

Pre-application webinar for
RFA-CA-21-048:
Research Centers for
Cancer Systems Biology (U54)

CANCER SYSTEMS
BIOLOGY CONSORTIUM

Agenda:

1. *Begin presentation at 1:05 EST*
2. *RFA Presentation (Hannah Dueck)*
3. *Q&A*

Audio for webinar:

1-650-479-3207

Meeting access number:

180 342 1170

Note: This meeting is being recorded

Hannah Dueck, Ph.D.

Program Director

Division of Cancer Biology

hannah.dueck@nih.gov

Purpose of RFA-CA-21-048: Research Centers for Cancer Systems Biology (U54)

The purpose of this RFA is to solicit multi-component U54 Research Centers to address challenges in **basic cancer biology that require a coordinated systems biology approach.**

These Research Centers will join the existing NCI-supported Cancer Systems Biology Consortium (CSBC). (<http://www.csbconsortium.org/>)

Purpose of RFA-CA-21-048: Research Centers for Cancer Systems Biology (U54)

The purpose of this RFA is to solicit multi-component U54 Research Centers to address challenges in **basic cancer biology that require a coordinated systems biology approach.**

These Research Centers will join the existing NCI-supported Cancer Systems Biology Consortium (CSBC). (<http://www.csbconsortium.org/>)

The CSBC **defines** cancer systems biology as the **explicit integration of experimental biology and computational and mathematical methods** to build predictive models of cancer that are tested or validated in a disease-relevant context.

In 2016, the NCI Division of Cancer Biology (DCB) launched the CSBC to support the application of systems biology approaches to basic cancer biological research

The **goals** of the CSBC are to:

- (1) Advance understanding of mechanisms that underlie fundamental processes in cancer;
- (2) Support the broad application of systems biology approaches in cancer research; and
- (3) Support the growth of a strong, stable, and diverse research community in cancer systems biology.

Structure of the CSBC



The CSBC includes:

- U54 Research Centers
13 under RFA-CA-15-014 (*Expired*)
- U24 CSBC/PS-ON Coordinating Center*
1 under RFA-CA-15-015 (*Expired*)
- U01 Research Projects
17 under PAR-16-131 (*Expired*)
9 under **PAR-19-287** (*Active*)

Structure of the CSBC



The CSBC includes:

- U54 Research Centers
13 under RFA-CA-15-014 (*Expired*)
- U24 CSBC/PS-ON Coordinating Center*
1 under RFA-CA-15-015 (*Expired*)
- U01 Research Projects
17 under PAR-16-131 (*Expired*)
9 under **PAR-19-287** (*Active*)

RFA-CA-21-048 is a reissue of RFA-CA-15-014, approved in March 2021.

Structure of the CSBC



The CSBC includes:

- U54 Research Centers
13 under RFA-CA-15-014 (*Expired*)
- U24 CSBC/PS-ON Coordinating Center*
1 under RFA-CA-15-015 (*Expired*)
- U01 Research Projects
17 under PAR-16-131 (*Expired*)
9 under **PAR-19-287** (*Active*)

RFA-CA-21-048 is a reissue of RFA-CA-15-014, approved in March 2021.

*Will be replaced by a multi-consortium U24 Coordinating Center under **RFA-CA-21-049** (*Active*).

Mechanism of support: U54, Specialized Center – Cooperative Agreements

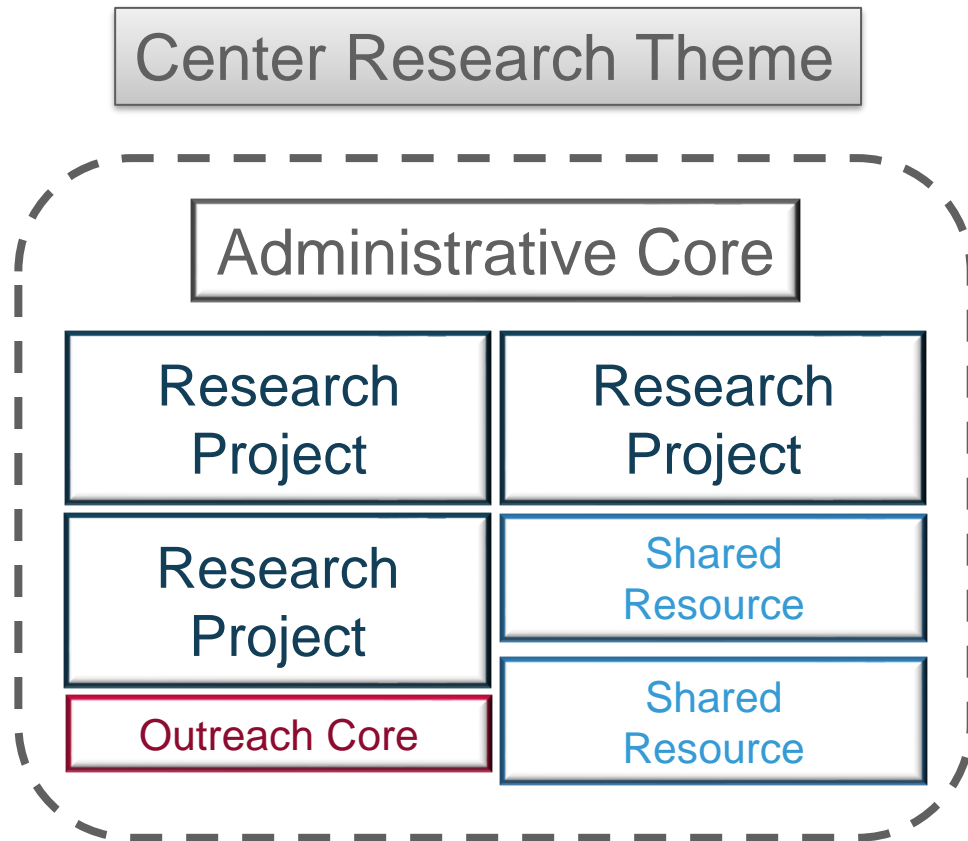
*The spectrum of activities comprises a **multidisciplinary attack** on a specific disease entity or biomedical problem area. These differ from program project in that they are usually developed in response to an announcement of the programmatic needs of an Institute or Division and subsequently **receive continuous attention from its staff**. Centers may also serve as **regional or national resources** for special research purposes, with funding component staff helping to identify appropriate priority needs.*

