reprints or preprints may be included in the Appendix. Note that the entire research plan is considered confidential, including any unpublished research.

E. Research Design. Describe your overall hypothesis, proposed methods, procedures, and data analysis in sufficient detail to permit evaluation by other scientists; include your rationale for approaches and analysis. Explain your project's feasibility and how the experiments proposed will address the Specific Aims. Discuss potential difficulties and limitations of your proposed methods and provide alternative approaches. Inclusion of an experimental timeline can be helpful.

F. Experimental Details *(optional – not to exceed 3 pages).* This section is available if more in-depth descriptions of the experimental design, technologies, or assays are needed to convey the specific approaches and procedures proposed.

G. Environment. Briefly describe the space and equipment available to carry out the proposed research (e.g., space designated specifically for your research program, shared space and/or core facilities). Investigators must have an institutional commitment of research facilities and the amount of committed space must be verified (see Statement of Institutional Support below). This section is required and especially important for all non-tenure track applicants.

H. References. Each literature citation should include title, authors, book or journal, volume number, page numbers, and year of publication. There is no page limitation; this section is not included in the 12-page limit of Sections (B) through (E).

6. DETAILED BUDGET

Complete the budget page located online at ProposalCentral. Use a start date of September 1, 2025.

A. Personnel. Names and positions of all key personnel must be individually listed, and the percentage of time to be devoted to the project by each person should be entered. List all key personnel (defined as individuals who will participate actively in the design and/or execution of the studies and have a level of effort >0%) other than the PI. Details of contractual arrangements with key personnel should be provided in the Justification of Budget section.

If the individual has not been selected, please list as "vacancy." Personnel may receive salary support up to a maximum that equals the NIH salary cap, prorated according to their percent effort on the project. If a Key Person is not receiving salary, you can request $0 for salary, but their percent effort is still required. Their effort and contribution to the project should be outlined in the Budget Justification even if they are not being compensated.

The costs to the institution of employee fringe benefits should be indicated as a percent of the employee's salary. The amount of fringe benefits requested must be prorated to the salary requested. For example, if 50 percent of an individual's annual salary is requested, then no more than 50 percent of that individual's annual cost for fringe benefits can be requested.

NOTE: The Society does not cover the costs of student tuition or fees for graduate or undergraduate students.

B. Equipment

- **Permanent equipment.** Defined as items of nonexpendable property with a purchase cost per unit that equals or exceeds $5,000 with a useful life of more than one year. List separately and justify the need for each item of permanent equipment. Note: the cost of permanent equipment is not included in the direct cost total used to calculate indirect costs.
- **Small or expendable equipment.** Defined as expendable property with a purchase cost per unit that is less than $5,000 and/or that has a short service life (<1 year). Note: Equipment that equals or exceeds $5,000 with a useful life of more than one year is not included in the direct cost total used to calculate indirect costs.
- **General purpose equipment.** Equipment such as computers used primarily or exclusively in the actual conduct of the proposed scientific project are considered direct costs and may be included in the direct cost total used to calculate indirect costs. Computers or other general-purpose equipment that will be used on multiple projects or for personal use are not allowable expenditures.

C. Supplies. Group supplies into major categories (e.g., glassware, chemicals, radioisotopes, survey materials, animals, etc.).

D. Travel. List all travel expenses. Any foreign travel requires **pre-approval** by your Scientific Office. Domestic travel expenses do not require pre-approval.

E. Miscellaneous Expenditures. List specific amounts for each item. Examples of allowed expenditures include publication costs and special fees (e.g., pathology, computer time and scientific software, and equipment maintenance).

F. Subcontracts. If any portion of the proposed research is to be carried out at another institution, enter the total direct costs in the online budget detail page on ProposalCentral. Each subcontract should be listed separately. Then provide a categorical breakdown of costs using the Subcontractor Budget and Justification form, using one form per subcontractor. Upload the form(s) when complete, entering the subcontractor's name in the "describe attachment" field.

Subcontracts for the research project may be with public or private institutions, provided they do not violate ACS policies. Subcontracts involving a contractor residing outside the borders of the United States are not permitted, unless the applicant can document that it is not feasible to have the work performed within the United States.

Administrative pages: A Letter of Agreement between institutions pertaining to the subcontract should be included in the Appendix.

G. Indirect Costs. To help the institution provide proper laboratory and clinical facilities, the Society will permit an indirect cost (IDC) allowance of up to 10% of the direct costs, excluding permanent equipment. If there is a subaward(s), indirect costs can be provided to the secondary institution through negotiation with the Principal Investigator's institution but the total amount of indirect costs, inclusive of subcontracts, may not exceed 10% of the award. If a subcontract is receiving indirect costs, list the indirect costs for each institution separately in the indirect costs section of the budget form.

Example: Budget Cost Totals Year 1 for LEAP-RSG

Primary Direct Costs	$165,000	Primary IDC	$16,500
Subcontract Direct Costs	$50,000	Secondary IDC	$5,000
Total Direct	$215,000	Total Indirect (10%)	$21,500
Total Costs Year 1		$236,500	

Note: Applicants should not budget above or below the allowable indirect cost rate.

H. Total Amount Requested. Budget totals should reflect a maximum duration of 4 years. The maximum allowable budget is $946,000: $215,000 direct costs per year and 10% indirect costs for the 4-year project period.

Note: For budgets that do not request the maximum allowable amount, if the grant is funded, the ACS will round the total to the nearest thousand dollars. We encourage applicants to request a budget amount that is rounded to an even thousand dollars.

7. JUSTIFICATION OF BUDGET

Provide budget justification on the template provided. Justify all items of permanent equipment costing over $5,000, as well as your needs for personnel, supplies, travel, and other miscellaneous items. If the budget includes a request for funds to be expended outside the United States or its territories, include an explanation of why such costs are essential for the successful conduct of the project, and why there are no alternatives.

Provide details of contractual arrangements with key personnel in this section.

