CONTENTS
General Information
Key dates for applications
Objectives
Application process
Eligibility
Developing Broad Professional Skills
Application instructions

ADDITIONAL INFORMATION …
Language Science Fellows (general)
Coursework
Winter Storm
Interdisciplinary Experience
Professional Skills
NSF Research Traineeship (NRT) Track
Research teams on multi-scale data (LSF-NRT only)
Policy experiences (LSF-NRT only)
LSF-NRT “Conversion” for Current Language Science Fellows

General information
Language Science Fellows (LSF) is the cover name for the Maryland Language Science Center’s graduate interdisciplinary training programs. It is not tied to any individual degree, funding mechanism or department, but it serves the goal of training engaged, interdisciplinary language scientists.

LSF has basic requirements, and “tracks” that are tied to specific training goals or funding mechanisms. Students can also apply to be Language Science Fellows independent of any specific track.

The NSF Research Traineeship (NRT) program is the name for a specific graduate training effort, funded by NSF that emphasizes the development of the broad professional skills needed to be a successful scientist. UMD’s NRT program additionally emphasizes the goal of pursuing collaborative team-based research to tackle problems that lie beyond the capacity of any individual scientist. NRT is a specific track within Language Science Fellows. Trainees commit to specific activities that serve the broad goals of the NRT and are eligible for various sources of funding that are specifically associated with NRT.

The ProPELL program is the name for another specific track within Language Science Fellows, funded by OSEP, that focuses on the needs of researchers in language and literacy with an interest in learning disabilities. ProPELL is targeted specifically at students who are pursuing a PhD in Special Education.
A third LSF track has been proposed, with a focus on *Translational Language Science* that bridges fundamental science and clinical research on language. It will be under review by the NIH later this year.

The application for all LSF tracks has a similar format but with specific requirements associated with individual tracks.

Except where specifically stated, all LSF tracks and activities are available to all UMD PhD students, regardless of department, funding source, or nationality. Certain specific funding opportunities may be limited by department or nationality, but funding is distinguished from the ability to participate in program activities.

**Websites:**
ter.ps/lsf (Language Science Fellows)
ter.ps/nrt (NRT program)

**Key Dates:**

March 23rd  
*informational meeting for students*

March 25th  
*students provide notification of their intention to apply*

April 11th  
*application materials due for LSF-general and LSF-NRT – electronic submission only*

May 10th  
*admission decisions or revisions for LSF-general and LSF-NRT *

* applications sometimes require revision before a decision is made

Email contacts
Timothy Mckinnon ([timm@umd.edu](mailto:timm@umd.edu)), Colin Phillips ([colin@umd.edu](mailto:colin@umd.edu))

**Objectives**

Language Science Fellows (LSF) is the name for a community of engaged graduate students who participate in one of a series of closely connected graduate training programs. LSF aims to:

i. Provide the environment and support to develop expert interdisciplinary language researchers,

ii. Build the professional skills needed to be successful in the current employment market (academic, industry, government, etc.)

iii. Train adaptable scientists who are prepared for lifelong creativity.

LSF programs offer venues and resources for interdisciplinary training and collaborative research to students and faculty alike.
Application Process (all applicants)

All prospective Language Science Fellows must submit a formal application, and must confirm the support of their advisor(s). Fellows are expected to design and follow through on an individualized training and research plan, so students are encouraged to apply in their first or second year of studies to receive full benefits from participation. Once admitted, Fellows remain part of the program until the end of their PhD. Specific commitments to LSF activities are typically more intensive in the earlier part of the program, though this may vary in individual LSF tracks.

The LSF community is not presently capacity-limited, and therefore applications are evaluated based on whether the student’s training and research plan meets program expectations and aligns with the student’s home department expectations. However, individual funding mechanisms and/or tracks within LSF may be limited, and applications for those resources may be made on a competitive basis. (See below for eligibility information.)

Applications for Fall 2016 are due by April 11th. Admissions decisions will be made by LSC’s graduate committee by mid-May. However, the graduate committee may still require revisions or additional details to be included in a student’s training plan after the student has already been admitted to LSF.

