



**European Participation in U.S. Federal Science & Technology
Research Funding Programs:
Case Study of Department of Energy-Funded Researchers**



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Disclaimer

The information contained within this report has been compiled from public sources and communications with U.S. funding entities. This report is not an official publication of any U.S. federal government entity nor necessarily reflects the views of the U.S. federal government or of the organizations comprising the Link2US project. The opinions and any errors within the report are entirely the responsibility of the authors.

Summary

The U.S. Department of Energy's (DOE's) Office of Science is the single largest supporter of basic research in the physical sciences in the United States, supporting a diverse portfolio of research that advance the science needed for revolutionary energy breakthroughs, seek to unravel nature's deepest mysteries, and provide U.S. researchers with the most advanced large-scale tools of modern science. The Financial Assistance Program of the Office of Science is an extramural grant program that can and has funded EU-based researchers.

The *European Participation in U.S. Federal Science & Technology Research Funding Programs: Case Study of Department of Energy-Funded Researchers* presents the results of interviews conducted during the summer of 2012 with five EU-based researchers who have received direct DOE awards. This report seeks to present more detailed perspectives of individual European experiences with DOE funding with the goal of providing funding policy makers on both sides of the Atlantic, including but not limited to DOE and the European Commission, with insight to help improve their processes and policies with regards to foreign researchers and fostering international cooperation.

The five researchers interviewed received awards from one of three programs of the Office of Science: DOE Low Dose Radiation Research Program¹, which has a goal to provide compelling experimental studies that can be used to guide accurate regulatory standards for exposure to low dose radiation; DOE Biological and Environmental Research Program,² specifically Climate and Environmental Sciences Division, which focuses on advancing a robust predictive understanding of Earth's climate and environmental systems and to inform the development of sustainable solutions to U.S. energy and environmental challenges; and the DOE Advance Computing Scientific Research³ program, which seeks to discover, develop, and deploy computational and networking capabilities to analyze, model, simulate, and predict complex phenomena.

The interviews revealed several, not necessarily consensus, insights on and recommendations for success on DOE Office of Science funding:

- 1. Alignment between a researcher's field and the specific areas targeted by the funding program is a fundamental first step toward successful funding.**

¹ DOE Low Dose Radiation Research Program <http://lowdose.energy.gov/default.aspx> - accessed September 2012

² DOE Biological and Environmental Research program <http://science.energy.gov/ber/> - accessed September 2012

³ DOE Advance Computing Scientific Research program <http://science.energy.gov/ascr/> - accessed September 2012

2. Existing collaborations with U.S. scientists or a network of international scientists in their field is essential for EU-based researchers to be successful in securing DOE grants.
3. Time spent in the United States may not be as critical as having an existing relationship with a U.S. colleague willing to assist the European collaborator.
4. Sufficient time to get acquainted with the U.S. policies and requirements, either for the pre-award or post-award periods, is crucial to funding success on the first attempt or even to being able to apply.
5. Full institutional support for grant management is necessary, but funding experience and knowledge from other U.S. funders like the National Institutes of Health may not be necessarily or transferable to DOE funding.
6. Access to such funding has several benefits for EU-based researchers, including improved continuity of funding sources, increased international recognition of work in one's field, increased access to other potential partners, and increased knowledge flow between like-minded researchers in one's field.
7. Joint calls between different funding programs, such as between EU and U.S. programs, is not necessarily desirable if they increase the administrative processes or decrease total funding opportunities; properly structured joint calls that do not increase administrative burden can enhance cooperation by opening networking opportunities.

Background

European Union (EU)-based researchers and institutions can and do participate (e.g., in cooperative agreements or receiving subcontracts and direct funding) in United States (U.S.) federal funding programs. The nature of participation is considerably affected by a diverse set of policies and regulations, the result of the decentralized nature of the U.S. federal research funding system. Federal funding authority extends across a dozen or more entities (i.e., executive agencies and cabinet departments and their sub-units); and each entity has its own policies and regulations.

Out of eleven civilian U.S. science and technology (S&T) federal research funding entities examined by the Link2US project,⁴ three have programs that can directly fund EU-based researchers through their institutions – the U.S. Department of Energy (DOE), the U.S. Department of Homeland Security (DHS), and the National Institutes of Health (NIH). Besides these three entities that can directly fund foreign-based researchers/institutions, many of the other U.S. funding entities also do not usually restrict, and indeed oftentimes encourage, cooperation between researchers in the United States and foreign institutions on projects as long as the foreign-based participants are funded separately.