8. BIOGRAPHICAL INFORMATION OF KEY PERSONNEL (PAGE 5.1)

Provide information for all key personnel involved in the project. Complete the NIH Biosketch template. **NOTE: Follow the format and instructions provided by the NIH.**

9. OTHER SUPPORT (PAGE 6.1)

Applicants should ensure that they include all requested items listed below, especially when modifying Other Support documents that were prepared for other funding agencies.

The ACS does not require applicants and Key Personnel to sign their Other Support document.

Provide the following information separately for the PI and all other Key Personnel:

A. Current Support. List all current funding from intramural and extramural sources (e.g., institutional awards and grants from for-profit and not-for-profit agencies, including other grants from the ACS). Provide for each award:

a. Source of funds
b. Grant number
c. Project title
d. Inclusive dates of approved or proposed project. For example, in the case of NIH support, provide the dates of the approved or proposed competitive segment.
e. Total **direct** costs
f. Role (e.g., PI, co-PI, co-I, etc.) and percent effort or person-months. For an active project, use person months, even if unsalaried for the current budget period. Classify person-months as academic, calendar, and/or summer.
g. An outline of the goals of the project in a brief paragraph.
h. A clear indication of overlap and differences between this grant and the proposed study. If necessary, include an explanatory letter in the Appendix.

B. Pending Support. List all pending applications for funding from intramural and extramural sources (e.g., institutional awards and grants from for-profit and not-for-profit agencies, including other grants from the ACS). Provide for each award:

a. Source of funds
b. Project title
c. Inclusive dates of approved or proposed project. For example, in the case of NIH support, provide the dates of the approved or proposed competitive segment.
d. Total **direct** costs
e. Role (e.g., PI, co-PI, co-I, etc.) and percent effort or person-months. Classify person-months as academic, calendar, and/or summer.
f. An outline of the goals of the project in a brief paragraph.
g. A clear indication of overlap and differences between this grant and the proposed study. If necessary, include an explanatory letter in the Appendix. In such cases, you may accept only one award if both are approved for funding. The ACS does not negotiate partial funding of grants with overlapping specific aims.

Please notify the Scientific Director if a pending extramural grant, that affects the feasibility of the PI's proposed effort or imposes scientific overlap, is funded during ACS peer review.

C. Institutional Support. Provide the following information for the Principal Investigator only:

a. For early-stage investigators, a description of any start-up funds provided by the institution to the applicant. If an applicant has received start-up funding from a source outside their institution, this should be including here as well, or appropriately marked as start-up funding in the current support section. An award of start-up funds does not decrease the likelihood of ACS support and can be important evidence of institutional commitment.

b. Details of the institutional commitment to support the applicant's salary.

c. The current term of the applicant's appointment.

The Statement of Institutional Support written by the Department Chair should align with the details provided by the PI in Section C of this template.

Non-tenure track applicants should also include a more detailed description of the space committed to the project. If the applicant is in the same department as a previous mentor, provide information on the relationship between the mentor's research space, and the space available for the project, and the relationship between funded research projects in the mentor's laboratory and the present application.

10. LIST OF LETTERS OF SUPPORT FROM COLLABORATORS/CONSULTANTS (PAGE 7.1)

Provide a list of collaborators, co-investigators, and consultants on the template and upload the letters of support provided by each. The letter should outline the role that person will play with sufficient detail for evaluation of the value of the individual contribution. Upload the template with "Not Applicable" in the body if there are no collaborators, co-investigators, etc.

11. COMPLIANCE STATEMENTS (PAGE 8.1)

Human Subjects

Selection of study population. When conducting research on humans, provide the rationale for selecting your target population. Include the involvement of children, minorities, and especially vulnerable populations such as neonates, pregnant women, prisoners, institutionalized individuals, or others who may be considered vulnerable populations or others who may be considered vulnerable populations. The institution is required to ensure IRB approval is obtained for the grant to start, and the approval documentation is uploaded into ProposalCentral within 3 months of grant activation.

On the planned enrollment form, estimate the total number of subjects by primary ethnicity and race, race/ethnicity subgroup (if applicable), and gender. Include a rationale for excluding any population. Estimate the planned enrollment based on these calculations.

Also include estimates of the sample distribution by gender, race, and ethnicity (if available). For example, if your sample size is 200, to complete the *total number of subjects* column by race (based on what you know about the population demographics or the existing dataset you plan to analyze), multiply by the estimated percentage.

Estimated percentage of the population by race	Estimated total number of subjects
50% White	100 (200 x 0.50)
49% AA	98 (200 x 0.49)
1% Asian	2 (200 x 0.01)

For applicants performing research with non-human subjects, check the box that most appropriately describes your research.

Potential benefits, risks, and knowledge gained. Succinctly describe the potential benefits and risks to subjects (physical, psychological, financial, legal, or other). Explain why the risks are

reasonable in relation to the anticipated benefits, both to research participants and others. Where appropriate, describe alternative treatments and procedures, including the risks and potential benefits to participants.

Research specimens and data. If the proposed research involves biospecimens, explain how the research material will be obtained from living subjects and what materials will be collected. List any specific non-biological data, such as demographic information, and how it will be collected, managed, and protected. Specify who will have access to such data and what measures you will maintain to keep personally identifiable private information confidential.

Collaborating sites. Where appropriate, list any collaborating sites where research on human subjects will be performed and describe the role of those sites and collaborating investigators in performing the proposed research. Explain how data from the site(s) will be obtained, managed, and protected.

Note: See the Department of Health and Human Services Office of Research Protection Subparts B-D for additional protections for vulnerable populations.

http://www.hhs.gov/ohrp/policy/populations/index.html.

Vertebrate Animals

IACUC approval must be obtained before animal work begins. An IACUC approval letter must be uploaded to ProposalCentral immediately upon approval.

