



Office of Research and Development's (ORD)
May 2007 Response to the Board of Scientific Counselors (BOSC)
October 2006 Final Report that Reviews ORD's Science to
Achieve Results (STAR) and Greater Research Opportunities (GRO)
Fellowship Programs

BOSC STAR/GRO Fellowship Program Subcommittee:

Clifford Duke (Chair), Ecological Society of America
Claudia Sturges Scott (Vice Chair), Consultant
John Adgate, University of Minnesota
Gary Barrett, University of Georgia
Richard Carson, University of California, San Diego
Costel Denson, Costech Technologies, L.L.C.
Nikola Garber, National Oceanic and Atmospheric Administration
Donald Scavia, University of Michigan
Consultant: John Hall, Morehouse College

Submitted By:

Stephanie Willett, Team Leader, STAR/GRO Fellowship Programs
National Center for Environmental Research
Office of Research and Development

**ORD Response to the Board of Scientific Counselors (BOSC)
Review of the STAR and GRO Fellowship Programs**

The Board of Scientific Counselors (BOSC) Science to Achieve Results (STAR)/Greater Research Opportunities (GRO) Fellowship Subcommittee performed a review of the Office of Research and Development's (ORD) STAR and GRO Fellowship Programs in 2006. As part of the review, the subcommittee conducted three conference calls prior to convening a face-to-face meeting, which was held on March 2–3, 2006, in Washington, D.C. After one subsequent conference call, the subcommittee finalized their draft report. It was vetted by the BOSC Executive Committee and submitted as a final report to ORD by the Executive Committee Chair in October 2006.

Following is a narrative response to the recommendations provided by the BOSC in their October 2006 report. The BOSC recommendations are listed below in italics under the most relevant charge question. The ORD response follows each recommendation.

Charge Question 1: The stated purpose of the STAR Graduate Fellowship Program is to encourage promising students to obtain advanced degrees and pursue careers in an environmental field, a benefit to both the public and private sectors. Has the STAR Graduate Fellowship Program produced the desired outcome? Please make recommendations for enhancing the potential for future positive outcomes.

“Overall, the Subcommittee finds that the fellows funded by the STAR and GRO programs have made excellent contributions in environmental science and engineering, and a number of them continue to be employed in the environmental field in academia, consulting, and government (EPA and other agencies). Although other federal agencies fund a number of fellowship programs, none are dedicated exclusively to the environmental sciences and engineering. Therefore, the EPA programs are clearly of value to the Agency and the nation in helping to educate the next generation of environmental scientists and engineers. This conclusion is based on extensive, but primarily anecdotal, data regarding program outcomes that EPA provided to the Subcommittee.” The Subcommittee recommends that EPA take several steps to improve its program data collection and hence its ability to evaluate outcomes:

1A) Develop an overall information collection strategy, which includes design of an appropriate database.

Response: ORD will adopt recommendation 1A.

The stated goals of the STAR Fellowship Program are: (1) to encourage promising students to obtain advanced degrees and (2) to pursue careers in an environmental field. With the introduction of the Fellowship Information Inventory (FII), which was discussed in our March 2, 2006, meeting with the BOSC, ORD has already begun collecting critical pre- and post-fellowship information on fellowship recipients. This database will be modified to make it more

user friendly or will be merged into a larger ORD database. Additional personnel/resources will be dedicated to data collection, input, and analyses. To measure attainment of the first goal, ORD considers the number/percentage of fellowship recipients who earn a master's or doctorate degree to be an appropriate metric. To measure attainment of the second goal, ORD considers working in an environmentally related career to be an appropriate metric. We will report on these outcomes every three to five years. Since a significant portion of fellowship recipients may not receive their degree while they are in the fellowship program, a valid approach to data collection, analyses, and reporting will need to be adopted. To the extent applicable, ORD will follow program evaluation guidance produced by the Academic Competitiveness Council to assess program effectiveness. For additional information on this interagency work group chaired by the U.S. Department of Education, see <http://www.whitehouse.gov/OMB/memoranda/fy2006/m06-24.pdf>.

1B) Require fellows to submit an up-to-date resume annually for at least 5 years from the conclusion of the fellowship.

