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IRWG Process Evaluation Design

Evaluation of the NIH Roadmap's Interdisciplinary Research Work Group: A Design and Feasibility Study

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Introduction

The Interdisciplinary Research Working Group (IRWG) was established under the NIH Roadmap's Research Teams of the Future theme to develop solutions to perceived barriers to interdisciplinary research inherent in the existing structures and processes at the NIH and within academic institutions. Following extensive deliberations, the Group – which included representatives from most Institutes and Centers at the NIH -- launched several initiatives, each designed to address a specific limitation in the current process of funding allocation and credit sharing. The Multiple-PI option for grants was also developed to stimulate team science and interdisciplinary research. The barriers to interdisciplinary research identified by the Group included training of researchers in a single discipline, the mission-oriented ("silo") organization of the NIH Institutes and Centers, and inequalities in credit sharing at host institutions among researchers submitting collaborative grant proposals. Correspondingly, the IRWG launched initiatives that had the following aims: formally educating scientists in several diverse disciplines (T32; K07; T90/R90); funding of collaborative projects (R13; P20/X02/U54; R21); funding for research that promotes the integration of disciplines; and introducing changes to the grant application process to allow more than one Principal Investigator on individual research awards (MPI). Solicitation titles for the initiative and release dates are presented in Exhibit 1.

Exhibit 1. Initiatives

Initiatives	Announcements
1. Interdisciplinary Health Research Training: Behavior, Environment and Biology (T32)	RFA-RM-04-010 RFA-RM-05-010 NOT-OD-04-008
2. Short programs for IR training (R13)	RFA-RM-04-008 NOT-OD-04-008
3. Curriculum Development Award in Interdisciplinary Research (K07)	RFA-RM-04-007 NOT-OD-04-008
4. Training for a New Interdisciplinary Workforce (T90/R90)	RFA-RM-06-006 RFA-RM-04-015 NOT-RM-05-012
5. Interdisciplinary Research Consortia (P20/X02/U54)	RFA-RM-04-004 NOT-RM-05-006 RFA-RM-06-008 RFA-RM-07-002 RFA-RM-06-002 NOT-RM-06-013
6. Facilitating Interdisciplinary Research via Methodological and Technological Innovation in the Behavioral and Social Sciences (R21)	RFA-RM-07-004
7. Supplemental grants (Supplements for Methodological Innovations in Behavioral and Social Sciences; Administrative Supplements in Behavioral, Social and Biological Sciences)	NOT-RM-05-007 RFA-RM-04-013 RFA-RM-07-004
8. Multiple PI Initiative (MPI)	NOT-OD-07-017

Four years after the establishment of these activities, the NIH wishes to conduct a process evaluation to document their implementation and early outcomes. The process evaluation was organized into two phases – development of the evaluation design and implementation of the proposed design. This document contains our proposed design.

The proposed design is grounded in extensive background research: we conducted in-depth interviews regarding issues of design with 25 individuals that included staff at NIH, grantees, and evaluators of similar programs; participated in, or observed, several meetings of the Interdisciplinary Workgroup and consortia grantees; and reviewed many program documents and evaluation articles and reports. Data from these sources helped us formulate the appropriate study questions and to identify relevant and available sources of information. Furthermore, to ensure that our design is realistic and well-informed, we sought the advice of two external advisors, an interdisciplinary researcher who studies scientific and engineering problem-solving practices and an experienced evaluator of interdisciplinary programs. In addition, the proposed data collection instruments were pilot tested with the appropriate respondent groups including staff at NIH, grantees, trainees, and unfunded applicants.

We propose a process evaluation that focuses on the following aspects of the IRWG initiatives:

1. Development of grants announcements/application process;
2. Review process;
3. Selection process;
4. Program management and grants oversight;
5. Grants implementation; and
6. Short-term (early) outcomes.

Approach

Research Questions

Following extensive background research and consultations with the NIH staff, we developed a list of study questions organized by evaluation domain below.

Development of Grants Announcements/Application Process

- What was the perceived need for interdisciplinary research and training initiatives and for the multiple-PI mechanism?
- What was the process for initiating grants announcements? How clear was the process? How well did relevant staff understand the process?
- How many different teams of people- and how many people- were involved in the planning process? What worked well? What were the barriers and problems? What improvements could be made?
- How did the planning process differ from that of a typical and/or other trans-NIH initiative grant announcement?
- Was adequate time allowed for application submission? How does the time allowed compare with other programs?
- Were the goals of the program, criteria for selection, and application procedures clearly communicated in the solicitation?
- What were the additional requirements for MPI application? Did these represent significant burden for the applicants?

Review Process

- What was the process for conducting the review (e.g., selecting a lead IC, scientific review administrators, reviewers, etc.)? How well did the review process work?
- How were program goals translated into review criteria and into the actual review process?
- Did the scoring of proposals reflect the goals of the initiative? How did the review process differ from a typical review and/or review for other trans-NIH initiatives?
- Did the review process for MPI differ from a traditional, single PI application?
- How did priority scores of applications that came in under IRWG funding opportunity announcements compare to the scores for the general pool of new applications?

Portfolio Selection (Funding plan)

- What were the characteristics of applications submitted for each initiative? Did these reflect the goals of the initiative?
- How were proposals selected for funding (e.g., strictly by priority score, balancing IC relevance, etc.)? Does the resulting portfolio reflect the goals of the initiative?
- Was the scoring and selection process different for applications that included multiple PIs? What fraction of the applications received include multiple PI's? What fraction of the MPI applications/selected proposals were interdisciplinary?
- What are the characteristics of MPI applicants (career stages, disciplinary focus, institutional affiliation)?

Program Management and Grants Oversight

- What were the policies, procedures and practices for ongoing NIH program management?
- How clear were these policies?
- How well did relevant staff understand these policies?
- How much variation is there in the way the policies are interpreted and implemented?
- Do these differ from non-IRWG programs?

- Were policies, procedures and practices different across funding announcements within the IRWG? If so, why?
- Were there any special needs/circumstances?
- How do the IRWG initiatives fit with staff members' regular responsibilities and ICs' missions?
- Are there any specific challenges to the oversight of MPI?
- What are the plans for transitioning initiatives after Roadmap ends?
- Are the plans satisfactory for maintaining gains that were made under the funded initiatives?
- What are the barriers to transitioning from the Roadmap to individual IC funding and what are the facilitating factors?

Extramural Community Implementation and Outcomes

Grants Implementation

- To what extent were grantees able to implemented their proposed training programs and research projects?
- Were there barriers (or facilitators) to implementing IRWG-funded projects that were different from a typical NIH-funded project?
- How did the IRWG funded projects function within the awardee institutions, given departmental structures, policies, and promotion and tenure practices?
- Were there any specific obstacles within institutions to handling multiple-PI grants?

Short-term Outcomes

- Is there any evidence of short-term outcomes?
- To what extent did the IRWG initiatives encourage collaboration and IR collaboration beyond usual NIH grant mechanisms?
- What proportion of MPI applications are new collaborations?
- Does the leadership plan help ensure that MPIs have successful collaborations?
- Did the IRWG impact university or institutional policies, practices, or procedures related to collaborative or interdisciplinary research?
- Did the MPI have an effect on promotion and tenure decisions?
- Do multiple PIs appear satisfied with the mechanism and plan to use it in the future?
- Is the research funded via the IRWG initiatives more IR, broader, more innovative etc. than projects funded via the more traditional NIH mechanisms?