Provide your rationale for using live vertebrate animals including the:

1. Necessity for using the animals and species proposed;
2. Appropriateness of the strains, ages, genders of the animals to be used;
3. Justifications for, and appropriateness of, the numbers of animals proposed. When completing the Targeted Enrollment Table, select non-human subjects research and check the box that most appropriately describes your research.

Biohazards

Briefly describe whether any materials or procedures proposed are potentially hazardous to research personnel, equipment, and/or the environment. What protections will mitigate such risks? Include biological and chemical hazards, if applicable.

Authentication of Key Biological and/or Chemical Resources

Briefly describe methods to ensure the identity and validity of key biological and/or chemical resources to be used in the proposed studies.

These resources may or may not be generated with ACS funds and:

- may differ from laboratory to laboratory or over time;
- may have qualities and/or qualifications that could influence the research data; and
- must be integral to the proposed research.

These may include, but are not limited to, cell lines, specialty chemicals, antibodies, and other biologics. Researchers should transparently report how they have authenticated key resources, so consensus can emerge.

Standard laboratory reagents that are not expected to vary do not need to be included in the plan (e.g., buffers and other common biologicals or chemicals). After reviewers assess the information you provide in this Section, their questions will need to be addressed prior to an award.

In this section, focus only on authentication and/or validation of key resources to be used in the study. Include all other information within the page limits of the research strategy. Applications that fail to comply may be dismissed.

14. STATEMENT OF INSTITUTIONAL SUPPORT (PAGE 9.1)

The Department Chair (or equivalent) should provide the following information and any pertinent supporting documentation for the Principal Investigator only:

- A description of any start-up funds provided by the institution to the applicant. If any start-up funds have been provided from an extramural source, this should be included here as well. An award of start-up funds does not decrease the likelihood of ACS support and can be important evidence of institutional commitment.
- Details of the institutional commitment to support the applicant's salary and research program.
- The current term of the applicant's appointment.
- For non-tenure track applicants, additional descriptions of the space and resources committed to the project should be highlighted.

12. APPENDIX TO APPLICATION

In addition to the application templates, other key documents may be uploaded and submitted as part of the application. However, applicants are urged to keep this section as brief as possible. Appended materials may include:

- Letter from ACS Eligibility Committee confirming eligibility (if applicable)
- Recent reprints or preprints (optional)
- Clinical protocols (if applicable)

III. REVIEWER GUIDELINE CRITERIA

For each section, the reviewers are directed to focus on the strengths and weaknesses. Your final score should align with your written critique.

1. ALIGNMENT WITH ACS RESEARCH PRIORITY AREAS AND LEAP RFA GOALS

Has the applicant identified and appropriately justified how their project fits within one or more ACS research priority areas? Has the applicant appropriately justified how their project aligns with the goals of the LEAP RFA and RRP's mission?

2. CANDIDATE

Provide an overall evaluation of the candidate's academic, clinical, and/or scientific qualifications and their commitment to cancer-related research. Assess the qualifications of the applicant considering the following items: goals and commitment to cancer-related research; past education; past training (board-eligible or board-certified), if appropriate; past research experience, and number and impact of previous publications.

The RSG award is intended for independent scientists with clear evidence of institutional commitment as confirmed in the Letter of Support from their Department Chair.

3. REPLY TO PREVIOUS REVIEWS [IF APPLICABLE]

Note whether this is a resubmission and comment on adequacy of response to critiques.

4. RESEARCH PLAN

Provide a brief overview of the project.

5. RESEARCH PLAN – SIGNIFICANCE AND CANCER RELEVANCE

Does the project address an important problem or a critical barrier to progress in the field? If the aims of the project are achieved, how will scientific knowledge, technical capability, and/or clinical practice improve? How will successful completion of the aims change the concepts, methods, technologies, treatments, services, or preventative interventions that drive this field? How is this research relevant or how will it impact the *RUNX1*-FPD patient community and their family/caregivers?

6. RESEARCH PLAN – INNOVATION/IMPROVEMENT

What is the potential that the proposed study will challenge and seek to shift current research understanding or clinical practice paradigms by utilizing novel theoretical concepts, approaches or methodologies, instrumentation, or interventions? Does the research propose meaningful improvements or address critical gaps?

7. RESEARCH PLAN – INVESTIGATOR/RESEARCH TEAM

Does the PI and research team have the training and experience needed to carry out the proposed research? Do team members have complementary skills and a feasible plan for collaboration, where applicable?

8. RESEARCH PLAN – APPROACH

Are the study design, methods for implementation, data collection and analysis appropriate for answering the research question(s)? Where appropriate, are proposed recruitment and/or case ascertainment methods well developed? Is the sample size adequate? Is the research timeline realistic? Are potential pitfalls, alternative approaches, and future plans articulated?

9. RESEARCH PLAN – ENVIRONMENT AND RESOURCES

Will the scientific environment and institutional support contribute to the probability of success? Will the project benefit from unique features of the scientific environment, subject populations, or collaborative arrangements? For early-stage PIs, are there competitive start-up funds to support the candidate's independent research program?

11. BUDGET

NOT TO BE CONSIDERED IN SCORING

Evaluate the overall budget and individual budget categories with respect to the award cap and the project aims. Are the budget items justified, specified, and accurate? Is the percent effort of key personnel appropriate? Is there a potential overlap with the PI's other funded research? If the budget includes a request for funds to be expended outside the United States or its territories, is there an explanation of why such costs are essential for the successful conduct of the project, and why there are no alternatives?

It is the policy of the American Cancer Society not to fund projects that are supported all or in part by another agency.

