

Specific Aims-ReBUILDetroit

OVERALL CORE

Specific Aim 1: To transform the culture of higher education institutions in urban Detroit such that they will become leaders in training undergraduate students from underrepresented backgrounds so that these students develop into the next generation of outstanding biomedical researchers for the regional and national workforce to enrich the depth and diversity of perspectives in biomedical research.

Specific Aim 2: To create a consortium of urban Detroit institutions of higher education that will serve as a sustainable model for devising and implementing innovative approaches to enhance research training opportunities for underrepresented minority students who will diversify the biomedical research workforce.

Specific Aim 3: To leverage the biomedical workforce and the synergy between institutional partnerships created from this initiative to power the rebuilding of Detroit as it emerges from economic challenges, and to help Detroit establish itself as a center of international excellence in industry, education, biomedical research training and biomedical research careers.

ADMINISTRATIVE CORE

Specific Aim 1. Establish an internal **steering committee** and **administrative core** which will have the responsibility for oversight and coordination of the respective REBUILD Detroit program objectives, including the dissemination of evidence-based mentoring practices and evidence-based interdisciplinary learning communities among the REBUILD Detroit partner institutions.

Specific Aim 2. In concert with the steering committee, the **administrative core** will provide budgetary oversight so that there is fiscally sound prioritization for allocation of funds as well as other institution resources such as space and instructional time so that the REBUILD Detroit program objectives are enhanced and met.

Specific Aim 3. The administrative core will create and implement a **timely and effective communication plan** amongst the stakeholders of the program to ensure there is effective communication throughout the award period. This is a critical aspect of the administration of the program since **this is a partnership between three institutions of higher education: University of Detroit Mercy, Wayne State University, and Marygrove College.**

Specific Aim 4. The administrative core will be responsible for the **collection and evaluation** of evidence regarding institutional practices and the assessment of process indicators and outcome indicators within each institution and the REBUILD Detroit program as a whole.

INSTITUTIONAL DEVELOPMENT CORE

SPECIFIC AIM 1. Reconfigure physical laboratory spaces at UD Mercy and WCCCD to prepare the iNSPIRE Laboratories, studio-style laboratory classrooms that can be used for the RCN project and as a flexible space for BUILD scholars to work on independent projects with faculty mentors. UD Mercy will continue to use this new space for BUILD students; WCCCD will no longer be participating in the ReBUILD Detroit Program.

SPECIFIC AIM 2. Develop cross-institutional mentoring for graduate students and post-doctoral fellows that builds pedagogical expertise, leverages the teaching expertise of partner and pipeline

institutions and provides research support for faculty and BUILD Scholars.

SPECIFIC AIM 3. Engage in a robust array of faculty and educational development activities designed to integrate and sustain curriculum development, pedagogical innovation, and growth in knowledge, skills, and values related to multiculturally inclusive life sciences education.

STUDENT TRAINING CORE

SPECIFIC AIM 1: To develop a program in which the enhanced academic programs coupled with mentored research experiences of undergraduate students are designed around data-driven individualized student needs that lead to their enhanced persistence and career success.

SPECIFIC AIM 2: To establish a program that facilitates the entry, as well as a focus on persistence and success, of increasing numbers of URM students especially in majors leading to biomedical careers in academics and/or scientific research. **SPECIFIC AIM 3:** To develop a program in which the undergraduate biomedical research opportunities are integrated into the basic fabric of the consortium universities scholarly activities.

SPECIFIC AIM 4: To provide a structured community and professional bonds that will enable URM students to learn development skills necessary for a successful future in biomedical careers.

SPECIFIC AIM 5: To provide opportunities for undergraduate students, graduate students, and post-doctoral researchers through peer-to-peer mentoring to develop skills in presentation, teaching, and mentoring that will not only maintain their focus on career goals, but also develop skills they will utilize in their future research/academic careers.

