

**Attachment 23:  
BUILD Site Visit & Case Studies Protocol**

Note: The first pages of this document describe the protocols for the proposed activity. The required burden statement is included in the interview protocols to be found with each of the specific data collection activities described subsequently (pages 3, 12, 21, 22, 25, 28, 31, 33, 35, 38, and 40).

## **NIH Diversity Program Consortium – CEC – BUILD Site Visit Plan**

As part of the mixed methods consortium level evaluation design, we propose to conduct three one-to-two-day site visits of the 10 BUILD sites during the grant period. The purpose of the site visits is to develop an understanding of each BUILD site in their effort to advance programs for URG bio-medical research training. In particular, we are interested in better understanding how each BUILD site is implementing student, faculty, and institutional interventions, as well as the development of partnerships and implementation of site-level and consortium-wide evaluation plans. In this way, site visits will serve as an opportunity to document the degree to which each BUILD site is fulfilling its project objectives and goals.

### **Site Visit Focus**

Site Visits will largely focus on describing the activities BUILD sites implement to promote and support URG bio-medical research training at each site. Using the *site level* BUILD program logic model as a guiding framework, site visits will offer the CEC the opportunity to provide a narrative description of the relationships among each BUILD site's inputs, activities and outputs and some, but not all, short-term program outcomes. Qualitative data will be collected on the ways and extent to which institutional partnerships are being developed at sites.

Site visits are an occasion for sites to showcase the defining features of their programs as well as to discuss any challenges related to program implementation and evaluation. The site visit is a three-way exchange of information among the BUILD site, the CEC and NIH that will allow for critical face-to-face learning to transpire. They are an opportunity to develop trusting relationships that help to promote knowledge exchange and learning from the evaluation.

### **Site Visit Guiding Evaluation Questions**

The following evaluation questions will be answered through collection of qualitative site visit data.

1. How are BUILD programs implementing their site-specific vision for advancing URG bio-medical research training?

Sub- Questions:

- a) What activities are being implemented to promote and support student involvement in the BUILD program?
- b) What activities are being implemented to promote and support faculty involvement in the BUILD program?
- c) What institutional focused activities are being implemented at the BUILD institution and partner institutions that support program development?

- a. How do partner institutions enhance the primary institutions' capacity to provide bio-medical research training?
- d) How are the activities that are being implemented to promote and support participation in the BUILD program enhancing short-term program outcomes?

## **Timeline**

We will conduct three site visits at each BUILD site during the grant period. Site visits will be conducted over the course of one-two days by a team of CEC faculty and staff in coordination with NIH project officers and scientists. Site visits will be conducted in 2016 (Spring/Summer), 2017 (Fall), and 2018/2019 (Fall/Winter). CEC BUILD Teams (2 CEC EC/DC Senior Leads, 2 CEC EC/DC Associate Leads, 1 Research/Admin Staff) will attend site visits. To the extent possible, there will be continuity in CEC team membership across the site visits. Additional CEC staff may attend the site visit as deemed necessary.

## **BUILD Site Visit Process and Participants**

The CEC PI and/or site leads will submit a request for site visits by email to the local to the BUILD PIs. BUILD PIs will be the primary point of contact for email recruitment of participants. Site visit participants will include 12-15 people involved with the local BUILD site. Suggested involvement includes: 1 BUILD PI, 3 BUILD Core Directors/Co-PIs, 1 Institutional Research Staff Member, 2 BUILD Evaluators (internal/external), 2 BUILD Faculty, 2 BUILD Students, and 3 other BUILD Administrators and/or Partner Representatives.

The two-day site visit will be comprised of presentations from and discussions with BUILD site representatives about student, faculty, institutional, and evaluation activities. A tour of BUILD facilities will also be included. The CEC will conduct one group interview on the development of partnerships and collaborations at the BUILD site and will meet with BUILD leadership and evaluation to discuss site-level and consortium-wide evaluation progress. A working lunch is expected so as to maximize the time spent with sites.

Note: BUILD Site Visit Agenda, BUILD Site Visit Observation Protocol, BUILD Site Visit Group Interview Protocol and Consent Waivers are attached to this document

## Sample BUILD Site Visit Agenda

Public reporting burden for this collection of information is estimated to average 24 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. **An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number.** Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to: NIH, Project Clearance Branch, 6705 Rockledge Drive, MSC 7974, Bethesda, MD 20892-7974, ATTN: PRA (0925-xxxx\*). Do not return the completed form to this address.

**Purpose:** The purpose of this site visit is to develop an understanding of *how* your BUILD site is advancing the goals of the NIH Diversity Program Consortium. We are interested in learning more about your BUILD student, faculty, and institutional interventions, as well as the development of partnerships and implementation of site-level and consortium-wide evaluation plans. In this way, site visits serve as an opportunity to document the degree to which each BUILD site is fulfilling its project objectives and goals.

**BUILD site participants (12-15):** Suggested Attendance: PI (1), Co-PIs and Core Directors (3), Institutional Research Staff (1), Evaluators (2), Faculty (2), Students (2), and other BUILD Administration or Partner Representatives (3)

### Day 1

8:00-8:30 **Welcome and Introductions** Presenting: BUILD PI(s)  
PI, Local BUILD, CEC

8:30-10:30 **Institutional Level Presentation and Discussion** Presenting: BUILD Leadership  
and/or BUILD Administration and/or Partner Representatives

Focus: implementation of activities and progress towards meeting stated goals (particular emphasis on progress generating institutional support and the development of partnerships and collaborations with pipeline and research intensive partners), challenges and barriers, and goal setting for next year(s)

10:30-12:00 **Partnerships and Collaborations Group Interview** Facilitated by CEC

Focus: gathering of qualitative data on the development of institutional partnerships and collaborations through a semi-structured group interview  
Suggested Attendance: BUILD Leadership, BUILD Administration and Partner Representative(s)

12:00-1:00 **Working Lunch – NRMN Partnership**

- 1:00-2:30 **Faculty Level Presentation and Discussion** Presenting: Core Director(s)  
Focus: implementation of activities and progress towards meeting stated goals, challenges and barriers, and goal setting for next year(s)
- 2:30-4:00 **Student Level Presentation and Discussion** Presenting: Core Director(s)  
Focus: implementation of activities and progress towards meeting stated goals, challenges and barriers, and goal setting for next year(s)
- 4:00-5:00 **Student & Faculty Presentations** Presenting: BUILD Students and Faculty

## Day 2

- 8:30-10:00 **Tour of BUILD Facilities**
- 10:00-12:00 **Site-Level Evaluation Presentation and Discussion** Presenting: BUILD Evaluators  
Focus: Review progress on site-level evaluation plans, data collection, and findings
- 12:00-1:00 **Working Lunch – Consortium Activities and Experiences**
- 1:00-3:00 **Consortium-Wide Evaluation Plan (CWEP) Implementation Discussion**  
Focus: Review progress on CWEP implementation, challenges and barriers, questions, and opportunities for further alignment with site-level evaluation plans  
Suggested Attendance: BUILD Leadership, BUILD Evaluators, Institutional Research Staff
- 3:00-3:30 **Remaining Questions and Next Steps**

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**NIH DIVERSITY  
CONSORTIUM**



<b>BUILD Site &amp; Participants:</b>		<b>Meeting Date(s):</b>
<p>Overall evaluation guiding question:  <b>1. How are BUILD programs implementing their site-specific vision for advancing URG bio-medical research training?</b></p> <p>Sub- Questions:</p> <ul style="list-style-type: none"> <li>a. What activities are being implemented to promote and support student involvement in the BUILD program?</li> <li>b. What activities are being implemented to promote and support faculty involvement in the BUILD program?</li> <li>c. What institutional focused activities are being implemented at the BUILD institution and partner institutions that support program development? <ul style="list-style-type: none"> <li>i. How do partner institutions enhance the primary institutions' capacity to provide bio-medical research training?</li> </ul> </li> <li>d. How are the activities that are being implemented to promote and support participation in the BUILD program enhancing short-term program outcomes</li> </ul>		
<b>NIH DPC Student, Faculty, and Institutional Activity Codes</b>		
Recruitment and Retention (RR)	Research Training and Support (RTS)	
Summer Program (SP)	Career Advancement (CA)	
Curriculum Enhancement (CE)	Structures and Procedures for Evaluation (Eval)	
Supplemental Instruction (SI)	Collaboration & Communication (CC)	
Academic Advising & Support (AAS)	Procedures for Administration of Programs (AdminP)	
Mentor Training (M)	Building and Development of Facilities (IBDev)	
Mentoring (Mtee) (Mtor)	Other (O)	

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BUILD Site-Level Logic Model Components and Questions by Focus (from OEP NIH Guide to Evaluating Diversity Programs)			
	Students	Faculty	Institutional
<p><b>Inputs:</b> What is invested toward achieving BUILD program goals?</p> <p>a. <b>Resources:</b> What is available to all BUILD program applicants?</p> <p>b. <b>Activities/Services Provided:</b> What is available to BUILD program participants?</p> <p>c. <b>Population Served:</b> Who are the desired BUILD applicants?</p>			

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<b>Outputs:</b> What is produced as a result of BUILD program participation?	<b>Students</b>	<b>Faculty</b>	<b>Institutional</b>
a. Are additional resources made available to participants as a result of the BUILD program?  b. Do BUILD program participants pursue/receive subsequent support?  c. Do BUILD program participants participate in networking opportunities?  d. Do BUILD program participants publish research findings?  e. To what extent do BUILD program participants engage in collaborative activities?  f. Is there a plan for community engagement or new curriculum developed?			