Response: ORD will adopt recommendation 1B, providing it is consistent with all EPA policies and procedures, and assuming that collecting these data is not cost prohibitive. ORD will either require that fellowship recipients provide an up-to-date resume or obtain this information another way.

1C) Require universities with fellowship recipients to provide the basic initial information for the database at the conclusion of the 2- or 3-year fellowship period.

Response: ORD cannot adopt recommendation 1C. Since funds are awarded directly to students, the Universities cannot be obligated to provide this information.

1D) Provide greater resources for the STAR Fellowship Program, both to address the increased number of applications that this change would produce and to fund a greater percentage of those applications rated excellent.

Response: In developing its annual budget, EPA seeks to balance its resource needs with those included in the overall Federal budget and the need to be a good steward of taxpayers' funds. Given changing economic conditions, growing entitlement spending, and financial commitments to the President's priorities, the current budget climate is challenging. EPA continues to believe the STAR Fellowship Program is an important part of its extramural research program.

1E) Consider increasing the graduate fellowship expense budget.

Response: ORD will consider adopting this recommendation, although increasing the fellowship expense budget, while assuming a fixed budget, will mean fewer fellowships.

1F) Consider seeking additional funding within the next few years to maintain the value of the individual fellowships without resorting to funding fewer fellows.

Response: ORD will devise a Fellowship Program Strategic Plan that will include the feasibility of collaborative efforts with other federal agencies and other organizations to increase the resources available for funding fellows. See also 1D above.

1G) Add a mentoring component to the program so that there is a specific individual within EPA who would serve as a resource for the fellow. The mentor could complement the function of the student's academic advisor by, for example, helping the fellow find opportunities that expand his or her graduate school experiences and serving as a professional resource regarding career opportunities in federal agencies. The Subcommittee recommends that ORD solicit mentor volunteers from throughout EPA, matching professional staff with the fellows' fields of investigation. This strategy would bring increased visibility to the STAR and GRO Fellowship programs within the Agency.

Response: ORD will adopt recommendation 1G on a pilot basis. Scientists and managers in the Research Triangle Park, NC, office have agreed to pilot the development of a mentoring component, initially with a small group of graduate fellowship recipients. If successful, the mentoring component will be expanded.

Charge Question 2: The GRO Graduate Fellowship Program, like its predecessor, the MAI Graduate Fellowship Program, is intended to strengthen the graduate environmental research capacity of institutions of higher education that receive limited funding to build such capacity, especially institutions with substantial minority enrollment. Has the GRO Graduate Fellowship Program fulfilled its purpose? Are there barriers or obstacles that prevent EPA from fully reaching this goal? Please make recommendations for enhancing the potential for future positive outcomes.

“Overall, the Subcommittee finds that the fellows funded by the STAR and GRO programs have made excellent contributions in environmental science and engineering, and a number of them continue to be employed in the environmental field in academia, consulting, and government (EPA and other agencies). Although other federal agencies fund a number of fellowship programs, none are dedicated exclusively to the environmental sciences and engineering. Therefore, the EPA programs are clearly of value to the Agency and the nation in helping to educate the next generation of environmental scientists and engineers. This conclusion is based on extensive, but primarily anecdotal, data regarding program outcomes that EPA provided to the Subcommittee.”

2A) Consider eliminating both GRO Fellowship programs, while at the same time improving marketing of the STAR Fellowship Program to minority-serving institutions to encourage applications for graduate support from underrepresented groups.

Response: ORD will consider recommendation 2A. The GRO Fellowship programs serve a small but important role in the development of future environmental researchers and practitioners and collaborative communities, and they contribute to increasing the national research capacity among institutions that may not otherwise have access to such opportunities and resources. ORD will explore all policy options currently available to us to help achieve these objectives, including collaborating with other federal agencies and organizations to maximize outreach to underrepresented groups.

2B) *If the GRO programs are maintained, review the impacts of its 2003 determination that competition for program awards cannot legally be limited to minority serving institutions.*

Response: ORD will initiate a re-assessment of the 2003 determination.