Eligibility

Application for the Language Science Fellows Program, including the LSF-NRT track, is open to ALL currently enrolled UMD graduate students in language science who are able to pursue the program (although it is geared primarily towards PhD students), regardless of citizenship, current funding status, advisor, or home PhD program. However, students should be aware that certain funding mechanisms place restrictions on the use of program funds. This may mean that some stipends or other funds are restricted to US citizens and permanent residents (i.e., green card holders). In such cases we have made every effort to secure additional funds that allow all students to participate fully.

Developing Broad Professional Skills

While service, outreach, and professional skills training are in some sense separate from research training, they are closely connected and are an integral part of students’ development as creative, adaptable and skilled interdisciplinary language scientists. They reflect the growing recognition that most career paths for PhDs (academia, industry, government, etc.) call for diverse skills, and that traditional PhD training models are too narrow in their focus. In addition to the ability to generate and publish new research, most PhDs will enter careers where it is highly valued to have excellent communication skills, to have leadership skills, to be able to work in diverse teams, and to be able to a lifelong learner.

The Language Science Fellows program takes these goals very seriously, and a primary lesson from the program’s experiences to date has been that activities that are sometimes viewed as distractions from the “real work” of PhD students turn out to improve the quality of the research.

Many of these activities also contribute to the vibrancy of Maryland’s language science community. For example, service on committees provides students with valuable experience, while helping to ensure that LSF activities continue to serve student needs. Language science outreach provides science
communication experience with diverse audiences, while engaging the public in language research - including high-school students who may be the next generation of language scientists.

Application Instructions

All applications, whether for the general LSF program or for a specific track such as LSF-NRT or LSF-ProPELL, should include the following:

1. **Student records**
   a. CV
   b. Academic records (transcripts and test scores). An unofficial transcript from Testudo is fine.
   c. Description of student’s existing funding plan for the PhD, listing the source and anticipated amount of funding. If there is a plan to apply for other fellowships (e.g., NSF-GRF, NIH-NRSA, international fellowships, CEBH) please mention this. (This is needed for reporting purposes).

2. **Summary timeline for courses, research and other training activities [1-page]**
   Include a table that summarizes, on a semester-by-semester basis, a feasible timeline for courses, research activities, and other professional skills training. Indicate which activities satisfy requirements for which program (e.g., home PhD, LSF, NACS Certificate, etc.).
   
The table should be limited to 1 page, to allow an easy overview of proposed activities. But additional remarks may be included if necessary to explain home department benchmarks or other requirements.

3. **Integrated research and training plan [5-pages maximum, single-spaced]**
   All Language Science Fellows tracks incorporate a mix of research experiences, interdisciplinary coursework, and professional skills development (e.g., science communication skills, leadership experience, public-facing activities).
   
The NRT track includes more specific components, such as team-based research, multi-scale data, and a science policy experience.
   
   All activities aim to prepare students to be effective and adaptable members of well-functioning research communities.

   An integrated research and training plan should include:
a. Student’s research interests and goals, placed in context of broader challenges in language science (these could be fundamental science challenges or practical challenges)

b. Specific research skills needed and the training activities that will develop those skills.

c. Professional skills training (science communication, leadership, public-facing activities)

4. Track-specific materials

Individual LSF tracks may require specific additional application information, to meet requirements from funders, etc. See additional pages for more information.

5. Letters of support

a. Advisor’s letter of commitment (non-confidential)

   This letter confirms that the advisor and student have discussed the student’s plans and that the student’s participation in the program has the support of the advisor and home department or PhD program. If a student has multiple advisors, then they should submit a joint letter.