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<b>Outcomes:</b> What is the BUILD program intended to achieve?	<b>Students</b>	<b>Faculty</b>	<b>Institutional</b>
<p>a. Do BUILD program participants transition to the next education level or career stage?</p> <p>b. Do BUILD program participants pursue/receive additional research or training support?</p> <p>c. Do BUILD program participants engage in a specific area or type of research?</p> <p>d. Are new opportunities made available as a result of the BUILD program?</p> <p>e. Does the BUILD program result in the recruitment of individuals with specific background/training?</p> <p>f. Does the BUILD program increase collaborative efforts?</p>			

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**BUILD Site-Level Evaluation Notes:**

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**CWEP Implementation Notes:**

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**Noteworthy Institutional Context Notes:**

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**Additional Comments (questions, concerns, issues, next steps, overall impressions, etc.):**

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List of NIH DPC Approved Hallmarks		
Individual	Faculty	Institutional
<p><b>IND-B1:</b> Psychosocial Variables (Including Perceptions of Culture and Environment, Identity, Attitudes, Aspirations)</p> <p><b>IND-B2:</b> Pursuit of Biomedical Science Undergraduate degree</p> <p><b>IND-B3:</b> Retention and Persistence in Biomedical Science Discipline</p> <p><b>IND-B4:</b> Participation in Undergraduate/Summer Biomedical Research Training in Labs or Similar Research Environment</p> <p><b>IND-B5:</b> Poster or Paper Presentation at Scientific Conferences</p> <p><b>IND-B6:</b> Receipt of Awards including Research Fellowships and Scholarships</p> <p><b>IND-B7:</b> Evidence of Biomedical Research Career Preparedness (grades, GRE; std. exams)</p> <p><b>IND-B8:</b> Authorship/Co-Authorship of Peer-Reviewed Publication(s)</p> <p><b>IND-B9:</b> Completion of Undergraduate Degree in Biomedical Science Discipline</p> <p><b>IND-B10:</b> Application to Attend Graduate Program in Biomedical Science Discipline</p> <p><b>IND-B11:</b> Entrance to Graduate Program in Biomedical Science Discipline</p> <p>Additional psychosocial variables that are site level but frequently discussed</p> <ul style="list-style-type: none"> <li>- Social Integration/Social Networks</li> <li>- Self efficacy, Grit, Goal Commitment, Persistence</li> <li>- Overcoming/coping with stereotype threat and implicit bias</li> <li>- Ability to manage academic environment</li> </ul>	<p><b>FAC-B1:</b> Change/Increase in self-efficacy as instructor, mentor and/or researcher</p> <p><b>FAC-B4:</b> Increase in Participation in Professional Development Activities for faculty in Programs Relevant to BUILD</p> <p><b>FAC-B8:</b> Increased Research Productivity in Grant Submissions and Awards as PI, multi-PI and/or collaborator for faculty in Programs Relevant to BUILD</p> <p><b>FAC-B12:</b> Increase in Participation in Mentorship Activities in Programs Relevant to BUILD (may include structured activities to train the next gen of biomedical scientists)</p> <p><b>FAC-B15:</b> Increase in the number of trainees mentored in Programs Relevant to BUILD</p> <p><b>FAC-B16:</b> Increased quality of mentoring (Student and mentor perceptions)</p>	<p><b>INST-B1:</b> Improved Undergraduate Retention Rates of Students in Programs Relevant to BUILD</p> <p><b>INST-B2:</b> Increased Participation in Mentoring Activities (Students and Faculty) in Programs Relevant to BUILD.</p> <p><b>INST-B3:</b> Increase in Number of disadvantaged/underrepresented Students Retained in BUILD Biomedical Research-Related Programs</p> <p><b>INST-B12:</b> Increase in Number of Student Research Training Opportunities for students and faculty in Programs Relevant to BUILD</p> <p><b>INST-B14:</b> Increase, enhance, and/or develop Inter-Institutional Collaborations to achieve BUILD outcomes related to research, mentorship, and faculty development (e.g., linkages with Community Colleges or other partner institutions, collaborations and postdocs at Research-Intensive partner institutions, engagement with NRMN)</p> <p><b>INST-B15:</b> Institutional commitment to BUILD sustainability evidenced by site maintenance of key elements of program interventions after grant period**</p> <p><b>INST-B16:</b> Increased institutional commitment to sustaining activities of BUILD (i.e. research infrastructure, FTE, scholarships, space), changing the academic culture, culture of faculty promotion, tenure, research development (release time), stronger emphasis on student mentoring and advising to increase institutional outcomes, curriculum improvements**</p> <p><b>INST-B17:</b> Increase enrollment and participation of underrepresented Students in biomedical research fields</p> <p><b>INST-B18:</b> Increase in participation of faculty in mentorship activities - defined as: Increase in number of faculty seeking and participating in mentor training</p>

## BUILD Site Visit Semi-Structured Group Interview Protocol

### BUILD Partnerships and Collaborations

*This semi-structured interview protocol contains a list of questions to be drawn from a group interview with individuals participating in the BUILD Site Visit – Day 1, 10:30am-12:00pm (BUILD PI (1), BUILD Co-PIs and Core Directors (3), BUILD Administration and/or Partner Representatives (3)). As a flexible framework, probes may be added or omitted from the interview in response to participant feedback. Interview questions, however, are expected to stay within the content areas detailed below.*

Public reporting burden for this collection of information is estimated to average 90 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. **An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number.** Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to: NIH, Project Clearance Branch, 6705 Rockledge Drive, MSC 7974, Bethesda, MD 20892-7974, ATTN: PRA (0925-xxxx\*). Do not return the completed form to this address.

- 1) It looks like your BUILD site has [*insert number here*] partnerships. Could you please tell us a little bit more about each of those partnerships. Specifically, how each partnership was established, the nature of the partnership or collaboration, and how the BUILD activities “fit” into the larger vision of the [*partner name’s*] work in bio-medical research.

***Interviewer:** I would like to talk to you in detail about some of the major BUILD activities [*site name*] is currently implementing--the processes of implementation, some of the challenges you may have encountered, as well as areas of success.*

- 2) Building off of what was shared during the Institutional Core Presentation (8:30am-10:30am), could you please tell us more about the BUILD activities that are specifically related to developing partnerships and collaborations. Additionally, please share a little bit about the challenges, how those challenges have been overcome, and any related successes.
  - a) Please share the BUILD activities that generate institutional support.
    - i) What might be some of the challenges encountered?
    - ii) How have those challenges been overcome?
    - iii) What might be some of the success experienced in this area?
  - b) Please share the BUILD activities that focus on intra-departmental collaborations.
    - i) What might be some of the challenges encountered?
    - ii) How have those challenges been overcome?
    - iii) What might be some of the success experienced in this area?
  - c) Please share the BUILD activities that focus on development of partnerships with pipeline institutions.
    - i) What might be some of the challenges encountered?
    - ii) How have those challenges been overcome?
    - iii) What might be some of the success experienced in this area?
  - d) Please share the BUILD activities that focus on the development of partnerships with research intensive institutions.
    - i) What might be some of the challenges encountered?
    - ii) How have those challenges been overcome?
    - iii) What might be some of the success experienced in this area?

- 3) How would you describe [*site name's*] involvement with NRMN?
  - a) Which NRMN activities do your faculty and students take part in, and to what extent?
  - b) Please share the BUILD activities that focus on the development of a partnership with NRMN.
    - i) What might be some of the challenges encountered?
    - ii) How have those challenges been overcome?
    - iii) What might be some of the success experienced in this area?
- 4) In what ways do you see your work under partnerships and collaborations contributing to the advancement of URG bio-medical research training?
  - a) In what ways, if any, do you believe your institution has benefited from BUILD partnerships and collaborations?
  - b) In what ways, if any, could engagement with partners and collaborators be improved to better support the advancement of URG bio-medical research training?
- 5) Do you feel that additional supports, systems, or structures could enhance [*site name's*] ability to successfully develop successful partnerships and collaborations? If so, what?
- 6) How might you summarize lessons learned from developing partnerships and collaborations in the BUILD program?
- 7) Are there any questions I haven't asked, or are there additional points you would like to raise that we have not yet discussed?

## NIH Diversity Program Consortium – CEC – BUILD Case Study Plan

In addition to the site visits, we are proposing to conduct in-depth case studies of the BUILD sites. The purpose of the case studies is to provide a holistic, in-depth description of the BUILD program at the consortium level. Case studies will provide a clearer understanding of each BUILD site's successes and challenges by offering explanations and descriptions that will allow for us to generalize at the consortium level. They will also provide us with the opportunity to leverage the findings of the site/local level BUILD evaluations, the survey data collected for the consortium level evaluation, and to better understand the relationship between the BUILD and NRMN programs. The case study will promote learning across the sites and cultures, which will enhance the validity and use of the overall consortium evaluation.

### Case Study Focus

The primary focus of the BUILD case study is to describe how the BUILD program is enhancing the capacity of campuses to attract, serve, and promote the success of URGs in biomedical research. The BUILD case studies will focus on the processes and procedures that build capacity and infrastructure to advance bio-medical research training. This work requires an understanding and analysis of how to build and successfully implement the “systems” “structures” at the institutional (in some cases this includes building or enhancing facilities), faculty and student levels—to achieve this goal. The primary theoretical/conceptual framework that will guide the analysis of case study is the consortium level logic model, developed by the CEC.