Charge Question 3: The GRO Undergraduate Fellowship Program, like its predecessor the MAI Undergraduate Program, is intended to strengthen the undergraduate environmental research capacity of institutions of higher education that receive limited funding to build such capacity, especially those with substantial minority enrollment. By providing quality environmental education support for undergraduate students, it was hoped that recipients would pursue careers in environmentally related fields beyond the baccalaureate level. Has the GRO Undergraduate Fellowship Program fulfilled its purpose? Are there barriers or obstacles that prevent EPA from fully reaching its goal? Please make recommendations for enhancing the potential for future positive outcomes.

3) *To provide sufficient resources to make a real impact on capacity building for undergraduate education, consider devoting the combined resources from both GRO Fellowship programs to fund competitively selected regional consortia, which would be designed to focus on environmental science opportunities for undergraduates.*

Response: While ORD will consider recommendation 3, we are concerned that a consortium could pose a high administrative burden and provide no assurance that our program goals will be reached. ORD prefers instead to increase its outreach and communication about the GRO fellowships within regions that have institutions that are most likely to benefit from the undergraduate program. ORD will also explore collaboration with other federal agencies and organizations.

Charge Question 4: Please review the fellowship recipient selection process and current decision criteria. Do they assure selection of high-quality fellowship recipients performing scientific research in areas that best support the Agency's mission? Please make recommendations for improvements.

4A) *Update the descriptions of the evaluation and selection criteria in the funding announcements to clearly describe the criteria employed in each step of the review process, to ensure transparency and fairness for all applicants.*

Response: ORD has adopted recommendation 4A. The 2007 RFA included a more detailed description of the evaluation and selection process, including more specifics about the EPA programmatic (internal) review. This information will continue to be communicated and refined in future RFAs.

4B) Broaden the categories used to sort applications to encompass emerging interdisciplinary fields of study, and consider making the categories used to sort the STAR Fellowship Program and the GRO Graduate Fellowship Program applications identical. Such consistency would allow for continuity and overlap of reviewers in the non-EPA expert panels as well as a clearer comparison of the two programs.

Response: The STAR and GRO research categories have been identical since 2005, with reviews for the STAR and GRO fellowship applications being conducted at the same peer review meeting. ORD reviews the fellowship solicitation research categories yearly. The research categories are chosen not only to reflect shifting Agency priorities but also to facilitate the external review process. The research categories in the upcoming 2008 RFA reflect our latest revisions. The current categories do not preclude emerging interdisciplinary fields; they are designed to accommodate the review of possible interdisciplinary research fields while also maintaining a manageable number of review panels. Applicants are asked to identify a single appropriate category for their proposed research, whether it be single or multidisciplinary, thereby ensuring an appropriate review.

Charge Question 5: Part of ORD's mission is to perform research and development to identify, understand, and solve current and future environmental problems. As such, an inherent outcome of the STAR and GRO Graduate Fellowship Programs is to produce basic and applied research results usable by EPA and others for decision making and/or policy development. Has this outcome been obtained? How can the programs be enhanced to produce results relevant to environmental protection?

5A) Review and compile the publication records of fellows. Although a comprehensive review may be a daunting task, such information should be readily available from resumes, which the Subcommittee recommends requiring fellows to periodically update annually for at least a 5-year period following the end of the fellowship. Other potential sources of this information include the Thomson ISI Web of Science, which provides citation records; Google Scholar, which provides some similar information without charge and also links to citations in the gray literature; and EPA itself, through searching EPA reports for citations of fellows' work.

Response: ORD will adopt recommendation 5A. We have performed a preliminary assessment of publication rates of former fellows, which indicates the importance of a retrospective analysis of this nature.

5B) Require that fellows provide links to their professional Web pages in the information that they submit to EPA. Such pages, particularly for those in academia, often provide a wealth of information on publications and other accomplishments of the pages' owners. EPA could add links to these home pages on an Agency Web site.

Response: ORD will adopt recommendation 5B. This information has been requested for the most recent fellows. ORD will also increase its efforts to acquire this information from fellows in the future.

Charge Question 6: Since the inception of the fellowship programs, assuring diversity among fellowship recipients has been a goal of ORD. Please comment on the practices, resources, and effectiveness of the Center's outreach efforts and make recommendations for enhancing the potential for positive outcomes in the future.