Application Type: All submissions will be **Type 1 (new applications)** and resubmissions)

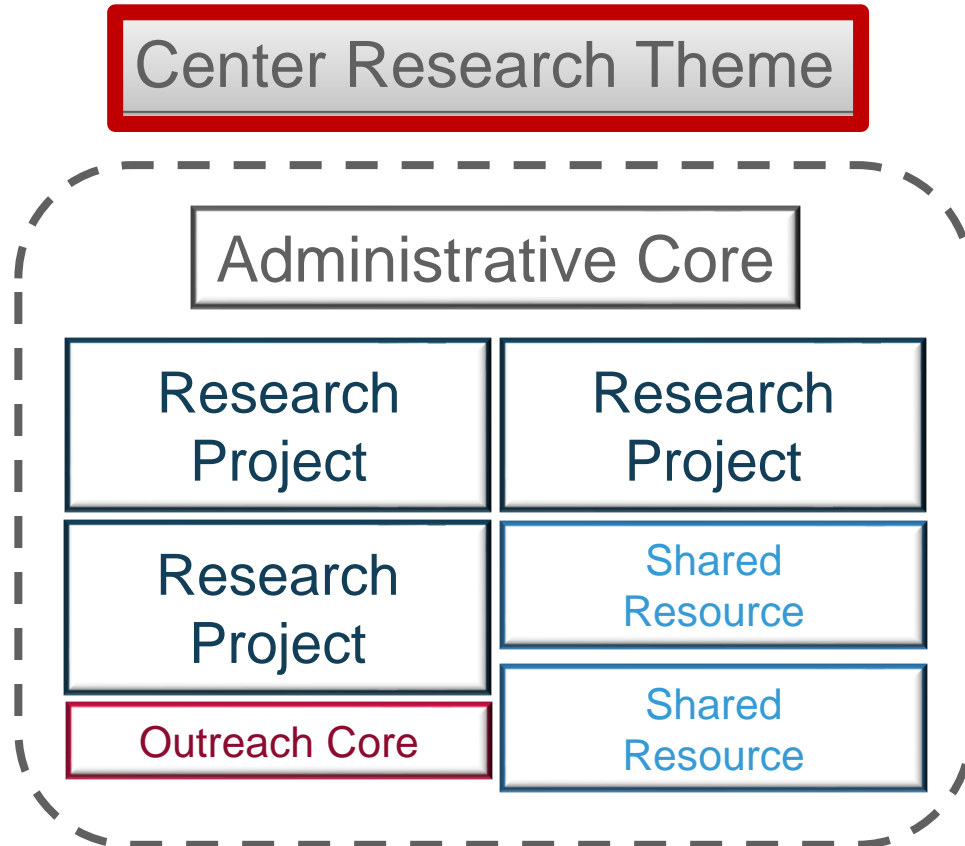
Budget: Not to exceed **\$1.5M per year (direct costs)** per Center. *Cap is exclusive of 3rd part F&A costs.*

Project Period: **5 years**

Organization of Individual CSBC U54 Research Centers



Organization of Individual CSBC U54 Research Centers



Each Research Center must address an **overarching scientific theme** in basic cancer biology that requires a **coordinated systems biology approach**.

This theme should serve to integrate the individual Research Projects.

The **scope of the scientific theme** addressed in CSBC U54 Research Center applications should not be readily addressable through other research mechanisms or initiatives.

Possible Research Center themes include, *but are not limited to*, the following:

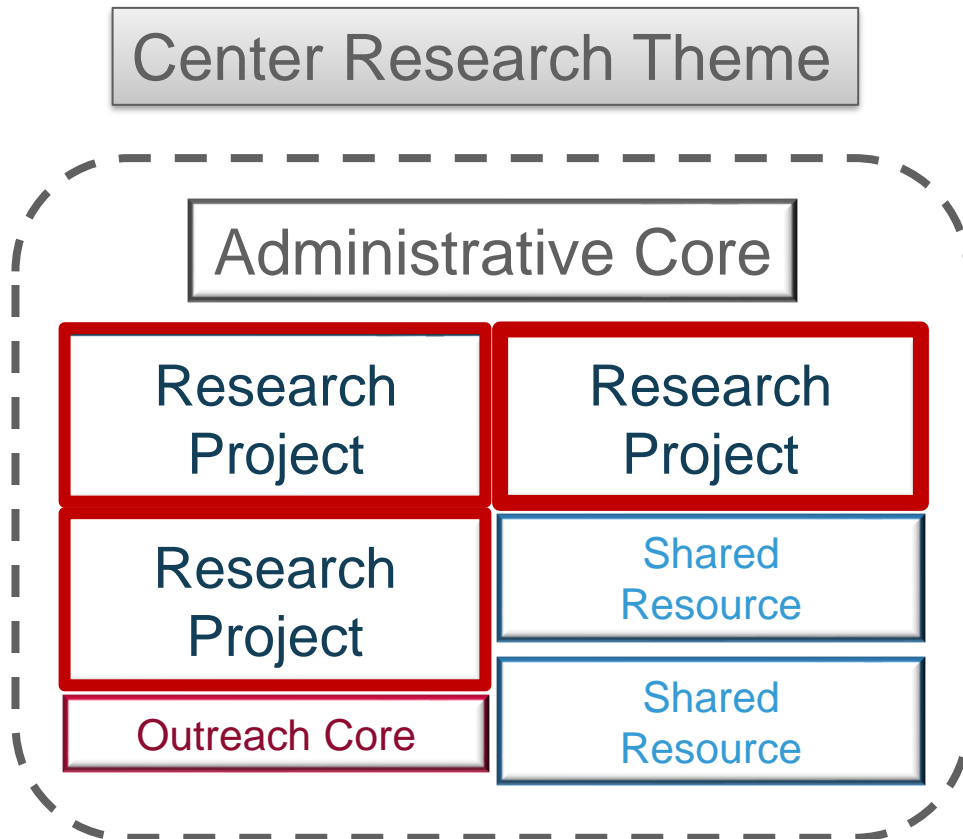
- Prediction and exploitation of generalizable molecular or cellular mechanisms across tumor types;
- Delineation of cellular interactions that lead to local or systemic, collective or emergent cellular behaviors that underlie cancer processes such as cancer initiation, progression, metastasis, and/or response to treatment;
- Elucidation of the interactions between tumor and non-tumor components in mediating the response, or lack of response, to therapy including standard, targeted, or immunotherapeutic approaches;
- Integration of the biology underlying normal physiological processes, such as development, aging, metabolism and/or immunity, to further understanding of cancer development, progression, metastasis, or treatment response;
- Discovery and testing of biologically informed combination therapies through systems biology approaches that uncover and prioritize specific targetable molecular or cellular mechanisms, account for potential patient toxicities, and consider variables such as dose and timing;