12. COMPLIANCE STATEMENTS

NOT TO BE CONSIDERED IN SCORING

1. **Human Subjects:** If applicable, evaluate the plans for protection of human subjects from research risks justified in terms of the scientific goals and research strategy proposed. For example, are the potential benefits and risks to subjects articulated reasonable and appropriate given the study design? Are their plans for conducting sub-analysis by group, data security and confidentiality, biohazards and data and safety monitoring adequate?
2. **Inclusion of Women, Minorities, and Children:** When the proposed project involves human subjects, evaluate the adequacy of the proposed plans for inclusion or exclusion of minorities, male and female genders, as well as children.
3. **Vertebrate Animals:** Evaluate the plan for live, vertebrate animals as part of the scientific assessment according to the following points: 1) necessity for the use of the animals and species proposed; 2) appropriateness of the strains, ages, and gender; 3) justifications for, and appropriateness of, the numbers of animals.
4. **Biohazards:** Assess whether materials or procedures proposed are potentially hazardous to research personnel and/or the environment, and if needed, determine whether adequate protection is proposed.

APPENDIX A: GENERIC EXAMPLE OF A GENERAL AUDIENCE SUMMARY

Title: Characterization of Early Breast Cancer by Contrast-Enhanced MRI

Magnetic resonance imaging (MRI) shows great promise as a supplementary tool to mammography and clinical exam for diagnosis and staging of breast cancer. Most research in this area has focused on diagnosis of invasive breast cancer. We have been interested in improving the ability of MRI to characterize early cancer, particularly at the pre-invasive stage. At the present time, the accuracy of MRI to for diagnosing pre-invasive breast disease, or ductal carcinoma in situ (DCIS) is low, mainly because the pattern of contrast enhancement for DCIS is difficult to distinguish from that of benign proliferative disease in the breast. An important emerging application for MRI is screening and surveillance in women at increased risk of developing breast cancer. There are now genetic tests and statistic al models that can accurately predict a woman's risk. However, there are few effective options for prevention and early detection. Women with a genetic risk of developing cancer are also likely to develop cancer at an early age when breast tissue is dense and mammography effectiveness is limited. MRI is very sensitive to small cancers and not limited by breast density. The studies we propose will address the specificity of MRI for early cancer and will have direct application to MRI screening and surveillance methods. We believe that in the future, a better understanding of the biological basis of patterns on MRI may lead to new methods for identifying breast tissue that is at risk for developing cancer.

APPENDIX B: GENERIC EXAMPLE OF STRUCTURED TECHNICAL ABSTRACT

Title: Structure and Function of DNA Replication Origins in Yeast

Background: The initiation of DNA replication marks a crucial step in the eukaryotic cell cycle. Entering S phase commits the cell to a full round of cell division. Studies in the budding yeast, *Saccharomyces cerevisiae*, have driven the field during the past decade, although our data and work by others suggest that many aspects of DNA replication are highly conserved in all eukaryotes, including humans. Origin structure has been best described for autonomously replicating sequence (ARS) function. Different origins have a different domain organization, and it is unclear how these differences impact the initiation of DNA replication. Recently, we have shown that initiation events occur at distinct nucleotide positions in yeast, a feature that appears to be conserved in humans.

Objective/Hypothesis: Our preliminary studies indicate that origin organization dictates where replication initiates. Therefore, we propose to define how features of ARS elements contribute to the precise initiation mechanism.

Specific Aims: (1) To determine whether chromosomal origins other than ARS1 initiate DNA replication at a distinct site; (2) to identify what determines the replication start point within origins; and (3) to determine if chromatin structure affects the initiation pattern at ARS elements.

Study Design: Using a technique that we have recently developed, replication initiation point mapping, we will first map the nucleotide positions at which replication initiates in wild-type and mutant ARS elements. To address the issue of what role chromatin configuration plays in origin activation, we will analyze the nucleosome organization of different ARS loci in relation to those regions where the parental DNA double-strand unwinds first. We will correlate the sites of initiation with sites of unwinding and place those into context with the overall chromatin structure at a given chromosomal ARS locus.

Cancer Relevance: These studies will contribute to our understanding of the mechanism underlying origin activation in yeast and will aid us in understanding origin function in more complex, higher eukaryotes. Since uncontrolled origin activity directly translates into uncontrolled growth, the long-term goal of our studies is to apply our knowledge and techniques to human DNA replication in order to inhibit proliferation of cancerous cells.

APPENDIX C: CLASSIFICATION CATEGORIES - AREAS OF RESEARCH

The areas of research are based on seven broad categories called the Common Scientific Outline (CSO) developed by the International Cancer Research Partnership (ICRP):

1. Biology
2. Etiology
3. Prevention
4. Early Detection, Diagnosis and Prognosis
5. Treatment
6. Cancer Control, Survivorship and Outcomes Research

Applicants are asked to select from the following codes:

1 – BIOLOGY

Research included in this category looks at the biology of how cancer starts and progresses as well as normal biology relevant to these processes.

1.1 **Normal Functioning**

Examples of science that would fit:

- Developmental biology (from conception to adulthood) and the biology of aging
- Normal functioning of genes, including their identification and expression, and the normal function of gene products, such as hormones and growth factors
- Normal formation of the extracellular matrix
- Normal cell-to-cell interactions
- Normal functioning of apoptotic pathways
- Characterization of pluripotent progenitor cells (e.g., normal stem cells)

1.2 Cancer Initiation: Alterations in Chromosomes

Examples of science that would fit:

- Abnormal chromosome number
- Aberration in chromosomes and genes (e.g., in chronic myelogenous leukemia)
- Damage to chromosomes and mutation in genes
- Failures in DNA repair
- Aberrant gene expression
- Epigenetics
- Genes and proteins involved in aberrant cell cycles

1.3 Cancer Initiation: Oncogenes and Tumor Suppressor Genes

Examples of science that would fit:

- Genes and signals involved in growth stimulation or repression, including oncogenes (Ras, etc.), and tumor suppressor genes (p53, etc.)
- Effects of hormones and growth factors and their receptors such as estrogens, androgens, TGF-beta, GM-CSF, etc.
- Research into the biology of stem cell tumor initiation

1.4 Cancer Progression and Metastasis

Examples of science that would fit:

