Project Description

Title: *Minority Student Pipeline Math Science Partnership (MSP)²*

Lead Partner: Bowie State University

Additional Core and Supporting Partners: Prince George's County Public Schools (PGCPS); University System of Maryland (USM), University of Maryland College Park (UMCP); University of Maryland Biotechnology Institute (UMBI); Prince George's Community College (PGCC).

This project, *(MSP)²*, proposes to establish a strong, multifaceted partnership among the essential P-16 players in one of the largest minority-majority counties in the country: Prince George's County, Maryland to expand the minority student pipeline in to STEM fields in higher education using four separate strategies involving STEM faculty targeted at multiple populations (teachers and students):

- Working with approximately 750 teachers over the five years in 4-8th grades, science faculty at UMCP and PGCC will develop two different types of professional development programs designed around principles of teaching and learning through inquiry science.
- A total of 110 high school science teachers will engage in summer research experiences over five years with UMCP, UMBI and BSU faculty. UMBI will guide partners in establishing learning communities for participating teachers built on the lessons learned from their previously funded ExPERT program.
- At least 375 high school students over five years will be offered opportunities to take challenging science courses through an innovative early college/dual enrollment program to be developed collaboratively by PGCPS with BSU and PGCC.
- 100 undergraduate underrepresented minority students will be offered opportunities for undergraduate teaching experiences (with 100 PGCPS science teachers to mentor them) and 50 undergraduate research experiences through BSU over 5 years.

PGCPS requested that we target this proposal to science only, since the State and county have provided funding to improve mathematics instruction in the schools.

Intellectual merit:

Inquiry instruction, when done properly, is not only a proven method of improving student learning, it is also inherently suited for reducing the achievement gap by requiring the active participation and interactive engagement of all students. This project will build on most current research in teaching and learning and upon recommendations from the National Academies of Science and the National Science Board that demand a rethinking of approaches to K-8 science curriculum, instruction, and assessment. Their overarching recommendation is that K-8 education should be coordinated around "doing science." *(MSP)²* is designed around a research plan that will compare different models of inquiry-driven professional development. In addition, the project will evaluate the impact of science teacher summer research experiences, and the impact of challenging courses and curricula on the STEM minority pipeline from PGCPS into higher education in Maryland.

Broader Impact:

Minorities are underrepresented in STEM disciplines at every level from secondary science and mathematics courses through graduate school. Lack of preparation in mathematics and science among underrepresented minority groups in the early elementary grades undermines enrollment and success in secondary-level school programs and, ultimately, in college and career choices later in life. Prince George's County is one of the largest majority-minority school systems in the nation, with 132,000 students enrolled in grades K-12 (76% African American, 15% are Hispanic). If ever this nation seriously hopes to address the opportunities and the challenges of fostering a robust pipeline for bringing underrepresented minority students into STEM professions and fields of study, Prince George's County offers a worthy case study for such an effort.

Indicators of Success

- Goal 1: Increase the number of minority and other underrepresented students who enter science disciplines
- Goal 2: Improve the ability of science teachers in elementary, middle, and high schools to effectively teach science to underrepresented minority students
- Goal 3: Increase and reward STEM faculty participation in ongoing professional development partnerships with K-12 teachers