

Guidelines for Huck - Affiliated Institutes, Centers, and Consortia (adopted May 28th, 2024)

Purpose. These guidelines clarify the purpose, organization, interconnection, administration, and sustainability of Huck-affiliated Institutes, Centers, and Consortia. This framework expands upon, but does not supplant, Penn State policy RAG05 - *Establishing Research Institutes, Consortia, and Centers*.

Context: Institutes and Centers are critical components of the research ecosystem at Penn State and are key to fostering innovation and collaboration within the life sciences. Institutes, Centers, and Consortia form a diverse yet cohesive framework to synergize and amplify the University's research, educational, and service capabilities. This is accomplished by enabling a seamless flow of ideas, resources, and collaboration across different units and layers of the research ecosystem.

Centers, Institutes and Consortia play complementary roles, ensuring that research activities are not only interconnected but also collectively oriented towards impactful outcomes. This symbiotic relationship supports a dynamic research environment where scientific discovery and interdisciplinary engagement thrive, positioning the Huck and Penn State at the forefront of addressing the life sciences challenges and opportunities of our time.

Definitions. Huck-affiliated Centers, Institutes and Consortia are defined by their scope and scale:

1. **Centers:** Operate as interdisciplinary hubs that bring together faculty (typically >10) focused on addressing complex research challenges through collaboration. They are characterized by their ability to facilitate innovation by leveraging resources, knowledge, and expertise across disciplines, enabling ambitious research, education, and service projects beyond the scope of individual investigators or Departments. Centers with very large numbers of faculty may benefit from the development of consortia / specialized working groups (see Consortia, below) around disciplinary focus areas.
2. **Institutes:** Encompass a broader spectrum of scientific endeavors, typically bridging multiple Centers/Consortia and colleges to support large-scale interdisciplinary research. Institutes provide high level leadership in orchestrating comprehensive research strategies, promoting interdisciplinary collaboration, and enhancing the University's capacity to tackle global challenges at scale.
3. **Consortia:** Represent specialized subgroups (within or across Centers, Institutes or independent groups within emerging fields that may blossom into Centers) that are focused on specific research topics or projects, offering a platform for deeper specialization. They operate with some degree of autonomy and have clearly defined outputs that may result in evolution into Huck-recognized Centers based on clear differentiation of scope, scale,

potential for research impacts, and alignment with strategic priorities. Consortia that do not transition to Centers are expected to be sunset or, if relevant, realigned.

What are the objectives of Centers?

- The primary objective of Centers is to foster dynamic interdisciplinary collaboration among faculty, leveraging a diverse array of expertise and perspectives to address critical challenges and opportunities in the life sciences through development of innovative partnerships with potential for significant societal impact.
- Centers produce groundbreaking, interdisciplinary research outputs that would be unattainable by individual researchers, labs, or smaller groups, demonstrating the unique value and necessity of such collaborative entities. This involves orchestrating complex research, educational, and service endeavors that cross traditional disciplinary boundaries, yielding novel insights and innovations that can only emerge from the intensive, coordinative effort and shared expertise of the Center's collective.
- **A defining objective of Centers is also to harness and amplify the intellectual synergy of their members through leveraging resources, with the goal of securing larger, collaborative extramural grants.** These grants are important and enable support for the Centers' activities and contribute to the benefit of the broader life-sciences community and society.
- By serving as inclusive hubs of intellectual exchange, Centers are expected to engage research faculty, staff, postdocs, and students from varied backgrounds, encouraging cross-disciplinary interactions that advance the frontiers of science. This inclusivity ensures a rich and diverse environment of scholarship where all members contribute to and benefit from cutting-edge scientific discoveries.
- Centers play a strategic role in enhancing the University's research, education, and service capabilities by identifying, nurturing and growing areas of excellence. This involves supporting recruitment and integration of diverse hires through the development of shared resources and facilities that align with current and emerging scientific priorities.
- Centers are outward looking by design and are expected to play a vital role in broadening collaborative networks to national and international partnerships, as well as in developing strategic alliances with philanthropic organizations, government bodies, and private sector partners to create a robust ecosystem that not only fosters scientific excellence but also ensures the research has a broad impact.
- Centers should maintain high visibility both internally and externally with the goal of being recognized as thought leaders in their field of research.

Through these distinctive contributions, Centers affirm their roles as indispensable catalysts for advancing knowledge and solving multifaceted problems, thereby achieving outcomes that significantly exceed the sum of their parts.

What are the objectives of Institutes?