   Advisors: by mentoring a student in this program, advisors agree to support the student’s training in the following ways: endorse the student’s training plan; and play an active role in the student’s broad professional skills development; be or become an LSC member; contribute to the success of the LSC or its training programs.

b. Two confidential letters of recommendation, one of which should be from the student’s primary advisor. The second letter should be from an individual who is familiar with the student’s academic abilities. The letter could be from a U of Maryland faculty member in the home department or other program, or it could be from an individual who is familiar with the applicant’s work at another institution. In the case where a student has multiple advisors, they could jointly provide one of the recommendation letters, or they could submit separate letters, with no need for an additional recommendation letter.
Coursework (all fellows)

Interdisciplinary coursework is intended to enhance students’ expertise in language science, particularly in areas that would not typically be encountered in a more traditional plan of study. For many applicants, coursework will also provide relevant preparation for the planned interdisciplinary experience or team-based research experience. Applications should include a proposed list of courses that take a student beyond the main area of study. The value of the proposed coursework should be addressed in the application.

Interdisciplinary seminars offered by faculty from different areas (within or between departments) are particularly valuable, as these provide an extended opportunity for students and faculty to jointly seek common ground across disciplines. Since these seminars are often not known until the preceding semester, it is understood that students may be able to offer only vague plans for such seminars.

The scope of the proposed LSF coursework will vary, according to the constraints and flexibility of the student’s home PhD program. Some PhD programs prescribe very few courses, while others have more extensive and rigid requirements; some PhD programs require coursework outside the home department. In all cases, however, it is expected that students should engage in formal coursework that engages with novel methods, ideas, or communities. Courses should contribute to taking students “outside their comfort zone”.

The specific number of LSF courses is not fixed, but as a guideline, students in the NSF-IGERT program that was the precursor to LSF typically took a total of 14-15 full courses (home PhD + other). Students from PhD programs with liberal requirements typically took 4-5 courses outside the main area of study.

Students are free to adjust their course plans at a later stage, in consultation with their advisor(s) and LSF management.

Winter Storm (all fellows)

Winter Storm is a key part of the annual calendar for Language Science Fellows. It occupies 2 weeks in January before the start of the Spring semester. It provides a unique opportunity for students and faculty to come together outside of the hectic of the semester, to engage in training, research planning, and in building new connections. Each year Winter Storm offers a mix of recurring and new activities, driven primarily by student needs and interests.

All Language Science Fellows are expected to take part in Winter Storm annually. However, the degree of involvement may be reduced at the end of students’ PhD program.

Interdisciplinary Experience (LSF General)

The interdisciplinary experience is designed to provide students with hands-on training outside their primary research area. This could take the form of a rotation in a research group other than the student’s home, a language policy externship, a field-work experience outside of the student’s home discipline, an
extended international research visit, or other experience-based activity. If a student opts for a policy externship, fieldwork, or other international experience rather than an on campus research rotation, these activities should be similarly substantial, e.g., a full semester policy externship rather than the shorter policy experience that LSF-NRT students will undertake.

For students in LSF-NRT, the interdisciplinary experience requirement is met by a combination of the team-based research experience and the policy experience (described in other sections).

**Professional Skills: Communication, Outreach, Service, and Leadership (all fellows)**

All Language Science Fellows are expected to engage in activities that will enhance their professional skills. These activities cover multiple domains, but have much overlap in the skills that they develop, and they should be planned as a cohesive suite of training activities.

**Communication:** The ability to communicate effectively with diverse audiences (specialists, academics from other areas, public, funders, etc.), in writing and in speaking, has always been important, but it is becoming even more important, for all career paths. All fellows are expected to participate in activities that are designed to improve their communication skills. Many opportunities are already available, and more are being developed in the context of the NSF-NRT program.

Current opportunities include: language science lunch talks (LSLT) - all fellows are expected to present annually, and peer feedback is now provided. Winter Storm activities. Writing for diverse audiences via leadership activities. Graduate School writing workshops. Outreach activities. Mentoring a PULSAR student or other students in writing. Teaching assistantship. Co-reviewing articles with a mentor. And many others.

Future opportunities will be designed in close collaboration with students, and could include: expanded semi-formal workshops in communication, peer support groups for writing articles or grant/fellowship proposals, writing or speaking experiences via policy internships, authoring content for websites, blogs, or Wikipedia. Other suggestions welcomed.

**Outreach:** Outreach activities that engage non-academics in language science are valuable in many ways. They foster improved communication skills for non-expert audiences, they contribute to building collaborative networks, and of course they raise the visibility of language science. Audiences can range from children to policy-makers.