Scientific Areas of Interest (cont.)

- Optimization of treatment choices through an increased knowledge of tumor behaviors in the context of patient comorbidities, real world polypharmacy, and/or known health disparities;
- Understanding the dynamic relationships between immune cell subsets, immune repertoires, microbiomes, and other host factors or mechanisms that regulate the balance between immune responses to tumor versus immune responses to self (e.g., immune-related adverse events) in response to single agent or combination immunotherapy; and
- Integration of molecular and cellular oncogenic processes with population-level risk factors and systemic stresses, such as obesity or chronic inflammation, including molecular or environmental factors that may differentially impact patient populations.

A diversity of systems biology approaches and cancer questions are of programmatic interest. Potential applicants are encouraged to contact NCI Program Staff prior to submission with questions regarding Research Center goals and scope.

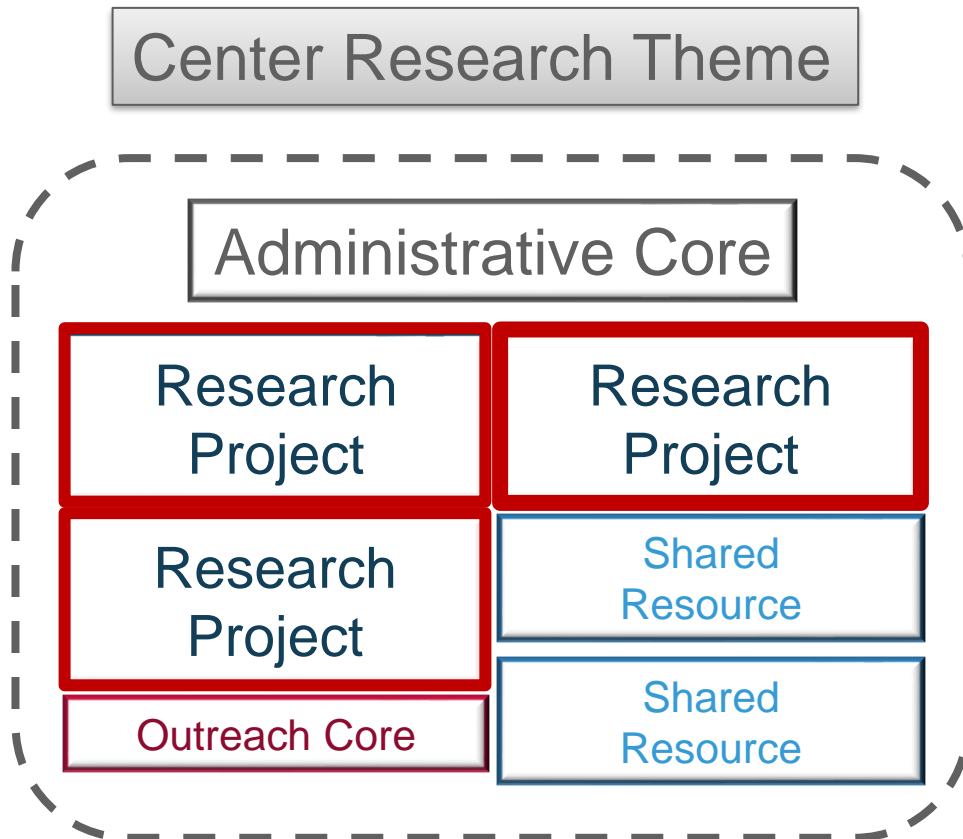
Organization of Individual CSBC U54 Research Centers



Research projects are the foundation of each CSBC Research Center and each center will include 2-3 Research Projects.

Each project should address a discrete biological question related to the Center theme and should reflect a self-standing scientifically meritorious research effort.

Organization of Individual CSBC U54 Research Centers



Individual Projects should be **synergistic** – meaning that the **ideas, efforts, and outcomes of the Center as a whole offers a distinct advantage** over pursuing individual projects separately.

- How will integration of the components into a coordinated Research Center **increase the impact** of proposed research beyond what could be achieved by stand-alone research projects?