In the next section, we outline our proposed methodologies. The aim of these is to collect, analyze, and synthesize information to address the study questions.

Data Collection and Analysis Activities

We found that both original data collection and obtaining data from extant sources are necessary to answer the study questions. These data collection activities are described in turn.

Original Data Collection

We propose two approaches to gathering new data for the process evaluation of the IRWG initiatives: key informant interviews and an on-line survey. During the design phase of the project, we developed and pre-tested the interview protocols for the target groups pertinent to the evaluation. These groups include NIH staff, grantees, trainees, and unfunded applicants. While the survey has not been pre-tested in its current format, many of the questions were crafted based on data collection that was piloted by the Science and Technology Policy Institute (STPI) describing the interviews with a small sample of MPI grantees. Interview protocols and the survey instrument are enclosed in the Appendix.

NIH staff

NIH staff members, who have been involved with the IRWG initiatives as well as those who have not, serve as valuable sources of information about the context for the programs, their management, and perception of their value at the NIH. Moreover, as we were developing the design for the process evaluation, we found that information related to these areas is not available from extant sources. Thus, interviews are a key component of the evaluation design.

The semi-structured interview protocols, pretested on several respondents from each target population, include the following topics for discussion: IRWG planning, review processes, and management structure for each initiative; advantages and limitations of participating in the IR initiatives; and differences between the IRWG initiatives and other NIH programs; the topics mirror the proposed evaluation domains.

During the pre-test phase, we found that NIH staff are knowledgeable about the topics and typically willing to engage in a conversation with us (individuals who declined to be interviewed cited unfamiliarity with the topics). For the process evaluation we propose to interview the remaining NIH staff, in particular team leaders and project officers – the group that appeared to be especially knowledgeable. Exhibit 2 presents the estimated sample size for each respondent group within NIH. Please note that the numbers for respondent groups overlap: for example, many Project Team members are also members of the IRWG group. Therefore, we estimate the total number of interviews as between 50 and 60 individuals. During the interviews, respondents would be asked to recommend other knowledgeable individuals to contact, who would be added to the interview roster. This snow-ball approach would ensure that all opinions are captured.

Exhibit 2. Number of Individuals in Sample, NIH Staff

Respondent Group	Number in Sample
IRWG members	20 members
Initiatives Project Team members	10 team members, not IRWG members
NIH program officers	10
Scientific Review Administrators	5
Grant Management Officers	5
Other NIH staff	10

Scientific community

Information gathered during interviews with grantees, unsuccessful applicants, and trainees will be used to address the questions about the application process, implementation of proposed programs, and early outcomes from an external perspective. During the design phase of the project, we found that some of this information can be obtained from secondary sources. For example, program outcomes – such as publications and placement of trainees – are typically included in the annual reports. To avoid unnecessary duplication, interview questions were crafted with care. Exhibit 3 contains the proposed number of interviewees within each respondent group, based on the estimates.

Grantees. The number of grantees for individual initiatives, 67 in total, was estimated based on the data available on the NIH website (http://nihroadmap.nih.gov/interdisciplinary/fundedresearch.asp). We propose to interview about one-third of the grantees (20-25 individuals), stratified by the initiative. We anticipate that this number of individuals would be sufficient to capture the breadth of opinions. The focus of the interviews will be on the application process and on all aspects of grant implementation.

Unfunded applicants. Interviews will be conducted with a small sample of unfunded applicants group in order to gain their perspective of how the application process worked, as well as their views on interdisciplinary research. As most researchers apply for many grants, it is critical to provide the respondent with the details of the grant under investigation (in advance of the interview or early during the interview) to ensure that they are providing relevant information.

Trainees. Information from trainees is important for understanding how, if at all, the experience of participating one of the IRWG-funded training programs affected their attitude to interdisciplinary research and career choices. Based on the information contained on the NIH website for funded interdisciplinary research and on the small sample of progress reports we have in hand, we found that the total trainee population is a mixture of undergraduate and graduate students and postdoctoral researchers. The numbers of students vary significantly across the IRWG initiatives as does the duration and type of the training provided under individual grants. For two reasons, we propose to target t graduate students and post-doctoral fellows. First, Principal Investigators or their supporting staff are more likely to have current contact information for these trainees than for undergraduates. Second, graduate students and postdocs are at more advanced stages in their careers and represent a more mature informant with better defined career plans.

Contact information for trainees is available from the IMPAC II database, although this information may become outdated by the time of the evaluation. Other sources of information will be the grant PIs, who may have contact information, especially for trainees of longer duration, and information contained in annual progress reports.

MPI on-line survey

The Science and Technology Policy Institute conducted a pilot study of Multiple PI Initiative. The study involved interviews with 19 applicants who chose this option and observations of a debriefing session with reviewers of multiple PI grants. The study produced several interesting findings related to the review process and to the perceived impact of this mechanism on the researchers. We understand that since the study took place, at least several hundred investigators have elected to take

advantage of this Initiative. We propose to extend the STPI study to a larger group of respondents, at least 200 individuals. We suggest targeting the applicants from the earlier years of the Initiative, so that sufficient time would have passed to observe some effects on their careers.

We suggest a simple web instrument that can be easily and inexpensively developed using commercial software (such as Survey Monkey or QuestionPro). In our experience, this software is sufficiently robust to meet the needs of the proposed data collection activities: it allows skip patterns, multiple choice and open-ended questions, email follow-up with non-respondents, and efficient tabulation/export of survey data. The survey instrument enclosed in the Appendix has been adapted from the interviews that were pilot tested in order to be used with a larger number of respondents.

Exhibit 3. Number of Individuals in Sample, Extramural Community

Respondent Group	Number in Sample
Funded grantees (non-MPIs)	23 from individual initiatives all 9 IRCs
Unsuccessful applicants	10-15 applicants
Trainees	20
Multiple PIs	200

Use of Extant Data

During the design phase of the project, we have established that there are several existing sources of useful data for addressing the study questions (the Appendix contains the plan that we developed for extracting data from IMPAC II and the list of NIH documents that need to be obtained for each of the initiatives). We analyzed representative documents available from NIH and public sources for their utility in the evaluation. We present some of our findings in the sections that follow as examples of the data that our proposed approach can yield.

Public NIH documents

Publically available NIH documents, in particular program solicitations, are a valuable source of information for the study. NIH staff use program announcements to communicate the vision for the program to the scientific community. In addition, program announcements contain information on the leading IC, the amount of NIH funding available, and on the processes of grant application and selection. To test the utility of the solicitation as a data source, we chose the RFA for T32 program "Interdisciplinary Training: Behavior, Environment and Biology" (RM-05-010) and compared it with another T32 RFA sponsored by the same institute "Human Genes and the Environment Research Training Program" (RFA ES-07-002). By contrasting these two RFAs, we found that the duration of several application/review/award steps was shorter for the Roadmap RFA (data not shown). The intent of the RM program is clearly communicated in the executive summary and provides a reference against which program implementation and outcomes could be evaluated. Similarly, the amount of funding anticipated, in the case of RM RFA $800,000 for three to five grants, is useful for comparison to the actual amounts awarded. We propose a review of program solicitations for each of the IRWG initiatives and their comparison to carefully selected solicitations for non-Roadmap programs from the same IC.