### Case Study Guiding Evaluation Questions

The following evaluation questions will be answered through collection of qualitative data at case study visits.

1. How are BUILD programs building capacity and infrastructure for Primary and Partner Institutions to advance URG bio-medical research training?

Sub- Questions:

- a) How are the strategies that are being implemented to enhance faculty development and engagement advancing bio-medical research training for URGs?
- b) How are the strategies that are being implemented to enhance student participation and engagement advancing bio-medical research training for URGs?
- c) How are the strategies that are being implemented to enhance participation in, and improve the quality of mentoring activities advancing research training for URGs?
- d) How do partner institutions enhance the primary institutions' capacity to provide bio-medical research training?

### Case Study Design

We propose a descriptive, embedded multiple-case design with comparison groups (Yin, 2006). In order to address the overall research question at the holistic level (i.e., How BUILD programs support building capacity and infrastructure for Primary and Partner Institutions to advance URG bio-medical research training), we will examine

four embedded sub-cases, specifically, BUILD students, BUILD faculty, Partnerships with institutions and Partnerships with NRMN. Within each case we will identify the conditions, features and characteristics that lead to and impede the success of BUILD Programs. These data will be examined across multiple BUILD sites to describe the extent to which they are replicated across sites and potentially replicable in other conditions.

In addition to studying BUILD sites, the case study design also includes two matched comparison institutions without BUILD programs. These institutions will be selected based on similar characteristics to the BUILD sites. Namely, these institutions would have been recipients of BUILD planning year grants (but not recipients of full BUILD funding) and they will have other funded institutional undergraduate training grants (i.e. NIGMS programs: Bridges, IMSD, MARC U-STAR, PREP, and RISE). Ideally these institutions will also have Higher Education Research Institute (HERI) survey (freshman, senior, and faculty) data available. Including like institutions with like programs in the case study design allows for an even deeper understanding of the unique processes and effects of the BUILD program.

We will use culturally responsive evaluation principles/strategies ([http://www.nsf.gov/pubs/2002/nsf02057/nsf02057\\_5.pdf](http://www.nsf.gov/pubs/2002/nsf02057/nsf02057_5.pdf); American Evaluation Association, 2011) to guide our case study work. The case studies will allow us to capture the unique cultural experiences, values, norms, beliefs and practices of each BUILD program that may influence processes and outcomes (Stake, 1995).

## Case Study Methods and Participants

Data Collected. The case studies use multiple data sources. Primary data collection will include direct observation, group interviews and individual interviews. We will also collect documents related to the BUILD site development as data sources, including local level BUILD evaluation reports. Consortium level evaluation data, i.e., survey data and site visit data will also be used in our analyses. Use of these multiple data sources will ensure a robust and rigorous approach.

The primary data to be collected by the case study research team will be through direct observation and interviews (both group and individual). Direct observation can be one of the most valuable sources of primary data collection for case study research. We will conduct open-ended observations at the BUILD Prime and Partner Institution sites and comparison sites. For BUILD programs, if there are more than four partner sites, we will visit up to four sites, which will be selected based on responses from PI and Program Manager interviews. We will use the attached observation protocol as a guide during observations.

At BUILD sites, we will also conduct semi-structured individual interviews with BUILD PI's, program managers, partner institution directors, as well as semi-structured group interviews with BUILD faculty and students (graduate and undergraduate). At non-BUILD sites, a semi-structured interview with an institutional director or program manager, as well as semi-structured interviews with faculty and students will be conducted. The individual and group interview protocols and consent forms are included at the end of this document.

Participants and Incentives. In total, there will be 62 PIs/Directors/Managers, 100 Faculty, and 240 students interviewed from BUILD and non-BUILD programs combined. 37 participants will be interviewed from each of the BUILD programs and 16 participants will be interviewed from each of the non-BUILD programs. All site participants will receive a meal as an incentive for participation and student participants will also receive \$20. BUILD (10 sites) and Non-BUILD (2 sites) case study participants per site include:

BUILD Individual Interview (II) Participants:

- a) BUILD PI – (1) – 1.5 hours
- b) BUILD Program Managers – (1) – 1.5 hours



- c) BUILD Partner Institution Directors – (4) – 1.5 hours

**BUILD Group Interview (GI) Participants:**

- d) BUILD Faculty Leads/Co-Leads (coordinating faculty – approximately 3 participants) – 1.5 hours
- e) BUILD Faculty Participants (including mentors) (approximately 6 participants who are not also coordinating faculty) – 1.5 hours
- f) BUILD Undergraduate Participants (including mentees and BUILD program dropouts) (approximately 16 participants – 2 groups of 6 (active participants) and 1 group of 4 (dropouts)) – 1.5 hours for each group
- g) BUILD Graduate/Post-Doc Participants (including mentees) (approximately 6 participants) – 1.5 hours

**Non-BUILD Individual Interview (II) Participants:**

- h) Institutional Director/Program Manager – (1) – 1.5 hours

**Non-BUILD Group Interview (GI) Participants:**

- i) BUILD Comparison Faculty Participants (approximately 5 participants) – 1.5 hours
- j) BUILD Comparison Undergraduate Participants (undergraduate, graduate, and post-doctorate) (approximately 5 participants) – 1.5 hours
- k) BUILD Comparison Graduate/Post-Doc Participants (graduate, and post-doctorate) (approximately 5 participants) – 1.5 hours

Timeline of Data Collection. A case study research team (4 researchers at BUILD sites and 2 researchers at non-BUILD sites) will visit each site once in year 4 (2018). Each team will spend approximately one week at BUILD sites and 2 days at Non-BUILD sites. The BUILD and non-BUILD sites will help facilitate visits and assist in scheduling specific observations and interviews (sites will not be responsible for organizing formal presentations to the site team). The NIH will help encourage case study cooperation from comparison sites. The following tables provide an overview of data collection at BUILD and Non-BUILD programs/sites.

TABLE 1. Case Study Team Data Collection Timeline within BUILD Programs

<b>Research Team Member</b>	<b>Day 1</b>	<b>Day 2</b>	<b>Day 3</b>	<b>Day 4</b>	<b>Day 5</b>
Lead Researcher	Observations (Prime Institution)	PI (II) Program Manager (II) Observations (Prime Institution)	Faculty Leads (GI) Observations (Prime Institution)	Faculty BUILD Participants (GI) Observations (Prime Institution)	Observations (Prime Institution)
Researcher 2	Observations (Prime Institution)	Group of Undergraduate (GI) Observations (Prime Institution)	Group of Undergraduate (GI) Observations (Prime Institution)	Group of Undergraduate (GI) Observations (Prime Institution)	Group of Graduate/Post-Doc (GI) Observations (Prime Institution)
Researcher 3	Observations (Prime Institution)	Partner Institution Director (II) and Observation	Partner Institution Director (II) and Observation	Partner Institution Director (II) and Observation	Partner Institution Director (II) and Observation
Researcher 4	Observations (Prime Institution)	Observations (Partner Institution)	Observations (Partner Institution)	Observations (Partner Institution)	Observations (Partner Institution)

TABLE 2. Case Study Team Data Collection Timeline within Non-BUILD Sites

Research Team Member	Day 1	Day2
Lead Researcher	BUILD Comparison Institutional Director/ Program Manager (II) Observations	BUILD Comparison Faculty (GI) Observations
Researcher 2	BUILD Comparison Graduate Students (GI) Observations	BUILD Comparison Graduate Students (GI) Observations

Analysis. Observation and interview data will be analyzed in four phases cycles (Saldaña, 2013). First, data will be assigned preliminary codes through attribute, in vivo, narrative and magnitude coding. During the second coding cycle, initial codes will sorted by categorical, thematic, conceptual organization of the data. Through *pattern coding* we will synthesized findings into more meaningful units of analysis (Miles & Huberman, 1994). By grouping similarly coded passages together and assessing the groupings for thematic similarity, difference, frequency, sequence and correspondence the final coding scheme is established. Finally, through *elaborative coding*, we will examine the data with an eye toward the consortium level logic model (our conceptual framework). Coding will be done using the qualitative data analysis software Dedoose.

One of the drawbacks of a conceptual framework is that it may limit the inductive approach when exploring a phenomenon. To safeguard against becoming deductive, researchers will journal their thoughts and decisions and discuss them to determine if their thinking has become too driven by the framework. We will also be sure that our multiple data sources converge in an attempt to understand the overall case.

**Site Selection Criteria (If needed).**

Ideally, we would conduct a case study at each of the ten BUILD sites. Just like with any other research design, the more cases included in the case study, the greater confidence we will have in our findings. If we are asked to conduct the case study on a sample of BUILD sites, we have developed criteria for how we might select a sample of BUILD sites. Selections have been made based on BUILD site program and activity foci, as presented at Orientation Site Visits. Table 3 details the key program and activity elements that were taken into consideration for each site. Table 4 details the mapping of BUILD sites to the potential selection criteria, inclusion decisions to be determined. While NRMN is not included as a case study site, BUILD site involvement with NRMN is a selection consideration for BUILD sites. BUILD involvement with NRMN will be captured in the case studies; special care will be taken to ensure that variability in NRMN involvement is present in the sample (in the case of low variability, an additional BUILD site will be selected for case study participation).