DOE's Office of Science is the single largest supporter of basic research in the physical sciences in the United States and works to address some of the most pressing contemporary challenges. The Office of Science supports a diverse portfolio of research that advance the science needed for revolutionary energy breakthroughs, seek to unravel nature's deepest mysteries, and provide U.S. researchers with the most advanced large-scale tools of modern science. The Financial Assistance Program of the Office of Science, as well as similar programs in the Office of Energy Efficiency and Renewable Energy and the Office of Fossil Energy, is an extramural grant program open to EU-based researchers and institutions. The Office of Science manages this research portfolio through six core program offices: Advanced Scientific Computing Research, Basic Energy Sciences, Biological and Environmental Research, Fusion Energy Sciences, High Energy Physics, and Nuclear Physics.⁵

In 2011, the Link2US project conducted a web-based survey of EU-based researchers who received direct DOE awards during 2005-2009 to identify key issues they faced when applying to and participating in DOE funding programs.⁶ The resulting report reflected only basic anecdotal perspectives given the small number of EU-based grants awarded during the period covered (50 awards to 16 identifiable and unique principal investigators (PI's)) and even smaller number of survey respondents (6).

⁴ U.S. Department of Agriculture, U.S. Department of Energy, U.S. Geological Survey, U.S. Department of Homeland Security, U.S. Department of Transportation, Environmental Protection Agency, National Aeronautics and Space Administration, National Institutes of Health, National Institute of Standards and Technology, National Oceanic and Atmospheric Administration, and National Science Foundation.

⁵ For more information, please go to <http://science.energy.gov/programs/> - accessed 6 September 2012

⁶ For more information, please see:

http://www.eusscienceandtechnology.eu/uploads/docs/LU_1.3_DOE%20Addendum%20main.pdf

Objective

To elaborate on the experiences of the limited numbers of EU-based researchers who received DOE funding previously identified in the survey report, more in-depth interviews were conducted to identify key issues that these researchers faced when applying to and participating in DOE extramural funding programs.

The interviews are presented as a case study report where the responses are presented as they were received in order to provide a fuller and more complete understanding of the individual European experience with DOE funding programs and to provide the funding agencies on both sides of the Atlantic (including but not limited to DOE and the European Commission) with insight to help improve their processes and policies with regards to foreign researchers and fostering international cooperation.

Methodology

European-based grantees (i.e., PI's) who received direct funding from DOE between FY2009 through 2011 were the focus of the interviews. They were interviewed about their experiences in various aspects of seeking, applying for, and receiving DOE grants. The interview was conducted by phone lasted from thirty minutes to an hour.

The interviewees were identified from the previously surveyed individuals⁷ who received awards between FY09 and FY11. Interview questions were not restricted to these three years only; one grantee having received DOE funding since the 1990's. Each individual interviewed received an introductory letter (see Appendix) via email about the Link2US project and the goal of the interview, the interview questions, and a link to the report of the previous survey. Individuals signed a consent form prior to the interview about identification disclosure for the written report.

Results

Interviewee demographics and profiles

The U.S. Department of Energy awarded fourteen grants to EU-based researchers from FY2009 to FY2011 representing twelve unique PI's. Eight PI's were contacted for whom contact information was readily available. Five agreed to be interviewed, of whom four had participated in the previous Link2US survey.

Interviewed PI's were from institutions located in the United Kingdom (4) and Germany (1), of which three were working at higher education institutions and two at research organizations. Each respondent had received between 1-3 direct awards, all from the Office of Science with some grants still active and others since ended.

⁷ PI information was requested and received from the DOE central procurement office. The information received was limited to institution, PI name, and grant size; no information was available about the specific DOE program. Contact information was found through internet searches, primarily from the websites of the researchers' institutions.

Three of the five researchers received awards with the Office of Science in the framework of the DOE Low Dose Radiation Research Program,⁸ which has a goal to provide compelling experimental studies that can be used to guide accurate regulatory standards for exposure to low dose radiation. One received an award under the DOE Biological and Environmental Research program,⁹ specifically Climate and Environmental Sciences Division, which focuses on advancing a robust predictive understanding of Earth's climate and environmental systems and to inform the development of sustainable solutions to U.S. energy and environmental challenges. And one researcher received an award through the DOE Advance Computing Scientific Research program,¹⁰ which seeks to discover, develop, and deploy computational and networking capabilities to analyze, model, simulate, and predict complex phenomena.