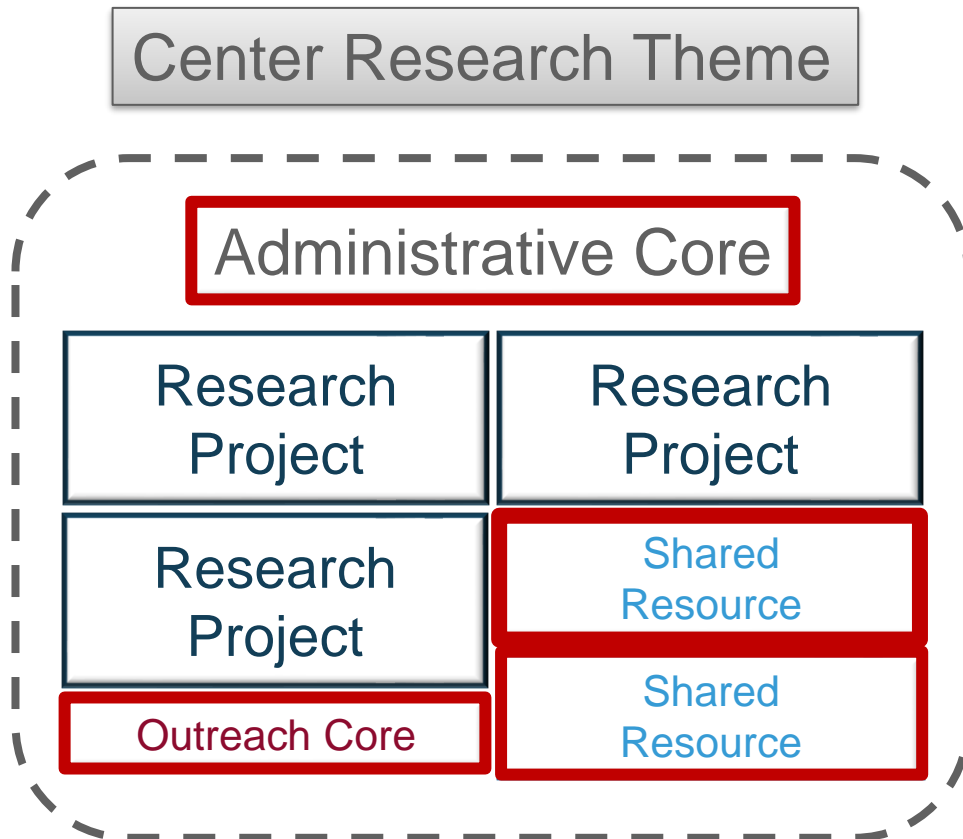
For example, individual Projects might address the Center theme at distinct length or time scales, stages of disease progression, cancer types, by focusing on distinct components in the system, or using different approaches.

CSBC U54 Research Center Expertise

Each Research Center will be led by an interdisciplinary research team whose members have expertise in quantitative and cancer biology.

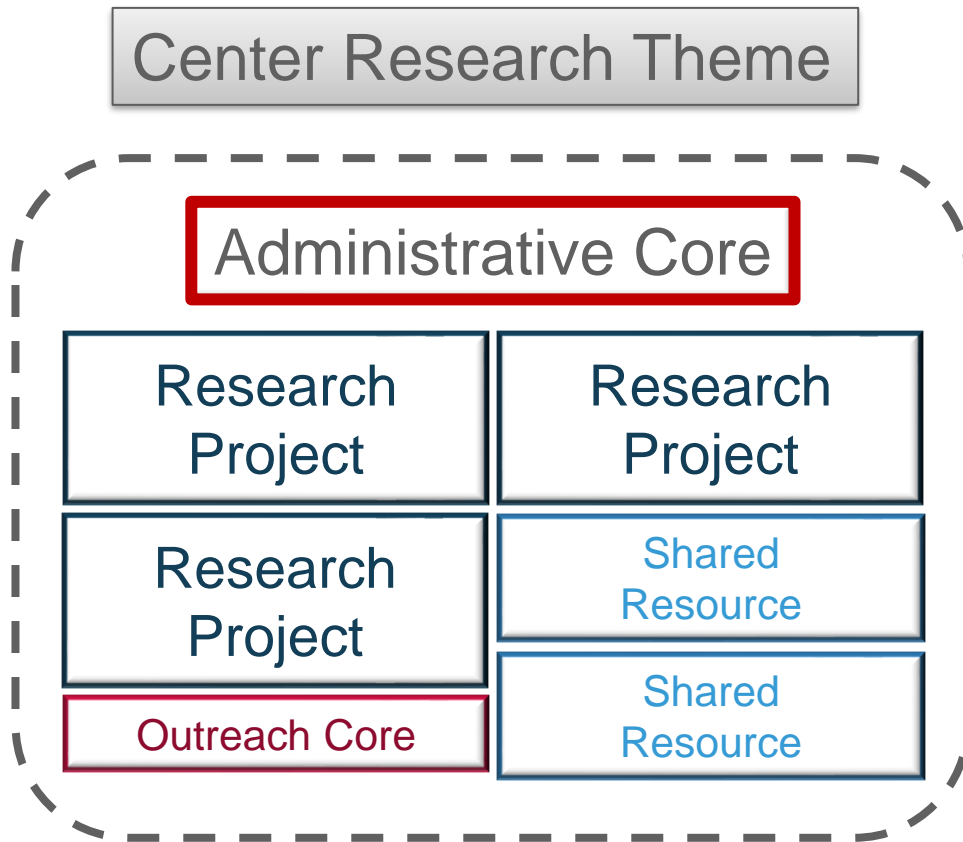
Each Research Center should consist of a research team of investigators with complementary expertise organized around an overall research theme. Members of the leadership team must have the ability to manage and understand the various approaches needed.

Organization of Individual CSBC U54 Research Centers



Each Research Center Core should contribute directly towards advancement of the overall scientific theme of the research center.