TABLE 3.  
Case Study Selection Criteria Elements and Elemental Considerations

Element Considered	Elemental Considerations
Program Focus	
Partnerships	Who is doing intensive (in-depth) and/or extensive (in-breath) partnership engagement?
Single URM Intensive	Who has a unique focus on a particular Underrepresented Group (URM)?
NIH/NIGMS History	Who has a long history of involvement with NGMIS/NIH programs?
Activity/Goal Focus	
Student	Who has an intensive and unique student focus?
Faculty	Who has an intensive and unique faculty focus?
Institutional	Who has intensive and unique institutional capacity building and infrastructure development?
Cross-Sectional (Systematic Partnership Alliance)	Who is intensively and uniquely focused on creating a seamless integration of cross-institutional partnership alliances?
Cross-Sectional (Curriculum Enhancement)	Who has intensive and unique curriculum enhancement and/or supplemental instruction?
NRMN Involvement	Who has high and low levels of integration with NRMN mentoring activities?

TABLE 4.  
Case Study Selection Criteria Mapped with BUILD Program and Activity Focus

Program Focus				Activity/Goal Focus					NRMN	
Partnerships		Single URM Intensive	NIH/NIGMS History	Student	Faculty	Institutional	Cross-Sectional (Systemic Partnership Alliance)	Cross-Sectional (Curriculum Enhancement)	Low	High
Intensive	Expansive									
			CSULB	CSULB	CSULB	CSULB	CSULB	CSULB	TBD	
	CSUN			CSUN	CSUN	CSUN	CSUN	CSUN		
Univ. Detroit Mercy				Univ. Detroit Mercy		Univ. Detroit Mercy	Univ. Detroit Mercy			
	Morgan State			Morgan State	Morgan State	Morgan State	Morgan State			
Portland State				Portland State				Portland State		
SFSU				SFSU	SFSU	SFSU		SFSU		
		UAF				UAF				
			UMBC	UMBC	UMBC	UMBC	UMBC	UMBC		
UTEP			UTEP							
	Xavier			Xavier		Xavier				

Note. All BUILD sites are doing research training and support - embedded in student, faculty, and institutional activities.

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## CASE STUDY PREPARATION

Public reporting burden for this collection of information is estimated to average 40 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. **An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number.** Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to: NIH, Project Clearance Branch, 6705 Rockledge Drive, MSC 7974, Bethesda, MD 20892-7974, ATTN: PRA (0925-xxxx\*). Do not return the completed form to this address.

### Interviews

Please work with the case study team to identify and schedule interviews with the following people in your program:

Individual Interviews:

- Institutional Director/Program Manager
- Principal Investigator (if a BUILD program)
- Partner Institution Directors (if a BUILD program)

Group Interviews:

- Faculty (including those with leadership positions in programs and those that are mentors)
- Undergraduate students active in your program (including those who may be mentees in your program)
- Undergraduate students who are no longer active in your program
- Graduate students or post-doctoral scholars who are part of your program, including as mentees

### Observation Activities

Please work with the case study team to identify program-specific activities that can be observed by the team, such as program development meetings, mentoring sessions, or lessons in which new curriculum is currently in use.

## CASE STUDY INTERVIEW AND FOCUS GROUP PROTOCOLS

### SEMI-STRUCTURED INDIVIDUAL INTERVIEW PROTOCOL

#### PIs (a) & Program Managers (b)

*This semi-structured interview protocol contains a list of possible questions to be drawn from in interviews with individuals participating in the BUILD Case Study. As a flexible framework, probes may be added or omitted from the interview in response to participant feedback. Interview questions, however, are expected to stay within the content areas detailed below.*

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- 1) Please provide an overall summary of the BUILD activities currently being implemented at your site.
- 2) How would you describe the URG sub-population you are targeting through BUILD and their unique needs as a URG sub-population?
- 3) What, if any, strategies have been implemented at [site name] prior to BUILD in an effort to expand URG participation in bio-medical research?
- 4) How would you say BUILD activities "fit" into the larger vision of [site name's] work in bio-medical research?

**Interviewer:** *I would like to talk to you in detail about some of the major BUILD activities [site name] is currently implementing--the processes of implementation, some of the challenges you may have encountered, as well as areas you continue to strengthen.*

*First I'd like to start with faculty development and engagement in BUILD programming, then student participation and engagement, then participation in mentoring activities, as well as the quality of mentoring activities. I'll be sure to leave time at the end of our conversation for issues or topics you would like to raise that I might not have asked about. Does that sound all right?*

- 5) Please describe what BUILD activities are currently being implemented to enhance faculty development and engagement in bio-medical research training for URGs.
  - a) How might this overall structure differ from your original proposal/plan, if at all?
    - i) If there are deviations from the original proposal/plan, why were these changes made?
    - ii) How are these revised strategies expected to improve faculty development and engagement in BUILD programming?
  - b) What challenges have you faced in implementation, if any?
    - i) How have you addressed those challenges?
  - c) From your perspective, what about your current programming elicits faculty engagement and participation in BUILD programming?
    - i) What impediments might exist to greater faculty engagement and participation?
  - d) In terms of enhancing bio-medical research training for URGs what, in your perspective, faculty development needs are the highest priority at this time?
  - e) Please describe pathways of communication with faculty participating in BUILD.
    - i) What feedback, if any, have you received from participating faculty?
- 6) Please describe what BUILD activities are currently being implemented to enhance student participant and engagement in bio-medical research.

- a) How might this overall structure differ from your original proposal/plan, if at all?
    - i) If there are deviations from the original proposal/plan, why were these changes made?
    - ii) How are these revised strategies expected to improve faculty development and engagement in BUILD programming?
  - b) What challenges have you faced in implementation, if any?
    - i) How have you addressed those challenges?
  - c) From your perspective, what about your current programming elicits student engagement and participation in BUILD programming?
    - i) What impediments might exist to greater student engagement and participation?
  - d) In terms of enhancing bio-medical research training for URGs what, in your perspective, student needs are the highest priority at this time?
  - e) Please describe pathways of communication with students participating in BUILD.
    - i) What feedback, if any, have you received from participating students?
- 7) Please describe what BUILD activities are currently being implemented to enhance *participation* in mentoring activities, both for students and faculty.
- a) How might these strategies differ from your original proposal/plan, if at all?
    - i) If there are deviations from the original proposal/plan, why were these changes made?
    - ii) How are these revised strategies expected to improve faculty development and engagement in BUILD programming?
  - b) What challenges have you faced in implementation, if any?
    - i) How have you addressed those challenges?
  - c) From your perspective, what about your current programming elicits student and faculty engagement and participation in mentoring?
    - i) What impediments might exist to greater student or faculty engagement and participation?
- 8) Please describe what BUILD activities are currently being implemented to improve the *quality* of mentoring activities, both for students and faculty.
- a) How might these overall strategies differ from your original proposal/plan, if at all?
    - i) If there are deviations from the original proposal/plan, why were these changes made?
    - ii) How are these revised strategies expected to improve faculty development and engagement in BUILD programming?
  - b) What challenges have you faced in implementation, if any?
    - i) How have you addressed those challenges?
  - c) From your perspective, what should be the priority areas of focus of mentor training and development?
    - i) What impediments might exist to more quality faculty and student engagement and participation in mentoring?
  - d) What feedback, if any, have you received from students and faculty participating in mentoring activities?
- 9) How would you characterize the nature of [*site name's*] involvement with NRMN?
- a) Which NRMN activities do your faculty and students take part in, and to what extent?
  - b) How, if at all, do you feel that NRMN programming has contributed to [*site name's*] capacity to advance URG bio-medical research training?
  - c) In what ways, if any, could engagement with NRMN be improved to better support the advancement of URG bio-medical research training?
- 10) Please describe the ways in which [*site name*] has been working with other partner organizations under BUILD and/or NRMN.
- a) In what ways do you see your work under these partnerships contributing to the advancement of URG bio-medical research training?



- b) What challenges have you faced in building these partnerships, if any?
  - c) What challenges, if any, might these partnership bring to the implementation of BUILD as you had envisioned?
- 11) Overall, how would your characterize [*site name's*] involvement in BUILD?
- a) Do you feel that additional supports, systems, or structures could enhance [*site name's*] ability to successfully implement this programming? If so, what?
  - b) Are there any questions I haven't asked, or are there additional points you would like to raise that we have not yet discussed?

**SEMI-STRUCTURED INDIVIDUAL INTERVIEW PROTOCOL**  
**BUILD Partnership Institutions – Director/Lead (c)**

*This semi-structured interview protocol contains a list of questions to be drawn from in interviews with individuals participating in the BUILD Case Study. As a flexible framework, probes may be added or omitted from the interview in response to participant feedback. Interview questions, however, are expected to stay within the content areas detailed below.*

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- 1) Please provide an overall summary of the BUILD activities your institution is currently involved in implementing.
- 2) Please describe why your institution became partners with [BUILD site] and how this partnership was established.
- 3) How would you describe the URG sub-population you are targeting through BUILD and their unique needs as a URG sub-population?
- 4) How would you say BUILD activities "fit" into the larger vision of [site name's] work in bio-medical research?

