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Organization: University of Maryland College Park

Proposal Detail:

Proposal Information

Proposal Number: 0801465
Proposal Title: IGERT: Biological and Computational Foundations of Language Diversity
Received by NSF: 10/05/07
Principal Investigator: Colin Phillips
Co-PI(s): Michael Long
 Jeffrey Lidz
 Amanda Woodward
 Amy Weinberg
Performing Organization: U of MD College Park

This Proposal has been Electronically Signed by the Authorized Organizational Representative (AOR).

NSF Program Information

NSF Division: Division of Graduate Education
NSF Program: Integrative Graduate Education and Research Training Program, IGERT Full Proposa
Program Officer: Carol Van Hartesveldt
PO Telephone: (703) 292-8112
PO Email: cvanhart@nsf.gov

Proposal Status

Status As of Today Dated: **06/15/08**

A program recommendation for award was concurred with by the cognizant Division/Directorate on **06/11/08**. However, no award is ensured and the recommended duration is **12** months with an effective date of **07/01/08** are subject to change. The grantee institution assumes any pre-award costs at its own risk. NSF may request additional information.

Award Duration: (months)

Warning: Our records indicate that the following Annual Project Report(s) are due or overdue for the Award(s) listed below. Please submit the report(s) as soon as possible using the Project Reports System within FastLane. The report(s) will be considered overdue if not submitted by the Report Period End Date. An overdue report will prevent the processing of this proposal:

Award **0604526**: Annual Report **due** for period ending **08/31/2008** for **Jeffrey Lidz**

Reviews

All of the reviews of your proposal that have been released to you by your NSF program officer can be viewed below. Please note that the Sponsored Project Office (or equivalent) at your organization is NOT given the capability to view your reviews.

Document:	Release Date:
Panel Summary #1	May 17 2008 8:41AM
Review #1	May 17 2008 8:41AM
Review #2	May 17 2008 8:40AM
Review #3	May 17 2008 8:40AM

Context Statement

Ninety six proposals were submitted to the final stage of the Integrative Graduate Education and Research Traineeship (IGERT) program competition for Fiscal Year 2008. NSF expects to fund approximately 20 IGERT awards from this competition, based on the quality of the proposals and the availability of funds.

Seven interdisciplinary review panels were organized to review the full proposals at the National Science Foundation. The review process was managed by the IGERT Coordinating Committee (ICC) that is comprised of program officers drawn from all of the NSF Directorates: Biological Sciences; Computer and Information Science and Engineering; Education and Human Resources; Engineering; Geosciences, Mathematical and Physical Sciences; Social, Behavioral, and Economic Sciences; from the Office of Polar Programs; and from the Office of International Science and Engineering.

Each proposal was placed in one of the seven panels on the basis of the affinity of proposal subject matter. A minimum of three panelists was assigned to provide written reviews for each proposal. Panelists provided written reviews of their assigned proposals prior to the panel meeting. They were asked to address both NSF review criteria of intellectual merit and broader impacts of the proposed IGERT activity, and to consider the additional IGERT criteria discussed in the program solicitation.

At the panel meeting, each proposal was discussed individually in turn. Panelists having a conflict of interest with a specific proposal did not review the proposal and left the panel room during its discussion. A panelist was designated as scribe for each proposal to record the panel discussion and prepare a panel summary describing strengths and weaknesses. The panel summary addressed the intellectual merit and broader impacts criteria, international component (if proposed), and summary basis of the recommendation. Based on the panel discussion and the written reviews, the panels classified each proposal into one of three categories: High Priority, Medium Priority, and Low Priority. In order to focus the panel decisions, NSF instructed each panel that at most 15% of the proposals it considered be placed in the High Priority category and at most an additional 20 % in the Medium Priority category.

Following the panel deliberations, the ICC met for a presentation of the recommendations from each of the panels and panel moderators. These recommendations were conveyed to the IGERT Program Officers, who considered these recommendations as well as written panel summaries, individual written reviews, and portfolio balance within the program. The quality of proposals under consideration was high, and as a result not all promising proposals could be recommended for award.