Organization of Individual CSBC U54 Research Centers

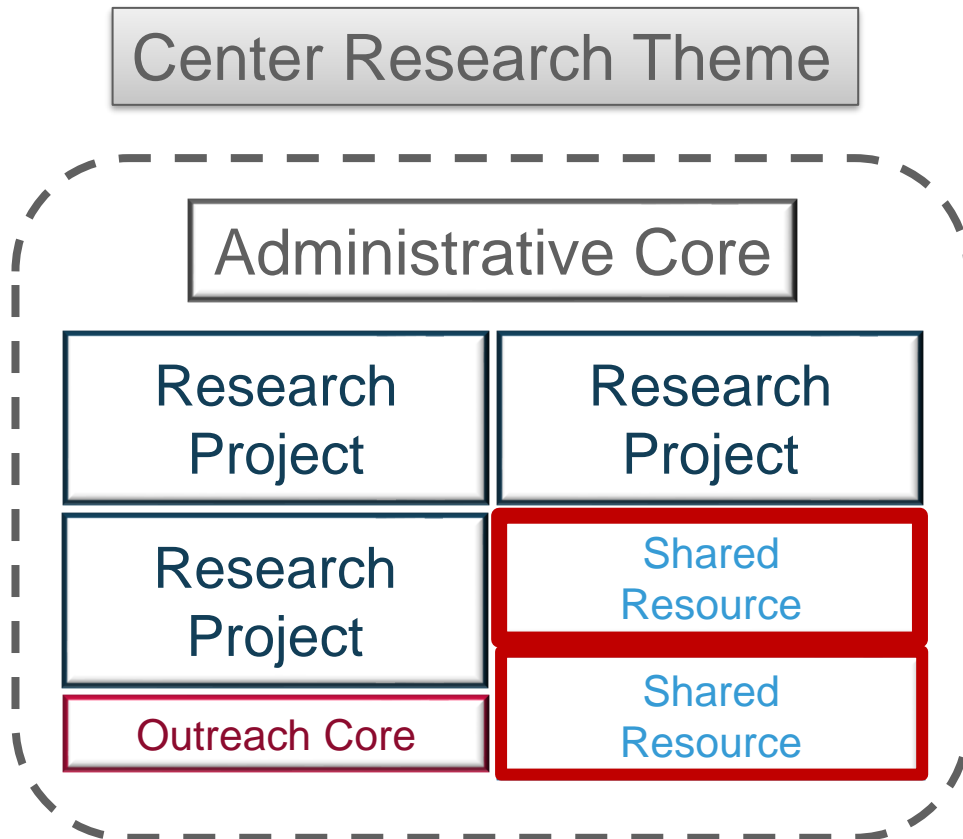


The Administrative Core will serve as the **primary contact** for the center, internally and for external interactions with the CSBC, the NCI, and the cancer research community.

Additionally, the Administrative Core will:

- Implement **strategies to enhance diversity and inclusion** in cancer systems biology;
- Manage the solicitation, review, and funding of Research Center **pilot projects** to support non-U54 funded investigators; and
- Ensure timely **sharing of data and resources** produced by all Research Center Projects and Cores.

Organization of Individual CSBC U54 Research Centers

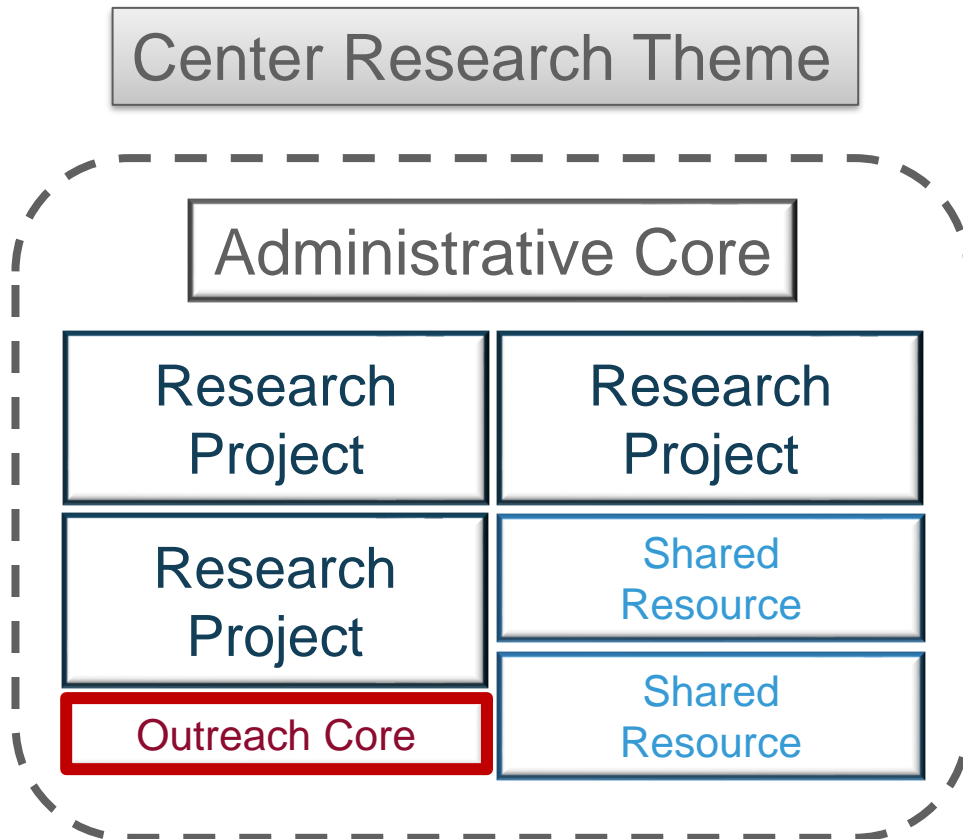


Each Research Center may include **up to two Shared Resource Cores**. These cores are optional.