Institutes connect, bridge, coordinate, support and amplify the activities of Centers and Consortia. They provide opportunities for an entire research community to engage in interdisciplinary activities with larger scale and scope. As representatives of the entire research community in a broad disciplinary area (eg plant science, neuroscience etc) Institutes can convene faculty to address larger disciplinary challenges. They can help coordinate horizon scanning and strategic planning to build capacity in emerging areas. This could include helping to realign existing Centers, form new Centers or sunset inactive Centers. Finally, Institutes can help establish a culture of support, training, professional development, and recognition in their disciplinary areas.

Administration and Sustainability of Institutes/Centers/Consortia

I/C/C are structured to foster autonomy while ensuring alignment with broader research mission of the university and Huck Institutes. This section outlines the governance structures and funding models that underpin their operation and sustainability.

Governance Structures

- Centers and Institutes are led by Directors, appointed typically for a 3 to 5-year renewable term, through a collaborative process involving nomination or external recruitment by members of the Center. A public presentation is required and will include an inclusive vision to lead and elevate the community. Appointment will be made by the Huck Director in consultation with the Huck Executive committee and C/I faculty.
- Each Center and Institute should have an Executive Committee, typically comprising ~5 or more members that represent the broad interests of the organization and appointed for a defined term by the Director to assist in strategic planning and operational management.

Funding Models and Sustainability Strategies of Huck-affiliated Centers and Institutes

Through a combination of inclusive governance, diversified funding models, and an emphasis on adaptability with regular assessment, the Huck will work closely with the I/C/C leadership to build long-term sustainability through strategic internal support and periodic evaluation and evolution of their strategic priorities to ensure continued alignment with the University's overarching goals of advancing knowledge and addressing societal challenges through cutting-edge scholarship.

While the goal of all I/C/C is ultimately to acquire extramural funding to support their work, intramural support is essential to seed these activities. The Huck Institutes can provide financial and administrative support for planning and executing events (seminars, workshops, symposia), travel associated with I/C/C activities and funds and administrative support for PI teams to plan,

write and submit large multi-PI and/or multi-institutional grants and other initiatives leading to extramural support or substantial impact.

- Funding for Centers and Institutes will derive, in part, from intramural sources to help advance the University's strategic interests. These funds are expected to be leveraged with additional funding from external grants, partnerships with industry, and philanthropic contributions for the operation of the Center.
- Centers and Institutes are expected to submit an annual report of activities and budget requests. Support for such activities is requested as part of the required annual report of I/C/C activity that is filed prior to the beginning of each fiscal year. Out of cycle requests for support will be considered on a case-by-case basis. It is likely, and has been the case historically, that requests for funds exceeds funds available and Huck prioritizes funding for those activities likely to have the greatest potential to catalyze research excellence in the life sciences and for sustained impact.
- Sustainability will be ensured through a mix of strategic planning, periodic reviews, and continually adapting to changing scientific landscapes.
- I/C/C will undergo a mandatory five-year review to assess the impact and alignment with evolving institutional priorities. This review informs decisions on continued support, strategic adjustments, and potential areas for expansion or realignment. Members of the I/C/C being reviewed shall lead the review process.
- Every decade, an external evaluation led by three or more scientific leaders in the field, appointed in consultation with and reporting to the Huck Director, will be tasked to review the activities, achievements, and strategic plans of the Center. Funds will be made available to support the external review.
- Innovation and adaptability through exploration of new research directions, new internal and external collaborations, as well as through strategic adjustments to address emerging scientific challenges and opportunities are key and, together, help ensure that Centers remain at the forefront of their fields and continue to contribute significantly to the University's research mission.
- Inclusivity and succession planning are crucial to the long-term sustainability of Huck-affiliated Centers and Institutes. By actively recruiting faculty from diverse ranks and backgrounds, the Centers and Institutes enrich their perspectives and drive innovation relevant to the units. Effective and welcoming mentorship is a cornerstone of this strategy, supporting the professional growth of junior faculty and researchers within a collaborative community. Additionally, strategic succession planning is implemented by offering leadership opportunities within the Center and elevating faculty to leadership roles in the wider academic community. This approach not only ensures seamless leadership transitions but also fosters leadership development, aligning with the Centers' commitment to advancing knowledge and addressing societal challenges through groundbreaking research.

Examples of some best practices in Huck-affiliated I/C/C.

The activities outlined below exemplify how Centers and Institutes foster innovation, collaboration, and impact within and beyond the academic community. These practices are not exhaustive but highlight key strategies for advancing research and engagement. Nor is it expected that all C/I/C will engage in all of these activities.

1. Generation and Exploration of Innovative Research Ideas

Central to the mission of Centers and Institutes is fostering a welcoming environment where innovative ideas can flourish. This goal is achieved through carefully designed activities that bring together diverse minds to tackle complex scientific questions. Two key activities stand out in their ability to stimulate groundbreaking ideas and facilitate their exploration: workshops and retreats.