**Interviewer:** *I would like to talk to you in detail about some of the major BUILD activities [site name] is currently implementing-- the processes of implementation, some of the challenges you may have encountered, as well as areas you continue to strengthen.*

*First I'd like to start with faculty development and engagement in BUILD programming, then student participation and engagement, then participation in mentoring activities, as well as the quality of mentoring activities. I'll be sure to leave time at the end of our conversation for issues or topics you would like to raise that I might not have asked about. Does that sound all right?*

- 1) Please describe what, if any, BUILD activities you are currently involved in implementing to enhance faculty development and engagement in bio-medical research training for URGs.
  - a) How might this overall structure differ from your original proposal/plan, if at all?
    - i) If there are deviations from the original proposal/plan, why were these changes made?
    - ii) How are these revised strategies expected to improve faculty development and engagement in BUILD programming?
  - b) What challenges have you faced in implementation, if any?
    - i) How have you addressed those challenges?
  - c) From your perspective, what about your current programming elicits faculty engagement and participation in BUILD programming?
    - i) What impediments might exist to greater faculty engagement and participation?
  - d) In terms of enhancing bio-medical research training for URGs what, in your perspective, faculty development needs are the highest priority at this time?
  - e) Please describe any pathways of communication with faculty participating in BUILD.
    - i) What feedback, if any, have you received from participating faculty?
- 2) Please describe what, if any, BUILD activities you are currently involved in implementing to enhance student participant and engagement in bio-medical research.
  - a) How might this overall structure differ from your original proposal/plan, if at all?

- i) If there are deviations from the original proposal/plan, why were these changes made?
    - ii) How are these revised strategies expected to improve student participation and engagement in BUILD programming?
  - b) What challenges have you faced in implementation, if any?
    - i) How have you addressed those challenges?
  - c) From your perspective, what about your current programming elicits student engagement and participation in BUILD programming?
    - i) What impediments might exist to greater student engagement and participation?
  - d) In terms of enhancing bio-medical research training for URGs what, in your perspective, student needs are the highest priority at this time?
  - e) Please describe any pathways of communication with students participating in BUILD.
    - i) What feedback, if any, have you received from participating students?
- 3) Please describe what BUILD activities you are currently involved in implementing to enhance *participation* in mentoring activities, both for students and faculty.
  - a) How might these strategies differ from your original proposal/plan, if at all?
    - i) If there are deviations from the original proposal/plan, why were these changes made?
    - ii) How are these revised strategies expected to improve participation in mentoring activities?
  - b) What challenges have you faced in implementation, if any?
    - i) How have you addressed those challenges?
  - c) From your perspective, what about your current programming elicits student and faculty engagement and participation in mentoring?
    - i) What impediments might exist to greater student or faculty engagement and participation?
- 4) Please describe what BUILD activities you are currently involved in implementing to improve the *quality* of mentoring activities, both for students and faculty.
  - a) How might these overall strategies differ from your original proposal/plan, if at all?
    - i) If there are deviations from the original proposal/plan, why were these changes made?
    - ii) How are these revised strategies expected to improve the quality of mentoring activities?
  - b) What challenges have you faced in implementation, if any?
    - i) How have you addressed those challenges?
  - c) From your perspective, what should be the priority areas of focus of mentor training and development?
    - i) What impediments might exist to more quality faculty and student engagement and participation in mentoring?
  - d) What feedback, if any, have you received from students and faculty participating in mentoring activities?
- 5) How would you describe [*site name's*] involvement with NRMN?
  - a) Which NRMN activities do your faculty and students take part in, and to what extent?
  - b) How, if it all, do you feel that NRMN programming has contributed to BUILD's capacity to advance URG bio-medical research training?
  - c) In what ways, if any, could engagement with NRMN be improved to better support the advancement of URG bio-medical research training?
- 6) In what ways do you see your work under this BUILD partnership contributing to the advancement of URG bio-medical research training?
  - a) In what ways, if any, do you believe your institution has benefited from this BUILD partnership?
  - b) What challenges have you faced in establishing this partnership, if any?
  - c) What challenges, if any, might this partnership bring to your institution?
- 7) Overall, how would you describe [*site name's*] involvement in BUILD?

- a) Do you feel that additional supports, systems, or structures could enhance [*site name's*] ability to successfully implement this programming? If so, what?
- b) Are there any questions I haven't asked, or are there additional points you would like to raise that we have not yet discussed?

**SEMI-STRUCTURED INDIVIDUAL INTERVIEW PROTOCOL**  
**BUILD Faculty – Leads/Co-Leads (d)**

*This semi-structured interview protocol contains a list of questions to be drawn from in interviews with individuals participating in the BUILD Case Study. As a flexible framework, probes may be added or omitted from the interview in response to participant feedback. Interview questions, however, are expected to stay within the content areas detailed below.*

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1. Please provide an overall summary of the BUILD activities your institution is currently involved in implementing.
2. Please describe why your institution became partners with [BUILD site] and how this partnership was established.
3. How would you describe the URM sub-population you are targeting through BUILD and their unique needs as a URM sub-population?
4. How would you say BUILD activities "fit" into the larger vision of [site name's] work in bio-medical research?

**Interviewer:** *I would like to talk to you in detail about some of the major BUILD activities [site name] is currently implementing-- the processes of implementation, some of the challenges you may have encountered, as well as areas you continue to strengthen.*

*First I'd like to start with faculty development and engagement in BUILD programming, then student participation and engagement, then participation in mentoring activities, as well as the quality of mentoring activities. I'll be sure to leave time at the end of our conversation for issues or topics you would like to raise that I might not have asked about. Does that sound all right?*

5. Please describe what, if any, BUILD activities you are currently involved in implementing to enhance faculty development and engagement in bio-medical research training for URMs.
  - a) How might this overall structure differ from your original proposal/plan, if at all?
    - i) If there are deviations from the original proposal/plan, why were these changes made?
    - ii) How are these revised strategies expected to improve faculty development and engagement in BUILD programming?
  - b) What challenges have you faced in implementation, if any?
    - i) How have you addressed those challenges?
  - c) From your perspective, what about your current programming elicits faculty engagement and participation in BUILD programming?
    - i) What impediments might exist to greater faculty engagement and participation?
  - d) In terms of enhancing bio-medical research training for URMs what, in your perspective, faculty development needs are the highest priority at this time?
  - e) Please describe any pathways of communication with faculty participating in BUILD.
    - i) What feedback, if any, have you received from participating faculty?
6. Please describe what, if any, BUILD activities you are currently involved in implementing to enhance student participant and engagement in bio-medical research.
  - a) How might this overall structure differ from your original proposal/plan, if at all?

- i) If there are deviations from the original proposal/plan, why were these changes made?
    - ii) How are these revised strategies expected to improve student participation and engagement in BUILD programming?
  - b) What challenges have you faced in implementation, if any?
    - i) How have you addressed those challenges?
  - c) From your perspective, what about your current programming elicits student engagement and participation in BUILD programming?
    - i) What impediments might exist to greater student engagement and participation?
  - d) In terms of enhancing bio-medical research training for URMs what, in your perspective, student needs are the highest priority at this time?
  - e) Please describe any pathways of communication with students participating in BUILD.
    - i) What feedback, if any, have you received from participating students?
7. Please describe what BUILD activities you are currently involved in implementing to enhance *participation* in mentoring activities, both for students and faculty.
  - a) How might these strategies differ from your original proposal/plan, if at all?
    - i) If there are deviations from the original proposal/plan, why were these changes made?
    - ii) How are these revised strategies expected to improve participation in mentoring activities?
  - b) What challenges have you faced in implementation, if any?
    - i) How have you addressed those challenges?
  - c) From your perspective, what about your current programming elicits student and faculty engagement and participation in mentoring?
    - i) What impediments might exist to greater student or faculty engagement and participation?
8. Please describe what BUILD activities you are currently involved in implementing to improve the *quality* of mentoring activities, both for students and faculty.
  - a) How might these overall strategies differ from your original proposal/plan, if at all?
    - i) If there are deviations from the original proposal/plan, why were these changes made?
    - ii) How are these revised strategies expected to improve the quality of mentoring activities?
  - b) What challenges have you faced in implementation, if any?
    - i) How have you addressed those challenges?
  - c) From your perspective, what should be the priority areas of focus of mentor training and development?
    - i) What impediments might exist to more quality faculty and student engagement and participation in mentoring?
  - d) What feedback, if any, have you received from students and faculty participating in mentoring activities?
9. How would you describe [*site name's*] involvement with NRMN?
  - a) Which NRMN activities do your faculty and students take part in, and to what extent?
  - b) How, if it all, do you feel that NRMN programming has contributed to BUILD's capacity to advance URM bio-medical research training?
  - c) In what ways, if any, could engagement with NRMN be improved to better support the advancement of URM bio-medical research training?
10. In what ways do you see your work under this BUILD partnership contributing to the advancement of URM bio-medical research training?
  - a) In what ways, if any, do you believe your institution has benefited from this BUILD partnership?
  - b) What challenges have you faced in establishing this partnership, if any?
  - c) What challenges, if any, might this partnership bring to your institution?
11. Overall, how would your describe [*site name's*] involvement in BUILD?

- a) Do you feel that additional supports, systems, or structures could enhance [*site name's*] ability to successfully implement this programming? If so, what?
- b) Are there any questions I haven't asked, or are there additional points you would like to raise that we have not yet discussed?