6) Consider the following as potential metrics as data become available: (1) The number of minority students who obtain advanced degrees in environmental disciplines; (2) the distribution or dispersion of students across eligible institutions, i.e., the concentration of fellowship recipients among colleges and universities; and (3) the number of awards to students pursuing master's degrees relative to the number of awards to students pursuing doctoral degrees.

Response: ORD will adopt recommendation 6. ORD already collects and analyzes data on metrics 2 and 3 above. ORD will report on metric 1 above in the future. See also the responses to recommendation 1A above.

Charge Question 7: Please review the fellowship programs' resources, information management, and communication processes and procedures. Are there any recommendations for program improvements or sustainability?

7A) To strengthen communication efforts, develop a user-friendly Web site for fellows and a listserv that will encourage easy communication among them and between EPA and each fellow. In addition, the upgraded database will allow fellows and alumni to track each other; to reach colleagues who can collaborate with them on projects, grants, and speaking opportunities; and to link with EPA after their fellowship is completed.

Response: ORD will adopt this recommendation. The Fellows Forum, a virtual community for current fellows, is under development and will be launched in the very near future. This virtual community will be managed and maintained with significant involvement of the fellows.

7B) Market the STAR Fellowship Program strategically to minority communities and institutions of higher education. If EPA acts on the Subcommittee recommendation to eliminate the GRO Graduate Fellowship Program, it will be even more vital to increase the marketing of the STAR Fellowship Program to insure diverse representation in that program. There remains a lack of data verifying that the STAR Fellowship Program has successfully reached under-represented minority populations.

Response: ORD will adopt the recommendation to market its fellowship programs more strategically to minority communities and institutions of higher education. Future communication and outreach strategies will be a part of the Fellowship Program Strategic Plan.

7C) Enhance efforts to increase the number of applicants to the GRO Undergraduate Fellowship Program. If the current program is replaced by the consortium approach recommended by the Subcommittee, expanded outreach would be a key function of the consortia.

Response: ORD will adopt the recommendation to expand outreach but will not seek to form a consortium at this time. See also recommendations 2A, 2B, and 3 above. Future communication and outreach strategies will be a part of the Fellowship Program Strategic Plan.

7D) Work more effectively to communicate awards, results, and successes to a variety of audiences, including Congress and sponsoring institutions.

Response: ORD will adopt recommendation 7D. Significant progress has been made in this area in recent years. Current practices include yearly notification of fellowship awards to appropriate Congressional members and systematic communication to the local press where fellowship recipients live. Future communication and outreach strategies will be a part of the Fellowship Program Strategic Plan.

7E) Continue the biennial conference of awardees to recognize and celebrate the outstanding recipients of fellowships and provide networking opportunities for fellows.

Response: We concur that a conference of this nature is beneficial to the fellows, to EPA, and the scientific community. ORD plans to continue to periodically hold a conference for fellowship recipients.

**STAR/GRO Fellowship Programs
Summary of BOSC Recommendations From October 2006 Final Report and
Proposed ORD Actions and Timelines**

Recommendation	ORD Action	Timeline for Action
1A) Develop an overall information collection strategy, which includes design of an appropriate database.	Recommendation adopted	Target completion date June 2008
1B) Require fellows to submit an up-to-date resume annually for at least 5 years from the conclusion of the fellowship.	Recommendation adopted	Target completion date June 2008
1C) Require universities with fellowship recipients to provide the basic initial information for the database at the conclusion of the 2- or 3- year fellowship period.	Recommendation not adopted	
1D) Provide greater resources for the STAR Fellowship Program, both to address the increased number of applicants that this change would produce, and to fund a greater percentage of those applications rated excellent.	Recommendation not adopted	
1E) Consider increasing the graduate fellowship expense budget.	Recommendation under consideration	Report on progress June 2008
1F) Consider seeking additional funding within the next few years to maintain the value of the individual fellowships without resorting to funding fewer fellows.	Recommendation adopted. A Fellowship Program Strategic Plan will be developed.	Fellowship Program Strategic Plan target completion date December 2007