Internal NIH documents

Documents such as internal memos, meeting notes, additional instructions to reviewers, and "paylists" contribute to an understanding of the program administration-related processes at the NIH and serve as good preparatory materials for interviews with the NIH staff.

We examined a variety of internal NIH documents. A T32 paylist, for example, provided the justification for funding applications. The analysis of the instructions to reviewers revealed a repeated emphasis on interdisciplinarity as a criterion for selection. Reviewer comments demonstrated that applications were, in fact, evaluated in the context of interdisciplinarity.

In developing the evaluation design, we also reviewed proposals and annual reports. Our review of sample proposals suggested that several of the study questions can be addressed through the review of these materials. The evaluator can document what proposed projects were available for selection and how they reflect the goals of the initiative. In addition, proposals that we reviewed contained a complete record of PI training and extensive information related to collaborators.

In the course of reviewing a sample of annual reports, we found that the content of the two case study reports selected – and their utility for the evaluation – varied. Therefore, we suggest that progress reports be supplemented by other sources of information to yield a more complete picture of how proposed projects are implemented.

IMPACC II data

There is also a variety of quantitative data available on the initiatives of interest. For example, the representation of women or breadth of disciplines in the applicant pool can be obtained (Exhibits 4 and 5). Other quantitative descriptors include distribution of scores, application success rate, representation by institution, and funded amounts. We examined all these variables in the design phase and found that they are available from IMPAC II data.

Exhibit 4. Representation of women, T32 program

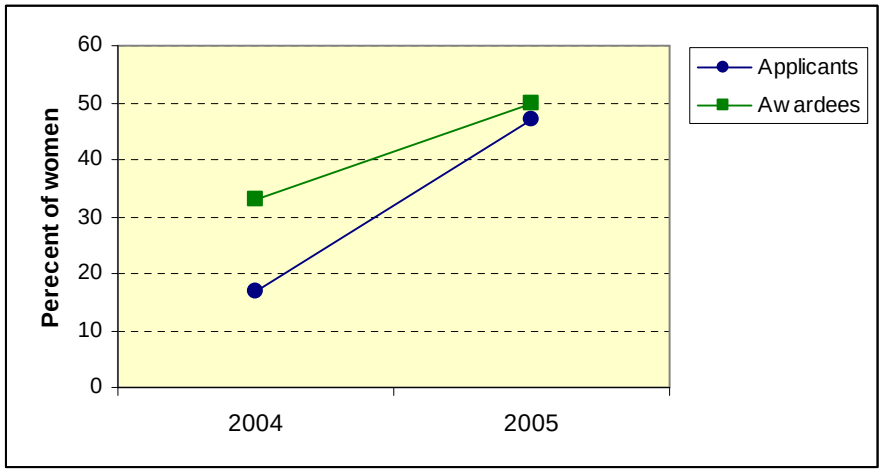
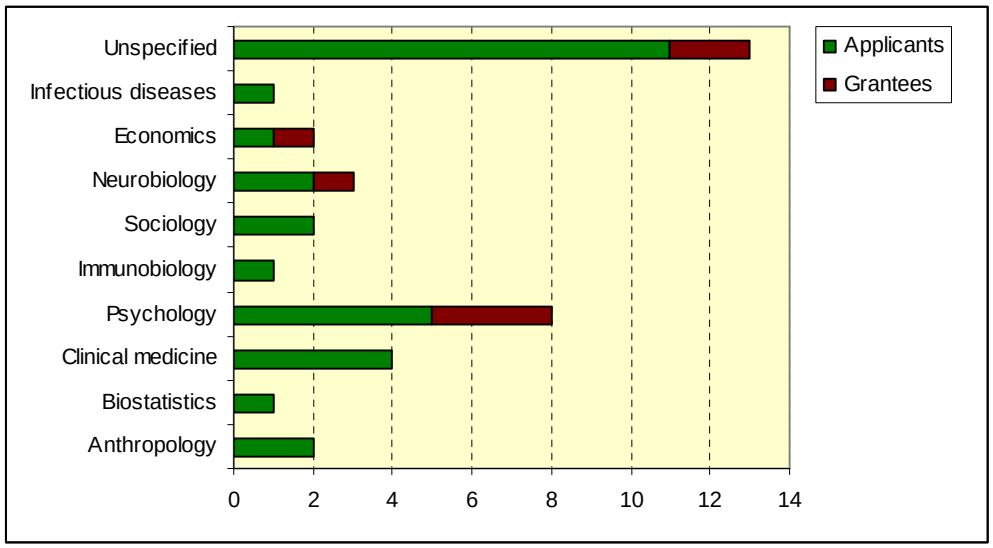


Exhibit 5. Number of applicants by field, T32 program



Possible obstacles to data collection and proposed mitigation approaches

Identifying respondents and securing participation

During pilot testing, we found that difficulties might arise in identifying and recruiting respondents. In particular, we had trouble recruiting grant managers. Some individuals that we approached claimed that they were unfamiliar with the initiatives and others, even when though they were originally identified as grants managers, turned out to be SROs and not grants managers. To improve recruitment among grants managers, we propose the following steps:

- Contacting every grant manager listed on the relevant solicitations;
- Obtaining referrals to grants managers from other NIH respondents; and
- Focusing primarily on consortia grants managers, since it appears that grants managers are significantly more involved in the consortia grants than in other IRWG grants

We anticipated that recruiting unfunded applicants would be a problem. Thus, we were surprised when all three applicants we contacted agreed to speak with us. While this is a very small sample to make predictions, we believe that a well-crafted invitation letter that emphasizes the importance of their views and an assurance that an interview would be short would be sufficient for recruiting the desired number of individuals.

Research trainees are a notoriously difficult group to study as they tend to move relatively quickly to the next stage in their careers. During the pilot testing, we successfully used the following approaches to finding trainees and we recommend these steps for the process evaluation:

- Focusing on graduate students and postdocs;
- Getting referrals from PIs to their program managers, who tend to have access to trainee information; and
- Using web searches based on information found in secondary sources, such as annual progress reports.

Obtaining extant data

In our experience, assistance from the NIH staff was required in order to gain full access to the IMPAC II database and to programmatic materials. However, we understand that once the query fields are well defined in IMPAC II, the time required to extract the data and documents is not excessive.

Data Analysis

In this section we describe the proposed approach to data analysis. These approaches are based on our experience with the limited data gathered in the course of pilot testing. Therefore the approach may be further refined and adapted with a full set of data. We propose two types of data analyses: descriptive, including statistical and qualitative analyses, and comparative, to study differences between IRWG initiatives and non-IRWG initiatives.

Descriptive analyses

Interview data. Interview data will yield a mix of qualitative and quantitative data. Interview data can be coded to provide quantitative data. For example, the number or percentage of respondents who said that the IRWG initiatives have been successful in reducing barriers to interdisciplinary research is an example of quantitative data that can be obtained through the interviews. Conversely, descriptions of respondents' roles related to IRWG initiatives is qualitative data.

In order to maximize the utility of the interview data – which is likely to be collected by several individuals – steps must be taken to ensure consistency and interpretability. We suggest that immediately after each interview, the interviewer enter the notes into the relevant sections of an electronic version of the interview protocol. In that way, information from different respondents can readily be combined and compared. We also found periodic meetings of the interviewers to be valuable, as this allow researchers time to discuss the data being gathered 'in real time' and to start identifying patterns and themes as they emerge across and within the initiatives. For ease of analysis, interview notes can be coded using a coding scheme that corresponds to the topics under investigation. A software program for qualitative analyses (e.g. NVivo) can facilitate the process, for example, allowing parts of transcripts related to the same topic to be combined into a single document.