SPECIFIC AIM 6: To provide a clear structural career ladder for transitioning URM community college students and college students to graduate school and/or biomedical careers. **This career ladder will include URM transfer students from community colleges of the Metro-Detroit area.**

RESEARCH ENRICHMENT CORE

Specific Aim 1. Integrate research and coursework by facilitating the incorporation of laboratory courses built on the project lab/Research Coordination Network (RCN) model.

Specific Aim 2. Pilot and evolve cross-institutional programs that help faculty a) become more effective mentors of underrepresented and economically challenged students; b) support the development of collaborations; c) build scholarly output from all partners; and d) facilitate enhanced grantsmanship and proposal development from partner institutions.

Specific Aim 3. Strengthen institutional infrastructure and rebuilding to provide enhanced research capacity and facilities that support student and faculty creative work.

REBUILDetroit Evaluation
List of Current Evaluation Goals and Objectives vs. Original
(original approved 08-31-2015)

UNDERGRADUATE STUDENT GOAL: To enhance the academic abilities, research interests, psychosocial preparedness and professional support of REBUILDetroit scholars.

ACADEMIC OBJECTIVES

Student Objective #1.1: 85% of REBUILDetroit scholars will attain a B or higher in their Research Coordination Network course.

Student Objective #1.2: 85% of REBUILDetroit scholars will maintain undergraduate major and overall GPAs of 3.20 or higher by the end of junior year, which will be 0.30 higher than the comparison group.

Student Objective #1.3: The retention rate of REBUILDetroit scholars will be at least 25% higher than the comparison students at the end of each year.

Student Objective #1.4: Transfer students enrolling in the REBUILDetroit program will have first semester GPAs at least 0.20 points higher than the comparison students.

Student Objective #1.5a: At least 50% of REBUILDetroit scholars will graduate with a baccalaureate degree in biomedical science related fields after completing four years of full time study.

Student Objective #1.5b: At least 75% of REBUILDetroit scholars will graduate with a baccalaureate degree in biomedical science related fields within six years.

Student Objective #1.6a: Statistically significantly more REBUILDetroit scholars will graduate in four years compared to the comparison group.

Student Objective #1.6b: Statistically significantly more REBUILDetroit scholars will graduate in six years compared to the comparison group.

Student Objective #1.7a: 50% of REBUILDetroit graduates with a baccalaureate degree in biomedical science related fields will matriculate into biomedical research graduate programs upon graduation.

Student Objective #1.7b: Statistically significantly more REBUILDetroit graduates with a baccalaureate degree in biomedical science will matriculate into biomedical research graduate programs than the comparison group.

PSYCHOSOCIAL PREPAREDNESS OBJECTIVES

New Student Objective #1.8a: 50% of REBUILDetroit scholars will feel less apprehensive about the adequacy of their research skills after completion of their second summer research experience.

Student Objective #1.8b: Statistically significantly more REBUILDetroit scholars will feel less apprehensive about the adequacy of their research skills than the comparison group by the end of their second year in the program.

Student Objective #1.9: REBUILDetroit scholars across all three institutions will be statistically significantly more psychosocially prepared (research self-efficacy and GRIT) than comparison students by the end of their second year in the program.

RESEARCH INTEREST OBJECTIVES

Student Objective #1.10: 50% of REBUILDetroit scholars will show enhanced appreciation for the role of research in academia and American society by the end of their first summer in the program.

Student Objective #1.11: 85% of REBUILDetroit scholars will have high-quality, positive, real-life research experiences by the end of their second summer in the program.

Student Objective #1.12: REBUILDetroit scholars' interest in biomedical post graduate research and nonacademic research opportunities will be statistically significantly greater than comparison students by the end of their second year in the program.

(NOTE: Student Objectives #1.13 and #1.14 were deleted during revisions and do not appear in the final, approved evaluation plan.)

PROFESSIONAL SUPPORT OBJECTIVES

Student Objective #1.15a: 85% of REBUILDetroit scholars will have a greater sense of belonging with a biomedical research community by the end of their second year.