## GROUP INTERVIEW PROTOCOL BUILD Faculty Participants (e)

*This semi-structured focus group protocol contains a list of possible questions to be drawn from in interviews with individuals participating in the BUILD Case Study. As a flexible framework, probes may be added or omitted from the interview in response to participant feedback. Interview questions, however, are expected to stay within the content areas detailed below.*

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### *Understanding current BUILD implementation*

- 1) Please introduce yourself by name, your position within [site name], your role in BUILD programming, and what you most hope to achieve as a result of BUILD participation.
- 2) In view of the goals and objectives just raised, what kind of progress do you think [site name] has made towards realizing those objectives?
  - a) In your opinion, what are the structures, systems, or processes that have supported this progress?
  - b) In your opinion, what are some of the challenges or hurdles you have come across in program implementation and facilitation?
  - c) In your opinion, what are some of the needed supports, systems, or processes that would greater assist BUILD implementation and facilitation?

### *Understanding URG participation and engagement*

- 3) How would you characterize the URG student population at [site name]?
  - a) To what extent do you feel URG's are already engaged in bio-medical research training?
  - b) In your view, what are the greatest needs of this sub-population in terms of their enhanced participation in bio-medical research training?
  - c) In your opinion, to what extent do you feel BUILD programming is addressing these needs?
  - d) What additional structures, systems and supports need to be in place to further engage URG's in bio-medical research training?

### *Understanding faculty participation and engagement*

- 4) In terms of supporting bio-medical research training for URGs, what are the greatest areas of need for faculty development?
  - a) To what extent have faculty participated in professional development targeted towards the engagement of URG's in bio-medical research training prior to BUILD?
  - b) To what extent has participation in BUILD supported faculty development and engagement in URG bio-medical research training?
    - i) In your opinion, what are the most essential links between faculty development and then, the translation of this training into strengthened engagement of URG's in bio-medical research training?
  - c) What additional structures, systems and supports need to be in place to further engage faculty in the training of URG's in bio-medical research through BUILD?

### *Understanding BUILD mentoring*

- 5) To what extent do you feel faculty and URG's are engaged in BUILD mentoring activities?



- a) What might some of the structures, systems, and supports in place that incentivize participation?
- b) What might be some of the challenges that exist in getting greater numbers of URG's and faculty involved in BUILD mentoring activities?
- 6) If you have participated in mentoring training, how would you describe the quality of BUILD mentoring training you have received?
  - a) What could strengthen your preparation as a mentor?
  - b) What are some of the challenges you have come across as a mentor?
- 7) How would you describe the quality of mentoring URG's currently receive?
  - a) What factors either support, or present challenges to improved mentoring quality?

#### *Understanding BUILD Partner Sites*

- 8) To what extent have you been involved in any activities with institutional partner sites [*provide a site name as an example*]? If applicable, please describe your involvement.
  - a) In your opinion, has participation in partner site activities been beneficial to you? Please provide detail as to why, or why not.
  - b) What, if any, aspects of partner site activities have been particularly valuable to you?
  - c) What, if any, aspects of partner site activities could be further improved to support you?
- 9) To what extent have BUILD with partner institutions contributed to the development of the BUILD program at this site?
  - a) How have partner institution activities been beneficial to the overall BUILD program development?
  - b) What, if any, aspects of partner activities have been particularly valuable to URG faculty and students?
  - c) What, if any, aspects of partner activities could be further improved to support URG faculty and students?

#### *Understanding NRMN*

- 10) To what extent have you been involved in any NRMN activities? If applicable, please describe your involvement.
  - a) In your opinion, has participation in NRMN activities been beneficial to you as a mentor to URG's? Please provide detail as to why, or why not.
  - b) What, if any, aspects of NRMN activities have been particularly valuable to you as a faculty mentor?
  - c) What, if any, aspects of NRMN activities could be further improved to support you as a faculty mentor?
- 11) To what extent have you been involved in BUILD activities in association with partner institutions? If applicable, please describe your involvement.
  - a) In your opinion, has participation in partner activities been beneficial to you as a mentor to URG's? Please provide detail as to why, or why not.
  - b) What, if any, aspects of partner activities have been particularly valuable to you as a faculty mentor?
  - c) What, if any, aspects of partner activities could be further improved to support you as a faculty mentor?

## GROUP INTERVIEW PROTOCOL BUILD Undergrad (f) and Grad/Post-Doc (g) Participants

*This semi-structured focus group protocol contains a list of possible questions to be drawn from in interviews with individuals participating in the BUILD Case Study. As a flexible framework, probes may be added or omitted from the interview in response to participant feedback. Interview questions, however, are expected to stay within the content areas detailed below.*

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### *Understanding BUILD participating and engagement*

- 1) Please introduce yourself by name, your current area of study, and what inspired your interest in pursuing bio-medical research?
- 2) How did you find out about BUILD programming?
- 3) Why did you decide to participate in BUILD programming?
- 4) To what extent are you involved in BUILD programming? (What activities do you participate in, and how involved in those activities are you?)
  - a) To what extent are you specifically involved in bio-medical research? (What activities do you participate in, and how involved in those activities are you?)

### *Participant feedback on overall BUILD programming*

- 5) In your opinion, has participation in these activities been beneficial to you as [title]? If so, how? If not, why not?
  - a) In particular, what (if any) opportunities or experiences has BUILD participation exposed you to that you think you might not otherwise have experienced?
  - b) What might improve your experiences as a BUILD participant?
    - i) In particular, are there systems, structures, or processes that could further improve your participation in BUILD activities?
    - ii) Are there particular skill areas you feel could be further addressed by BUILD programming?

### *Participant feedback on BUILD URG focus*

- 6) As a URG what, in your opinion, are some of the greatest challenges you face in your success as a bio-medical researcher?
- 7) In what ways do you feel that your personal needs as an URG are sufficiently addressed through BUILD programming, or in what ways do you feel that they could be more effectively addressed?
- 8) In what ways do you feel BUILD programming has, or has not acknowledged and respected your cultural, racial and/or gender background?
- 9) In what ways do you feel that BUILD faculty are, or are not well prepared to support you as an URG [title] in bio-medical research?
  - a) What, if any, additional structures, systems and supports need to be in place to further engage students in the training of URG's in bio-medical research through BUILD?
    - i) What has been the most valuable about this experience?
    - ii) How can this experience be strengthened or improved?

### *Participant feedback on mentoring*

- 10) Do you have a faculty mentor and how long you have been working with them?
  - a) How did you initially connect with them?
- 11) How often would you say you meet with your mentor, and for how long?
- 12) What do you discuss in mentoring sessions with your faculty mentor?
- 13) In what ways do you feel that having a faculty mentor has been beneficial to you as a [title] in bio-medical research?
- 14) In what ways, if any, do you feel that your mentoring experience could be improved to better support you as a bio-medical researcher?
- 15) In what ways, if any, do you feel that your faculty mentor could be better prepared to support you as a URG [title] in bio-medical research?

*Reflection*

- 16) Do you plan to pursue a career in bio-medical research?
  - a) What are the motivating factors behind this decision?
  - b) What are the greatest challenges URGs face in pursuing a career in bio-medical research?
  - c) If not a career in bio-medical research, then what do you aspire to do? How has the BUILD program supported this decision and success in this area?

*Understanding NRMN and Partnerships*

- 17) To what extent have you been involved in any NRMN activities? If applicable, please describe your involvement.
  - a) In your opinion, has participation in NRMN activities been beneficial to you as a [title]? Please provide detail as to why, or why not.
  - b) What, if any, aspects of NRMN activities have been particularly valuable to you as a [title]?
  - c) What, if any, aspects of NRMN activities could be further improved to support you as a [title]?

*Understanding Partnerships*

- 18) To what extent have you been involved in BUILD activities in association with partner institutions? If applicable, please describe your involvement.
  - a) In your opinion, has participation in partner activities been beneficial to you as a [title]? Please provide detail as to why, or why not.
  - b) What, if any, aspects of partner activities have been particularly valuable to you as a [title]?
  - c) What, if any, aspects of partner activities could be further improved to support you as a [title]?

*Reflection*

- 19) Would you recommend BUILD participation to other URG [title]? Why or why not?
- 20) What, in your opinion, would further incentivize additional [title] to participate in BUILD programming?
- 21) What, if any, barriers to participation exist amongst URG [title]?

## SEMI-STRUCTURED INDIVIDUAL INTERVIEW PROTOCOL Comparison Group – Institutional Director/Program Manager (h)

*This semi-structured interview protocol contains a list of possible questions to be drawn from in interviews with individuals participating in the BUILD Case Study Comparison Group. As a flexible framework, probes may be added or omitted from the interview in response to participant feedback. Interview questions, however, are expected to stay within the content areas detailed below.*

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*Understanding current engagement with biomedical students and junior faculty*

- 1) Please introduce yourself by name and your position within [site name]?
- 2) How would you describe your institutions level of involvement with undergraduate/graduate/post-doctoral students in biomedical research?
  - a) Please provide an overall summary of the activities training program initiatives currently being implemented at your site.
  - b) How would you describe the URG sub-population you are targeting through BUILD and their unique needs as a URG sub-population?
  - c) You might think about the number and types of classes you taught in the field of biomedical research, advisory roles with students in biomedical research, mentoring roles with student in biomedical research, and/or specialized programs, training, or support roles with students in biomedical research. [Probe for: specific examples, numbers of students involved, time/intensity of activities]
- 3) How would you describe your institutions level of involvement with junior faculty in biomedical research?
  - a) What, if any, type of advisory or mentoring support do you offer junior faculty, either formally or informally? [Probe for specific examples, time/intensity of activities]
- 4) What, if any, strategies have been implemented at [site name] in an effort to expand URG participation in bio-medical research?
- 5) How would you say these activities "fit" into the larger vision of [site name's] work in bio-medical research?