IMPAC II data. Like the interview notes, the IMPAC II database contains quantitative and qualitative data. For quantitative data, such as the distribution of scores and funding levels, counts of PI research specialization, affiliations, and demographic characteristics, we suggest presenting descriptive statistics (an example illustrating a change in the percentage of women applicants for two application cycles can be found in the previous section). For qualitative data available from IMPAC II – proposals and annual reports for example – we recommend a form of content analysis, whereby a researcher reviews the large amount of information contained in the documents and synthesizes it into short summaries. These summaries are then further analyzed to address the study questions. For example, the overall design of the training program can be extracted and recorded from each funded proposal, and the types of programs under each initiative organized into categories. This approach to analysis allows the researcher to ascertain whether and how the selected set of proposals addressed the program goals. The same strategy could be used for the analysis of other programmatic documents, such as solicitations. We have demonstrated the effectiveness of this approach on a small number of case studies (data not shown).

MPI Survey data. The Multiple PI sample might be sufficiently large to allow for some bivariate analyses. For example, it might be possible to look for correlations between variables – such as junior status of an investigator and the perception of equality among the applicant PIs or the length of time required to develop an application and the level of satisfaction with the process.

Comparative analyses

Theoretically, three types of comparative analyses should be possible in this evaluation: (1) between IRWG and "traditional" NIH program of the same type; (2) between IRWG and other trans-NIH initiatives; and (3) among IRWG initiatives. In practice, however, because of the nature of the IRWG initiatives – they were developed to mitigate perceived limitations of the existing NIH funding processes – there are no programs that are a perfect comparison for any of the IRWG initiatives. Therefore, the appropriateness of the programs selected for comparisons will need to be clearly articulated, including what differences exist, and any comparative data should be interpreted with care.

The following aspects of the programs are amenable to comparative analyses:

Development of Grants Announcements

- Time expended by the NIH staff (compared to time expended on duties for similar programs)
- Instructions given to applicants and other information contained in the RFPs (compared to RFPs for similar types of grants based at the same IC)
- Amount of time allowed for proposal preparation (compared to RFPs for similar types of grants based at the same IC)
- Sources from which applicants learned about the programs (compared to other NIH solicitations)

Review Process

- Instructions given to reviewers (compared to RFPs for similar types of grants based at the same IC)
- Composition of review panels (compared to similar types of grants based at the same IC)

- Priority scores values and distribution (compared to similar types of grants based at the same IC)

Portfolio Selection (Funding plan)

- Application success rates (compared to the rates for all T32s, R21, and other appropriate programs)
- Characteristics of applicants and awardees, e.g. demographics, research area (compared to similar types of grants based at the same IC)

Program Management and Grants Oversight

- Policies, procedures and practices for NIH program management (compared to similar grants managed by the same Program Officer)

Short-term outcomes

- Success of programs, as perceived by the grantees (compared to other grants held by the grantee)
- Scientific outputs (compared to other grants held by the grantee and/or to other grantees for similar grants)

We expect that for other aspects of the programs it might be difficult to identify appropriate comparisons. However, in our view, the lack of comparison group does not diminish the value of the data collected for this evaluation. The following areas might not be amenable to comparison:

Development of Grants Announcements

- Activities involved in planning for and developing RFPs

Portfolio Selection (Funding plan)

- Selection decisions
- Evaluation of proposals by reviewers, as reflected in "pink sheets"
- Interdisciplinarity of proposals and selected grants

Short-term outcomes

- Trainee level of satisfaction and career choices

Proposed Design Summary

Exhibit 6 below presents a summary of the proposed design, linking the domains of the evaluation questions to indicators and proposed data sources.

Exhibit 6. Evaluation Summary

EVALUATION QUESTION DOMAIN	EVALUATION INDICATOR	EVALUATION APPROACH/ DATA SOURCE
Development of Grants Announcements/Application process	• Perceived need for change • Clarity of solicitations • Time allowed for proposal development • Compositions of NIH initiative management teams • Process of announcement development and advertisement • Barriers/facilitators to initiative development • Additional burden on applicants (MPI) • Capacity of institutions to deal with new type of application (MPI)	• Interviews with NIH staff • Interviews with grantees • Interviews with unfunded applicants • MPI survey
Review Process	• Composition of review panels • Instructions to reviewers • Correspondence between program goals and selected proposal • Correspondence between reviewer comments and program goals	• Analysis of program documents • MPI survey
Portfolio Selection	• Characteristics of selected applicants • Evidence of reviewer consideration of proposal interdisciplinarity • Values and distribution of scores • Project team considerations for selection other than scores • Application success rate • Applicant satisfaction with the process	• Analysis of program documents • Analysis of IMPAC II data • MPI survey
Program Management and Grants Oversight	• Description of policies • Description of grant management activities • Satisfaction with polices of NIH staff and grantees • Amount of time spent by NIH staff on managing the initiatives • Success with and obstacles to grant transitioning	• Analysis of program documents • Interviews with NIH staff • Interviews with grantees

EVALUATION QUESTION DOMAIN	EVALUATION INDICATOR	EVALUATION APPROACH/ DATA SOURCE
Grants Implementation	• Evidence of proposed goal implementation by grantees • Barriers/facilitators to implementation • Contribution of institutional structure to success/failure of implementation	• Analysis of program documents • Interviews with grantees • MPI survey
Short-term Outcomes	• Evidence of outcomes, including enhanced collaboration, development of interdisciplinary research projects, interdisciplinary training of students, career choices, change in institutional policies to ease interdisciplinary research, effect on tenure decisions and promotions (in particular MPI) • Outputs, including joined publications, number of trainees enrolled in programs and completing programs • Any evidence of impact on NIH	• Interviews with grantees • Interviews with NIH staff • Analysis of program documents • MPI survey

Appendix – Data Collection Instruments

IRWG Member

Please briefly describe your role related to the IRWG.

If necessary, probe on

Involvement as IRWG or IRC Project Team Member (PTM), Program Officer (PO), Grants Management Officer (GMO), or Scientific Review Officer (SRO)

If not very involved, probe on reasons for limited involvement.

How do/did your IRWG initiative activities fit into your other work responsibilities?

NOTE: Unmarked questions are for all IRWG members. More detailed questions for IRWG members who played specific roles are marked in [brackets].

Development of Grants Announcements

Please describe the process and activities involved in the planning for the IRWG initiatives.

Probe on:

How needs were identified

Who was involved in developing RFAs

Involvement of multiple ICs and levels of involvement

Role of IRWG Project Teams

Were there explicit discussions in the larger IRWG about:

Development of RFAs

Review and grant selection process for the IR/IT initiative

Cross-IC program management and grants oversight

Long-term sustainability of the program

[PO and PTM] Were there special dissemination efforts for advertising IRWG initiatives to the scientific community, other than posting on the NIH website?

[PO] Did you receive a lot of inquiries from the scientific community? Were any researchers discouraged from submitting a proposal? *If yes*, can they give an example?

Review Process and Portfolio Selection

[PO, PTM] What was the process for organizing and conducting the review of the IRWG programs?