All Language Science Fellows are expected to take part in at least one outreach activity per year. (The same expectation holds for Language Science faculty.) For LSF-NRT students who are conducting a science policy internship, that satisfies the outreach expectation. A variety of language science outreach activities with schools and the broader community are organized by LSC’s graduate outreach committee, but other forms of outreach are also valued and ideas may be proposed in the training plan. More information on outreach can be found here:

https://languagescience.umd.edu/education/graduate-language-science-fellows/outreach

Students are encouraged to discuss outreach plans and goals as part of the integrated research and training plan, though it is expected that these plans may change over the course of the student’s fellowship period.

**Service and Leadership:** Service and leadership activities play an integral role in the success of the Language Science Fellows program. They develop skills that are highly valued in all science career paths, they ensure that program activities are well-run and ‘fresh’, and above all they ensure student
ownership of program activities. One of the clearest lessons from the NSF-IGERT program was the benefit of student leadership, for individuals and for the program. Many individual students commented that their leadership roles helped them to gain confidence, and that they surprised themselves with what they were able to achieve. The program overall was transformed by the benefits of student ownership.

All Language Science Fellows are expected to serve on at least 1 committee per year for 2 years, with the additional expectation to serve as a committee chair or event organizer during one of those years. More information about graduate committees can be found here:

https://languagescience.umd.edu/education/graduate-language-science-fellows/student-ownership

It is likely that there will also be a call for student representatives on some LSC faculty committees (e.g. graduate education committee).

Service and leadership are integral components of fellows’ training, and plans for meeting service requirements as well as any specific goals and ideas for this component of a student’s program should be included in the research and training plan, even though these may change at a later date.
ADDITIONAL INFORMATION (LSF-NRT)

The NSF Research Traineeship (NRT) Program is supported by a $3M training grant (2015-2020). The NSF training grants are “experiments in graduate education”, and that is especially true in the initial years of the NRT program.

A copy of the NRT Proposal and Reviews is available on the LSC website. The title of the project is “Flexibility in language processes and technology: Human and global scale”. Our project was one of only 8 awards made in the first round of NSF’s NRT competition, which span all areas of science and engineering. And we are currently the only group, in any field, to have won both IGERT and NRT awards.

NSF’s goal for NRT is to “encourage the development of bold, new, potentially transformative, and scalable models for STEM graduate training”. There is a strong emphasis on (i) pursuing research on Big Challenges of national importance, (ii) preparing students for diverse careers, and (iii) systematic evaluation of what really works. A number of NSF’s priorities for its NRT program reflect practices that we had already implemented through our IGERT program.

LSC’s goal for NRT is to build upon the existing successes of the IGERT program, which served 50 PhD students from 10 departments. In addition to the research theme (see below, and this news story), we want to more closely integrate different research and training activities, e.g., connecting interdisciplinary seminars with Winter Storm activities or ‘Summer Camps’, and we want to develop more systematic and integrated professional skills training, e.g., connecting communication training with outreach activities.

Eligibility

All current UMD PhD students, regardless of nationality or departmental home. Any student who is admitted to the program and undergoes the training is regarded as a ‘trainee’ in NSF’s eyes. (This is different than IGERT, and an improvement for international students.)

Funding

NRT provides funding for multiple activities, and funding comes from multiple sources (currently: NSF, UMD; seeking additional funds for the future).

Funds for research, travel, and other training activities are available to all trainees. (Yes, international students are eligible for NSF funds for this.)

Funds for stipend support vary by nationality and source. Each year around 5 1-year NSF-funded fellowships ($32,000 plus benefits) will be available, to US citizens and permanent residents only. Other funds can be used to provide additional stipend support, and these are available to all students, regardless of citizenship. As with IGERT, we will make every effort to ensure that effects of citizenship have minimal impact on students.