**Interviewer:** *I would like to talk to you in detail about some of the major BUILD activities [site name] is currently implementing--the processes of implementation, some of the challenges you may have encountered, as well as areas you continue to strengthen.*

*First I'd like to start with faculty development and engagement in BUILD programming, then student participation and engagement, then participation in mentoring activities, as well as the quality of mentoring activities. I'll be sure to leave time at the end of our conversation for issues or topics you would like to raise that I might not have asked about. Does that sound all right?*

- 6) Please describe what activities are currently being implemented to enhance faculty development and engagement in bio-medical research training for URGs.
  - a) How might this overall structure differ from your original proposal/plan, if at all?
    - i) If there are deviations from the original proposal/plan, why were these changes made?
    - ii) How are these revised strategies expected to improve faculty development and engagement?
  - b) What challenges have you faced in implementation, if any?
    - i) How have you addressed those challenges?

- c) From your perspective, what about your current programming elicits faculty engagement and participation in programming?
    - i) What impediments might exist to greater faculty engagement and participation?
  - d) In terms of enhancing bio-medical research training for URGs what, in your perspective, faculty development needs are the highest priority at this time?
  - e) Please describe pathways of communication with faculty participants.
    - i) What feedback, if any, have you received from participating faculty?
- 7) Please describe what BUILD activities are currently being implemented to enhance student participant and engagement in bio-medical research.
- a) How might this overall structure differ from your original proposal/plan, if at all?
    - i) If there are deviations from the original proposal/plan, why were these changes made?
    - ii) How are these revised strategies expected to improve student development and engagement in programming?
  - b) What challenges have you faced in implementation, if any?
    - i) How have you addressed those challenges?
  - c) From your perspective, what about your current programming elicits student engagement and participation in BUILD programming?
    - i) What impediments might exist to greater student engagement and participation?
  - d) In terms of enhancing bio-medical research training for URGs what, in your perspective, student needs are the highest priority at this time?
  - e) Please describe pathways of communication with students participants.
    - i) What feedback, if any, have you received from participating students?
- 8) Please describe what activities are currently being implemented to enhance *participation* in mentoring activities, both for students and faculty.
- a) How might these strategies differ from your original proposal/plan, if at all?
    - i) If there are deviations from the original proposal/plan, why were these changes made?
    - ii) How are these revised strategies expected to improve faculty development and engagement in programming?
  - b) What challenges have you faced in implementation, if any?
    - i) How have you addressed those challenges?
  - c) From your perspective, what about your current programming elicits student and faculty engagement and participation in mentoring?
    - i) What impediments might exist to greater student or faculty engagement and participation?
- 9) Please describe what activities are currently being implemented to improve the *quality* of mentoring activities, both for students and faculty.
- a) How might these overall strategies differ from your original proposal/plan, if at all?
    - i) If there are deviations from the original proposal/plan, why were these changes made?
    - ii) How are these revised strategies expected to improve faculty development and engagement in programming?
  - b) What challenges have you faced in implementation, if any?
    - i) How have you addressed those challenges?
  - c) From your perspective, what should be the priority areas of focus of mentor training and development?
    - i) What impediments might exist to more quality faculty and student engagement and participation in mentoring?
  - d) What feedback, if any, have you received from students and faculty participating in mentoring activities?
- 10) How would you characterize the nature of [site name's] involvement with NRMN?

- a) Which NRMN activities do your faculty and students take part in, and to what extent?
  - b) How, if at all, do you feel that NRMN programming has contributed to [site name's] capacity to advance URG bio-medical research training?
  - c) In what ways, if any, could engagement with NRMN be improved to better support the advancement of URG bio-medical research training?
- 11) Please describe the ways in which [site name] has been working with other partner organizations.
- a) In what ways do you see your work under these partnerships contributing to the advancement of URG bio-medical research training?
  - b) What challenges have you faced in building these partnerships, if any?
  - c) What challenges, if any, might these partnerships bring to the implementation as you had envisioned?
- 5) Overall, how would you characterize [site name's] involvement in undergraduate training programs?
- a. Do you feel that additional supports, systems, or structures could enhance [site name's] ability to successfully implement this programming? If so, what?
  - b. Are there any questions I haven't asked, or are there additional points you would like to raise that we have not yet discussed?

## GROUP INTERVIEW PROTOCOL Comparison Group – Faculty (i)

*This semi-structured focus group protocol contains a list of questions to be drawn from in interviews with individuals participating in the BUILD Case Study comparison group. As a flexible framework, probes may be added or omitted from the interview in response to participant feedback. Interview questions, however, are expected to stay within the content areas detailed below.*

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### *Understanding current engagement with biomedical students and junior faculty*

- 1) Please introduce yourself by name and your position within [site name]?
- 2) How would you describe your level of involvement with undergraduate/graduate/post-doctoral students in biomedical research?
  - a. You might think about the number and types of classes you teach in the field of biomedical research, advisory roles you may have with students in biomedical research, mentoring roles you may have with student in biomedical research, and/or specialized programs, training, or support roles you may have with students in biomedical research. [Probe for: specific examples, numbers of students involved, time/intensity of activities]
- 3) How would you describe your level of involvement with junior faculty in biomedical research?
  - a. What, if any, type of advisory or mentoring support do you offer junior faculty, either formally or informally? [Probe for specific examples, time/intensity of activities]

### *Understanding URG participation and engagement in biomedical research*

- 4) How would you characterize the URG student population at [site name]?
  - a. To what extent do you feel URG's are engaged in bio-medical research training?
  - b. In your view, what are the greatest needs of these sub-populations in terms of their enhanced participation in bio-medical research training?
  - c. In your opinion, to what extent do you feel current programming at [site name] is addressing these needs?
  - d. What additional structures, systems and supports need to be in place to further engage URG's in bio-medical research training?

### *Understanding faculty development needs in URG biomedical research training*

- 5) In terms of supporting bio-medical research training for URGs, what might be some areas for faculty development?
  - a. To what extent have faculty participated in professional development targeted towards the engagement of URG's in bio-medical research training?
  - b. Would you say there is an expressed need by faculty for this type of training?
  - c. What additional structures, systems and supports would need to be in place to further engage faculty in the training of URG's in bio-medical research?

### *Understanding faculty mentoring activities*

- 6) To what extent do you feel faculty are engaged in mentoring activities?
  - a. What might some of the structures, systems, and supports in place that incentivize participation?

- b. What might be some of the challenges that exist in getting greater numbers of faculty involved in mentoring activities?
  - c. To what extent do you feel faculty are engaged in mentoring activities with biomedical students/post-docs/junior faculty from URG?
- 7) How would you describe the quality of mentoring biomedical students/post-docs/junior faculty currently receive?
- a. What factors either support, or present challenges to improved mentoring quality?

*Reflection*

- 8) In general, do you see your URG biomedical students pursuing careers in bio-medical research? [Also: Do you have access to this information?]
- a. What do you think are the motivating factors behind their decisions?
  - b. What do you think are the greatest challenges URGs face in pursuing a career in bio-medical research?
- 9) In what ways do you feel students are prepared to pursue your career interests as a result of their research and training experiences at *[site name]*?
- a. Are there particular research, or specific skill areas in which you feel your program could provide additional training/guidance to bolster student success in pursuing careers in biomedical research?
- 10) How would you describe what it means to be successful as an undergraduate/graduate/post-doc student in the biomedical sciences at *[site name]*?
- 11) How would you describe what it means to be successful as a junior faculty member in the biomedical sciences at *[site name]*?



## GROUP INTERVIEW PROTOCOL

### Comparison Group – Undergrad (j) Grad/Post-Doc (k) Students

*This semi-structured focus group protocol contains a list of questions to be drawn from in interviews with individuals participating in the BUILD Case Study comparison group. As a flexible framework, probes may be added or omitted from the interview in response to participant feedback. Interview questions, however, are expected to stay within the content areas detailed below.*

Public reporting burden for this collection of information is estimated to average 90 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. **An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number.** Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to: NIH, Project Clearance Branch, 6705 Rockledge Drive, MSC 7974, Bethesda, MD 20892-7974, ATTN: PRA (0925-xxxx\*). Do not return the completed form to this address.

#### *Understanding participation and engagement in biomedical research experiences*

- 1) Please introduce yourself by name, your current area of study, and what inspired your interest in pursuing this particular academic area?
- 2) How would you describe your opportunities to engage in research as a student at [site name]?
  - a) What activities come to mind as being part of your research experience here? [Probe for: specific examples, time/intensity of research activities]
    - i) Outside of your standard coursework and labs, have there been additional opportunities to engage in biomedical research, for example, through supplementary programs, workshops, or internships?
      - (1) If so, please describe your involvement in these activities. [Probe for: specific examples, time/intensity of research activities]
      - (2) How would you describe your interest in engaging in these types of activities? (i.e., Have you pursued involvement in these activities – why or why not?)
      - (3) What barriers, if any, might have challenged your participation in these activities?
  - b) How would you describe the value of your research experience at [site name] to your academic career, or other career interests you may have?
  - c) What could be improved about your research experience at [site name]?
    - i) In particular, are there systems, structures, or processes that could be put in place to further improve your research experience as a student?
  - d) In your experience, have you come across any barriers to participating in biomedical research during your time at [site name]?
    - i) In answering, please describe how you have come to this conclusion.

