Agenda:

1. *Begin presentation at 2:05 ET*
2. *Welcome and Introduction*
3. *PAR Presentation*
4. *Q&A*

Audio for webinar:
1-650-479-3207
Meeting access number:
739 297 948
Audio works best if you choose “Call me”
Note: meeting audio is being recorded

Pre-application webinar for PAR-16-131: Emerging Questions in Cancer Systems Biology

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NIH NATIONAL CANCER INSTITUTE

October 13, 2017

The Cancer Systems Biology Consortium (CSBC)

The CSBC is a community of systems biologists who aim to integrate experimental biology and computational models across multiple temporal and spatial scales towards a better understanding of cancer.

From the FOA:
CSBC Research Projects should address a well-defined, discrete, and circumscribed research question in cancer incorporating quantitative experimentation, analysis, modeling and validation, which are the hallmarks of systems biology. As part of the CSBC, investigators from the Research Projects will have the opportunity to share resources and expertise across the Consortium and participate in Consortium activities and annual meetings.

About the CSBC

- U54 CSBC Research Centers (9 as of 5/1/17)
- U24 CSBC/PS-ON Coordinating Center (1)
- U01 Research Projects
  - 8 U01 Collaborative Research in Integrative Cancer Biology
  - 5 U01 Bridging the Gap Between Cancer Mechanism and Population Science
  - **U01 CSBC Research Projects (PAR-16-131) (6 as of 9/30/17)**

Please visit www.csbconsortium.org for more information about individual Centers and Projects

Goals of the Funding Opportunity Announcement (FOA) *Emerging Questions in Cancer Systems Biology*

The purpose of PAR-16-131 is to encourage research projects addressing challenging cancer problems using systems biology approaches. These approaches should include explicit integration of experimental biology and computational or mathematical modeling to build, test and/or validate hypotheses or ideas.

Importantly, the CSBC Research Projects encourage studies addressing basic cancer biology questions and a specific translational component of the proposed research is not required for submission. However, projects that contain a clinical or translational component are also welcome under this FOA.

Goals of the Funding Opportunity Announcement (FOA) *Emerging Questions in Cancer Systems Biology*

There are several highlighted areas of interest within the FOA. *Note that the list is non-inclusive and is not meant to restrict the scope of investigator-initiated research topics.*

- Dynamics of cell-cell interactions
- Integration of information across temporal and spatial scales
- Tumor behaviors reflecting single cell characteristics
- Systems-level analyses of the role of the microbiome in cancer
- The combination of systems and synthetic biology for understanding disease mechanisms
- Hierarchical models of cancer (*see next slide)
- Systems biology aided clinical trial design

Please see Part 2, Section I Funding Opportunity Description for further details.

Goals of the Funding Opportunity Announcement (FOA) *Emerging Questions in Cancer Systems Biology*

*Models that bridge mechanism and population science are encouraged under this FOA. For applications related to utilizing computational, mathematical or statistical formalisms to bridge a mechanistic systems biology model at one scale and a population-level model at the other, please contact Rocky Feuer (feurerr@exchange.nih.gov).

The FOA contains a list of projects that are **not appropriate for applications** submitted to this FOA. Please see Part 2, Section I Funding Opportunity Description for further details. *Please contact me if you have questions about if your project falls within one of these categories.*

Goals of the Funding Opportunity Announcement (FOA) *Emerging Questions in Cancer Systems Biology*

In addition to addressing specific biological hypotheses, the continued success of cancer systems biology depends on the development of new methodologies to address complex and multivariate questions, including new theoretical, mathematical and computational techniques, multi-scale modeling approaches capable of integrating across scales from the molecular to the population level, and new biological tools and systems for informing and testing cancer systems biology generated hypotheses.

Mechanism of Support & Funding

Mechanism of support: U01, Research Project – Cooperative Agreement

Supports discrete, specified, circumscribed projects to be performed by investigator(s) in an area representing their specific interest and competencies. Used when substantive programmatic involvement is anticipated by the NIH.

Application Type: Resubmissions are allowed.

Budget: Application budgets are not limited but need to reflect the actual needs of the proposed project.

Project Period: Not to exceed 5 years.

Note on Eligible Applicants: Foreign (non-U.S.) institutions are eligible to apply and foreign components are allowed.

Funds Available and Anticipated # of Awards: Contingent upon budget and submission of a sufficient number of meritorious applications.

Mechanism of Support & Funding

What is a U01? A U01 application is *similar to an R01* application in that it is a single project consisting of multiple specific aims that are outlined to achieve the goals of that project.

What does the "U" designate (vs. "R")? The U designates a *cooperative agreement* where there is programmatic involvement beyond the normal stewardship role in awards by the NIH program official(s). See the FOA, Section VI-2, "Cooperative Agreement Terms and Conditions of Award" for responsibilities of the PD(s)/PI(s), the NIH staff, and the areas of joint responsibility.