Probe on

Selection of lead ICs and SROs

Translation of program goals into review criteria and review process

Selection of review panelists

[PO] Did the reviewers evaluate proposals in the context of what the program was meant to achieve? What was the balance of good science vs interdisciplinary science in the panelists decisions (for research programs)? What was the balance of good training program vs ID training program in panelists decisions (for training programs)?

[PO, PTM] Did the proposals address the goals of the program?

[PO, PTM] Were you satisfied with the proposals received? With the selections made by the review panelists? With the proposals ultimately funded?

[PO, PTM, only research programs] Did investigators propose ideas that spanned the boundaries of their fields?

Were there large differences in quality between successful and unsuccessful applications?

[PO, PTM] Were the proposals received more interdisciplinary in nature than those funded under existing initiatives/mechanisms? Could these applications have been funded under existing initiatives/mechanisms?

[PO] To what extent do the funded proposals address the missions of more than one Institute or Center or bridge "gaps" between the ICs?

Program Management and Grants Oversight

[PO, PTM, GMO] How are the IRWG grants managed? How were decisions about which IC(s) would manage grants in the initiative made? Does the NIH structure allow for effective management by multiple ICs?

[Depending on management structure]
[PO, PTM, GMO] Has the approach of having a [single program officer] [IRC team approach] assigned to lead a group of IR grants been effective?

Probe on:
Advantages and disadvantages of having a team versus a single program officer approach
Impact on coordination or cohesiveness of the program
Potential implications of assigning grants to single versus multiple ICs for management

[PO, PTM, GMO] Were the necessary structures in place to support the management of this initiative?

If no, probe on:
Have there been any functional or structural changes to support management?
If yes:, Are these temporary or permanent changes?

Perceptions of IR Roadmap Initiative/Impact on NIH

How does the work of the IRWG initiatives fit into your IC's mission?

Probe on
Support for mission of Roadmap and the IRWG
Relationship to IC's other key programs or initiatives
Interviewees IRWG work relative to IC work responsibilities

How successful has NIH been at reducing barriers to trans-IC IR collaborations?

Probe on
New or expanded collaborations between ICs that have resulted
Success within NIH
Success in extramural community

Have there been any changes in the NIH culture, policies, or procedures, as a result of the IRWG activities?

Probe on
New solutions to promoting IR within NIH
Changes to reduce barriers to trans-IC and/or IR collaborations

Are there other mechanisms with NIH to support interdisciplinary projects in areas that have not been explicitly targeted in specific solicitations?

How did the IRWG process differ from that for a typical NIH grant program and/or other trans-disciplinary NIH initiatives?

Probe on
Planning process
Review process
Management of grants
Quality of applications
Number of applications
Success rate

Short Term Outcomes of Grants

[PO, PTM, GMO] What are the primary outcomes of the IRWG initiatives from your perspective?

Probe on
Multidisciplinary or interdisciplinary projects
Different approaches to research problems
Changes in scientists' research agendas
New partnerships or collaborations, or enhancement of existing ones
Training of scientists in more than one discipline/preparing a new cadre of researchers

[PO, PTM, GMO] What has facilitated or hindered the implementation of grantees programs and/or research agendas?

[PO, PTM, GMO] In retrospect, is there a need for special programs to promote interdisciplinary research and training? Can this be achieved within ICs, through trans-disciplinary programs, or simply in an *ad hoc* manner by researchers?

[PO, PTM] In retrospect, what would you change in the program design and implementation?

[PO] Did you receive any feedback from grantees, or other members of the scientific community regarding the initiatives?

Sustainability of IR Initiatives

What are the prospects for sustainability of the IRWG and Multiple PI initiatives within NIH?

Probe on:
Necessary changes for the IRWG and Multiple PI initiatives to continue as envisioned
Ways to remove barriers and/or facilitate these changes

What are the prospects for individual grantees seeking to transition from IR Roadmap funding to continued support under the current IC system?

IRWG Program Officer (Not member of full IRWG Team)

Please briefly describe your role related to the IRWG initiative.

How did you become involved as a Project Team Member for the [name of IR Initiative]?

How do/did your IRWG initiative activities fit into your other work responsibilities?

Were you also a member of the IRWG Project Team in addition to your role as a Project Officer?
Interviews: If no, skip to

[PT] What roles did the [name of IR initiative] Project Team play?
Probe on:
How team members were assembled
Team's responsibilities
Interactions with the full IRWG
Role in peer review process and portfolio selection

Development of Grants Announcement

Did the planning process for the initiative include explicit discussions among the project team about:
Development of the RFAs
Review and grant selection process for the IR/IT initiative
Cross-IC program management and grants oversight
Long-term sustainability of the program

Were there special dissemination efforts for advertising IRWG initiatives to the scientific community, other than posting on the NIH website?

How did this planning process differ from that for a typical grant program and/or other trans-NIH initiatives?

Review Process and Portfolio Selection

What was the process for organizing and conducting the review of the IRWG programs?
Probe on
Selection of lead ICs and SROs
Translation of program goals into review criteria and review process
Selection of review panelists

Did the reviewers evaluate proposals in the context of what the program was meant to achieve? What was the balance of good science vs interdisciplinary science in the panelists decisions (for research programs)? What was the balance of good training program vs ID training program in panelists decisions (for training programs)?

Did the proposals address the goals of the program?

Were you satisfied with the proposals received? With the selections made by the review panelists? With the proposals ultimately funded?

[only research programs] Did investigators propose ideas that spanned the boundaries of their fields?

Were there large differences in quality between successful and unsuccessful applications?

Were the proposals received more interdisciplinary in nature than those funded under existing initiatives/mechanisms? Could these applications have been funded under existing initiatives/mechanisms?

To what extent do the funded proposals address the missions of more than one Institute or Center or bridge "gaps" between the ICs?

Program Management and Grants Oversight

How are the IRWG grants managed? How were decisions about which IC(s) would manage grants in the initiative made? Does the NIH structure allow for effective management by multiple ICs?

[Depending on management structure]
Has the approach of having a [single program officer] [IRC team approach] assigned to lead a group of IR grants been effective?

Probe on:
Advantages and disadvantages of having a team versus a single program officer approach
Impact on coordination or cohesiveness of the program
Potential implications of assigning grants to single versus multiple ICs for management

Were the necessary structures in place to support the management of this initiative?

If no, probe on:
Have there been any functional or structural changes to support management?
If yes:, Are these temporary or permanent changes?

Perceptions of IR Roadmap Initiative/Impact on NIH

How does the work of the IRWG initiatives fit into your IC's mission?

Probe on
Support for mission of Roadmap and the IRWG
Relationship to IC's other key programs or initiatives
Interviewees IRWG work relative to IC work responsibilities

How successful has NIH been at reducing barriers to trans-IC IR collaborations?

Probe on
New or expanded collaborations between ICs that have resulted
Success within NIH
Success in extramural community

Have there been any changes in the NIH culture, policies, or procedures, as a result of the IRWG activities?

Probe on
New solutions to promoting IR within NIH
Changes to reduce barriers to trans-IC and/or IR collaborations

Are there other mechanisms with NIH to support interdisciplinary projects in areas that have not been explicitly targeted in specific solicitations?

How did the IRWG process differ from that for a typical NIH grant program and/or other trans-disciplinary NIH initiatives?

Probe on
Planning process
Review process
Management of grants
Quality of applications
Number of applications
Success rate

Short Term Outcomes of Grants

What are the primary outcomes of the IRWG initiatives from your perspective?

