

Examples of Team Science-Specific Review Criteria

NIH

Scored (Core) Review Criteria

- **An existing standard Scored Review Criterion**
 - The NIH “**Investigator(s)**” criterion
 - “For multiple-PI grant applications: If the project is collaborative or multi-PD/PI, do the investigators have complementary and integrated expertise; are their leadership approach, governance and organizational structure appropriate for the project?”
- **Additional team science-specific review elements associated with one or more of the five standard Scored (Core) Review Criteria**
 - New NIGMS Collaborative Program Grants for Multidisciplinary Teams (RM1; [PAR-17-340](#))
 - **Significance:** Is the program of sufficient scope and complexity, and of sufficient potential impact, to warrant a team approach? Do the specific aims form a single cohesive program, and if accomplished will these aims advance the stated goals of the program? Is the problem such that definitive outcomes can be accomplished during the funding period? If successful, will the proposed program's coordinated research effort uniquely advance a scientific field/community that increases basic research for understanding biological processes?
 - **Investigator(s):** Is the planned effort by the PD/PIs appropriate and sufficient for the work proposed? Are the critical mass and diversity of investigator backgrounds and expertise sufficient to address the proposed scientific problem? Is it clear that each investigator is necessary and will contribute to achieving the goals of the program? Is there evidence for synergistic interactions among PD/PIs beyond the additive benefits of additional investigators? If the application includes collaborating investigators who will not receive direct support, is it clear how these investigators will participate in the program? If foreign investigators are involved are they uniquely qualified to participate in the team?
 - **Innovation:** Does the program involve innovative ideas or approaches that would be very difficult to pursue through independently funded individual or multiple PD/PI research project grants? Does the program involve innovative combinations of scientific fields and/or intellectual viewpoints to address its goals? Is innovation evident in the method that established areas of science are combined?
 - **Environment:** Is there synergy to be gained from the involvement of multiple departments and institutions? Will the range of departments and/or institutions involved enhance the diversity of the team in terms of the backgrounds, expertise and skills of the researchers? If foreign organizations are involved do they provide unique resources that are not otherwise available?
 - **Approach:**
 - **Research Program:** Is the program presented as a coherent and fully integrated set of specific aims or objectives? Are the approaches and personnel appropriate for the specific aims proposed? Are the timeline and milestones proposed appropriate for accomplishing the specific aims? Are the resources and infrastructure adequate for accomplishing the specific aims and supporting team science? Are any plans for technology development necessary to address the scientific problems and specifically focused on these

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problems as opposed to being more general technology development goals? If new databases or resource collections will be developed, are they well justified and clearly ancillary to the research goals? Does the work plan make adequate use of existing institutional and regional resources? If new resources or equipment are requested, are they well justified and not redundant with resources available elsewhere in the institution or region? If a second five-year period is anticipated, are long-term, ten-year objectives clearly described? Do plans include criteria for making the go/no-go decision for a renewal application?

- Team Management Plan: Does the team management plan describe adequately the governance and processes that will be used for decision making? Does the plan allow for flexibility in pursuing the aims and allocation of resources? Does the plan assure that all investigators are encouraged to have a voice in decision making so that no single PD/PI will become overly dominant? Is the team management plan complementary to the multiple PD/PI plan? Does it provide for effective team leadership and management with distributed responsibility and decision-making processes? Is the team plan sufficiently detailed to create a sustainable environment for maintaining trust and shared vision? Does the management plan include adequate plans for shared professional credit? Is there evidence of institutional buy-in for shared professional credit for team activities that is sufficient for professional advancement? If shared research resources will be utilized, are plans adequate to ensure that all team members will have the access they require? If an external advisory committee is proposed, is the plan for this appropriate? If a scientific program manager or coordinator is proposed, are the qualifications and role of this individual appropriate? Are adequate plans presented to establish and sustain a team of researchers with an optimal range of backgrounds, expertise and skills and plans to arrive at major decisions, accounting for diverse points of view?
- Optional Activities: If proposed, are plans for a pilot studies program appropriate? Are plans for the solicitation, review, and monitoring of exploratory pilot studies appropriate? Does the management plan describe how these investigators will be integrated into the program and learn best practices in team science? Are clear pathways for developing the research programs of the ESIs described that will likely lead to independent funding? Is team diversity considered in plans for recruiting ESIs for pilot projects?
- **Integration: Additional (new) sixth Scored Review Criterion**
 - NHLBI Program Project Applications (P01; [PAR-18-405](#))
 - **Integration:** How well-integrated is the Project within the Program? Does inclusion of this Project within a Program offer distinct advantage or scientific gain over pursuing the Project independently? Is the Project interrelated and synergistic within the overall Program? How well does the Project fit into the overall theme of the Program?
 - The NCI Physical Sciences-Oncology Centers (U54; [PAR-14-169](#))