#### *Understanding participation and engagement in biomedical mentoring experiences*

- 3) How would you describe your opportunities to be mentored by faculty as a student at [site name]?
  - a) In particular, would you say you have a mentor at [site name]?
    - i) If so, how did you connect with your mentor?
      - (1) In your experience, what were some of the important factors that facilitated this connection?
      - (2) How would you describe your own personal interest in finding a mentor or in being mentored?
    - ii) If not, have opportunities arisen for you to connect with a mentor?
      - (1) How would you describe your own personal interest in finding a mentor or in being mentored?
      - (2) What challenges might you have experienced in connecting with a mentor?
  - b) Whether you consider yourself as having a designated mentor or not, what activities come to mind as being part of your mentoring experience as a student at [site name]? [Probe for: specific examples, time/intensity of mentoring, who is doing the mentoring, what activities mentoring encompasses]

- c) How would you describe the value of your current mentoring experience at *[site name]* to your academic career, or other career interests you may have?
- d) What could be improved about your current mentoring experience at *[site name]*?
  - i) In particular, are there systems, structures, or processes that could be put in place to further improve your mentoring experience as a student?

*Experiences as a URG biomedical student*

- 4) As a biomedical student from an URG, what, in your opinion, are some of the greatest challenges you face in your success as a bio-medical researcher?
- 5) In what ways do you feel that your personal needs as a student from an URG are sufficiently addressed through your current academic program, or in what ways do you feel that they could be more effectively addressed?
- 6) In what ways do you feel your current academic program has, or has not acknowledged and respected your cultural, racial and/or gender background?
- 7) In what ways do you feel that faculty are, or are not well prepared to support you as an URG *[title]* in bio-medical research?
  - a) What, if any, additional structures, systems and supports need to be in place to further engage URG students in bio-medical research?
- 8) In what ways, if any, do you feel that faculty you interact with could be better prepared to support you as a URG *[title]* in bio-medical research?

*Reflection*

- 9) Do you plan to pursue a career in bio-medical research?
  - a) What are the motivating factors behind your decision?
  - b) What are the greatest challenges URGs face in pursuing a career in bio-medical research?
  - c) If not a career in bio-medical research, then what do you aspire to do?
- 10) In what ways do you feel prepared, or feel that you will be prepared, to pursue your career interests as a result of your research and training experiences at *[site name]*?
  - a) Are there particular research, or specific skill areas in which you feel your could use additional training/guidance outside of what your current academic program provides?
- 11) How would you describe what it means to be successful in your current academic program?

## **BUILD CASE STUDY GENERAL OPEN-ENDED OBSERVATION PROTOCOL**

Semi-structured observation will be conducted during case study data collection visits. Participating BUILD institutions will be asked to prepare in advance for the visiting research team to observe BUILD-specific activities in progress, such as BUILD program development meetings, mentoring sessions, or lessons in which new curriculum is currently in use. Because BUILD activities vary extensively by site, the case study research team will work in close coordination with the BUILD site visit monitoring team and each BUILD institution to ensure appropriate, practical activities are selected for observation. Participants will include faculty and staff charged with implementing BUILD at the primary and partner sites as well as students involved in BUILD activities.

The purpose of observation in this context is to gain a contextualized understanding of the ways in which different groups of BUILD stakeholders (i.e., program leadership, program implementers, and partners) interact and collaboratively strategize to advance BUILD's overarching objective of increasing URG participation and engagement in bio-medical research. While this can often be a dynamic, fluid process wherein observable details may frequently change, or which may be spontaneously revealed, there are several key areas of interest that are considered most relevant to this research inquiry. These are as follows:

### **Context**

- Persons/roles present
- Stated purpose/objectives of the meeting/activity being observed
- Type of activity being observed (planned and as it is actually implemented)
- Questions, answers, comments raised (and by who)

### **Discussion and dialogue amongst those present:**

- **Capacity of the BUILD Prime institution to successfully implement BUILD activities**
  - Successes and challenges in implementation
  - Benefits and drawbacks of partner collaboration in implementation
  - Negotiation of human, financial, time resource allocations
- **Goal-setting and progress monitoring**
  - Planning implementation timelines
  - Achievement of, and challenges in achieving scheduled milestones
  - Strategic planning to achieve BUILD program objectives
  - Perceived stakeholder accountability to implementation partners
  - Perceived stakeholder accountability to evaluation theory of success (e.g., output, intermediate outcomes, and long-term outcomes)
- **Development of a shared vision among key stakeholders (admin, faculty at and among BUILD partner sites)**
  - Alignment of goals and objectives
  - Alignment of implementation timelines
  - Alignment of program resources (human and financial)
  - Investments in establishing/sustaining partnerships
- **Development, dissemination and implementation of curriculum and pedagogy**
  - Alignment of goals and objectives
  - Alignment of implementation timelines
  - Alignment of program resources (human and financial)
  - Investments in establishing/sustaining partnerships
- **Enacting policy**
  - Resource and support needs identified by various BUILD stakeholders
  - Response to, and consideration of expressed needs by implementing partners

- Perspective and opinions that take precedence in determining implications for action
- **Identifying and resolving barriers to effective collaboration across program activities**
  - Identification of systemic, structural, procedural weaknesses in links among BUILD stakeholders
  - Actionable next steps developed to resolve identified issues
  - Evidence of follow-up and implementation of action items
- **Systems, structures, and processes required to promote BUILD partnership sustainability**
  - Identification of factors promoting long-term BUILD partnership sustainability
  - Resource allocation (human, financial, time) in support of sustainability needs
- **Data-informed decision-making**
  - Data sources presented
  - Perceived reliability/quality of data presented
  - How discussion and dialogue is facilitated (and by who) around data interpretation
  - What and how data are used to inform next steps
  - Perspectives and opinions that take precedence in determining implications for action
  - Expressed data needs

## **BUILD CASE STUDY – COMPARISON GROUP – GENERAL OPEN-ENDED OBSERVATION PROTOCOL**

Semi-structured observation will be conducted during case study data collection visits. Participating non-BUILD institutions will be asked to prepare in advance for the visiting research team to observe specific activities in progress, such as program development meetings, mentoring sessions, or lessons in which new curriculum is currently in use. Because activities vary extensively by site, the case study research team will work in close coordination with the site visit monitoring team and each non-BUILD institution to ensure appropriate, practical activities are selected for observation. Participants will include faculty and staff charged with implementing undergraduate/graduate training programs.

The purpose of observation in this context is to gain a contextualized understanding of the ways in which different groups of stakeholders (i.e., program leadership, program implementers, and partners) interact and collaboratively strategize to advance URG participation and engagement in bio-medical research. While this can often be a dynamic, fluid process wherein observable details may frequently change, or which may be spontaneously revealed, there are several key areas of interest that are considered most relevant to this research inquiry. These are as follows:

### **Context**

- Persons/roles present
- Stated purpose/objectives of the meeting/activity being observed
- Type of activity being observed (planned and as it is actually implemented)
- Questions, answers, comments raised (and by who)

### **Discussion and dialogue amongst those present:**

- **Capacity of the institution to successfully implement activities**
  - Successes and challenges in implementation
  - Benefits and drawbacks of partner collaboration in implementation
  - Negotiation of human, financial, time resource allocations
- **Goal-setting and progress monitoring**
  - Planning implementation timelines
  - Achievement of, and challenges in achieving scheduled milestones
  - Strategic planning to achieve program objectives
  - Perceived stakeholder accountability to implementation partners
  - Perceived stakeholder accountability to evaluation theory of success (e.g., output, intermediate outcomes, and long-term outcomes)
- **Development of a shared vision among key stakeholders (admin, faculty, students)**
  - Alignment of goals and objectives
  - Alignment of implementation timelines
  - Alignment of program resources (human and financial)
  - Investments in establishing/sustaining partnerships
- **Development, dissemination and implementation of curriculum and pedagogy**
  - Alignment of goals and objectives
  - Alignment of implementation timelines
  - Alignment of program resources (human and financial)
  - Investments in establishing/sustaining partnerships
- **Enacting policy**
  - Resource and support needs identified by various stakeholders
  - Response to, and consideration of expressed needs by implementing partners
  - Perspective and opinions that take precedence in determining implications for action

- **Identifying and resolving barriers to effective collaboration across program activities**
  - Identification of systemic, structural, procedural weaknesses in links among stakeholders
  - Actionable next steps developed to resolve identified issues
  - Evidence of follow-up and implementation of action items
- **Systems, structures, and processes required to promote partnership sustainability**
  - Identification of factors promoting long-term partnership sustainability
  - Resource allocation (human, financial, time) in support of sustainability needs
- **Data-informed decision-making**
  - Data sources presented
  - Perceived reliability/quality of data presented
  - How discussion and dialogue is facilitated (and by who) around data interpretation
  - What and how data are used to inform next steps
  - Perspectives and opinions that take precedence in determining implications for action
  - Expressed data needs