Probe on
Multidisciplinary or interdisciplinary projects
Different approaches to research problems
Changes in scientists' research agendas
New partnerships or collaborations, or enhancement of existing ones
Training of scientists in more than one discipline/preparing a new cadre of researchers

What has facilitated or hindered the implementation of grantees programs and/or research agendas?

In retrospect, is there a need for special programs to promote interdisciplinary research and training? Can this be achieved within ICs, through trans-disciplinary programs, or simply in an *ad hoc* manner by researchers?

In retrospect, what would you change in the program design and implementation?

Did you receive any feedback from grantees, or other members of the scientific community regarding the initiatives?

Sustainability of IR Initiatives

What are the prospects for sustainability of the IRWG and Multiple PI initiatives within NIH?

Probe on:
Necessary changes for the IRWG and Multiple PI initiatives to continue as envisioned
Ways to remove barriers and/or facilitate these changes

What are the prospects for individual grantees seeking to transition from IR Roadmap funding to continued support under the current IC system?

IRWG Project Team Member (Not on full IRWG, not Project Officer)

Please briefly describe your role related to the IRWG initiative.

How did you become involved as a Project Team Member for the [name of IR Initiative]?

How do/did your IRWG initiative activities fit into your other work responsibilities?

What roles does/did the [name of IR initiative] Project Team play?

Probe on:
How team members were assembled
Team's responsibilities
Interactions with the full IRWG
Role in peer review process and portfolio selection

Development of Grants Announcement

Did the planning process for the initiative include explicit discussions among the project team about:

Development of the RFAs
Review and grant selection process for the IR/IT initiative
Cross-IC program management and grants oversight
Long-term sustainability of the program

Were there special dissemination efforts for advertising IRWG initiatives to the scientific community, other than posting on the NIH website?

How did this planning process differ from that for a typical grant program and/or other trans-NIH initiatives?

Review Process and Portfolio Selection [Ask if Project Team had key involvement in this]

What was the process for organizing and conducting the review of the IRWG programs?

Probe on
Selection of lead ICs and SROs
Translation of program goals into review criteria and review process
Selection of review panelists

Did the proposals address the goals of the program?

Were you satisfied with the proposals received? With the selections made by the review panelists? With the proposals ultimately funded?

[only research programs] Did investigators propose ideas that spanned the boundaries of their fields?

Were there large differences in quality between successful and unsuccessful applications?

Were the proposals received more interdisciplinary in nature than those funded under existing initiatives/mechanisms? Could these applications have been funded under existing initiatives/mechanisms?

Perceptions of IR Roadmap Initiative/Impact on NIH

How does the work of the IRWG initiatives fit into your IC's mission?

Probe on

Support for mission of Roadmap and the IRWG

Relationship to IC's other key programs or initiatives

Interviewees IRWG work relative to IC work responsibilities

How successful has NIH been at reducing barriers to trans-IC IR collaborations?

Probe on

New or expanded collaborations between ICs that have resulted

Success within NIH

Success in extramural community

Have there been any changes in the NIH culture, policies, or procedures, as a result of the IRWG activities?

Probe on

New solutions to promoting IR within NIH

Changes to reduce barriers to trans-IC and/or IR collaborations

Sustainability of IR Initiatives

What are the prospects for sustainability of the IRWG and Multiple PI initiatives within NIH?

Probe on:

Necessary changes for the IRWG and Multiple PI initiatives to continue as envisioned

Ways to remove barriers and/or facilitate these changes

What are the prospects for individual grantees seeking to transition from IR Roadmap funding to continued support under the current IC system?

Grants Management Officer

IRWG-related Work Activities

Please briefly describe your role at NIH and your role as a Grants Management Officer for the [name of initiative].

How do/did your IRWG initiative activities fit into your other work responsibilities?

Program Management and Grants Oversight

How are the IRWG grants managed? How were decisions about which IC(s) would manage grants in the initiative made? Does the NIH structure allow for effective management by multiple ICs?

[Depending on management structure]
Has the approach of having a [single program officer] [IRC team approach] assigned to lead a group of IR grants been effective?

Probe on:
Advantages and disadvantages of having a team versus a single program officer approach
Impact on coordination or cohesiveness of the program
Potential implications of assigning grants to single versus multiple ICs for management

Were the necessary structures in place to support the management of this initiative?

If no, probe on:
Have there been any functional or structural changes to support management?
If yes, Are these temporary or permanent changes?

Perceptions of IR Roadmap Initiative/Impact on NIH

How does the work of the IRWG initiatives fit into your IC's mission?

Probe on
Support for mission of Roadmap and the IRWG
Relationship to IC's other key programs or initiatives
Interviewees IRWG work relative to IC work responsibilities

How successful has NIH been at reducing barriers to trans-IC IR collaborations?

Probe on
New or expanded collaborations between ICs that have resulted
Success within NIH
Success in extramural community

Have there been any changes in the NIH culture, policies, or procedures, as a result of the IRWG activities?

Probe on
New solutions to promoting IR within NIH
Changes to reduce barriers to trans-IC and/or IR collaborations

Are there other mechanisms with NIH to support interdisciplinary projects in areas that have not been explicitly targeted in specific solicitations?

How did the management of the IRWG grants differ from that for a typical NIH grant program and/or other trans-disciplinary NIH initiatives?

Short Term Outcomes of Grants

What are the primary outcomes of the IRWG initiatives from your perspective?

Probe on
Multidisciplinary or interdisciplinary projects
Different approaches to research problems
Changes in scientists' research agendas
New partnerships or collaborations, or enhancement of existing ones
Training of scientists in more than one discipline/preparing a new cadre of researchers

What has facilitated or hindered the implementation of grantees programs and/or research agendas?

In retrospect, is there a need for special programs to promote interdisciplinary research and training? Can this be achieved within ICs, through trans-disciplinary programs, or simply in an *ad hoc* manner by researchers?

Sustainability of IR Initiatives

What are the prospects for sustainability of the IRWG and Multiple PI initiatives within NIH?

Probe on:
Necessary changes for the IRWG and Multiple PI initiatives to continue as envisioned
Ways to remove barriers and/or facilitate these changes

What are the prospects for individual grantees seeking to transition from IR Roadmap funding to continued support under the current IC system?

Scientific Review Officer

Would you please briefly describe your role as SRA.

Review Process and Portfolio Selection

What kind of guidelines or recommendations related to the review process did you receive for the *[name of specific initiative]*? Is it standard practice to receive such guidance/recommendations?

What was the process for organizing and conducting the review of the IRWG programs?

Probe on
Selection of lead IC and SRA
Translation of program goals into review criteria and review process
Selection of review panelists

Did you recruit panelists with interdisciplinary backgrounds? Did the reviewers have the appropriate expertise to review the range of proposals that were received?

Did the reviewers evaluate proposals in the context of what the program was meant to achieve? What was the balance of good science vs interdisciplinary science in the panelists decisions (for research programs)? What was the balance of good training program vs ID training program in panelists decisions (for training programs)?

Did the proposals address the goals of the program?

Were you satisfied with the proposals received? With the selections made by the review panelists? With the proposals ultimately funded?

Did investigators propose ideas that spanned the boundaries of their fields?

Were there large differences in quality between successful and unsuccessful applications?

Were the proposals received more interdisciplinary in nature than those funded under existing initiatives/mechanisms? Could these applications have been funded under existing initiatives/mechanisms?