- Latency, promotion, and regression
- Expansion of malignant cells
- Interaction of malignant cells with the immune system or extracellular matrix
- Cell mobility, including detachment, motility, and migration in the circulation
- Invasion
- Malignant cells in the circulation, including penetration of the vascular system and extravasation
- Systemic and cellular effects of malignancy
- Tumor angiogenesis and growth of metastases
- Role of hormone or growth factor dependence/independence in cancer progression
- Research into cancer stem cells supporting or maintaining cancer progression
- Interaction of immune system and microbiome in cancer progression

1.5 Resources and Infrastructure

Examples of science that would fit:

- Informatics and informatics networks
- Specimen resources
- Epidemiological resources pertaining to biology
- Reagents, chemical standards
- Development and characterization of new model systems for biology, distribution of models to scientific community or research into novel ways of applying model systems, including but not limited to computer-simulation systems, software development, in vitro/cell culture models, organ/tissue models or animal model systems. Guidance note: this should only be used where the focus of the award is creating a model. If it is only a tool or a methodology, code to the research instead.
- Education and training of investigators at all levels (including clinicians and other health professionals), such as participation in training workshops, conferences, advanced research technique courses, and Master's course attendance. This does not include longer-term research-based training, such as Ph.D. or post-doctoral fellowships.

2 – ETIOLOGY

Research included in this category aims to identify the causes or origins of cancer - genetic, environmental, and lifestyle, and the interactions between these factors.

2.1 Exogenous Factors in the Origin and Cause of Cancer

Examples of science that would fit:

- Research into the role of lifestyle factors such as smoking, chewing tobacco, alcohol consumption, parity, diet, sunbathing, and exercise in the origin and cause of cancer or increasing the risk of cancer
- Research into the social determinants of cancer such as crime, housing dilapidation, (poor housing), neighborhood level, socio-economic status, and services and their relationship to cancer incidence and mortality, etc.
- Studies on the effect(s) of nutrients or nutritional status on cancer incidence
- Development, characterization, validation, and use of dietary/nutritional assessment instruments in epidemiological studies and to evaluate cancer risk
- Environmental and occupational exposures such as radiation, second-hand smoke, radon, asbestos, organic vapors, pesticides, and other chemical or physical agents
- Infectious agents associated with cancer etiology, including viruses (Human Papilloma Virus-HPV, etc.), and bacteria (helicobacter pylori, etc.)
- Viral oncogenes and viral regulatory genes associated with cancer causation
- Contextual Factors Contributing to Cancer Incidence (e.g., race/ethnicity, socioeconomic status, neighborhood factors, community factors, built environment)

2.2 Endogenous Factors in the Origin and Cause of Cancer

Examples of science that would fit:

- Free radicals such as superoxide and hydroxide radicals
- Identification /confirmation of genes suspected of being mechanistically involved in familial cancer syndromes; for example, BRCA1, Ataxia Telangiectasia, and APC
- Identification/confirmation of genes suspected or known to be involved in "sporadic" cancer events; for example, polymorphisms and/or mutations that may affect carcinogen metabolism (e.g., CYP, NAT, glutathione transferase, etc.)
- Investigating a role for stem cells in the etiology of tumors

2.3 Interactions of Genes and/or Genetic Polymorphisms with Exogenous and/or Endogenous Factors

Examples of science that would fit:

- Gene-environment interactions, including research into the role of the microbiome
- Interactions of genes with lifestyle factors, environmental, and/or occupational exposures such as variations in carcinogen metabolism associated with genetic polymorphisms

- Interactions of genes and endogenous factors such as DNA repair deficiencies and endogenous DNA damaging agents such as oxygen radicals or exogenous radiation exposure

2.4 Resources and Infrastructure Related to Etiology

Examples of science that would fit:

- Informatics and informatics networks; for example, patient databanks
- Specimen resources (serum, tissue, etc.)
- Reagents and chemical standards
- Epidemiological resources pertaining to etiology
- Statistical methodology or biostatistical methods
- Centers, consortia, and/or networks
- Development, characterization and validation of new model systems for etiology, distribution of models to the scientific community or research into novel ways of applying model systems, including but not limited to computer-simulation systems, software development, in vitro/cell culture models, organ/tissue models or animal model systems. Guidance note: this should only be used where the focus of the award is creating a model. If it is only a tool or a methodology, code to the research instead.
- Education and training of investigators at all levels (including clinicians and other health professionals), such as participation in training workshops, conferences, advanced research technique courses, and Master's course attendance. This does not include longer term research-based training, such as Ph.D. or post-doctoral fellowships.

3 – PREVENTION

Research included in this category looks at identifying individual and population-based primary prevention interventions, which reduce cancer risk by reducing exposure to cancer risks and increasing protective factors.

3.1 Interventions to Prevent Cancer: Personal Behaviors (Non-Dietary) that Affect Cancer Risk

Examples of science that would fit:

- Research on determinants of personal behaviors, such as physical activity, sun exposure, and tobacco use, known to affect cancer risk and interventions (including educational and behavioral interventions directed at individuals as well as population-based interventions including social marketing campaigns, environmental supports, and regulatory, policy and legislative changes), to change determinants or to target health inequalities.
- Directed education to specified populations of patients, health care providers, and at-risk groups about cancer risk and prevention and relevant interventions with the intent of promoting increased awareness and behavioral change. This includes communication of lifestyle models that reduce cancer risk, such as communicating smoking and tobacco cessation interventions, genetic counselling, or targeting/addressing health inequalities.