Organizing and Sponsoring Workshops. Workshops are often used to enable innovative idea generation within Centers. These events are planned to create fertile ground for the development of new concepts, typically structured around intense, 1 to 2-day sessions that combine broad participation with focused, in-depth discussions on cutting-edge scientific issues. Workshops function to:

- **Leverage expertise:** By inviting 1-4 external experts to collaborate with PSU faculty, workshops help introduce fresh perspectives and specialized knowledge, enriching the academic discourse and sparking new insights.
- **Be structured for broad engagement:** Best practices suggest that successful workshops often start with introductory foundational talks, accessible to all members, followed by ideation discussions. These discussions, constituting approximately 80% of the workshop's duration, delve into technically specialized topics, fostering an engaged, creative problem-solving environment.
- **Be outcome-oriented:** The primary aim is to produce tangible outcomes, such as collaborative grant proposals, strategic plans, research agendas and white papers. Unlike traditional review papers, the emphasis is on actionable outputs that pave the way for new funding opportunities and scholarship directions or provide perspectives to a broader audience, including policy makers of contemporary challenges.
- **Ensure inclusive participation:** Engagement across all levels, from Center-affiliated faculty and post-docs to students, is encouraged. This inclusivity ensures a wide range of perspectives and contributes to a comprehensive approach to the scientific issues at hand. This is an essential element of training and developing the next generation of science leaders.

Retreats. Annual and strategic retreats complement workshops by providing a broader platform for idea exploration and collaborative planning. These retreats, typically spanning a day, are essential for stepping back from daily academic responsibilities, building the community, and engaging deeply with new and emerging research themes. Retreats are optimized with:

- **Collaborative Ideation:** Retreats are structured to maximize collaborative ideation, with activities designed to stimulate open, creative thinking about future scholarship directions.
- **Exploratory Sessions:** Through a series of exploratory sessions, participants are encouraged to present novel concepts, discuss potential interdisciplinary projects, and identify opportunities for joint grant applications.
- **Community Building:** Beyond their intellectual benefits, retreats play a crucial role in community building, fostering a sense of camaraderie and mutual support among Center affiliates that are key to the free exchange of ideas and strengthening the collaborative spirit.
- **Strategic Planning:** Retreats also serve as strategic planning sessions, allowing members to align on goals, set priorities for the coming year, and refine their collective research agenda.
- **Training and Mentoring:** Retreats provide opportunities for the community of trainees and early career investigators to interact with more established investigators and hone their disciplinary expertise and build networks.

2. Enhancing Research Output and Impact

The pursuit of excellence at Huck and Penn State is fundamentally linked to enhancing the quantity, quality, and impact of scientific outputs. This objective is primarily advanced within Centers and Institutes through collaborative research, grant writing for multi-investigator projects, high-impact joint publications, and innovating training and professional development; each can be pivotal in securing the necessary funding for scholarly output and disseminating groundbreaking findings to the wider academic and public communities.

Grant writing – Submission of collaborative external grant proposals including two or more members of the Center is the primary expected product of the Center, and typically includes novel interdisciplinary grants between members as well as umbrella and training grants that can support activities. The level of support provided by Huck for development of these large interdisciplinary grants will be determined, in part, on potential for sustained impact in the field. To successfully compete for large, multi-PI, multi-institutional grants, Centers must foster and support faculty at all levels to achieve and maintain investigator-initiated funding, education, and service programs. Stated simply, an essential foundation for large grants is the strategic confluence of individual, extramurally funded faculty.

Publications – Joint publications from people within Centers are another important metric of success. Primary research publications in high-impact journals along with forward-looking perspectives/white papers and reviews are desired outputs.

3. Fostering Collaboration Across Disciplines

Centers and Institutes advance scholarship by bridging diverse fields to tackle important challenges and opportunities. Forming and sponsoring Consortia and development and implementation of seminar series are often a key part of this mission:

Consortia – Internal subgroups within the Center or Institute that address specific questions and issues. These should also be inter- and transdisciplinary and attract (typically 5-10) faculty spanning multiple units, centers or institutes. See description of Consortia above.

Seminar series – Bringing in external speakers can be immensely helpful in developing ideas and brainstorming, so this is encouraged. But Centers should not just run a seminar series like those run in Departments. Centers and Institutes should invite stakeholder speakers from academic and non-academic units who will interact with a group of PIs, help ideate, and be involved in group brainstorming sessions with faculty and others. These should be structured to foster group discussion and collaboration. External speakers who are thought leaders in their disciplines also help raise awareness externally of Penn State research excellence, which assists with recruiting and retaining outstanding faculty, students and staff.