All of the respondents have previously collaborated with U.S. federal institutions through scientific collaborators while exercising normal scientific activities (e.g., meetings, networking, etc.), while two out of five respondents have previously conducted scientific studies in the United States from six months to two and a half years.

PI's of the projects can be classified into two categories: main PI's leading the project on their own without a U.S. collaborator or sharing the project as co-PI's with one or more U.S. co-PI's. The U.S. co-PI's also received funding from DOE or, in one case, from the National Aeronautics and Space Administration (NASA).

Successful factors to receiving funding

All EU-based researchers interviewed said that they applied for funding through DOE because their research interests aligned with the targeted areas funded through DOE programs, which contributed toward their success in receiving the grants.

Another successful factor was having previous connections with U.S. collaborators, which all interviewees stressed as being very important in many ways. One way was by sharing information about the availability of funds in U.S. funding programs with their EU-based collaborators. They either learnt about opportunities while conducting research in the United States (e.g., sabbatical at NASA for one interviewee), after returning to their country and continuing their scientific relationship with U.S. collaborators they met while in the United States, or by hosting U.S. collaborators on sabbatical in their own laboratories and continuing the scientific relationship when the U.S. collaborators returned to the United States.

U.S. collaborators also provided help with the grant application itself, either by jointly writing the grant application or by providing comments and suggestions, for example,

⁸ DOE Low Dose Radiation Research Program <http://lowdose.energy.gov/default.aspx> - accessed September 2012

⁹ DOE Biological and Environmental Research program <http://science.energy.gov/ber/> - accessed September 2012

¹⁰ DOE Advance Computing Scientific Research program <http://science.energy.gov/ascr/> - accessed September 2012

on language to fit with U.S. culture, on a draft application written by the EU-based PI. This type of support was invaluable to successfully receiving funding on the first attempt. For the German researcher, his long time U.S. collaborator invited him to apply for a DOE grant, which was a logical next step for their scientific collaboration. The two collaborators wrote the grant application together and received funding. A British researcher's institution first received DOE funding through a partnership with a U.S. researcher in the 1980's and have received renewals every three years ever since; the high profile research conducted was high-profile and there was continuity of targeted topic areas funded by DOE.

Cultural aspects of the granting process

Application aspects

An interesting and important aspect of the grant application process noted by at least two researchers is the level of detail required in the preliminary results section of the grant application, which is different than other funding schemes in which they are familiar. Preparation time for DOE proposals is a key element for success. Reviewers demand a certain level of detail before recommending the project for DOE funding, a level of detail that EU-based researchers may not be used to providing in other grant applications (*e.g.* EU Framework Programme). One PI received funding on the second attempt, after failing to provide the required level of detail in the first attempt. Another PI was successful at the second attempt after realigning the project budget to a level that DOE was able to award having applied without help from a U.S. collaborator. The two researchers were able to correct the issues in their applications by understanding and responding to reviewers' feedback, received through DOE program staff, on the weaknesses in their first applications.

No major difficulties were reported by any of the five interviewed researchers on the application process itself besides setting aside enough time to be able to apply (*i.e.*, allowing time to register through grants.gov if the institution does not already have an account) or understanding the eligibility language, which does not often specifically address foreign-based institutions and can be unclear to EU-based researchers who would prefer a more direct statement on eligibility.

Enhancing the marketing effort on open calls available to non-U.S.-based scientists have been mentioned by some, while others indicated it was not a problem because they receive emails of new opportunities sent to former PI's of the funding programs.

Post award management aspects

For some researchers, the main issue after receiving an award was reporting requirements. Especially if their institution had never received prior funding from DOE, the learning curve was steep, though all were able to eventually learn and adapt. Moreover, institutional experience with funding from another U.S. Federal funding entity is not necessarily or completely transferable to DOE, or any other funding entity, because each has its own policies and regulations that can be very different. One challenge for some is the extensive information provided but that consequently make finding specific answers particularly relevant to non-U.S. grantees difficult. A solution could be to provide grantees

with a frequently asked questions pamphlet or a step-by-step guidelines booklet explaining the post award grant management process to non-U.S. grantees. Nevertheless, all researchers mentioned the availability and readiness of both their assigned DOE program and administrative officers to help and answer questions from the PI and their sponsored research offices.