3.2 Dietary Interventions to Reduce Cancer Risk and Nutritional Science in Cancer Prevention

Examples of science that would fit:

- Quantification of nutrients, micronutrients, and purified nutritional compounds in cancer prevention studies
- Development, characterization, validation, and use of dietary/nutritional assessment instruments to evaluate cancer prevention interventions
- Research on determinants of dietary behavior and interventions to change diet, including educational and behavioral interventions directed at individuals as well as population-based interventions including social marketing campaigns, environmental supports, and regulatory and legislative changes, to change diet
- Education of patients, health care providers, at-risk populations, and the general population about cancer risk and diet
- Communicating cancer risk of diet to underserved populations, at-risk populations, and the general public
- Communication of nutritional interventions that reduce cancer risk
- Nutritional manipulation of the microbiome for cancer prevention

3.3 Chemoprevention

Examples of science that would fit:

- Chemopreventive agents and their discovery, mechanism of action, development, testing in model systems, and clinical testing
- Other non-vaccine, preventive measures such as prophylactic surgery (e.g., mastectomy, oophorectomy, prostatectomy etc.), use of antibiotics, immune modulators/stimulators or other biological agents
- Manipulation of the microbiome for cancer prevention (e.g. fecal transplant)

3.4 Vaccines

Examples of science that would fit:

- Vaccines for prevention, their discovery, mechanism of action, development, testing in model systems, and clinical testing (e.g., HPV vaccines)

3.5 Complementary and Alternative Prevention Approaches

Examples of science that would fit:

- Discovery, development, and testing of complementary/alternative medicine (CAM) approaches or other primary prevention interventions that are not widely used in conventional medicine or are being applied in different ways as compared to conventional medical uses
- Mind and body medicine (e.g., meditation, acupuncture, hypnotherapy), manipulative and body-based practices (e.g., spinal manipulation, massage therapy), and other practices (e.g., light therapy, traditional healing) used as preventive measures

3.6 Resources and Infrastructure Related to Prevention

Examples of science that would fit:

- Informatics and informatics networks; for example, patient databanks
- Specimen resources (serum, tissue, etc.)
- Epidemiological resources pertaining to prevention
- Clinical trials infrastructure
- Statistical methodology or biostatistical methods
- Centers, consortia, and/or networks
- Development and characterization of new model systems for prevention, distribution of models to scientific community or research into novel ways of applying model systems, including but not limited to computer-simulation systems, software development, in vitro/cell culture models, organ/tissue models or animal model systems. Guidance note: this should only be used where the focus of the award is creating a model. If it is only a tool or a methodology, code to the research instead.
- Education and training of investigators at all levels (including clinicians and other health professionals), such as participation in training workshops, conferences, advanced research technique courses, and Master's course attendance. This does not include longer term research-based training, such as Ph.D. or post-doctoral fellowships.

4 – EARLY DETECTION, DIAGNOSIS, AND PROGNOSIS

Research included in this category focuses on identifying and testing cancer markers and imaging methods that are helpful in detecting and/or diagnosing cancer as well as predicting the outcome or chance of recurrence or to support treatment decision making in stratified/personalized medicine.

4.1 Technology Development and/or Marker Discovery

Examples of science that would fit:

- Discovery or identification and characterization of markers (e.g., proteins, genes, epigenetic), and/or technologies (such as fluorescence, nanotechnology, etc.) that are potential candidates for use in cancer detection, staging, diagnosis, and/or prognosis
- Use of proteomics, genomics, expression assays, or other technologies in the discovery or identification of markers
- Defining molecular signatures of cancer cells, including cancer stem cells (e.g., for the purposes of diagnosis/prognosis and to enable treatment decision planning in personalized/stratified/precision medicine)

4.2 Technology and/or Marker Evaluation With Respect to Fundamental Parameters of Method

Examples of science that would fit:

- Development, refinement, and preliminary evaluation (e.g., animal trials, preclinical, and Phase I human trials) of identified markers or technologies such as genetic/protein

biomarkers (prospective or retrospective) or imaging methods (optical probes, PET, MRI, etc.)

- Preliminary evaluation with respect to laboratory sensitivity, laboratory specificity, reproducibility, and accuracy
- Research into mechanisms assessing tumor response to therapy at a molecular or cellular level

4.3 Technology and/or Marker Testing in a Clinical Setting

Examples of science that would fit:

- Evaluation of clinical sensitivity, clinical specificity, and predictive value (Phase II or III clinical trials), including theranostics and prediction of late/adverse events
- Quality assurance and quality control
- Inter- and intra-laboratory reproducibility
- Testing of the method with respect to effects on morbidity and/or mortality
- Study of screening methods, including compliance, acceptability to potential screenees, and receiver-operator characteristics. Includes education, communication (e.g., genetic counselling and advice on screening behavior based on cancer risk factors), behavioral and complementary/alternative approaches to improve compliance, acceptability or to reduce anxiety/discomfort, and evaluation of new methods to improve screening in healthcare settings.
- Research into improvements in techniques to assess clinical response to therapy

4.4 Resources and Infrastructure Related to Detection, Diagnosis, or Prognosis

Examples of science that would fit:

- Informatics and informatics networks; for example, patient databanks
- Specimen resources (serum, tissue, images, etc.)
- Clinical trials infrastructure
- Epidemiological resources pertaining to risk assessment, detection, diagnosis, or prognosis
- Statistical methodology or biostatistical methods
- Centers, consortia, and/or networks
- Development, characterization and validation of new model systems for detection, diagnosis or prognosis, distribution of models to the scientific community or research into novel ways of applying model systems, including but not limited to computer-simulation systems, software development, in vitro/cell culture models, organ/tissue models or animal model systems. Guidance note: this should only be used where the focus of the award is creating a model. If it is only a tool or a methodology, code to the research instead.
- Education and training of investigators at all levels (including clinicians and other health professionals), such as participation in training workshops, conferences, advanced

research technique courses, and Master's course attendance. This does not include longer term research-based training, such as Ph.D. or post-doctoral fellowships.

5 – TREATMENT

Research included in this category focuses on identifying and testing treatments administered locally (such as radiotherapy and surgery) and systemically (treatments like chemotherapy which are administered throughout the body) as well as non-traditional (complementary/alternative) treatments (such as supplements, herbs). Research into the prevention of recurrence and treatment of metastases are also included here.