Recommendation	ORD Action	Timeline for Action
<p>1G) Add a mentoring component to the program so that there is a specific individual within EPA who would serve as a resource for the fellow. The mentor could complement the function of the students academic advisor by, for example, helping the fellow find opportunities that expand his or her graduate school experiences and serving as a professional resource regarding career opportunities in federal agencies. The Subcommittee recommends that ORD solicit mentor volunteers from throughout EPA, matching professional staff with the fellows' fields of investigation. This strategy would bring increased visibility to the STAR and GRO Fellowship Programs within the Agency.</p>	<p>Recommendation adopted on a pilot basis</p>	<p>Report on progress in June 2008</p>
<p>2A) Consider eliminating both GRO Fellowship programs, while at the same time improving marketing of the STAR Fellowship Program to minority-serving institutions to encourage applications for graduate support from underrepresented groups.</p>	<p>Recommendation under consideration</p>	<p>Report on progress in June 2008</p>
<p>2B) If the GRO programs are maintained, review the impacts of its 2003 determination that competition for program awards cannot legally be limited to minority-serving institutions.</p>	<p>Recommendation adopted</p>	<p>Report on progress in June 2008</p>

Recommendation	ORD Action	Timeline for Action
3) To provide sufficient resources to make a real impact on capacity building for undergraduate education, consider devoting the combined resources from both GRO Fellowship Programs to competitively selected regional consortia, which would be designed to focus on environmental opportunities for undergraduates.	Recommendation under consideration	Report on progress in June 2008
4A) Update the descriptions of the evaluation and selection criteria in the funding announcements to clearly describe the criteria employed in each step of the review process, to ensure transparency and fairness for all applicants.	Recommendation adopted	Completed August 2006
4B) Broaden the categories used to sort applications to encompass emerging interdisciplinary fields of study, and consider making the categories used to sort the STAR Fellowship Program and the GRO Graduate Fellowship Program applications identical. Such consistency would allow for continuity and overlap of reviewers in the non-EPA expert panels as well as a clearer comparison of the two programs.	Recommendation adopted	Completed January 2007
5A) Review and compile the publication records of fellows, etc.	Recommendation adopted	Target completion date December 2008
5B) Require that fellows provide links to their professional Web pages in the information that they submit to EPA.	Recommendation adopted	Target completion date December 2008

Recommendation	ORD Action	Timeline for Action
<p>6) Consider the following as potential metrics as data become available:</p> <p>(1) The number of minority students who obtain advanced degrees in environmental disciplines</p> <p>(2) The distribution or dispersion of students across eligible institutions, i.e., the concentration of fellowship recipients among colleges and universities</p> <p>(3) The number of awards to students pursuing master's degrees relative to the number of awards to students pursuing doctoral degrees.</p>	<p>Recommendation adopted</p>	<p>Report on progress by December 2008</p>
<p>7A) To strengthen communication efforts and to develop a user-friendly Web site for fellows and a listserv that will encourage easy communication among them and between EPA and each fellow. In addition, the upgraded database will allow fellows and alumni to track each other; reach colleagues who can collaborate with them on projects, grants, and speaking opportunities; and link with EPA after their fellowship is completed.</p>	<p>Recommendation adopted</p>	<p>Target completion date December 2007</p>
<p>7B) Market the STAR Fellowship Program strategically to minority communities and institutions of higher education. There remains a lack of data verifying that the STAR Fellowship Program has successfully reached underrepresented minority populations.</p>	<p>Recommendation adopted. Communication and outreach strategies will be a part of the Fellowship Program Strategic Plan.</p>	<p>Target completion date for Strategic Plan is December 2007. Report on progress by December 2008.</p>

Recommendation	ORD Action	Timeline for Action
7C) Enhance efforts to increase the number of applicants to the GRO Undergraduate Fellowship Program.	Recommendation adopted. Communication and outreach strategies will be a part of the Fellowship Program Strategic Plan.	Target completion date for Strategic Plan is December 2007. Report on progress by December 2008.
7D) Work effectively to communicate awards, results, and successes to a variety of audiences, including Congress and sponsoring institutions.	Recommendation adopted. Communication and outreach strategies will be a part of the Fellowship Program Strategic Plan.	Target completion date for Strategic Plan is December 2007. Report on progress by December 2008.