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Summer Research Institute for Diversity in Biomedical Science

Dwight E. Lewis
Purdue University
Detris T. Honora
Southern University, Baton Rouge

"At Purdue University, we have recently developed a Summer Research Institute with the goal of establishing a new paradigm for advancing minority students toward graduate school and on to careers in research and teaching."

Summer research opportunities have been offered to undergraduate minority students since the early 1980s. The initial efforts were designed to introduce students to research careers by providing experiences in laboratories and centers, with a faculty member as their mentor. Summer programs, such as those traditionally offered at Purdue and many other institutions, are helpful, but often do not have the intended impact.

Students enjoy the socialization as they are carefully taught the techniques, but often leave still in awe of the research enterprise. Although they have completed a skillfully crafted research project during that time, they still do not consider themselves to be part of the system. In similar ways, motivated students of color were identified, offered places at research institutions and assigned research mentors. Activities in these programs have focused mainly on one-on-one relationships and the development of research and technical skills. What the National Institute of Health has found is that research training conducted in this way has not worked to produce minority faculty who are applying for the top NIH R-1 grants.

At Purdue University, we have recently developed a Summer Research Institute with the goal of establishing a new paradigm for advancing minority students toward graduate school and on to careers in research and teaching. This program seeks to answer the question: What does it take to bring a student into the world of research? Many intelligent undergraduate students of color come into a laboratory in awe of the research experience. By keeping the students in our program in groups which worked together on a task, we sought to build the confidence of individual students while developing their research skills, thus enabling them to enter a research laboratory prepared to effectively meet the vigorous demands of basic biomedical research.

The key challenge to overcoming barriers and finding ways to tomorrow's opportunities is to build the capabilities of the students who in turn will become our future leaders. These core skills are the gateway to student's careers as scientists. One of these core areas of competency is working in the laboratory on the fundamentals of research.

This project-oriented laboratory taught the students basic techniques including DNA isolation, restriction digestion, cloning and bacterial manipulation. There was also emphasis on analytical writing and communication and considerable time was spent working on the development of computer models. Some deficiencies were determined

with pretest analysis. Students were taught the fundamentals of research in a carefully-controlled environment. An intensive program was provided to train students as proficient researchers while increasing their interest in pursuing research careers in academia.

Students completed three GRE sessions designed to improve their overall verbal, quantitative and analytical skills by teaching test-taking strategies and assisting each student in gaining an accurate perception of his/her strengths and weaknesses. Each session included individual instruction on each section of the GRE. As part of the quantitative assessment of the program, students completed a pre- and post-GRE. The pre-exam, administered during the first week of the program, yielded an average score of 1316. The post-test, administered during the seventh week, yielded an average score of 1455. There was an overall increase of 139 points between pre- and post-GRE scores. This compares to an increase of 2060 points by other GRE study programs.

The English component of the program was designed to guide students through the process of preparing a credentials packet for graduate school admissions. This short-course was taught in a computer classroom. The writing assignments included a personal biography and the personal statement with sessions for this component being held in two hour segments, once a week. The personal statement instruction proved most beneficial to students. Students determined which of their academic experiences would be most relevant for the audience (i.e., graduate admissions committee members) and were assisted in constructing a concise, clear presentation.

The need to develop and improve summer research programs is important to the overall scientific enterprise. In order to realize an increase in the number of scientists at Research 1 institutions, our model and others like it must be successful. We increased the skill level, drive and techniques of all the students in this program along with their communication and writing skills. As part of the evaluation of our Summer Institute, we are tracking the long-term effects of the institute on these students as they matriculate to graduate school, and finally into academia. They were introduced to opportunities we hope will lead to further academic study.

PRESENTERS

Dwight E. Lewis is director of Minority Affairs in the Office of Vice President for Research and Dean of the Graduate School of Purdue University. He has substantially improved the overall competitiveness of the University with new and continuing programs that have been developed and coordinated by his office. The most successful of these, the Historically Black Institution (HBI) Visitation Program, has helped increase Purdue's enrollment to record levels. Mr. Lewis has developed a successful recruitment program in the Graduate School and has increased minority enrollment by 200% over the last 11 years, with a record enrollment being achieved in nine of the last 11 years.

Mr. Lewis holds two master's degrees from Purdue University and is working on a doctorate in education. He has acquired excellent leadership experience being the founder or co-founder of key programs and organizations at Purdue, i.e., a minority student

organization in science, the Black Graduate Association, the MARC/AIM program (now run out of the Graduate School) and the successful HBI Visitation Program.

Mr. Lewis's community activities are extensive, including serving three years as Chair of Purdue's Black Faculty and Staff Caucus. He is also a Vice President of the National Family Partnership of Indiana, an organization that fights drug use and teenage drinking.

Honors include: Outstanding Young Men of America, 1980, 1983; Upjohn Service Award, 1981; Fellowship from Purdue University, 1982; Service Award from Black Cultural Center, 1983; Outstanding Leadership Award, Presidents' Affirmative Awards, Purdue University, 1991; McKinley High School Football Hall of Fame Enshrinee, 1995; Recognition Award, Purdue University, 1997.

Detris T. Honora, Assistant Professor of Psychology at Southern University, Baton Rouge, La., works as an organizational consultant on issues relating to recruitment and retention efforts and to school climate for students of color at predominantly white institutions. Dr. Honora's current research interests focus on the future aspirations of low-income urban and rural African American adolescents, current program evaluation efforts for Headstart and the recruitment and retention of students of color. She attained her Master of Science degree in Community Agency Mental Health Counseling at Purdue University and her doctorate of Education at the Harvard University Graduate School of Education in Human Development and Psychology. Dr. Honora teaches developmental psychology and psychological research methods.