

Project Summary

Noyce Program Track: Track 1: Scholarships and Stipends; **Project Title:** Carver Teaching Initiative (CTI) Robert Noyce STEM Teacher Scholarship Program (CTI Noyce Program); **Host Institution:** Indiana University-Purdue University Indianapolis (IUPUI); **Target Community:** Secondary schools in three high-needs metropolitan districts located in Central Indiana; **Number of Participants:** 50-90 freshman and sophomore STEM majors; 25 junior and senior STEM majors; and 15 beginning teachers

Overview. The *Carver Teaching Initiative* (CTI) at IUPUI proposes the establishment of a CTI Robert Noyce Teacher Scholarship Program aimed at (a) increasing the number and diversity of STEM teachers in three high needs partnering districts (MSDPT, MSDLT, and MCS) and (b) retaining these teachers through the first years of their professional work. To realize this aim, CTI (which is a collaborative partnership of one university, four units within that university, three local educational agencies, one charter school, one private school, and one professional teaching association) will work to (a) increase and diversify the available pool of high-achieving STEM majors, by providing 90 STEM research teaching internships to high-achieving, STEM majors; (b) increase and diversify the number of STEM graduates with secondary certification by providing two-year scholarships for 25, high-achieving, STEM majors; and (c) increase the number of new graduates who engage in new teacher induction by providing new teacher induction program incentives for 10 graduates.

Intellectual Merit. The collaborators that comprise CTI have worked extensively to increase and diversify the STEM teaching workforce in their respective areas even prior to their collaboration. Taken together, the expertise of the collaborators is comprehensive. Practice-oriented, empirical, and theoretical expertise have all converged to provide a set of principles which serve to guide this project. Specifically, underrepresented minorities are more likely to be attracted to STEM teaching when there is aggressive recruitment, sustained engagement (throughout undergraduate study), culture specific STEM pedagogy, and professional engagement. The CTI Robert Noyce Teacher Scholarship Program will foreground these four principles in the implementation of the program, and will assess the impact of these four principles in the evaluation of the program. In this way the CTI Robert Noyce Teacher Scholarship Program will provide a space for empirical exploration and description of practice that will inform STEM teacher education.

Broader Impact. This program will (a) increase the number and diversity of STEM teachers in Central Indiana, (b) increase and diversify the pool of potential STEM teachers, (c) equip a core of STEM teachers in Central Indiana to meet the educational needs of students in high-needs schools by providing culturally relevant STEM education, and (d) advance the knowledge base of STEM teacher educators nationally on strategies for recruiting, retaining and supporting underrepresented minority STEM teachers. The CTI Noyce Scholarship Program will directly impact approximately 75-115 STEM majors (25 who will graduate with teaching licensure and 50-90 who will participate in STEM teaching internships). We also expect the project will have broader pedagogical, educational, and cultural impacts in multiple ways. First, this initiative will result in greater numbers of STEM teachers (including ethnic minority teachers) working in high needs districts. At present the number of underrepresented minority STEM teachers is very low. In the state of Indiana, for example, fewer than 3% of all practicing teachers are African American. This number is even lower when looking at the number of African American STEM teachers. Given the current paucity of minority STEM teachers even modest numbers of graduates would have a profound impact. Second, teachers prepared through the CTI Noyce Scholarship Program will have extensive grounding in using culturally relevant STEM pedagogy. This model is aimed at helping stimulating STEM interest among minority STEM learners. A third impact will be the scholarship that develops around the preparation of STEM teachers for STEM teaching careers. Despite the low numbers of minority STEM teachers, there is very little research in this area. Insight developed from the CTI Noyce Scholarship Program, will be shared with STEM teacher educators through regional, national, and international research and practitioner conferences and through publication in STEM and STEM education journals. Our dissemination efforts should position other STEM teacher educators to replicate successful approaches and to avoid unsuccessful approaches.