- Shared Resource Cores may be **physical or virtual infrastructures** (e.g. cloud-based computing or storage) providing a biological, computational or engineering resource.
- Any proposed Shared Resource Core must support at least 2 Research Projects.

Shared Resource Cores are not research projects and should play a supporting role.

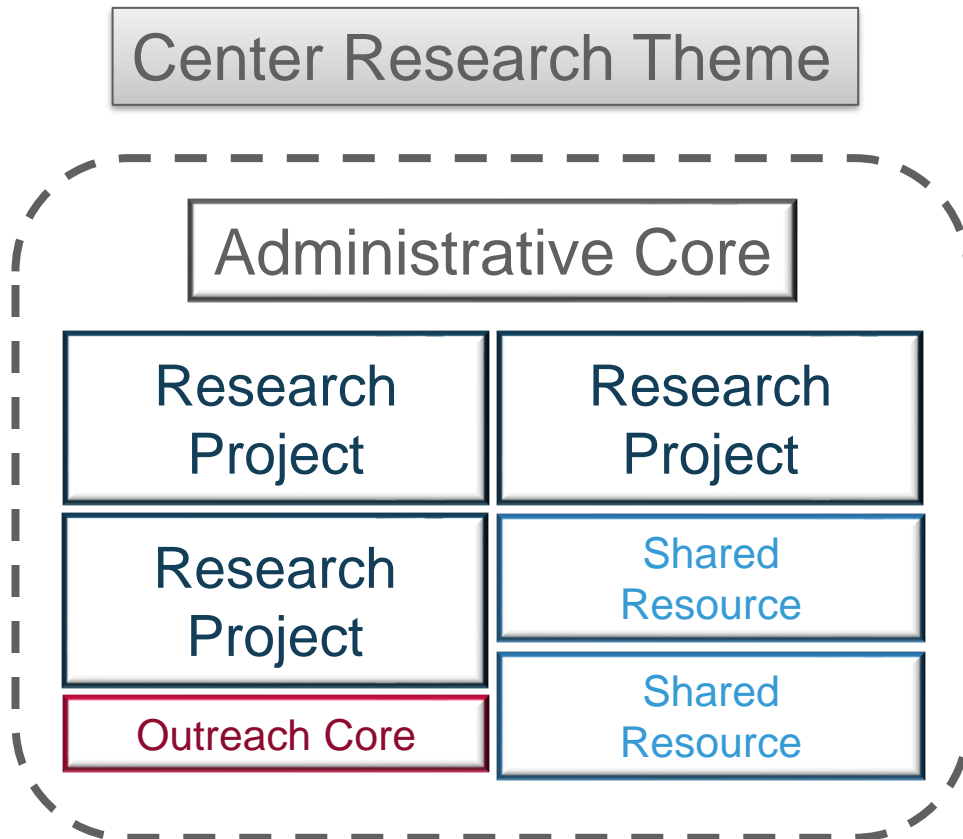
Organization of Individual CSBC U54 Research Centers



The required Outreach Core will:

- **Coordinate scientific outreach** activities that contribute to the overall research theme,
- **Increase the accessibility** of the computational and modeling approaches developed within their Research Center, and
- **Recruit involvement** of diverse investigators, cancer biologists, and clinicians.

Organization of Individual CSBC U54 Research Centers



Each awarded CSBC Research Center will recruit an **External Advisory Board (EAB)** to serve as scientific advisors to Research Center leadership.

The EAB should include one member from within the CSBC and the remainder from outside of the consortium.

Do not name EAB members within the application.

Application & Submission Information

Component Types Available in ASSIST	Research Strategy / Program Plan Page Limits	Required number of Components
Overall	12	1
Admin Core (use for Administrative Core)	6	1
Project (use for each Research Project)	12 <i>per Research Project</i>	2-3
Core (use for each Shared Resource Core and Outreach Core)	6 <i>per Core</i>	0-2 (Shared Resource*) 1 (Outreach)

Overall Component – Research Strategy

(12 page limit, FOA Part 2 – Section IV)

Present a concise overall vision and plan for the proposed CSBC Research Center. Describe the primary questions in basic cancer biology that will be addressed by the Research Center and how they integrate to form an overall research theme. Items to be addressed include:

- **Research Theme:** Define the overall central scientific theme and discuss background, rationale and significance.
- **Research Center Organization:** Describe Center structure. Discuss interactions and synergy across components.
- **Research Projects:** Outline the rationale for each project and the expected gains in terms of new knowledge with respect to the overall scientific theme.
- **Shared Resource Core(s) (If applicable):** Explain the need for any Shared Resource Core(s).
- **Leadership in the Cancer Systems Biology Research Community:** Explain how the proposed Center will support the field of Cancer Systems Biology.

Overall Component – Resource Sharing Plan

Note: *Resource Sharing Plans should only be included in the Overall component.*

The plan should describe strategies for data management, preservation, and sharing of scientific data and accompanying metadata. The following topics should be addressed:

- **Estimated Data Volume:** Estimate the volume and type of scientific data and metadata that will be generated and shared.
- **Data Repository Selection:** Name data repositories that will be used to share scientific data and metadata. NIH strongly encourages the use of established repositories.
- **Data Sharing Timelines:** Explicitly state when scientific data and metadata sharing is expected. Shared scientific data and metadata should be made accessible in accordance with current NIH policies, including the NIH's 2014 Genomic Data Sharing (GDS) Policy (https://osp.od.nih.gov/wp-content/uploads/NIH_GDS_Policy.pdf). Applicants are encouraged to share scientific data as soon as possible, and no later than the time of associated publication in accordance with the 2003 NIH Data Sharing Policy.
- **Considerations for Scientific Data Derived from Human Participants:** Researchers proposing to generate scientific data derived from human participants should outline how privacy, rights, and confidentiality of human research participants will be protected.