The individual reviews and a summary of the panel discussion are available for each proposal via FastLane. They are provided as feedback to the applicant to help in understanding the Foundation's action. They may also be helpful for applicants in preparing any future submissions to the IGERT program.

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Organization: University of Maryland College Park

Panel Summary #1

Proposal Number: 0801465

Panel Summary:
Panel Summary

1. Intellectual Merit (strengths/weaknesses):

a. Interdisciplinary theme/science/engineering

This proposal correctly identifies current challenges faced in the training of graduate students in the 1) the trans-disciplinary nature of the linguistics field and 2) the fracturing of the current approaches to education and research due in part to factionalism, different discipline backgrounds and fundamentally, differences in the 'language' of the field. The key value-added component in the current proposal is the notion of building a collaborative hub (the IGERT program) which extends spokes into different disciplines such as neurosciences, computer science, cognitive psychology, and others in such a way as to build a sustainable change in this most trans-disciplinary of fields.

b. Education integrated with interdisciplinary theme/science/engineering

The training program is particularly well-conceived with appropriate broad coursework and an innovative annual boot camp, the so called 'Winter Storm' which will bring IGERT trainees and faculty together over a half-month to learn, collaborate and cultivate the 'culture' of reaching out to colleagues across field-boundaries.

2. Broader Impacts (strengths/weaknesses):

a. Diversity (strengths/weaknesses)

There is an interesting link with Gallaudet University that offers both opportunities for research on sign language and its implications for human language in general and opportunities for deaf students to become involved in research career paths that might not otherwise be open to them. There is a relatively strong discussion of minority recruitment, which includes the fact of excellent minority representation among the undergraduates at U. Maryland. There is also a good track record of undergraduates going on to get the PhD as well as ongoing involvement with a high school program designed to interest students in a research career at an early stage. There is considerable diversity among the participating faculty.

b. International Component (if proposed):

The proposal has strong international two-way ties to India, Japan and Brazil, which make scientific sense above and beyond the convenience and availability of collaborative opportunities. Thus, the experiences take advantage of the wealth of linguistic diversity provided by these countries. International activities are an integral part of the proposed educational program.

Summary of Discussion:

This is a distinctive proposal for its strengths rooted on high quality research, a proposed innovative cross-disciplinary graduate program, a diverse cadre of participants who are leaders in their fields and a well-thought plan to recruit and retain students from underrepresented groups and undergraduate populations.

Panel Recommendation: High Priority

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Proposal Status | MAIN ▶

Organization: University of Maryland College Park

Review #1

Proposal Number: 0801465
Performing Organization: U of MD College Park
NSF Program: Integrative Graduate Education and Research Training Program, IGERT Full Proposals
Principal Investigator: Phillips, Colin
Proposal Title: IGERT: Biological and Computational Foundations of Language Diversity
Rating: Multiple Rating: (Very Good/Good)

REVIEW:

What is the intellectual merit of the proposed activity?

The proposal joins cognitive neuroscience with linguistics in order to extend the study of language processing in new ways. The researchers use a multilingual comparison approach in order to understand and generalize across languages. The work is creative and to be performed by a set of leaders in their respective fields. The program proposed is cohesive supporting the research equally and jointly in both departments. The graduate training program is carefully spelled out and the management plan is tight. In addition there is an identified set of international contacts that will broaden the program. The link between Gallaudet and the University of Maryland is useful for including the study of ASL, but it is unclear whether this addresses diversity of graduate student population. It is true that neuroscience and linguistics attract women students but the minority student enrollment is low and the efforts proposed are not likely to increase it.

What are the broader impacts of the proposed activity?

This work is likely to lead to the advancement of linguistics and the understanding of how humans understand and handle language. As such there are multiple impacts, from the generation of speech understanding programs in languages that are currently not served to the better diagnosis and management of speech disorders.

Summary Statement

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Organization: University of Maryland College Park

Review #2

Proposal Number: 0801465
Performing Organization: U of MD College Park
NSF Program: Integrative Graduate Education and Research Training Program, IGERT Full Proposals
Principal Investigator: Phillips, Colin
Proposal Title: IGERT: Biological and Computational Foundations of Language Diversity
Rating: Excellent

REVIEW:

What is the intellectual merit of the proposed activity?