Many of the interviewees stressed that having good administrative support from their own institutions was essential to success both during the application process (e.g., through reviews of legal material) and in the post-award management process, especially if renewal will be sought from that funding source. All PI's work closely with the administrative support teams at their institutions. Other issues raised include currency exchange rates, which can be addressed by agreeing on a fixed rate or applying a higher rate to minimize risks, and overhead or indirect rates, which can be simple to determine if the institution already has an rate agreement with another Federal funding agency (e.g., NIH), a so-called "congnizant agency," as it automatically applies to the overhead rate of awards from other U.S. federal sources.

Benefits to receiving grants from non-domestic origins for EU-based researchers

Many of the researchers shared that there are many benefits from receiving DOE funding other than the direct financial support of a particular grant. The climate research interviewee benefited from the long-term and continuous commitment of the DOE climate research program that has kept funding open in the same targeted areas and thus has been a source of stable support for his laboratory. He noted that his own national and European Union research funders seem to change funding topic areas in his field more regularly than does DOE, making it difficult for researchers to count on steady funding. The supercomputing researcher appreciated being able to receive funding as a non-domestic researcher under DOE ARSC program because it allowed him to intensify collaboration with a long-term partner based in the United States. Especially in his field, multinational collaboration is essential to meet future challenges. The researchers from the Low Dose Program mentioned that the regular grantee workshops, where all grantees are invited to present their research, were useful information-sharing and networking opportunities for potential future collaborations. One researcher mentioned that having DOE program administration staff at these workshops have been valuable in providing answer to questions while onsite.

Benefit of joint calls?

Finally, when similar research funding programs are available in the EU and the United States (e.g., low dose, super-computing), researchers thought that increasing opportunities to share information should encouraged and supported, as has been done in the respective low dose programs by inviting representatives of both programs at each other's conferences. However, the benefit of joint calls to some PIs was unclear – depending on how the calls are structured, whether funded separately by each partners' domestic funding agency or a single pot and whether review and administrative processes are shared (e.g., single peer-review of proposals) or duplicated. One PI mentioned that it would be too difficult on the administrative side, though probably not on the scientific side

as many mentioned that the projects managed as co-PIs were usually two separate projects administratively but not considered as such scientifically. Several researchers feared that the reporting requirement of such calls may increase the burden on the PI's and their support teams. One PI suggested that a solution would be to have joint applications, but not joint calls as the issues may be different in the different funding programs. Another PI emphasized that if structured well, for example if funded and administratively responsible by each PI's own funding agency, joint calls do not necessarily need to add to administrative burden and can enhance cooperation by opening networking opportunities.

Findings and Conclusions

The interviews revealed several, not necessarily consensus, insights on and recommendations for success with DOE Office of Science funding for EU-based researchers who may seek DOE funding and for the funding agencies on both sides of the Atlantic to help improve their processes and policies with regards to foreign researchers.

1. Alignment between a researcher's field and the specific areas targeted by the funding program is a fundamental first step toward successful funding.

Accessing several national, European, or foreign (e.g. United States) funding programs may help to increase the chances of obtaining funding for one's research, but, to improve the likelihood of success and sustained funding, researchers should ensure that the priorities of the particular funding programs are aligned with their own research area.

2. Existing collaborations with U.S. scientists or a network of international scientists in their field is essential for EU-based researchers to be successful with U.S. DOE awards.

Whether U.S. collaborators help make EU-based researchers aware of the availability of such funding or provide them actual grant writing insight in the DOE funding programs and culture, all researchers interviewed made it clear that their U.S. colleagues were critical in the success of receiving funding from U.S. federal funding programs.

3. Time spent in the United States may not be as critical as having an existing relationship with a U.S. colleague willing to assist the European collaborator.

Two researchers spent time in the United States, but the others did not remark on having been directly educated or worked in the United States. But all knew of U.S. colleagues who have provided help in the past.

4. Sufficient time to get acquainted with the U.S. policies and requirements either for the pre-award or post-award periods is crucial to funding success on the first attempt or even to being able to apply.

Most applications for U.S. federal grants must be received through the grants.gov portal. Access to the portal requires an active account for the institution, which can take up to four weeks for completion of all registration steps. Moreover,

understanding the language, budget limits, general culture of grants management such as detailing preliminary results and reporting requirements of personnel hours, and other issues is indispensable in grant application and management and therefore in success over time.

