

THE NASA ASTROBIOLOGY INSTITUTE - MINORITY INSTITUTION RESEARCH SUPPORT PROGRAM: SUPPORTING THE NEXT GENERATION OF

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Introduction: The NASA Astrobiology Institute Minority Institution Research Support (NAI-MIRS) Program was created by NAI to broaden the participation of faculty and students from Minority Serving Institutions. The program was designed to (1) provide support and training in astrobiology to the next generation of researchers; and (2) provide sabbaticals, follow-up support, and travel opportunities for faculty and students from minority institutions. The purpose of this initiative is to increase the attendance and participation of underrepresented scientists (a) in astrobiology research laboratories, publications and grants, (b) at professional conferences, and (c) as NAI Team members. To date, the NAI-MIRS program, through its partnership with Minority Institute Astrobiology Collaborative, has involved members from the three major minority serving institutions (MSIs): Tribal Colleges and Universities, Historically Black Colleges and Universities, and Hispanic Serving Institutions. Collectively MSI's in the United States enroll more than two million students of color each year. The NAI-MIRS program is helping to increase awareness of astrobiology at these institutions and encourage MSI faculty and students to pursue this field of work. This presentation will highlight the successes and challenges in identifying talented researchers, and fostering astrobiology research and education within minority communities. This presentation will also discuss ways established in which astrobiology research programs can participate in the NAI-MIRS program as well as the successes of the NAI-MIRS funded scientists.

Program Evaluation

It is a good experience that not only allows one to pursue research interests but also to make valuable connections in the field. In a nutshell, the NAI-MIRS research sabbatical helped my career.
- Survey responses, NAI-MIRS Fellows

In 2009 the first systematic evaluation was conducted to determine how well the NAI-MIRS program was meeting its objectives and to answer research questions about the benefits of the sabbatical research experience. The

evaluation covered the years 2002 – 2008. During this period there were a total of 10 sabbatical awards given. Six of the recipients were from HBCUs, 3 from HSIs and 1 from a Tribal College. The evaluation was guided by the following research questions:

- Does the Faculty Sabbatical program enable recipients to become more effective scholars, evidenced through published research and grants?
- How conducive is the environment at the host institution in nurturing the skills and research capability of the awardee?
- How successful is the host institution in helping the awardee to expand their collaborations with astrobiology researchers nationally and internationally?
- Do the awardees promote astrobiology careers for students through courses or research opportunities at their home institutions?

The evaluation strategy used to measure the program impact was a five level framework based on the theoretical work of Guskey [1] and Kirkpatrick & Kirkpatrick [2]. Data were analyzed to determine the fidelity of the implementation in light of proposed goals and the program impact on the various stakeholders. The NAI-MIRS program is built on collaboration among faculty and students at minority serving universities with astrobiologists at their research sites. The NAI-MIRS program addresses the broad issue of how to bring minority candidates into the STEM pipeline for careers in astrobiology.

Data collection. Data collection included a review of program goals and records from 2002 to 2008, web-based surveys and interviews. The web-based anonymous surveys were emailed to 10 Fellows and 9 Hosts from past years. Responses were received from 7 Fellows (70% response rate) and 3 Hosts (33% response rate). Survey findings and follow-up telephone interviews with two NAI-MIRS Fellows were conducted and analyzed.

Evaluation findings. The evaluation findings suggest that the NAI-MIRS program is a powerful springboard to launch NAI-MIRS fellows into scientific and career achievements. A second important benefit of the program is to bring promising minority undergraduate and

graduate students into advanced astrobiology research and career opportunities. This success is possible because of 1) collaboration among faculty, students, and hosts at astrobiology research sites and with others in the astrobiology community 2) the generosity of hosts through technology transfer; 3) continued collaboration after the fellowships ends; and 4) the ability of the NAI-MIRS awardee to serve as a culturally relevant science faculty mentor for students. The structural elements that contribute to the program's success are flexibility in the timing of the sabbatical and the problem-solving approach by the TSU NAI-MIRS administrators. One participant compared the NAI-MIRS successful model to the unmanned spacecraft missions: *smaller, faster, better* especially in contrast with expensive programs aimed at minority students that produce few results. Suggestions for sustainability of this program are to create follow-up next-step opportunities for NAI-MIRS fellows after the sabbatical ends such as mini research sabbaticals for faculty and students, support for faculty research laboratories at their home institutions, continued collaboration with scientists and NAI-MIRS fellows, participation in large research grants, and developing special tenure track positions for minority scientists at state universities.

References: [1] Guskey, T. (2000) *Evaluating Professional Development* Corwin Press, Inc. [2] Kirkpatrick, D.L. & Kirkpatrick, J.D. (2006) *Evaluating Training Programs: The Four Levels*. San Francisco, CA: Berrett-Koehler.