

DRAFT: STUDENT RESEARCH – ACADEMIC YEAR RESEARCH

Inputs	Strategies	Outputs	Outcomes		Impacts (Long Term-Conditions)
			(Short Term-Learning)	(Medium Term-Action)	
Laboratory space Equipment Students from W&M, HBCUs, and TNCC Faculty mentors Funds to support student research grants of \$500 each (HHMI) Faculty Advisory Committee Expertise of financial aid officers Online system for submitting and reviewing student research grant proposals Salary support from institution Departmental support Mechanisms for tracking and evaluation	Provide options for students to continue their summer research projects throughout the academic year Establish a program whereby students from disadvantaged backgrounds receive work study and/or scholarship funds to pursue research during the academic year Develop collaborative partnerships to allow HBCU or TNCC students to continue their research at either their home institution or at W&M Promote informal interactions between W&M and the other institutions to promote research-related activities among faculty and students Offer competitive student research grants Structure application process to develop professional scientific writing skills Implement a “peer review” and faculty feedback process of student research grant proposals	Number of underrepresented students and students from disadvantaged economic backgrounds who continue their research during the academic year List of research projects Number of informal opportunities to collaborate with partner institutions Number of students who submit and are awarded grant proposals to support research during the academic year Number of students who participate in the “peer review” of grant proposals Number of faculty members who provide feedback on student reviews	Students develop writing skills in competitive proposals that communicate their research project and the overall significance of the research Students learn scientific and critical learning skills through participation in a “peer review” process of grant proposals with follow-up faculty feedback Students continue to develop increasingly sophisticated scientific research skills Students’ attitudes toward research become increasingly positive	Students coauthor publications and develop ideas for competitive grant proposals Students, especially those from underrepresented groups and disadvantaged backgrounds, have greater opportunities to engage in substantive research experiences Students value continuity in long-term research projects Students apply to graduate school Institutions develop lasting mutually beneficial collaborations with HBCUs and community colleges	Students are engaged in science-related activities and professions Students are committed to the pursuit of collaborative scientific research Students value integration of scientific research across levels of a discipline Students and faculty are inspired to greater success and contribute to the scientific community Students from underrepresented groups and disadvantaged backgrounds are retained in the sciences Faculty engage in collaborative research with faculty from other institutions and across levels of biological organization Faculty are successful in winning multi-institutional grants Institutions cultivate synergistic partnerships to leverage resources and promote undergraduate research Institutions place a high value on providing significant undergraduate research as part of the institution’s culture

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Evaluation Questions for OUTCOMES	Possible Indicators/Measures	Possible Data Collection Methods and Information Sources	Rank/Priority (include brief rationale)
<ol style="list-style-type: none"> 1. Does sustained research during the academic year enhance interest in science, further develop student appreciation of the research enterprise, and result in advanced student research skills and knowledge of the discipline? 2. Does the application and peer review process contribute to scientific communication and critical learning skills? 3. Are needs of students from underrepresented groups and disadvantaged backgrounds addressed in the program? Do collaborative partnerships encourage students from HBCUs and TNCC students to pursue research during the academic year? 4. Does the academic year research experiences and collaborations result in long term success of both the students and faculty members? 	<ol style="list-style-type: none"> 1 <ol style="list-style-type: none"> a. Students involved in academic year research select and continue in science majors b. Students describe research as a collaborative and long-term pursuit c. Students who participate in sustained research perform well in science classes d. Knowledge and skills are demonstrated in student research projects and summary of results e. Students express enthusiasm for conducting research 2 <ol style="list-style-type: none"> a. Student “peer reviewers” enhance their critical thinking and scientific reasoning skills as a result of the review process and faculty feedback 3 <ol style="list-style-type: none"> a. The work-study and grant arrangements increase access to and participation in research opportunities for students from disadvantaged backgrounds b. Increasing numbers of students from HBCUs and TNCC pursue research through collaborative partnerships c. Students from underrepresented groups and disadvantaged backgrounds apply to graduate or professional school 4 <ol style="list-style-type: none"> a. Faculty-student teams acquire and prepare data for grants, presentations and publication b. Faculty obtain external funding c. Students and faculty publish research results d. Students and faculty present talks at meetings e. Students pursue post-graduate work in science related fields f. Students excel in academic and professional pursuits g. Institutions develop lasting mutually beneficial collaborations that improve opportunities for publication with student coauthors and development of ideas for competitive grant proposals 	<ol style="list-style-type: none"> 1. <ol style="list-style-type: none"> a. Transcripts b. Student records c. End of year questionnaire d. W&M Senior Survey e. Annual student updates f. SURE/CURE g. Annual mentor reviews h. Self evaluations i. Focus group interviews j. Interviews 2. <ol style="list-style-type: none"> a. Peer reviews b. Faculty feedback c. Interviews d. End of year questionnaires e. Self evaluations 3. <ol style="list-style-type: none"> a. Tracking data from W&M HHMI online system b. Historical trends of participation c. Graduate school applications d. Mentor survey e. Annual student update 4. <ol style="list-style-type: none"> a. Exit questionnaire b. Publications, presentations, grant funding c. Student research tracking; publications and presentations from students d. Performance review e. CVs f. Funder’s reports g. Student academic and professional awards h. Invited talks on both science and pedagogy i. Undergraduate long term tracking e.g. PhD programs entered j. Collaborations outside of W&M k. Activity on the W&M/HHMI website 	<p>Evaluation questions are ranked in order of how quickly an effect is expected to be seen. However data for all outcomes will be collected simultaneously.</p>