To what extent do the funded proposals address the missions of more than one Institute or Center or bridge "gaps" between the ICs? Which ICs are substantively represented in the proposed projects? In the funded projects?

Were there implicit or explicit guidelines for balancing the representation of ICs in the portfolio for the [name of Initiative]?

Perceptions of IR Roadmap Initiative/Impact on NIH

How does the work of the IRWG initiatives fit into your IC's mission?

Probe on
Support for mission of Roadmap and the IRWG

Relationship to IC's other key programs or initiatives
Interviewees IRWG work relative to IC work responsibilities

How successful has NIH been at reducing barriers to trans-IC IR collaborations?

Probe on
New or expanded collaborations between ICs that have resulted
Success within NIH
Success in extramural community

Have there been any changes in the NIH culture, policies, or procedures, as a result of the IRWG activities?

Probe on
New solutions to promoting IR within NIH
Changes to reduce barriers to trans-IC and/or IR collaborations

Are there other mechanisms with NIH to support interdisciplinary projects in areas that have not been explicitly targeted in specific solicitations?

How did the IRWG process differ from that for a typical NIH grant program and/or other trans-disciplinary NIH initiatives?

Probe on
Planning process
Review process
Management of grants
Quality of applications
Number of applications
Success rate

Sustainability of IR Initiatives

What are the prospects for sustainability of the IRWG and Multiple PI initiatives within NIH?

Probe on:
Necessary changes for the IRWG and Multiple PI initiatives to continue as envisioned
Ways to remove barriers and/or facilitate these changes

What are the prospects for individual grantees seeking to transition from IR Roadmap funding to continued support under the current IC system?

Other NIH Staff (Other ICs, Involved with Other Trans-IC Initiatives)

Please briefly describe your role at NIH.

To what extent have staff from your IC been involved in the IRWG Initiatives (e.g., IRWG, IR Project Teams, Program Managers, Grants managers)?

Program Management and Grants Oversight

Are you familiar with how the IRWG grants were managed?

If so, Did the management of the IRWG initiatives differ from management of traditional NIH programs or other trans-NIH/multiple-IC initiatives?

Does the NIH structure allow for effective management of grants by multiple ICs?

What would be the advantages and disadvantages of having a team versus a single program officer approach to managing a program?

Perceptions of IR Roadmap Initiative/Impact on NIH

How does the work of the IRWG initiatives fit into your IC's mission?

Probe on
Support for mission of Roadmap and the IRWG
Relationship to IC's other key programs or initiatives

How successful has NIH been at reducing barriers to trans-IC IR collaborations?

Probe on
New or expanded collaborations between ICs that have resulted
Success within NIH
Success in extramural community

Have there been any changes in the NIH culture, policies, or procedures, as a result of the IRWG activities?

Probe on
New solutions to promoting IR within NIH
Changes to reduce barriers to trans-IC and/or IR collaborations

Are there other mechanisms with NIH to support interdisciplinary projects in areas that have not been explicitly targeted in specific solicitations?

How did the IRWG process differ from that for a typical NIH grant program and/or other trans-disciplinary NIH initiatives?

Probe on
Planning process
Review process
Management of grants [if not answered above]

Sustainability of IR Initiatives

What are the prospects for sustainability of the IRWG and Multiple PI initiatives within NIH?

Probe on:

Necessary changes for the IRWG and Multiple PI initiatives to continue as envisioned

Ways to remove barriers and/or facilitate these changes

What are the prospects for individual grantees seeking to transition from IR Roadmap funding to continued support under the current IC system?

Grantees

Grant Announcement and Review

How and when did you learn about the [IRWG initiative]?

Why did you decide to apply?

Probe on,

Advantages/disadvantages of participating in IRWG initiative, or submitting MPI

Other NIH initiatives or mechanisms that might have funded the proposal

Was the RFA clear about the purpose, desired characteristics and requirements for the proposed work?

If not, Did you seek guidance, clarification, or other assistance regarding the solicitation from the NIH staff? *If yes,* Were able to obtain the information that you needed?

Did NIH allow adequate time to respond to the RFA?

Probe on, whether time is comparable to other programs

Did the proposal process differ from that of other grants at NIH?

If yes, probe How?

Overall, did you find the application process satisfactory? Would you recommend any changes to the process?

What was your reaction to reviewers' comments? In your view, was your proposal well understood and fairly judged? If not, please elaborate.

Are there mechanisms at NIH to fund proposals for interdisciplinary research/training that are different from what is explicitly sought through solicitations?

Project management

[Training programs] Have you had any interaction with NIH staff related to your project beyond providing annual reports?

[Consortia] Did you attend the annual meetings? What is your view on the utility of the meetings?

Do you consider the reporting requirements adequate? Excessive? Insufficient? How would you compare the reporting processes to other NIH grants? Would you recommend any changes?

Have you sought any assistance from the NIH staff after your grant was awarded? If yes, were your needs met?

Have you received any feedback related to your project from the NIH staff? If not, would you welcome such feedback?

Grant Implementation

Please briefly describe your research/training project.

Probe on
Interdisciplinary nature
Collaborations
Accomplishments
[Training] Training components, curricula developed
[Consortia] Various proposals and components

[Research] Did the interdisciplinary nature of the initiative affect your approach to the research problem?

[Research] Did the collaborative nature of the grant affect your approach to the research problem?

Have you encountered any difficulties in meeting your proposed goals? If yes, what was the nature of these difficulties? In hindsight, would you make any changes to the proposed project/program?

Short-term Outcomes

[Training] In your view, did trainees receive interdisciplinary training? Would they have been able to receive the same training outside of your program?

[Research and Consortia] Was research conducted under the grant interdisciplinary in nature? Is your IRWG more interdisciplinary or collaborative than research conducted under other funding mechanisms?

[Research and Consortia] Was research conducted under the grant interdisciplinary in nature?

Will you be (Were you) able to continue your program/project after the funding ended? If yes, how it was/is funded? If not, have you made any attempts to obtain funding from NIH or from other sources to sustain the program?

What effect, if any, has the grant had on your research program? What effect, if at all, has the grant had on your career? Did you form new partnerships and collaborations? What is the value of these relationships to you? Are you continuing these collaborations after the funding ended?

Have your views on interdisciplinary research and training changed as a result of the grant? Have any new challenges emerged that you have not anticipated?

What recommendations related to your program in particular or to interdisciplinary research and training in general would you like to communicate to the NIH?

Have there been any changes in the policies at your institution that would support IR or collaborations? If not, were any changes necessary?

Probe on
Shared credit for grants
Credit within a department for interdisciplinary work
Tenure and promotion decisions
Increased collaborations
Increased interdisciplinary work

Sustainability of IR Initiatives

What are the prospects for funding your project after [IRWG initiative] funding has ended?

Will you continue the line of research [or collaborations]?

Are there barriers to continued funding under the current IC system?

If so, What are they? Are there ways to remove the barriers?

Unfunded Applicants

Grant Announcement and Review

How and when did you learn about the [IRWG initiative]?

Why did you decide to apply?

Probe on,

Advantages/disadvantages of participating in IRWG initiative

Other NIH initiatives or mechanisms that might have funded the proposal

Was the RFA clear about the purpose, desired characteristics and requirements for the proposed work?

If not, Did you seek guidance, clarification, or other assistance regarding the solicitation from the NIH staff? *If yes,* Were able to obtain the information that you needed?

Did NIH allow adequate time to respond to the RFA?