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- **Integration, Overall:** How well does the application describe a truly integrated “Center” rather than a collection of unrelated research projects and support services? Will the whole Center be greater than the sum of its individual components? How well does the Center organization promote scientific and administrative integration and synergy and a cohesive research program? How well does the Administrative Core and the Center management plan provide for effective communication, interaction, and coordination among the investigators and components of the Center? Do the applicants state their willingness to collaborate and share models, software, and other resources within the Center and across the Network?
- **Integration, Research Projects:** How well is the proposed Project integrated with other Research Projects and the overall Center? How well does the Project further the Center's organizing framework? How well does the project take advantage of the Center infrastructure to allow for alternative approaches or perspectives to be quickly employed? If the Project is supported by a Core, how well integrated are the Project and Core?

Additional Review Criteria (non-Scored Criteria)

- NIAAA Specialized Alcohol Research Centers (P50; [RFA-AA-17-001](#))
- **Integration:** Is there evidence of scientific and administrative integration of the proposed program? Is there evidence of coordination, interrelationships, and synergy among the individual research projects and core components? Are there clear advantages or value added by conducting the proposed research as a center rather than through separate research efforts? Is there thematic cohesion to the center? Is the interrelationship of individual projects and cores clear and scientifically well-justified? How will the administrative structure of the center contribute to its probability of success? Does the application clearly describe and justify the proposed administrative and organizational structure? Is the proposed structure adequate to support and encourage optimal interactions among participants of the overall center? Does the administrative plan provide for internal quality control of ongoing research and for fair and effective communication and cooperation among center members including resolution of disputes and allocation of funds?

Extra review elements

- NIAID Human Tissue Models for Infectious Diseases (U19; [RFA-AI-16-022](#))
- **Review Criteria - Overall**
 - Are the overall goals of the Center conducive to generating significant multidisciplinary investigations that respond to the overall objectives of the FOA, i.e., generating novel models for studies of infectious diseases that will advance basic science and/or product development?
 - Does the Center provide a feasible strategy for collaboration among the scientific fields relevant to this FOA, i.e., infectious diseases, tissue engineering, and, optional, the microbiota/microbiome?
 - Do all of the individual projects relate to the overall goals of the Center and provide a cohesive and synergistic whole?

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- Does the Center PD(s)/PI(s) have the leadership and scientific ability, scientific and technical skills, and managerial competence to develop, manage, and direct an integrated and focused research Center, including the time commitment and demonstrated ability to establish and manage collaborations?

Genomic Innovator Award (R35)

RFA-HG-18-006

<https://grants.nih.gov/grants/guide/rfa-files/RFA-HG-18-006.html>

NHGRI recently released an interesting RFA for an R35 Genomic Innovator Award that is targeted at early-stage investigators who are “important contributors to team-science efforts” in genomics. I asked one of the program officers how they would define and evaluate that, and they said: “...the applicant should be an important contributor to a group effort, but not the senior leadership.” Of course, applicants also have to “show considerable promise for becoming independent researchers.”

In the background section for the RFA, they say:

Much genomics research is done as part of "team science", in consortia or other research group efforts including interdisciplinary research, large projects or centers, or similar multifaceted collaborative efforts. Many investigators in genomics start their careers in such groups, which do not always provide traditional opportunities for career development such as leading independent research projects and writing first-author publications. Such individuals can face hurdles when applying for standard NIH awards, since their contributions and creativity can be difficult to recognize. This program aims to assist researchers who have been important contributors to research consortia or similar large groups to obtain their own funding and establish themselves as independent investigators. These researchers may continue their participation in the groups in which they currently work, or they may transition to work on individual projects or other team-science projects, in genomics.