Note: Applicants must propose and budget for a Data Manager through the Administrative Core to facilitate data and resource sharing.

Administrative Core – Budget

(6 page limit: FOA Part 2 – Section IV)

Leadership effort commitment:

- The Research Center **contact PD/PI** must dedicate **2.4 person months** effort per year.
- Each Research Center **PD/PI who is not the contact** must dedicate **1.2 person months** effort per year.

*The required levels of effort may **reflect an aggregate** of the effort for the entire CSBC Research Center (listed under the Administrative Core) and the efforts for other CSBC Research Center components, as applicable.*

Administrative Core – Budget

(6 page limit: FOA Part 2 – Section IV)

Leadership effort commitment:

- The Research Center **contact PD/PI** must dedicate **2.4 person months** effort per year.
- Each Research Center **PD/PI who is not the contact** must dedicate **1.2 person months** effort per year.

*The required levels of effort may **reflect an aggregate** of the effort for the entire CSBC Research Center (listed under the Administrative Core) and the efforts for other CSBC Research Center components, as applicable.*

Example:

In a multi-PI Research Center application, the contact PI who is sole Project Lead of one Research Project must commit:

1.8 person months effort to Research Project + **0.6 person months** effort to Administrative Core
= **2.4 person months** effort across the Research Center

Administrative Core – Budget

(6 page limit: FOA Part 2 – Section IV)

Leadership effort commitment:

- The Research Center **contact PD/PI** must dedicate **2.4 person months** effort per year.
- Each Research Center **PD/PI who is not the contact** must dedicate **1.2 person months** effort per year.

*The required levels of effort may **reflect an aggregate** of the effort for the entire CSBC Research Center (listed under the Administrative Core) and the efforts for other CSBC Research Center components, as applicable.*

Applicants must propose and budget for:

- A **Research Center Administrator** to manage day-to-day operations; and
- A **Data Manager** who to facilitate timely data and resource sharing;

Note: Budget for data and resource sharing should be included in individual Research Projects.

Administrative Core – Budget

(6 page limit: FOA Part 2 – Section IV)

Funds for Intra-Center Pilot Projects: \$50K per year (direct costs) must be allocated to a fund for the support of post-award pilot projects hosted within the Research Center.

- *The Administrative Core will implement one-year intra-center projects to support non-U54 funded investigators. Plans should be included in the Administrative Core Research Strategy.*
- *Do NOT propose any pilot projects in the application.*

Administrative Core – Budget

(6 page limit: FOA Part 2 – Section IV)

Funds for Intra-Center Pilot Projects: \$50K per year (direct costs) must be allocated to a fund for the support of post-award pilot projects hosted within the Research Center.

- *The Administrative Core will implement one-year intra-center projects to support non-U54 funded investigators. Plans should be included in the Administrative Core Research Strategy.*
- *Do NOT propose any pilot projects in the application.*

Funds for Cross-Consortium Projects: \$75K (direct costs) per year in **years 2-5** must be allocated to a fund to facilitate joint cross-consortium projects on areas of high value and common interest.

- *Plans for Cross-Consortium Projects are NOT included in the application.*

Administrative Core – Budget

(6 page limit: FOA Part 2 – Section IV)

Funds for Intra-Center Pilot Projects: \$50K per year (direct costs) must be allocated to a fund for the support of post-award pilot projects hosted within the Research Center.

- *The Administrative Core will implement one-year intra-center projects to support non-U54 funded investigators. Plans should be included in the Administrative Core Research Strategy.*
- *Do NOT propose any pilot projects in the application.*

Funds for Cross-Consortium Projects: \$75K (direct costs) per year in **years 2-5** must be allocated to a fund to facilitate joint cross-consortium projects on areas of high value and common interest.

- *Plans for Cross-Consortium Projects are NOT included in the application.*

Applicants must budget for:

- Travel for Research Center and consortium activities;
- The implementation of plans to enhance diverse perspectives in cancer biology; and
- Open-access publishing.

Funds may be allocated for expenses related to the External Advisory Board.

Administrative Core – Research Strategy (cont.)

(6 page limit: FOA Part 2 – Section IV)

This section will present a concise overall vision for the organization and administration of the proposed CSBC Research Center.

Sub-section A: Organizational Structure and Staff Responsibilities: Outline the leadership structure and overall Research Center structure. Considerations include support of synergy and integration across the center, evaluating Center progress, and ensuring timely data and resource sharing.

Sub-section B: Enhancing diverse perspectives in cancer systems biology: Provide a summary of strategies to advance the scientific and technical merit of the Center through expanded inclusivity. Consider how enhancing diverse perspectives is supported throughout the Center. Include a timeline and milestones for implementation.

Sub-section C: Intra-Center Pilot Projects Describe plans to implement one year intra-center pilot projects, including how projects will be solicited, selected, and evaluated.

Sub-section D: Stewardship plan: Briefly explain how infrastructure, collaborations, data and resources developed under this Research Center will be sustained beyond this award period.

Sub-section E: External Advisory Board: Describe the general composition, range of expertise, and utilization. **DO NOT** state specific names in application or contact individuals.

Research Projects – Research Strategy

(12 page limit *per Research Project*: FOA Part 2 – Section IV)

The Research Projects constitute the most important activities of the Research Center and should address fundamental question(s) in cancer research using a systems biology approach.

- How is the Project is integrated within the Research Center and how does it contribute to the Research Center's overall research theme?
- State the multidisciplinary aspects of the Research Project and how it benefits from the unique scientific expertise of Research Center personnel.
- How will the project team take advantage of the Research Center infrastructure to allow for new approaches or perspectives to be quickly implemented or tested?
- Highlight any innovative systems biology approaches used or developed within the project.
- If the Research Project will utilize the Shared Resource Core(s), describe how the Core(s) capabilities impact the proposed project.