Probe on, whether time is comparable to other programs

Did the proposal process differ from that of other grants at NIH?

If yes, probe How?

Overall, did you find the application process satisfactory? Would you recommend any changes to the process?

What was your reaction to reviewers' comments? In your view, was your proposal well understood and fairly judged? If not, please elaborate.

In retrospect, how, if at all, would you change your application?

Would you recommend any changes to the proposal process?

Were you able to get funding for your proposal from other sources? *If yes,* please elaborate.

Are there mechanisms at NIH to fund proposals for interdisciplinary research/training that are different from what is explicitly sought through solicitations?

Trainees

How did you learn about the training program?

Why did you decide to participate in the program?

What graduate program are you in? How many years have you been in the graduate program? How many years have you been in the [IRWG training program]?

Please describe the nature of your participation.

Probe on
Research training
Courses
Interdisciplinary nature of training

Were you satisfied with the program? Would you recommend any changes?

Did the program provide you with experiences that were unique compared to what you would have had in a standard graduate training program?

Have you participated in any other interdisciplinary program? If yes, please elaborate on its nature and compare it to the IRWG program.

Has participating in the program changed your views on interdisciplinarity in scientific research? If yes, in what way? If not, why not?

What effect, if any, has participating in the training program had on your career and the choices that you made?

If relevant: is your current scientific work interdisciplinary in nature? If yes, in what way? If not, why not? Do you anticipate engaging in interdisciplinary research in the future?

In your view, are there barriers to interdisciplinary research?

Survey of MPI Grantees

1. Name (pre-loaded)

2. Institution (pre-loaded)

3. Grant number (pre-loaded)

4. NIH IC (pre-loaded)

5. Number of years as an independent investigator

   _____

6. Why did you elect a Multiple PI option for your grant?

Open-ended question

7. How would you describe the application instructions?

   - ❑ Clear
   - ❑ Somewhat unclear
   - ❑ Unclear
   - ❑ I do not recall
   - ❑ Other (box for text)

7A. For respondents who selected 'somewhat unclear' or 'unclear'

What aspects of the instructions were unclear?

Open-ended question

8. Please estimate how long it took you to develop an application?

   _____ hours

9. How would you compare the length of time required to develop an MPI application to the length of time required to develop a traditional R01 application?

   - ❑ MPI application took much longer
   - ❑ MPI application took a little longer
   - ❑ MPI application took less time
   - ❑ No difference in time
   - ❑ I do not have a basis for comparison
   - ❑ I do not know
   - ❑ Other (box for text)

9A. For respondents who selected 'much longer' or 'a little longer'

Why did this application take more time to complete?

Open-ended question

10. What was the total number of PIs on your application including yourself?

_____

11. How would you describe the relationship between yourself and each of the other PIs?

Open-ended question

12. Would you agree with the statement that a multiple PI option presents all applicants as equals?

- ❑ Yes
- ❑ No
- ❑ Other

12A. For respondents who selected 'no' or 'other'

Please explain:

Open-ended question

13. Did your leadership plan help facilitate the collaboration between PIs, and with NIH?

- ❑ Yes
- ❑ No

Please explain:

Open-ended question

14. Did the collaborative nature of the grant affect your approach to the research problem?

- ❑ Yes
- ❑ No

Please explain:
Open-ended question

15. Was there any confusion about, or did you encounter any difficulties regarding, the grant at your institution?

- ❑ Yes
- ❑ No
- ❑ Other

Please explain:
Open-ended question

16. Did the collaborative nature of the grant affect your approach to the research problem?

Open-ended question

17. Would you choose the MPI option again?

- ❑ Yes/I have already done so
- ❑ No
- ❑ I am not sure
- ❑ Other

17A. For respondents who have selected 'no' or 'I am not sure' or 'other'
Please explain:
Open-ended question

18. Do you believe that using the multiple PI option had an effect on how your proposal was judged by reviewers?

- ❑ No
- ❑ Yes
- ❑ I do not know
- ❑ Other

18A. For respondents who have selected 'yes'
Please explain:
Open-ended question

19. Which of the following, if any, were the result of the MPI grant (please check all that apply)?

- ❑ It strengthened my promotion case
- ❑ It strengthened my tenure case
- ❑ It strengthened my relationship/collaboration with other PI(s) on the grant
- ❑ It had a negative effect on my relationship with other PI(s) on the grant
- ❑ My position/standing was disadvantaged through participation in MPI grant
- ❑ Other

19A. For respondents who selected the last three options
Please explain
Open-ended question

20. What is the best application for MPI option?
Open-ended question

21. What are the benefits of MPI concept?
Open-ended question

22. What are the limitations of MPI concept?
Open-ended question

23. Please feel free to share with us any other thoughts about MPI option.

Extant Data Request

Programs

Data is requested for the following IRWG programs:
T90/R90 IR Training
U54 IR Consortia
P20 Planning grants
X02 Preapplication for IR consortia
R13 Short Programs for IR Training
Administrative Supplements in BSS
R21 Facilitating IR through Methodological and Technological Innovation
K07 Curriculum Development in IR
T32 Interdisciplinary Health Research Training

Multiple PI

Data is requested for the following comparison programs:
[List of programs to be inserted at time of request]

Documents requested

Internal NIH or project documents
NIH team lists
Memos/instructions to reviewers
Reviewer roster
Reviewer profile
Grant applications
Summary statements ('pink sheets')
Program paylist
Grantee progress reports
Cooperative agreements
NIH presentations on initiatives
IRWG meeting notes
Consortia team meeting agendas and/or notes
Consortia site visit team notes
NIH OPASI policy documents

Publically available documents

RFAs
NIH public presentations
Sample leadership plan for multiple PI awards

Data extraction request from IMPAC II

Request to extract data from the IMPAC II database for the following:

Applicant variables

Variable name	Short Description
Actv	Active grant flag
Admin IC	Administrating IC
Awd Dir $	Award direct cost amount
Awd Indir $	Award indirect cost amount
Awd Tot $	Award total cost amount
Co-Fund	Co-Funding Indicator
Gender	Applicant gender
IC	Institute/Center
Inst Addr	Institution business official address
Inst Contact	Institution business official contact
Inst City	Institution business official city
Inst St	Institution business official state
Inst Zip	Institution business official zip code
Minority	Minority institution
Inst Type	Institution Type
Multi PI Ind	Multiple PI indicator
New Invstgr Cd	New investigator indicator
PI Addr	PI address
PI Degrees	PI degrees held
PI Email	PI email
PI Name	PI name
PI Primary Deg	PI primary degree
PI Primary Deg Fld	PI field of primary degree
Primary CRISP terms	Primary CRISP terms
Priority Code	Priority code of application
Priority Score	
Rev IC	Reviewing IC
RFA/PA Number	RFA/PA Number
Score	Priority score of application
Secondary CRISP terms	Secondary CRISP terms
SRA	SRA name
SRA Email	SRA email
SRA Phone	SRA phone number
Tertiary CRISP terms	Tertiary CRISP terms
Title	Grant title
Trainees – Postdocs All Years	
Trainees – Predocs All Years	
Trainees – Short-term Trainees All Years	
Trainees – Stipends Cost	
Trainees – Stipends Req	
Trainees – Training $	
Trainees – Travel $	
Trainees – Tuition $	
Year Adv Degree	Year advanced degree received

Also, any field that indicates IC $ contribution to grants