5.1 Localized Therapies - Discovery and Development

Examples of science that would fit:

- Discovery and development of treatments administered locally that target the organ and/or neighboring tissue directly, including but not limited to surgical interventions, cryotherapy, local/regional hyperthermia, high-intensity, focused ultrasound, radiotherapy, and brachytherapy
- Therapies with a component administered systemically but that act locally (e.g., photodynamic therapy, radioimmunotherapy, radiosensitizers and theranostics)
- Development of methods of localized drug delivery of systemic therapies e.g., Pressurized Intraperitoneal Aerosol Chemotherapy (PIPAC), direct intratumoral polymers/gels/nanoparticles/microsomes etc.
- Research into the development of localized therapies to prevent recurrence
- Guidance note: localized therapies are considered to be localized when the site of action is the same as the site of administration.

5.2 Localized Therapies - Clinical Applications

Examples of science that would fit:

- Clinical testing and application of treatments administered locally that target the organ and/or neighboring tissue directly, including but not limited to surgical interventions, cryotherapy, local/regional hyperthermia, radiotherapy, and brachytherapy.
- Clinical testing and application of therapies with a component administered systemically but that act locally (e.g., photodynamic therapy, radiosensitizers and theranostics, Pressurized Intraperitoneal Aerosol Chemotherapy (PIPAC), direct intratumoral polymers/gels/nanoparticles/microsomes etc.)
- Phase I, II, or III clinical trials of promising therapies that are administered locally
- Side effects, toxicity, and pharmacodynamics
- Clinical testing of localized therapies to prevent recurrence and prevent and treat metastases

5.3 Systemic Therapies - Discovery and Development

Examples of science that would fit:

- Discovery and development of treatments administered systemically such as cytotoxic or hormonal agents, novel systemic therapies such as immunologically directed therapies (treatment vaccines, antibodies), gene therapy, angiogenesis inhibitors, apoptosis inhibitors, whole body hyperthermia, bone marrow/stem cell transplantation, differentiating agents, adjuvant and neo-adjuvant treatments, systemically-delivered nanoparticles/microsomes, cell-based therapies, manipulation of the microbiome etc.
- Identifying mechanisms of action of existing cancer drugs and novel drug targets, including cancer stem cells for the purposes of treatment/identifying drug targets
- Drug discovery and development, including drug metabolism, pharmacokinetics, pharmacodynamics, combinatorial chemical synthesis, drug screening, development of high throughput assays, and testing in model systems, including that which may aid treatment planning in stratified/personalized medicine
- Investigating the molecular mechanisms of drug resistance (including the role of cancer stem cells) and pre-clinical evaluation of therapies to circumvent resistance
- Development of methods of drug delivery
- Research into the development of systemic therapies to prevent recurrence

5.4 Systemic Therapies - Clinical Applications

Examples of science that would fit:

- Clinical testing and application of treatments administered systemically such as cytotoxic or hormonal agents, novel systemic therapies such as immunologically directed therapies (treatment vaccines, antibodies, antibiotics, theranostics or other biologics), gene therapy, angiogenesis inhibitors, apoptosis inhibitors, whole body hyperthermia, bone marrow/stem cell transplantation, and differentiating agents, adjuvant and neo-adjuvant treatments, systematically-delivered nanoparticles/microsomes, cell-based therapies, manipulation of the microbiome etc.
- Phase I, II, or III clinical trials of promising therapies administered systemically
- Side effects, toxicity, and pharmacodynamics
- Clinical testing of systemic therapies to prevent recurrence and prevent and treat metastases

5.5 Combinations of Localized and Systemic Therapies

Examples of science that would fit:

- Development and testing of combined local and systemic approaches to treatment (e.g., radiotherapy and chemotherapy, or surgery and chemotherapy)
- Clinical application of combined approaches to treatment such as systemic cytotoxic therapy and radiation therapy
- Development and clinical application of combined localized and systemic therapies to prevent recurrence and prevent and treat metastases

5.6 Complementary and Alternative Treatment Approaches

Examples of science that would fit:

- Discovery, development, and clinical application of complementary/alternative medicine (CAM) treatment approaches such as diet, herbs, supplements, natural substances, or other interventions that are not widely used in conventional medicine or are being applied in different ways as compared to conventional medical uses
- Complementary/alternative or non-pharmaceutical approaches to prevent recurrence and prevent and treat metastases

5.7 Resources and Infrastructure Related to Treatment and the Prevention of Recurrence

Examples of science that would fit:

- Informatics and informatics networks; for example, clinical trials networks and databanks
- Mathematical and computer simulations
- Specimen resources (serum, tissue, etc.)
- Clinical trial groups
- Clinical treatment trials infrastructure
- Epidemiological resources pertaining to treatment
- Statistical methodology or biostatistical methods
- Drugs and reagents for distribution and drug screening infrastructures
- Centers, consortia, and/or networks
- Development and characterization of new model systems for treatment, distribution of models to scientific community or research into novel ways of applying model systems, including but not limited to computer-simulation systems, software development, in vitro/cell culture models, organ/tissue models or animal model systems. Note: this should only be used where the focus of the award is creating a model. If it is only a tool or a methodology, code to the research instead.
- Reviews/meta-analyses of clinical effectiveness of therapeutics/treatments
- Education and training of investigators at all levels (including clinicians and other health professionals), such as participation in training workshops, conferences, advanced research technique courses, and Master's course attendance. This does not include longer term research-based training, such as Ph.D. or post-doctoral fellowships.

6 - CANCER CONTROL, SURVIVORSHIP, AND OUTCOMES RESEARCH

Research included in this category includes a broad range of areas: patient care and pain management; tracking cancer cases in the population; beliefs and attitudes that affect behavior regarding cancer control; ethics; education and communication approaches for patients, family/caregivers, and health care professionals; supportive and end-of-life care; and health care delivery in terms of quality and cost effectiveness.