Shared Resource Cores – Research Strategy

(6 page limit *per Shared Resource Core*: FOA Part 2 – Section IV)

This section should clearly define the services and resources provided by a Shared Resource Core to other Research Center components. Issues to be addressed include:

- Value of the Core services to the Research Center and Research Projects;
- Integration between the Core and Research Projects;
- Procedures for selecting Research Projects to use the Core, including allocating resources, cost effectiveness, and increased efficiency; and
- Quality control measures.

These proposed new shared resources **must not duplicate analogous resources** already established in the applicant institutions (although supplemental funding to such existing resources may be requested).

Outreach Core – Research Strategy

(6 page limit: FOA Part 2 – Section IV)

Identify and describe the outreach activities that will be undertaken by the Research Center. Include a plan to evaluate the effectiveness of the proposed outreach activities. Proposed activities should relate to the research theme of the Research Center. *A minimum of \$100,000 direct costs per year must be allocated to the Outreach Core. This budget can be used to support specific outreach activities and associated staff.*

Potential activities include, but are not limited to:

Short courses: Engage on-experts and individuals outside of the CSBC in use of resources developed by the Center.

Seminar series: Hosting clinicians and clinical researchers to facilitate information exchange and build relationships.

Think Tanks. Holding small meetings of investigators with diverse perspectives, including all stages of career development, to identify ways to support the clinical translation of basic research performed at the Research Center.

Workshops. Hosting focused meetings that involve cancer researchers outside of systems biology and the CSBC.

Personnel Exchanges. Facilitating exchanges involving Research Center undergraduates, graduate students, postdoctoral fellows, or investigators with trainees at different types of institutions and organizations.

Educational Website. Establishing a website to increase usability of data and tools developed by the center.

Research Center Annual Meeting. Disseminating CSBC Research Center advances through an open meeting with a focus on increasing uptake of systems biology approaches across the wider cancer research community.



The CSBC functions as a **collaborative network** and individual U54 Research Centers and U01 Research Projects are encouraged to share resources and model systems, cross validate ideas and observations, and integrate data.

CSBC Steering Committee
Cross-Consortium Projects Working Groups
Annual Meetings
Outreach

Details on relevant PI/PD responsibilities can be found in RFA Section VI: Terms and Conditions of Award.

NIH policies to be aware of while preparing your application:

1. Hyperlinks **are not allowed** in NIH grant applications

- See <https://grants.nih.gov/grants/guide/notice-files/NOT-OD-20-174.html> for more information.

2. Guidance on constructing a NIH Biosketch.

- See <https://grants.nih.gov/grants/guide/notice-files/NOT-OD-21-073.html> for general information and tools -- including instructions and a sample.
- FAQs: http://grants.nih.gov/grants/policy/faq_biosketches.htm

3. Post-submission materials will be accepted 30 days prior to review

- See <https://grants.nih.gov/grants/guide/notice-files/NOT-OD-21-179.html> for more information.
- *“One page of preliminary data will be accepted for single component applications or for each component of a multi-component application.”* – Applicants may submit one additional page for each core, project, etc.

	Pre-Application Webinar	Letters of Intent Due Dates	Application Due Dates	Review Dates	Earliest Anticipated Start Dates
Round 1	Sept 13 2021	Oct 12 2021	Nov 12 2021	March 2022	July 2022
Round 2	Summer 2022	Sept 19 2022	Oct 19 2022	March 2023	July 2023

Due date: **Oct 12 2021**

Highly encouraged, but not required

A letter of intent is **not binding**. It will be used to assist IC staff in planning for review.

Standard elements:

- Descriptive title of CSBC Research Center
- Name(s), address(es), telephone number(s) of the PD(s)/PI(s)
- Names of other key personnel
- Participating Institution(s)
- Number and title of funding opportunity

Additional recommended information:

- **Provide a brief (3-5 sentence) description of the overall research theme**
- **Include relevant expertise and Keywords**

Letters of intent should be emailed to: Hannah Dueck (hannah.dueck@nih.gov)

- Consider the **FOA-specific review criteria** defined in Part 2, Section V
- **Overall impact score** for the entire CSBC Research Center and **numerical score** for individual components (Research Projects, Administrative Core, Shared Research Core(s), and Outreach Core).
- **Individual Criterion Scores** for Overall Component and Research Projects include: Significance, Investigator, Innovation, Approach, and Environment.
 - Additional Review Criteria for Overall Component: Integration
- Scores for Cores (Administrative, Outreach, Shared Resource) will be based on bulleted lists defined in Part 2, Section V.

- Applicants are encouraged to include a cover letter with their application to aid in a fair and accurate review of the proposal. Potential conflicts of interest may be included in this letter.
- The study section roster will be available online 30 days prior to review. Applicants may contact the Scientific Review Officer with concerns prior to review.

Applications will compete for available funds with all other recommended applications submitted in response to this FOA. Following initial peer review, recommended applications will receive a second level of review by the National Cancer Advisory Board.

The following will be considered in making funding decisions:

- Scientific and technical merit of the proposed project as determined by scientific peer review.
- Availability of funds.
- Relevance of the proposed project to program priorities.

Contact Information

Scientific/Research Contact:

Hannah Dueck
Division of Cancer Biology
hannah.dueck@nih.gov

Peer Review Contact:

NCI Referral Officer
240-276-6390
ncirefof@dea.nci.nih.gov

Financial/Grants Management Contact:

Amy Bartosch
240-276-6912
bartoschar@mail.nih.gov

Slides from this webinar will be available on the Division of Cancer Biology website:

<https://www.cancer.gov/dcb>

<https://www.cancer.gov/about-nci/organization/dcb>

<https://www.cancer.gov/about-nci/organization/dcb/news>



**NATIONAL
CANCER
INSTITUTE**

www.cancer.gov

www.cancer.gov/espanol