This proposal for interdisciplinary training in language and linguistics has outstanding affiliated faculty from several disciplines ù linguistics, computer science/AI, some neuroscience/neurology (see list of participants on page 1) The PI, Associate Professor Colin Phillips is working at the intersection of linguistics, psycholinguistics and cognitive neuroscience. The co-PI's include another linguist, Associate Professor Jeffrey Lidz, with cognitive science orientation who also works on the psychology of language acquisition, Prof. David Long, who chairs a new department of Second Language Acquisition as is a recognized world leader in that field, Associate Professor Amy Weinberg, who is Area Director for Technology in the Center for Advanced Study of Languages, and Prof. Amanda Woodward of the psychology department, who studies language acquisition and cognitive development. The proposed program also benefits from a couple of existing language-centered research centers, the Center for Advanced Study of Language employing approximately 60 professionals across a wide range of fields and the DoD funded Center of Excellence in Human Language Technology in which Maryland participates along with Johns Hopkins. It builds on already substantial interdisciplinary efforts. In particular, the linguistics department/program seems to have undergone significant revamping in recent years that involved making interdisciplinary links and that seems to have been highly successful in improving the standing of the department and the employment prospects for its graduates. The university has already shown flexibility with a Neural and Cognitive Science PhD program so that the students in the proposed IGERT award probably will not be overloaded with the requirements of multiple departments. Four of the five co-PIs are participants in the Neural and Cognitive Science program. The psychology department seems to be the weak point in this configuration, not contributing as much as it should. There is a promise of making a relevant hire in the area of cognitive modeling, but I happen to know that the Maryland psychology department has a long history of not fulfilling supposed intentions to hire in the cognitive area.

The proposed graduate training program looks quite good. It would include a new intensive winter short course to encourage creation of this new interdisciplinary research community. This would be reinforced with proposed new proseminar courses that sound quite exciting, focused on questions in cross-language research that require a convergence of theoretical, experimental and computational tools. Examples given are one relating research on the neurophysiological encoding of complex acoustic spectra to the task of representing the sound systems of different languages. Another will address the problem of encoding richly structured representations from several disciplinary perspectives. That one has already been tried in a successful pilot version focused on number and quantification. Students are reported to be working on research projects inspired by that course experience. A planned lunchtime research seminar involves a special emphasis on communicating across traditional boundaries and explaining why a particular research problem is seen as important from the perspective of the student's primary field. Lab rotation experiences are included. Research ethics training is included. However, I think the ethics training should be extended from the usual given the foci of the "DoD" funded research centers. In this context, "DoD" means the intelligence community, and much of the research is intended to automate processing of large amounts of language data collected in spying activity that may threaten privacy rights and the conduct of a free, democratic society. So, I think ethics training in this program should include discussion of such issues.

There is an equipment request which seems more likely to be the expression of the desires of a particular faculty member than something generally needed for the graduate program.

What are the broader impacts of the proposed activity?

The proposal makes a strong case that Maryland is leading the way to a much broader definition of language studies. In fact, it appears that the Japanese connection has arisen from a desire to follow their lead. It appears that they are quite sincere in their efforts to bring more diverse students into this program and more likely than most to succeed in doing so. There is a strong commitment from the university: the President of the university has designated "Language, Cognition, & Culture" as one of the university's strategic priorities. Co-PI Amy Weinberg has been appointed to a role in identifying how that commitment will be made concrete. It does involve a high level commitment to making new hires in psychology that would contribute to relevant strengths.

There is an interesting link with Gallaudet University that offers both opportunities for research on sign language and its implications for human language in general and opportunities for deaf students to become involved in research career paths that might not otherwise be open to them. There is a relatively strong discussion of minority recruitment, which includes the fact of excellent minority representation among the undergraduates at U. Maryland and a good track record of undergraduates going on to get the PhD as well as ongoing involvement with a high school program designed to interest students in a research career at an early stage. There is considerable diversity among the participating faculty. Although somewhere in the proposal there is a rather glib statement about women generally not be well-represented in "technical" subjects, and there is not much discussion of women, there is good representation of women in many of the associated departments. Furthermore, it appears to me from my personal experience that women are quite well represented in the technical field of computational linguistics.