If I am an NIH Early Stage Investigator (ESI), will I lose ESI status if designated as PD/PI of an awarded U01? Yes, if you are designated as a PD/PI on an awarded U01 you will no longer be eligible for for ESI status on NIH applications.

Is special consideration given for applications that have PD(s)/PI(s) with eligible ESI status? No, unlike R01s submitted to the parent research project grant FOA, these *applications will not be given special consideration* for those with ESI status.

Leadership Expertise

Due to the multi-disciplinary nature of the projects and the focus on collaboration and expertise sharing, this FOA strongly encourages the use of the multi-PD/PI mechanism. The CSBC Research Project PD/PI (contact PD/PI for applications with multiple PDs/PIs) should be a scientist with expertise in cancer systems biology.

Foreign Institutions

Non-domestic (non-U.S.) Entities (Foreign Institutions) **are** eligible to apply.

Non-domestic (non-U.S.) components of U.S. Organizations **are** eligible to apply.

Foreign components, as defined in the *NIH Grants Policy Statement*, **are** allowed.

Key Dates

CANCER SYSTEMS BIOLOGY CONSORTIUM

	Pre-Application Webinar	Letter of Intent Due Dates	Application Due Dates	Review Dates	Earliest Anticipated Start Dates
Round 1	~~Apr 27, 2016~~	~~May 24, 2016~~	~~June 24,2016~~	~~Oct/Nov 2016~~	Apr 2017
Round 2	~~Oct 17, 2016~~	~~Oct 18, 2016~~	~~Nov 18, 2016~~	~~Mar/Apr 2017~~	~~Aug 2017~~
Round 3	~~May 8, 2017~~	~~May 23, 2017~~	~~June 23,2017~~	~~Oct/Nov 2017~~	~~Apr 2018~~
Round 4	**Oct 13, 2017**	**Oct 24, 2017**	**Nov 24, 2017**	**Mar/Apr 2018**	**Aug 2018**
Round 5	TBD, est Feb 2017	May 22, 2018	June 22,2018	Oct/Nov 2018	Apr 2019
Round 6	TBD, est Aug 2017	Oct 23, 2018	Nov 23, 2018	Mar/Apr 2019	Aug 2019

Letter of Intent (LOI)

CANCER SYSTEMS BIOLOGY CONSORTIUM

Highly encouraged, but not required. Not binding and does not enter into review.

Standard elements:

- Descriptive title of CSBC U01 Research Project
- 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 (PAR-16-131)

Additional recommended information:

- **Provide a brief (3-5 sentence) description of the Research Project.**
- **Include relevant expertise and Keywords (“Systems Biology” is not a useful keyword)**

Email LOI to shannon.hughes@nih.gov

NIH Application Forms

See NOT-OD-16-004 for details on new application forms (FORMS-D) that are required for applications with due dates of May 25, 2016 and beyond.

Link to FORMS-D annotated form set:

http://grants.nih.gov/grants/ElectronicReceipt/files/Annotated_Forms_General_FORMS-D.pdf

A list of significant changes can be found at:

http://grants.nih.gov/grants/how-to-apply-application-guide/forms-d/general/g.120-significant-changes.htm

R&R Budget

Application budgets are not limited but need to **reflect the actual needs of the proposed project**. The maximum project period is 5 years.

Appropriate travel funds must be included in the proposed budget to support travel for at least one CSBC Research Project PD/PI to the Annual CSBC Investigators Meeting.

Note: The number of awards is contingent upon NIH appropriations and the submission of a sufficient number of meritorious applications.

PHS 398 Research Plan
12 page limit

CANCER SYSTEMS BIOLOGY CONSORTIUM

Specific Aims: State the specific aims of the Research Project and provide the rationale for the proposed systems biology approach. *Within the Specific Aims, please state if the application addresses one of the topic areas highlighted in Part 2, Section I.*

Research Strategy: Under standard sub-sections, address the following specific aspects:

- Explain how the proposed Research Project uses systems biology and/or integrated systems biology/population science approaches for research goals that could not be accomplished utilizing molecular, cellular, biochemical, or computational/mathematical approaches alone.
- Highlight any innovative systems biology methodologies utilized or developed within the context of the proposed research.
- Explain how the Research Project will contribute to the goals of the Cancer Systems Biology Consortium.

PHS 398 Research Plan: *New Rigor & Reproducibility Standards*

All applications submitted after January 25, 2016 must address **Scientific Rigor and Reproducibility.** http://grants.nih.gov/reproducibility/index.htm#guidance

The "Resources" section includes examples and two videos about what to include in your application and how the new criteria will be reviewed.

Scientific Premise, Scientific Rigor and Inclusion of Relevant Biological Variables must be addressed **within the 12 page** Research Plan.

Use the new attachment for Authentication of Key Biological and/or Chemical Resources to address plans for authentication.

NEW GRANT GUIDELINES

what you need to know

WHY UPDATE THE GUIDELINES?