Examples of Team Science-Specific Review Criteria

NSF

Additional Solicitation Specific Review Criteria

- **Systems Approach**
 - **Interdisciplinary Integration**
 - **Network Structure**
 - **Management, Organization and Evaluation**
 - **Transdisciplinarity/Synergy**
 - **Quality and Value of Collaboration**
 - **Others**
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- NSF Innovations at the Nexus of Food, Energy and Water Systems (INFEWS; [NSF 17-530](#))
 - **Systems Approach:** How well does the proposal incorporate and integrate across food, water, and energy systems? Are the proposed study systems appropriately defined?
 - **Interdisciplinary Integration:** How well do the proposed research activities integrate across at least three or more intellectually distinct disciplines that, in aggregate, represent scientific areas supported by three or more of the participating NSF Directorates or two Directorates and USDA/NIFA. (USDA/NIFA may be invoked as a "discipline" if the research focus represents a topical area that is uniquely distinct from disciplines typically supported by NSF Directorates. See also Frequently Asked Questions (FAQ) at the end of the solicitation.
 - Does the **research team** include sufficient expertise to carry out the interdisciplinary research?
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- NSF Sustainability Research Networks Competition (SRN; [NSF 14-534](#))
 - **Interdisciplinarity:** How well do the proposed SRN activities integrate across NSF-supported disciplines to create new interdisciplinary networks and/or collaborations?
 - **Network Structure:** Will the proposed SRN link scientists, engineers and educators in multiple institutions and be geographically dispersed? Will the network promote the direct involvement - from the outset - of participants from a variety of different sectors and perspectives? Does the proposal explain clearly how each of the network partners contributes to the goals and objectives of the network?
 - **Management, Organization and Evaluation:** Are the structure, roles and responsibilities, and management for the proposed SRN appropriate and clear? Does the proposed SRN Management Team have the vision, experience, and capacity to manage a complex, multi-faceted, and innovative enterprise that integrates research, education, diversity and outreach at the network level? Will funding and other resources be shared among the network partners? Are appropriate mechanisms in place to allow the network to adapt and grow as new opportunities arise?

Examples of Team Science-Specific Review Criteria

- NSF Transdisciplinary Research in Principles of Data Science Phase I (TRIPODS; [NSF 16-615](#))
 - Each proposal is required to include a **Collaboration and Evaluation Plan** as a separate supplementary document
 - **Transdisciplinarity/Synergy**: Is the project transdisciplinary, bringing together theories and approaches from theoretical computer science, mathematics, and statistics? Is there synergy between the different groups?
 - **Quality and Value of Collaboration**: Are the specific roles of each collaborating investigator clear? Does the collective team have expertise representing the three communities (statistics, mathematics, and theoretical computer science)? Is there a well-developed plan for communication and interaction with the domain sciences and industry?
- **Others**
 - NSF Smart and Connected Communities (S&CC; [NSF 16-610](#))
 - How effectively does the proposal address **integrative research** and **research capacity-building** coupled with **community engagement**?
 - NSF Expeditions in Computing ([NSF 16-535](#))
 - Does the project description make a convincing case that the **collaborative contributions of the project team** will be greater than the sum of each of their individual contributions?
 - NSF Planning Grants for Engineering Research Centers (ERC; [NSF 18-549](#))
 - Is a **convergent research** approach needed for the targeted societal impact?
 - Are the proposed strategies for **team formation** and developing the ERC management structure appropriate?

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Other Funders

NASA Astrobiology Institutes (NAI; CAN7)

- Extent to which the proposed research is interdisciplinary in nature;
- Complementarity of proposed research center with existing NAI centers within the network.

American Heart Association

AHA Strategically Focused Heart Failure Research Network [RFA](#), pages 13-15, Center Application Scoring Criteria

- **Synergy** – A clear vision of scientific direction is expected. A Strategically Focused Research Center should be viewed as a group of interrelated research projects, each of which is not only individually scientifically meritorious, but also complements the other projects and contributes to an integrating theme. Describe the rationale for the total program. Explain the strategy of achieving the objectives of the overall program and how each individual project relates to the strategy. Describe the synergies and interactions among projects and their investigators. What collaborations do you envision between investigators working on individual projects? Is there evidence of synergy among the projects and training component of the Center? **PROJECTS THAT DO NOT DEMONSTRATE SYNERGY WILL NOT MOVE FORWARD TO PHASE 2.**
- **Collaboration** – History of collaboration, as well as the ability and commitment to collaborate with other institutions, investigators and within the applicant institution as well as within the awarded Network. Defined and detailed process for collaboration with other sites in addition to within and among the proposed projects; plans to actively participate in a collaborative network. Evidence of formal training in leadership skills with an emphasis on collaborative leadership will be favorably reviewed. • **Interaction Plan** within and among Centers—Plan for and commitment to sharing knowledge and methods, providing a stimulating atmosphere for research collaborations, and providing networking opportunities for trainees. Cited strategies for communication and interaction among the Centers.
- **Center Team** – Qualifications of the Director to provide scientific and administrative leadership for the Center; experience and commitment of the nominated Director; quality of research team; qualifications of investigators and co-investigators; experience with heart failure-related studies; training experience.
- **Center Director** – Demonstrated ability to lead others, along with experience and commitment to the success of the Center, the projects contained within, and the Network as a whole. Documented evidence of willingness to collaborate with others outside their institution to share ideas, science, etc. to progress the field of heart failure research.
- **Investigator team** – Quality of interdisciplinary research team; qualifications of co-investigators; training experience.