Ad hoc working groups are temporary, interdisciplinary teams formed to address specific, often urgent issues or projects. They operate by gathering members with relevant expertise to collaboratively define objectives, conduct focused research, and develop solutions. These groups meet regularly to coordinate efforts, share findings, and progress toward their goals, ultimately disbanding once the task is completed. Through their concentrated and specialized efforts, they efficiently resolve challenges and contribute to the Center's broader objectives, demonstrating the value of targeted, collaborative problem-solving.

4. **Community Building and Networking**

The vibrant research ecosystem at Huck and Penn State thrives not just on scientific inquiry but also on the strong sense of community and the cohesive network it fosters. Central to cultivating this environment are social events and an active alumni network, both of which play crucial roles in nurturing connections that transcend the professional into the personal and the past into the future.

Peer-to-peer mentoring

Peer-to-peer mentorship at Huck Centers and Institutes is key to fostering professional growth by encouraging researchers, faculty, and students to exchange knowledge and experiences, thereby enhancing collective development. High-performing centers encourage the (mutually acceptable) assignment of peer mentors, creating opportunities for members to naturally assume mentorship roles based on expertise and experience. Such mentorship enriches the community, promoting a culture of learning, mutual trust and respect, and shared progress. Through this collaborative approach, the Centers not only accelerate individual professional development but also strengthen their collective research capabilities.

Social Events

Social events are a cornerstone of community building within the Centers, offering a relaxed atmosphere for researchers, faculty, and students to mingle, share experiences, and foster

personal connections. These events enhance collaboration by breaking down formal barriers. Social events make it easier for individuals to discuss potential collaborations in a less structured environment. They also help foster inclusivity by serving as a platform for integrating new members into the community, ensuring that everyone feels welcomed and valued. Informal gatherings (coffee hours, café's, brown bag lunches, etc.) also serve to allow for spontaneous conversations in unstructured settings that can lead to innovative interdisciplinary ideas and collaborative research projects.

Alumni Networks

Alumni networks can serve as a bridge connecting current members of the Centers with their predecessors, facilitating a continuous exchange of knowledge, resources, and opportunities, including for fundraising and development. Alumni can provide mentorship to current members, sharing insights from their professional journeys and advice on navigating both academic and industry landscapes. Alumni working in various sectors can also open doors to new research collaborations, internships, and employment opportunities for current members. Finally, by maintaining ties with alumni, Centers can preserve and build upon their historical strengths and achievements, ensuring a rich legacy of research excellence.

5. Training, Engagement, and Inclusion in Scholarship

A key pillar of the mission at Huck and Penn State is fostering an inclusive environment that actively engages and trains and develops diverse participants in scientific exploration. Central to this mission is the inclusion of graduate and undergraduate students in research training initiatives, professional development and leveraging digital engagement and virtual collaboration tools to widen access and participation.

Inclusion of trainees at all levels – Centers are already good at including postdocs and graduate students and often help drive development of training grants. Best practices at Centers and Institutes encourage and create opportunities to include undergraduates in research, not just as passive participants but as active contributors to projects, which can enhance their educational experience and prepare them for graduate studies or careers in science. We envision students rotating from one semester to the next between faculty within a Center and gaining valuable research skills and experience in a specific research area.

Curricular and training – In emerging interdisciplinary areas, I/C/C could partner in or lead efforts to develop new curriculum/training modalities (boot camps, workshops, internships etc) and graduate training programs (emphasis areas, options, programs, dual titles, minors etc) to better prepare graduates for success in their fields.

Digital engagement / virtual collaboration helps create a dynamic and collaborative research environment that leverages digital tools to enhance learning, research collaborations, and community engagement. Examples may include, but are not limited to: collaborative online platforms used to engage around research questions or themes, virtual labs and simulations, research data management platforms that facilitate data preservation and sharing within or across different Center groups, online professional development

programs, etc. These tools also help knit the research community into an effective collaboratory that can shrink geographic separation and encourage broader participation.

Adapting to Emerging Challenges and Sustainability

Adaptability and Sustainability. The idea is to sustainably drive innovation in the field and incorporate and evolve research themes and methods to ensure Centers and Institutes stay at the forefront of their fields and are equipped to respond to emerging challenges.

Universities in general, and Centers and Institutes in particular, should be looking "over the horizon" for emerging threats and opportunities that will affect human thriving. Sustainability is ensured by actively identifying and recruiting the next generation of leaders to Penn State and by reinforcing the essential trust relationship between science and society.