5. Full institutional support for grant management is necessary, but funding experience and knowledge from other U.S. funders like the National Institutes of Health may not be necessarily or completely transferable to DOE funding.

U.S. Federal research funding authority extends across over a dozen or more federal entities. Each entity has its own policies and regulations, which can be very different from each other. Having full support from experienced sponsored research offices of their institutions allow EU-based researchers to navigate the process successfully. DOE program and grant officers also readily facilitate the understanding of policies and procedures.

6. Access to such funding has several benefits for EU-based researchers, including improved continuity of funding sources, increased international recognition of work in one's field, increased access to other potential partners, and increased knowledge flow between like-minded researchers in one's field.

7. Joint calls between different funding programs, such as between EU and U.S. programs, is not necessarily desirable if they increase the administrative processes or decrease total funding opportunities; properly structured joint calls that do not increase administrative burden can enhance cooperation by opening networking opportunities.

While it can be scientifically beneficial to support joint applications to similar funding programs, joint calls should not add new administrative processes. Rather joint calls can be based on existing domestic funding mechanisms and processes where the PI and research institution have existing experience and capacity.

Appendix

U.S. Department of Energy EU-based grantees case study questions

The questions below will be asked during a phone interview and are shared with you in advance for your information.

The answers to these questions will be used to relate your “story” as part of a series of case studies regarding EU-based researchers receiving funding from the U.S. Department of Energy (DOE).

Before we can publish any of the interview information in the report, we will ask you to please sign a document giving us permission to identify you as a respondent to our series of question (i.e., use your name publicly in the report), or, if you prefer that we do not identify you by name, we will only refer to your host institution, country and your general area of research (e.g., an energy materials researcher at a public university in Germany).

Interview questions:

1. **Describe briefly your research project(s) that is/are funded by DOE.**
 - a. Are any of these projects conducted cooperatively with U.S. colleagues? If so, please briefly describe.
2. **Please indicate how many new awards you have received from DOE?**
 - a. Which DOE office did you get these awards from?
 - b. Any sub-awards?
3. **Why did you choose to apply to a grant with the DOE?**
 - a. Have you ever applied to other U.S. funding schemes?
 - b. What attracted you to this funding scheme?
 - c. Were you successful and received funding directly after your first proposal? What, in your opinion, made your proposal successful if you attempted several times before being awarded?
4. **In a previous survey, you may have mentioned that you found out about DOE direct funding to EU-based researchers from colleagues at U.S. universities or research organizations.**
 - a. Are these colleagues part of the DOE-funded research as collaborators?
 - b. Are they receiving any funding from the award (e.g., subcontract or consultant)?
 - c. If they are not involved in the DOE-funded research you are conducting, were they essential in helping you get your first grant with the DOE? How?
 - d. Do DOE grants facilitate cooperation with U.S. (or other) researchers? If so, how? If not, how could they do so?
 - e. What would you have liked to know before applying that would have made it easier for you to apply to and be successful in receiving a DOE grant; recommendations to other EU-based researchers if they were interested in pursuing DOE grants?
5. **You also may have indicated that differences in grant management culture, grant administration issues like budget and audit requirements, or other issues like indirect cost**

recovery or IP issues may have been challenging with the award received. Could you elaborate?

- a. How were the issues resolved, if they were?
- b. Could they have been such a hindrance that you/your institution may not have been able to sign the grant agreement?
- c. Have you had issues related to other areas of the grant agreement or post awards (such as taxes, for example)?

6. U.S. funding bodies are exercising increased scrutiny on regulatory and policy compliance, especially for those awards received by foreign organizations. Has this presented particular challenges for you or your institution?

- a. Did you have to get special measures in place at your organization to receive the funding and being able to manage it to comply with U.S. laws? If yes, please elaborate and specify which offices of your organizations had to adapt (finance, legal office, etc.)
- b. If you receive grants from multiple sources (e.g., your national research council and DOE), does having DOE grants significantly add to the overall administrative burden?
- c. How can DOE and/or your national government and/or the European Commission help facilitate understanding and compliance with U.S. laws?

7. Do you have anything else to add about your experience in getting funding from DOE that could be valuable to other EU-based researchers?

- a. For a DOE grant specifically
- b. In general?