6.1 Patient Care and Survivorship Issues

Examples of science that would fit:

- Research into patient-centered outcomes
- Quality of life

- Pain management
- Psychological impacts of cancer survivorship
- Rehabilitation, including reconstruction and replacement
- Economic sequelae, including research on employment, return to work, and vocational/educational impacts on survivors and their families/caregivers
- Reproductive issues
- Long-term issues (morbidity, health status, social and psychological pathways)
- Symptom management, including nausea, vomiting, lymphedema, neuropathies, etc.
- Prevention and management of long-term treatment-related toxicities and sequelae, including symptom management (e.g., physical activity or other interventions), prevention of mucosities, prevention of cardiotoxicities, opportunistic infections, cachexia etc.
- Psychological, educational or complementary/alternative (e.g., hypnotherapy, relaxation, transcendental meditation, imagery, spiritual healing, massage, biofeedback, herbs, spinal manipulation, yoga, acupuncture) interventions/approaches to promote behaviors that lessen treatment-related morbidity and promote psychological adjustment to the diagnosis of cancer and to treatment effects
- Burdens of cancer on family members/caregivers and interventions to assist family members/caregivers
- Educational interventions to promote self-care and symptom management
- Research into peer support, self-help, and other support groups
- Behavioral factors in treatment compliance

6.2 Surveillance

Examples of science that would fit:

- Epidemiology and end results reporting (e.g., SEER)
- Registries that track incidence, morbidity, co-morbidities/symptoms, long-term effects and/or mortality related to cancer
- Surveillance of established cancer risk factors in populations such as diet, body weight, physical activity, sun exposure, and tobacco use, including method development
- Analysis of variations in established cancer risk factor exposure in populations by demographic, geographic, economic, or other factors
- Trends in use of interventional strategies in populations (e.g., geographic variation)

6.3 Population-based Behavioral Factors

Examples of science that would fit:

- Research into populations' attitudes and belief systems (including cultural beliefs) and their influence on behaviors related to cancer control, outcomes and treatment. For example, how populations' beliefs can affect compliance/interaction with all aspects of the health care/service provision

- Research into the psychological effects of genetic counselling
- Research into behavioral barriers to improving cancer care/survivorship clinical trial enrollment

6.4 Health Services, Economic and Health Policy Analyses

Examples of science that would fit:

- Development and testing of health service delivery methods
- Interventions to increase the quality of health care delivery
- Impact of organizational, social, and cultural factors on access to care and quality of care, including studies on variations or inequalities in access among racial, ethnic, geographical or socio-economic groups
- Studies of providers such as geographical or care-setting variations in outcomes
- Effect of reimbursement and/or insurance on cancer control, outcomes, and survivorship support
- Health services research, including health policy and practice and development of guidelines/best practice for healthcare delivery across the diagnostic/preventive/treatment spectrum
- Analysis of health service provision, including the interaction of primary and secondary care
- Analyses of the cost effectiveness of methods used in cancer prevention, detection, diagnosis, prognosis, treatment, and survivor care/support
- Ethical, legal or social implications of research/health service delivery (e.g. genetic counselling)
- Research into systemic or operational barriers to trial enrollment

6.5 Education and Communication Research

Examples of science that would fit:

- Development of generic health provider-patient communication tools and methods (e.g., telemedicine/health)
- Tailoring educational approaches or communication to different populations (e.g., social, racial, geographical, or linguistic groups)
- Research into new educational and communication methods and approaches, including special approaches and considerations for underserved and at-risk populations
- Research on new methods and strategies to disseminate cancer information/innovation to healthcare providers (e.g., web-based information, telemedicine, smartphone apps, etc.) and the effectiveness of these approaches
- Research on new communication processes and/or media and information technologies within the health care system and the effectiveness of these approaches
- Media studies focused on the nature and ways in which information on cancer and cancer research findings are communicated to the general public

- Education, information, and assessment systems for the general public, primary care professionals, or policy makers
- Research into barriers to successful health communication

6.6 End-of-Life Care

Examples of science that would fit:

- Hospice/end-of-life patient care focused on managing pain and other symptoms (e.g., respiratory distress, delirium) and the provision of psychological, social, spiritual and practical support through either conventional or complementary/alternative interventions/approaches throughout the last phase of life and into bereavement
- Quality of life and quality of death for terminally ill patients
- Provision of psychological, social, spiritual, and practical support to families/caregivers through either conventional or complementary/alternative interventions/approaches
- Research into the delivery of hospice care

6.7 Research on Ethics and Confidentiality

Examples of science that would fit:

- Informed consent modeling/framing and development
- Quality of Institutional Review Boards (IRBs)
- Protecting patient confidentiality and privacy
- Research ethics
- Research on publication bias within the cancer research field

6.8 – Historical code [no longer used]

6.9 Resources and Infrastructure Related to Cancer Control, Survivorship, and Outcomes Research

Examples of science that would fit:

- Informatics and informatics networks
- Clinical trial groups related to cancer control, survivorship, and outcomes research
- Epidemiological resources pertaining to cancer control, survivorship, and outcomes research
- Statistical methodology or biostatistical methods pertaining to cancer control, survivorship and outcomes research
- Surveillance infrastructures
- Centers, consortia, and/or networks pertaining to cancer control, survivorship and outcomes research
- Development and characterization of new model systems for cancer control, outcomes or survivorship, distribution of models to scientific community or research into novel ways of applying model systems, including but not limited to computer-simulation

systems, software development, in vitro/cell culture models, organ/tissue models or animal model systems. Guidance note: this should only be used where the focus of the award is creating a model. If it is only a tool or a methodology, code to the research instead.

- Psychosocial, economic, political and health services research frameworks and models
- Education and training of investigators at all levels (including clinicians and other health professionals), such as participation in training workshops, conferences, advanced research technique courses, and Master's course attendance. This does not include longer-term research-based training, such as Ph.D. or post-doctoral fellowships.