Criteria

Applications for the LSF-NRT track will be reviewed by the LSC Graduate Committee. There is no limit to the number of students who can be admitted as LSF-NRT fellows/trainees. However, NSF-funded fellowships will be assigned on a competitive basis to eligible students. Criteria for these fellowships are:
(i) strength of the integrated research and training plan; (ii) student’s ability to contribute to the goals of the NRT program; (iii) student academic record, including letters; (iv) disciplinary diversity.

**Current Language Science Fellows**

Students who successfully applied to join the Language Science Fellows program in previous years are encouraged to join the NRT track. Since these students already submitted a full application to LSF a year ago, they need only submit a reduced application in the current cycle. Further instructions below.

**Research Teams on Multi-Scale Data (LSF-NRT only)**

The research components of UMD’s NRT program share an overarching concern with multi-scale data. Research will address how language data at varying scales can be used efficiently by humans and machines. Within this overall theme, interdisciplinary teams of faculty and students will explore different strands of research relating to data scale and quality. Teams will engage in seminars and working groups during the academic year, in addition to participating in periodic, intensive research-only workshops. These workshops will bring Maryland researchers together with invited faculty experts and student participants from other universities, to further research goals and to promote integrated, team-based approaches to complex problems spanning multiple fields.

More detailed information about the multi-scale data theme can be found in the [NRT proposal](#) online. Note that this theme has broad applicability to a very wide range of language science research: the need to make intelligent choices based on varying amounts of information is relevant throughout cognitive and computational approaches to language. If you have concerns about whether your research interests align with this theme, please ask!

Examples of proposed team-focuses related to multi-scale data (this list is not exhaustive or final) are the following, each of which is discussed in more detail in the NRT grant proposal.

- Low-resource languages, language technology and field linguistics
- ‘Language poverty’ and learner differences
- Flexible automatic speech recognition
- Prediction and millisecond-scale information management
- Intelligent tutoring systems (computation & learning)
- Flexible clinical diagnostic tools

All LSF-NRT students will participate in at least one research team, including at least one major research-focused activity (e.g. workshop, summer camp) during their program.

**Changes to plans in the NRT proposal.** Discussions among faculty and students have already established that the implementation of the research teams described in our proposal is unlikely to be optimal. A priority for the first year of the program has been to design and implement a better approach. The NRT proposal stated that there should be a 1-month Summer Camp each year, dedicated to a single theme, and that each NRT trainee would participate in one Summer Camp during their PhD. This is not viable, as a more continuous approach is needed, in order to engage and maintain interest from students and faculty alike. A more likely approach will be to use funding for more frequent, shorter research-intensive workshops. The details of themes and research team activities have been developing.
over the course of the last year. We are now planning ‘interest groups’ around proposed team research focus areas.

For the purposes of applying to LSF-NRT in 2016, students should address the following in their research and training plan:

- Address ways in which NRT team research activities and the overall theme of data-scale for humans and/or technology might support or complement the student’s individual research and training goals. Interdisciplinary approaches that connect computational and cognitive approaches are especially welcome.
- Identify up to 3 data-scale sub-themes of particular relevance and interest; this should include at least one from the list above, but additional themes can be proposed. If proposing additional themes, please identify relevant faculty members and current research at UMD (including CASL).
- Discuss how the themes identified link to individual research and professional preparation goals, motivations for participating in these particular research areas, etc.

Student applications will provide valuable information that will be used to further guide 2016-2017 program activities. Thoughtful input about data-scale themes is particularly valuable.

Policy Experiences (LSF-NRT only)

Students in the NRT program are required to take part in a “science policy experience”. This is not a full-scale internship program, and it does not compete with students’ other internship goals. It is a part of the professional skills development component of the NRT program. The estimated time commitment is around 80 hours total, which could be completed in a single intense period or could be spread over a period of a few months.

