

This transcript is the narrative for the slides designed to provide information about the 2019 NSF Postdoctoral Research Fellowships in Biology Program. The numbers refer to the slide number.

- 1) These slides provide information on the Postdoctoral Research Fellowships in Biology program and the new solicitation released in 2019. I am Amanda Simcox, and together with my colleague Diane Jofuku Okamuro, we are the program officers for the postdoctoral fellowship program.
- 2) These slides will start with an overview of the PRFB and then cover specific information for the 4 competitive areas. To help you plan for an application, we will provide general advice, show you how to get detailed information about the program and the submission requirements.
- 3) The goal is to support the training and research of scientists early in their postdoctoral careers in preparation for advanced careers in life sciences. The yearly stipend is 54 thousand dollars and there is also a yearly research allowance of 15 thousand dollars, which is used at the discretion of the fellow to cover costs for research, training, travel and benefits like health insurance. In competitive areas 1, 2, and 4, the fellowship lasts 2 years unless there is an international component lasting about 1 year, in which case the fellowship can be for 3 years. In competitive area 3, the fellowship is for 3 years.
- 4) To be eligible, you must be a US citizen or permanent resident. Before you start a fellowship, you must have your PhD, but you can apply while you are still a graduate student. For applicants who are already in postdoc positions, or other jobs that require a PhD, you must not have been in that position for more than 9 months for Competitive Areas 1, 2 and 4, or 12 months for Competitive area 3. Please contact us if you have questions about this, as there may be some flexibility. Finally, you can only submit the research project to one NSF fellowship program, and one Competitive Area.
- 5) Here are the main points about Competitive Area 1, Broadening Participation of Underrepresented Groups in Biology. Research in this area can involve any topic of biology that is supported by the National Science Foundation. The project should also involve activities that promote the involvement of students and others from minority groups in biology. Strong proposals will show an integration of the research and broadening participation activities and also an assessment of the effectiveness of the broadening participation work.
- 6) This shows more details about the area. The NSF defines underrepresented groups as Native Americans, including Alaskan Natives and Native Pacific Islanders, African Americans, Hispanics and individuals with disabilities. To apply you do not need to be a member of one of these groups. NSF proposals are split into two main sections— Intellectual Merit and Broader Impacts. As part of the Broader Impacts section, you should describe how your work will increase participation of individuals from one or more of these groups. If you plan to work with another group, for which there is evidence of underrepresentation in biology, contact us to discuss your idea. Finally, you can propose research in any area of biology from molecular biology to ecology.

- 7) 2019 is the last year that Competitive Area 2, Research Using Biological Collections will be offered. In future years we envision projects using collections could be proposed in other competitive areas. For Collections research, any topic in biology is appropriate, but the research must involve a substantive use of collections. And these should be collections that are well curated and publicly available. You need to show you have access to specimens in the collection by providing a letter from the director of the facility. Strong projects will use the collections in new ways—potentially transform the use. The broader impacts should be well thought out and integrated with the research. Some applicants use the collections themselves as part of the activity for broader impact.
- 8) This provides more detail and emphasizes the goal to use collections in new ways to answer big questions in biology. Biological collections in the US alone have over a billion specimens. These are of all types from physical to digital and they represent a rich source of research material. The research you can propose is wide ranging from developing methods to interdisciplinary work that could be relevant to other sciences. To support feasibility, you must provide a letter from the collection director that you have access to the specimens and permission to use them as you propose. This should be provided as a supplemental document. Let's now move on to Area 3 and my colleague Diane Okamuro.
- 9) Thank you Mandy! I am Diane Jofuku Okamuro the lead program officer for Area 3, the National Plant Genome Initiative (NPGI) Fellowships. Area 3 was first offered in FY 2015 to support interdisciplinary training of the next generation of plant biologists and plant breeders. Importantly, the research and training plan of each fellowship must address important scientific questions within the scope of the goals of the NPGI and the specific guidelines in this Solicitation.
- 10) When considering submitting a proposal, the applicant is encouraged to "think out of the box" and craft a research project that is both genome-wide in scale and requires training in multiple disciplines and mentors. The project may be only distantly (or not at all) related to the applicant's thesis work but the associated training is considered key to his/her career goals. Please go to the Plant Genome Research Program (PGRP) [webpage](#) and the most current [NPGI Five Year Plan](#) for more information and examples of research foci.
- 11) Competitive Area 4 is new this year. The title is Integrative Research Investigating the Rules of Life Governing Interactions Between Genomes, Environment and Phenotypes, which I am going to just call Rules of Life! When considering applying to this area, you need to carefully think about whether your project meets the program criteria. Ask yourself a series of questions. Does the work involve more than one sub-discipline of biology? Does it span two or more scales in the hierarchy of life from molecules to cells to organisms to populations to ecosystems? Are different methodologies being used, such as, experiments and computational modeling. Does the work address how phenotypes arise from the interaction of genotypes and the environment? This flow chart captures the expectation that the research will lead to an understanding of the features of a biological system that contribute to its structure and/or function. This

information should lead to a theory or model with predictive power and essentially define a Rule of Life.