There are some interesting international links that will undoubtedly enhance the opportunities to study generalizations across very different human languages, links to India, Brazil and Japan. I was surprised, however, that the proposal seemed to underestimate relevant activity in Japan. An NSF-supported expedition looking into HCI research in Japan found very high interest in speech interaction with computers (because of the difficulties of keyboard input in Japanese) and machine translation to diverse languages (languages of countries in which Japanese companies have manufacturing facilities.) Most of this research activity may be in companies in Japan, rather than in universities.

The Advisory Board members are already in place, and evaluation plans are quite specific and feasible to execute, address such issues as whether they did what they said they would in course development, research rotations, and the like. They will examine the extent to which interdisciplinary work is being produced, and the success in recruiting diverse, highly qualified students.

Summary Statement

The proposed program will provide graduate students with an outstanding training opportunity that will likely make them tomorrow's leaders in a much broader and more effective approach to research on human language. Clearly Maryland is making a significant contribution to US research capabilities in language and language technology.

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Organization: University of Maryland College Park

Review #3

Proposal Number: 0801465
Performing Organization: U of MD College Park
NSF Program: Integrative Graduate Education and Research Training Program, IGERT Full Proposals
Principal Investigator: Phillips, Colin
Proposal Title: IGERT: Biological and Computational Foundations of Language Diversity
Rating: Excellent

REVIEW:

What is the intellectual merit of the proposed activity?

This is an excellent IGERT proposal. The PI's leverage the extant institutional strength of UMCP in linguistics in a proposal that seeks to change the way linguistics training and research are done. The PI's correctly recognize 1) the trans-disciplinary nature of the linguistics field and 2) the fracturing of the current approaches to education and research due in part to factionalism, different discipline backgrounds and fundamentally, differences in the 'language' of the field. The key value-added component in the current proposal is the notion of building a 'collaborative hub' (the IGERT program) which extends spokes into different disciplines such as neurosciences, computer science, cognitive psychology, and others in such a way as to build a sustainable change in the this most trans-disciplinary of fields. The key notion underlying this change is diversity: A) in languages studied (increasing the ability of trainees to glean information about the truly human-specific brain substrates of language); B) in scientific approaches (e.g. combining computer-science with cognitive neuroscience and C) in terms of under-represented groups becoming productive knowledge-creators in the field.

The training program is particularly well-conceived with appropriate broad coursework and an innovative annual boot camp, the so called 'Winter Storm' which will bring IGERT trainees and faculty together over a half-month to learn, collaborate and cultivate the 'culture' of reaching out to colleagues across field-boundaries. The proposal has strong international ties to India, Japan and Brazil, which make scientific sense above and beyond the convenience and availability of collaborative opportunities. Thus, the experiences take advantage of the 'wealth of linguistic diversity' provided by these countries

What are the broader impacts of the proposed activity?

This is a proposal which, if successful can be used as a model for other programs at other institutions. The architecture (hub and spoke) combined with the Winter Storm boot camp and above, the emphasis on diversity (writ large) have the potential of transforming linguistic research in the United States. It is this type of transformation that the field has been waiting for. By gaining real paradigm-breaking progress in linguistics, US competitiveness in many fields will be improved (e.g. robotics and machine learning) while at the same time real insight into higher human cognition functions such as language, may at last unlock some of the secrets of 'mind'.

Summary Statement

Linguistics, the study of how language(s) emerge from human biology, particularly within the context of brain development, human social interactions, and common rule-sets constitutes one of the great frontiers of understanding ourselves as intelligent creatures in a larger universe. This proposal seeks to move beyond an inhibiting factionalism that hobbles the field, by creating a new model for interdisciplinary graduate education in this area. The model proposes to create an IGERT that brings disparate fields (with their respective jargons and biases) together by means of a new and novel architecture with diversity as the underlying thread that facilitates collaboration and potential productivity.

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