The science policy experience is intended to enable students to contribute to broader understanding of science, and in particular to advance awareness of the field of language science; to see how individual scientific projects connect to overarching scientific goals, and how those goals connect to societal concerns; and to build communication skills for reaching a diverse audience. This program component takes advantage of our location within the DC metropolitan area to provide students with a unique experience translating science for public policy. The policy experience has the following four primary goals:

1) Provide students with hands-on training in communicating to a broad audience, including learning how to put together executive summaries (a common component to many academic and nonacademic careers).
2) Provide students with information about diverse career paths for language scientists.
3) Help students to understand major public policy issues and government concerns regarding language, and how language science research can inform those questions.
4) Develop working papers, documents, and other science-based information that can be used to bolster scientific and policy-based arguments, and thus to help the LSC have a voice in how language science information is used to help the public good.

Policy experiences could be with a variety of locally-based organizations (e.g., American Psychological Association, Linguistic Society of America, American Speech-Language-Hearing Association, American Association for the Advancement of Science, and many others). In the integrated research and training plan, students should mention any initial interests, motivations or ideas for policy-related experiences they might benefit from. We have also identified some ideas for projects that might be appropriate.
● Developing briefing materials that explain how cutting-edge research contributes to societal needs ("connecting the dots" for non-scientists).
● Developing working papers on policy-related issues (such as best practices for teaching foreign languages, or for medicare coverage of clinical language interventions, how different fields of research contribute to language technology, etc.)
● Researching how federal definitions of “STEM” fields are determined and coordinated. This is a topic that has major impact on funding and on work visa policies.
● Explaining how scientific findings inform decisions about language rights issues that affect minority or indigenous communities in the US and worldwide.
● Gathering data on how language science is funded and supported nationwide (or beyond), and providing evidence that can be used to support further research endeavors.
● Visits to Capitol Hill.
● Shadowing lobbyists.

These are just a few sample projects, and NRT faculty will work with students to help them develop a project that meets their individual goals. The program is flexible, in that the requirement can be met in multiple ways in terms of timing/structure and content, and is not intended to compete with or conflict with any other internships that students might pursue.

Our expectation is that this policy experience will generally involve a time commitment in the area of 80 hours - this is equivalent to a two-week condensed period, or to roughly one day per week for a 2-3 month period. Students can select the scheduling approach that makes most sense in terms of their own academic program. While some of this time would likely take place off-campus (meeting with staff members at partner organizations, for example), other time could be spent working on a project at UMD or in a location of your choosing, either individually or as part of a team.

As preparation for these policy experiences, we will also invite speakers from partner organizations, the School of Public Policy, related NGOs, and governmental subject matter experts to speak at LSC events, including Winter Storm and Language Science Day. These experiences should help students to assess the variety of policy-related opportunities that are available.

The following links to relevant organizations and internship programs are intended to give students ideas of the kinds of activities and general goals that partner organizations pursue. These are not internship programs NRT students would sign up for directly - e.g. the APA link describes a 1-year paid internship program, and this is very different from NRT policy experiences, which are much smaller.

American Association for the Advancement of Science
http://www.aaas.org/page/internship-opportunities

American Psychological Association
http://www.apa.org/about/awards/policy-grad.aspx

National Academies:
http://sites.nationalacademies.org/pga/policyfellows/
LSF-NRT “Conversion” for Current Language Science Fellows

Students who are current members of Language Science Fellows may submit a shorter application to join the NRT track.

1. Current fellows do not need to submit a new integrated training and research plan.
2. Overall: submit an update on progress to date and any evolution of research goals. (1 page is sufficient, though more space can be used if needed.)
3. Courses/training: submit an updated table/plan. If there is no change in plans, then the material submitted previously will suffice.
4. Research: submit a brief statement that addresses how research plans will align with the research theme(s) of the NRT program. (1 page is sufficient.)
5. As described above under “Interdisciplinary Experience”, the role of that activity (also known as “research rotation”) is superseded in NRT by the goals of the research teams/themes and the policy experience. We do not expect existing LSF students to simply add NRT commitments to LSF commitments. Since individual student plans are so individualized, we encourage individual students to discuss with their mentors and with program leadership whether/how to adjust rotation plans. Our highest goal is to ensure maximal benefits for students.
6. Professional skills: give a brief statement that summarizes your interest in professional skills activities, especially relating to communication and policy experiences, since these aspects are more developed in the NRT program. For example, indicate the kind(s) of policy experiences that you might find attractive.