- 12) While the goal is to discover a Rule of Life, we can break this down into a more tangible set of parameters. The project can be either hypothesis-driven biology research or advanced datascience. It must involve the integration of two or more subdisciplines of biology, such as molecular biology and ecology and span multiple levels in the hierarchy of life. It must also involve multiple approaches such as computational and experimental. For this reason, many applicants may need more than one sponsor, so that the expertise in the subdisciplines and approaches are available.
- 13) There are resources available. The links are listed here. But if you Google PRFB and NSF, this will take you to the program page. The solicitation is linked from there and in the solicitation you will find links to the so-called PAPPG, which has important general details about NSF proposals and more information about the Plant Genome Research Program, which will be important for applicants to Area 3.
- 14) This is the PRFB program page.
- 15) Which has the link to the solicitation.
- 16) Read it many times!
- 17) Until it looks like this, marked up with key reminders to yourself. The most important piece of information we can give you is read the solicitation. Do not miss any instruction, because it is very painful to have your proposal returned without review, for example, because you missed the part that explains biomedical research is not supported by NSF.
- 18) Applying for the fellowship is a stepwise process and begins here by clicking on the link to the 'How to Apply' document.
- 19) The link will take you to this document. Follow it step by step.
- 20) As I mentioned use the guide. Note in particular that you will need to register as an individual and you will get an NSF organizational code that starts with the letter 'P'. There is also an Application Form as part of the proposal.
- 21) This is a screen shot of what it will look like when you apply and the arrow marks the Application form I just mentioned. You can navigate through these links and nothing is final until you submit, so do not be afraid to explore so that you can learn the system.
- 22) This set of bullet points can be summarized by saying that the fellowship should be an opportunity for you to grow as a scientist, better preparing you for the next step in your career, whether this be in academics, industry, government or other advanced careers. The fellowship involves both research and training. To maximize the training potential, fellows should propose to work in a new institution so that you can interact with new scientists and experience a different science culture. The postdoctoral period is a chance to broaden your expertise and add to your scientific credentials by learning new methods and systems. Your sponsor will be key to your training and should use the 3-page statement to explain how they and the institution will support your research, training and career goals. You should work with your sponsor to develop an effective plan. Lastly on this slide don't forget that all NSF proposals must address both Intellectual Merit and Broader Impacts.

- 23) Where you conduct the research should be well matched to your research and training goals. It can be a US or International Institution. Again, moving to a new institution has many benefits, but if for any reason you can't move, explain why. In all Competitive Areas, international research is encouraged.
- 24) Spend time selecting a sponsor and discussing your ideas and the proposal. They are integral to the application, so you will need to communicate extensively. Many applicants have more than one sponsor to provide training and research expertise for specific aspects of the proposal. We talked earlier about the importance of the sponsoring statement. It is an opportunity to highlight the mentoring you will receive that is specific to you—both the research you propose and the career path you hope to follow.
- 25) Make sure your proposed research is appropriate for NSF. NSF supports basic biological research from molecules to ecosystems. But research that has a biomedical focus is not supported. Your research may, however, have a broader impact on medicine, because disease processes have their basis on normal biology. If you are unsure contact us.
- 26) These are the parts to a proposal. The list is also provided as a checklist in the solicitation. We will briefly touch on these.
- 27) The Project summary is very important. With this single page, you hope to strongly interest a reader in your proposal. It has three sections. Plan them as a whole, but insert them individually into FastLane in three separate boxes. Most scientists know what intellectual merit is—the intrinsic merit of the science. Broader Impacts are not so intuitive. Overall they are the impact of your research other than just the science results you will generate. The next slide has more on this.
- 28) Broader impacts come in many forms, they stem from your research and ideally should be well integrated. The list shows a few of these; broadening participation to ensure everyone, especially those traditionally underrepresented, get a chance to participate in science; education to improve STEM understanding at any level; benefitting society, for example, public outreach to enhance public engagement in science or promoting health and wellness. There are resources available to help you think about how to develop the broader impacts for your project.
- 29) In the project description, which is only 6 pages, write clearly and provide both the big picture to showcase the significance, and provide sufficient detail, so that it is apparent you are well prepared to undertake the work. Emphasize the training as well. The 'How to Apply' document has a list of all the aspects you need to cover in an a-h bulleted list—use it! 'g' on this list is Broader Impacts—in addition to what you write in the Summary, you must have separate section, headed BROADER IMPACTS, in which you discuss in more detail the activities you propose. Final writing tip on this slide--write for the reader. This is important, for example, jargon will obscure your meaning and writing in a way that is only appropriate for specialists in your field, means some reviewers will not see the significance of your work.
- 30) These do not need special explanation, but make sure you cite relevant research, and follow the guidelines for your Biosketch and the Current and Pending document. The Data Management Plan is required for all NSF proposals and you should prepare it carefully in consultation with your sponsor.

- 31) There is a specific document to help your sponsor prepare their statement, this is linked from the PRFB program page and you should draw your sponsor's attention to it. The statement is 3 pages and gives your sponsor an opportunity to showcase their mentoring plan for you and how it will promote your development as a scientist. You must upload the Abstract of your thesis as a separate document. For applicants to Area 2, Collections, the letters you need to show you have access to the specimens or data you need for your research must also be uploaded.
- 32) Two letters of recommendation are needed, one from your thesis advisor. Don't use your sponsor for the other, find another scientist who knows you and your work.
- 33) This shows how and where you add the reference writers.
- 34) Your proposal will be reviewed by a panel of scientists. Three reviewers will read your proposal in more detail, present their assessment to the rest of the panel and write reviews, which you will receive at the end of the process, which should take about 6 months. Remember when writing your proposal, the reviewers, even though they are biologists, may not work in your precise field—make the project accessible.
- 35) If you want to get a feel for the successful projects, find this link at the bottom of the PRFB program page.
- 36) Here are some of last year's projects. You will see even in this snapshot there are many different topics.
- 37) For any questions, please contact us. And join for a live version of these slides in a Webinar in mid October, details will be announced on the DBI blog and the PRFB program page.