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Funding from the Department of Defense Office of Naval Research, the National Science Foundation, and the Department of Energy was obtained to support short-term trans-atlantic exchanges of early career scientists designed to foster collaborative interactions and enhance the professional development of the exchange fellows through the acquisition of expertise in microbial biotechnology. Applicants were recruited on a national basis from microbial ecology, molecular microbiology, and environmental science laboratories. Eleven young scientists were selected, six male and five female, and completed exchange experiences in Denmark, England, Germany, Italy, Spain and The Netherlands. The exchanges fostered the acquisition of new skills and expertise (cont'd)

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Abstract continued:

in environmental technology during the 3-week to 6-month stay in the host laboratory. Likewise, the laboratories acting as hosts acquired new skills, techniques, and perspectives from the visiting scholar. The funding allowed laboratories with collaborative interests to bolster their interaction through the exchange of personnel and to open communication lines that lead to functional cooperation.

FINAL REPORT

GRANT #: N00014-01-1-0069

PRINCIPAL INVESTIGATOR: Joseph M. Suflita, and Judy D. Wall (Co-PI)

INSTITUTION: University of Oklahoma

GRANT TITLE: Biotechnology for the Environment

AWARD PERIOD: 1 October 2000 - 30 September 2001

OBJECTIVES: To support short-term transatlantic exchanges of early career scientists designed to foster collaborative interactions and enhance the professional development of the exchange fellows through the acquisition of expertise in microbial biotechnology. The exchange visits will range from one to six months in a host EU laboratory. The fellowship will be used to support travel to the host laboratory, as well as supplement housing and living. Salary for the exchange fellow will not be covered.

APPROACH: The Working Group of the United States (US) - European Union (EU) Biotechnology Task Force sought applications for short-term transatlantic exchange fellowships. Applicants were recruited on a national basis from microbial ecology, molecular microbiology, and environmental science laboratories through advertisements in *Science, Environmental Science and Technology* and *ASM News*. In addition, a direct mailing to full and student members of Divisions Q and N of the American Society of Microbiology was conducted. Announcements were also posted on appropriate professional websites and an interactive internet web site was established to facilitate online application procedures (http://www.biochem.missouri.edu/EC-US-BiotechFellow). Applications from people with diverse racial, ethnic, and cultural backgrounds were encouraged.

A US selection committee composed of four members of the Working Group and two industrial representatives directly involved in environmental remediation activities reviewed the applicants received electronically and then either met to discuss and award the fellowships or responded electronically with their vote. Because this process could be completed electronically, a rolling approval of applications was possible. Applications were considered until the funds were exhausted.

Participants must have been US citizens or permanent residents at the time of their application. Additionally, they must have been at least in their third year of predoctoral studies or awarded the Ph.D. no more than four years from the application deadline. The applicant must have been training in the field of microbiology with a demonstrable interest in environmental aspects as a professional goal. The candidate's application was supported by transcript of graduate training, a one-page description of the research/training plan for the transatlantic exchange, a letter of support from the Ph.D. or postdoctoral advisor and from the exchange host institution or scientific mentor. It was incumbent upon the applicant to justify how the exchange would serve to augment their educational goals,

facilitate their scientific research in the discipline, and lead to collaborative exchange with another laboratory.

Grant support (Table 1) was obtained from three federal agencies for the short-term transatlantic exchange fellowships.

Table 1. Grant support for US-EU Biotechnology Exchange Fellowships

Agency	Grant No.	Amount
US DOE	DE-FG03-00ER63027	$27,500
NSF	DEB-0091243	$20,000
DOD-ONR	N00014-01-1-0069	$10,000

ACCOMPLISHMENTS: Ultimately, eleven young scientists were selected, six male and five female, and completed exchange experiences in EU countries, Denmark, England, Germany, Italy, Spain and The Netherlands. The exchanges fostered the acquisition of new skills and expertise in environmental technology during the 3-week to 6-month stay in the host laboratory. The host institution provided an opportunity for a new skill to be learned or improved, laboratory infrastructure, basic supplies, and exposure to an appropriate intellectual climate (e.g. access to faculty/staff, lectures, seminars, etc.). Likewise, the laboratories acting as hosts acquired new skills, techniques, and perspectives from the visiting scholar. The funding allowed laboratories with collaborative interests to bolster their interaction through the exchange of personnel and to open communication lines that lead to functional cooperation. These experiences generated much enthusiasm for the program and requests for its continuation. Collaborations and publications are now in the planning stages.

CONCLUSIONS: The program had a profound impact on the ability of the US and EU to develop affordable remediation strategies by sharing intellectual capital in environmental biotechnology. Collaborating scientists working together on common environmental concerns fostered cooperation in important areas of research. As a societal implication, the pooling of scientific expertise from both sides of the Atlantic helped to accelerate the pace of technology designed to provide effective and environmentally sound solutions to environmental contamination problems. Such technology will in turn reduce the human and environmental risks associated with hazardous materials. In addition, international research and development policies include objectives to foster competitiveness in the global market place. The exchange program undoubtedly assisted with this objective through the sharing of information in environmental remediation - an important economic growth area for both the US and the EU. The exchange program had additional tangible benefits associated with increased exposure of young scholars to cultural differences. The type of cooperation in research exemplified by the exchanges plays an important role in the process of societal and cultural understanding and as a tool for the development of

productive external relations amongst participants. Such aspects helped ensure that the total benefits of the program far exceed the sum of the component parts.

SIGNIFICANCE: These experiences have made lasting impressions and have begun the transatlantic links necessary for true collaborative research to develop biotechnology for the remediation of contaminated environments. The overwhelmingly positive feedback of the participants and their sponsors, as well as the supportive responses and demand for the program from the Environmental Microbiology community has prompted us to seek renewal support for the EU-US Biotechnology Exchange Fellowships.

PUBLICATIONS AND ABSTRACTS: Publications are now in the planning stages.