Student Objective #1.15b: REBUILDetroit scholars will have a statistically significantly greater sense of belonging to the research community by the end of their second year than the comparison group.

Student Objective #1.16: 85% of REBUILDetroit scholars will report being satisfied or very satisfied with their research mentoring experiences at the end of their second year in the program.

GRADUATE AND POST DOCTORAL GOALS: To increase the preparedness of graduate students for teaching careers in the biomedical sciences.

POST DOCTORAL OBJECTIVE

Student Objective #2.1: REBUILDetroit post-doctoral fellows will report greater understanding of student learning, Primarily Undergraduate Institutions (PUI) teaching and undergraduate research by the end of their second year in the program than before participating in the program.

Student Objective #2.2: 75% of REBUILDetroit post-doctoral fellows will have artifacts demonstrating competencies in presentation, teaching and mentoring underrepresented students by the end of their time in the program.

GRADUATE STUDENTS

New Student Objective #2.3: By the end of their semester fellowship, at least 80% of REBUILDetroit graduate teaching fellows will report having opportunity, guidance and support toward pursuing science teaching careers.

FACULTY GOALS: Goal #1: To enhance faculty ability to appropriately teach and mentor underrepresented students. Goal #2: To increase the research capacity of faculty across the four institutions.

FACULTY OBJECTIVES

Faculty Objective 1.1: At least 50 faculty will receive mentoring training and 85% of trained REBUILDetroit faculty mentors will be providing culturally-responsive mentoring to their REBUILDetroit scholars by the end of the students' second year in the program.

Faculty Objective 1.2: 85% of REBUILDetroit faculty who teach the Research Coordination Network course will be following an inquiry-based pedagogy for teaching the RCN course at their institution by the end of year two (2016).

Faculty Objective 1.3: 50% of the 30 faculty who participate in REBUILDetroit will report more networking with mentors at other institutions than they reported in year one, by the end of year three (2017).

Faculty Objective 1.4: 50% of faculty at the two PUIs who participate in REBUILDetroit will report improved valuing of scholarship and research by the end of the grant period (2019).

Faculty Objective 2.1: 25% of REBUILDetroit faculty from PUIs will report stronger curriculum vitae than they reported at the end of year one, by the end of the grant period (2019).

Faculty Objective 2.2: 25% of REBUILDetroit faculty will report more involvement in research with faculty at other institutions than they reported in year one, by the end of the grant period (2019).

Faculty Objective 2.3: 10% of the REBUILDetroit faculty will report greater understanding of their career and research goals than they reported in year one, by the end of the grant period (2019).

INSTITUTIONAL GOALS: Goal #1: To improve the research environment at all institutions to make them more conducive to student learning. Goal #2: To identify and ameliorate institutional barriers to student success.

Institutional Objective 1.1: By the end of year one (2015), the Research Coordination Network course at all three institutions will be designed or revised to give students the opportunity to design and carry out experiments and to teach them that trying and failing is part of the scientific research process, which, in turn, will lead to students being less apprehensive and more adequate in their research skills and more psychologically prepared (research self-efficacy, social integration and GRIT) than the comparison group.

Institutional Objective 1.2: All three institutions will have flexible physical spaces within which REBUILDetroit scholars can work on independent projects with their faculty mentors by the end of year two (2016).

Institutional Objective 1.3: By the end of the grant period (2019), 25% of REBUILDetroit faculty from the two PUI institutions will report greater use of research facilities at the research partner (WSU) and that the use of these facilities enabled them to engage in cross-institutional research, network more with

other faculty mentors, value scholarship and research more, and refine their understanding of their own career and research goals.

Institutional Objective 2.1: Each of the three institutions will have identified and ameliorated at least one institutional policy or procedure that presents a barrier to student recruitment, introduction to biomedical careers, retention or post degree education and/or job placement by the end of the grant period (2019).

Institutional Objective 2.3: The number of biomedical science-related articulation agreements across the three institutions will increase by 10% from year one, by the end of the grant period (2019).