The updates focus on four areas deemed important for enhancing rigor and transparency:

1. **PREMISE** — The scientific premise forming the basis of the proposed research
2. **DESIGN** — Rigorous experimental design for robust and unbiased results
3. **VARIABLES** — Consideration of relevant biological variables
4. **AUTHENTICATION** — Authentication of key biological and/or chemical resources

Send inquiries to reproducibility@nih.gov

See also NIH Notice NOT-OD-16-011
http://grants.nih.gov/grants/guide/notice-files/NOT-OD-16-011.html

WHAT ARE THE UPDATES?

1 UPDATES TO RESEARCH STRATEGY GUIDANCE

The research strategy is where you discuss the significance, innovation, and approach of your research plan. Let's look at an R01, for example:

The new **research strategy** guidelines require that you:

- State the strengths and weakness of published research or preliminary data crucial to the support of your application
- Describe how your experimental design and methods will achieve robust and unbiased results
- Explain how biological variables, such as sex, are factored into research design and provide justification if only one sex is used

2 NEW ATTACHMENT FOR AUTHENTICATION OF KEY BIOLOGICAL AND/OR CHEMICAL RESOURCES

From now on, you must briefly describe methods to ensure the identity and validity of key biological and/or chemical resources used in the proposed studies.

These include, but are not limited to:

CELL LINES · ANTIBODIES · SPECIALTY CHEMICALS · OTHER BIOLOGICS

Standard laboratory reagents that are not expected to vary do not need to be included in the plan. Examples are buffers and other common biologicals or chemicals.

- **DO NOT** put experimental methods or preliminary data in this section
- **DO** focus on authentication and validation of key resources

3 NEW REVIEWER GUIDELINES

Here are the additional criteria the reviewers will be asked to use:

- Is there a **strong scientific premise** for the project?
- Have the investigators presented adequate plans to address **relevant biological variables**, such as sex, for studies in vertebrate animals or human subjects?
- Have the investigators presented strategies to ensure a **robust and unbiased approach**, as appropriate for the work proposed?

Reviewers will also be asked to comment on that new attachment (see **Update 2**)!

Review Information

Applications will be evaluated for scientific and technical merit by an appropriate Scientific Review Group convened by the NCI, using the stated review criteria.

As part of the scientific peer review, all applications:

- May undergo a selection process in which only those applications deemed to have the highest scientific and technical merit will be discussed and assigned an overall impact score.
  - Note the applications will not be percentiled.
- Will receive a written critique.

Review Information

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.

Review Information

(NEW) Applicants are encouraged to include a PHS Assignment Request Form with their application that includes information about:

- Potential conflicts of interest
- Areas of scientific expertise needed for a fair and knowledgeable review of the application
- https://grants.nih.gov/grants/how-to-apply-application-guide/forms-d/general/g.600-phs-assignment-request-form.htm

The review panel roster will be available in eRA Commons 30 days prior to review. Applicants may contact the Scientific Review Officer with concerns prior to review.

NIH Genomic Data Sharing Policy

NIH GDS Policy : NOT-OD-15-027

- Applies to applications submitted after January 25, 2015
- Covers wide range of genomic analyses across various experimental platforms and sample types (human and non-human)
- NCI specific guidelines for the number of samples that qualify as ‘large-scale’ data collection. Minimum threshold is met quickly given different combinations of patient samples, cell lines, time points, and chemical/therapeutic perturbations.
- Documentation to satisfy GDS policy is part of the standard Just-in-Time information so now is the correct time to determine if your work will fall under the policy.
- If applicable, generate a Genomic Data Sharing Plan and apply for Institutional Certification.
- **Include a cover letter stating the GDS Policy applies to your application**

New Appendix Policy (NOT-OD-17-035)

Allowable Appendix Materials

For applications proposing clinical trials (unless the funding opportunity announcement (FOA) provides other instructions for these materials):

- Clinical trial protocols
- Investigator's brochure from an Investigational New Drug (IND) application, as appropriate for the goals of the research proposed in the application.

For all applications:

- Blank informed consent/assent forms
- Blank surveys, questionnaires, and/or data collection instruments
- Other items only if they are specified in the FOA as allowable

No other items are allowed in the Appendix. Simply relocating disallowed materials to other parts of the application will result in a noncompliant application (NOT-OD-11-080).

New Policy: Reporting Preprints and Other Interim Research Products

The NIH encourages investigators to use interim research products, such as preprints, to speed the dissemination and enhance the rigor of their work.

Example: Bar DZ, Atkatsh K, Tavarez U, Erdos MR, Gruenbaum Y, Collins FS. Biotinylation by antibody recognition- A novel method for proximity labeling. BioRxiv 069187 [**Preprint**]. August 11, 2016 [cited 2017 Jan 12]. Available from: https://**doi**.org/10.1101/069187.

Please see NOT-OD-17-050 for more information

Agency Contacts:
See FOA Section VII

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Slides will be posted at www.csbconsortium.org and www.cancer.gov/csbc