NSF Graduate Research Fellowship (GRFP)

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What is the GRFP?

Goals:

1. Recognize & support early-career scientists with high potential for significant achievement.

2. Broaden participation in STEM fields.

What is the GRFP?

In a 5-yr period

- 3 years of full graduate support
  $159k ($37k/yr stipend plus tuition+fees)
- Career-life balance support possible
- ~2200 awards; ~12,000 applicants/yr, ~18% funding rate

Eligibility

- US Citizen, national, or permanent resident
- Have not completed any grad degree by Aug 1 of the submission year unless (1) joint BS/MS program and no additional grad work; (2) At least 2 years off.
- **NO** MD/PhD, JD/PhD, Management, Social work;
  NO support for clinical research, health services

When should I apply?

Senior undergraduates
Post-baccalaureates who have not started grad school
Must be prepared to enroll the fall after you receive the award

APPLY!

First year graduate students

APPLY!

Highly competitive = demonstrates high potential to make significant achievements in STEM

- Past achievements predict future success
- GPA, awards, research experience, letters, great essays, clear past broader impacts and plans for future broader impacts of your work.
- Publications, presentations definitely help

Deadlines are in November of each year

Components of Application

- Personal information, education, work experience
- Proposed field of study
- Transcripts
- Three letters of recommendation (VERY IMPORTANT!)
- **Essay 1: Personal Statement:** relevant personal background & future goals (3pg.)
- **Essay 2: Research Statement:** graduate research plan (2pg.)

NSF Postdoctoral Fellowships

NSF's Postdoctoral Opportunities

Goals:

1. Support independent postdoctoral research early in a scientist's career, enabling fellows to pursue innovative projects that broaden their perspectives and build leadership potential.

2. Facilitate professional development, including advanced training, interdisciplinary interactions, mentorship, and skill expansion beyond doctoral work.

3. Help establish fellows as future leaders in their fields by providing flexibility to choose environments (e.g., new institutions or collaborators) that maximize impact on their scientific growth.

NSF's Postdoctoral Opportunities

Programs:

1. Postdoctoral Research Fellowships in Biology (PRFB)
2. Mathematical Sciences Postdoctoral Research Fellowships (MSPRF)
3. Earth Sciences Postdoctoral Fellowships (EAR-PF)
4. Social, Behavioral, and Economic Sciences SBE Postdoctoral Research Fellowships (SPRF)
5. Engineering Postdoctoral Fellowship (eFellow)
6. Innovative Postdoctoral Entrepreneurial Research Fellowship
7. General NSF Postdoc Opportunities (e.g., Astronomy/Astrophysics, Atmospheric/Geospace, MPS-Ascend)

NSF postdoctoral funding page: https://www.nsf.gov/funding/postdocs

NSF's Postdoctoral Opportunities

Two-year fellowships

- 2 years of stipend + research allowance
  $220-$340k ($110-$170k/yr) depending upon specific program.

Eligibility

- US Citizen, national, or permanent resident
- Must have earned (or will before fellowship start) a doctoral degree in relevant STEM field.
- Proposal must align with the program's disciplinary focus and goals.

Components of Application

- Project summary (1pg)
- **Project description** (6-10pg, depending on program)
- References cited
- Biographical sketch(es)
- Current and pending support
- Collaborators (COA)
- Data management and sharing plan
- Budget and justification
- Facilities, equipment, and other resources
- Letters from sponsoring scientists/mentors
- Letters of collaboration

NSF's Selection Criteria

What is the potential of the proposed activity to:

Advance knowledge and understanding within its own field or across different fields (**Intellectual Merit**)?

Benefit society or advance desired societal outcomes (**Broader Impacts**)?

Rating: Excellent; Very Good; Good; Fair; Poor

MUST be strong under BOTH criteria;
Labelled Intellectual Merit and Broader Impact statements must be in each essay/proposal

Intellectual Merit

Definition: The potential to advance knowledge

Considers: Creativity, originality

Personal Statement: Evidence of prior achievement, personality, recognition

convince reviewers that you have intellectual merit

Research Statement: Importance and relevance of the proposed work

convince reviewers that your proposed research outcomes have intellectual merit

Broader Impacts

Definition: Potential to benefit society or advance desired societal outcomes

Personal Statement: Evidence of prior engagement or interest relevant to your proposed plan

- show reviewers that you have experiences and qualifications that contribute to your ability to carry out your plan, and sincere commitment to its outcome

Research Statement: Detail your Broader Impacts plan in a way that naturally flows from some aspect of the research plan

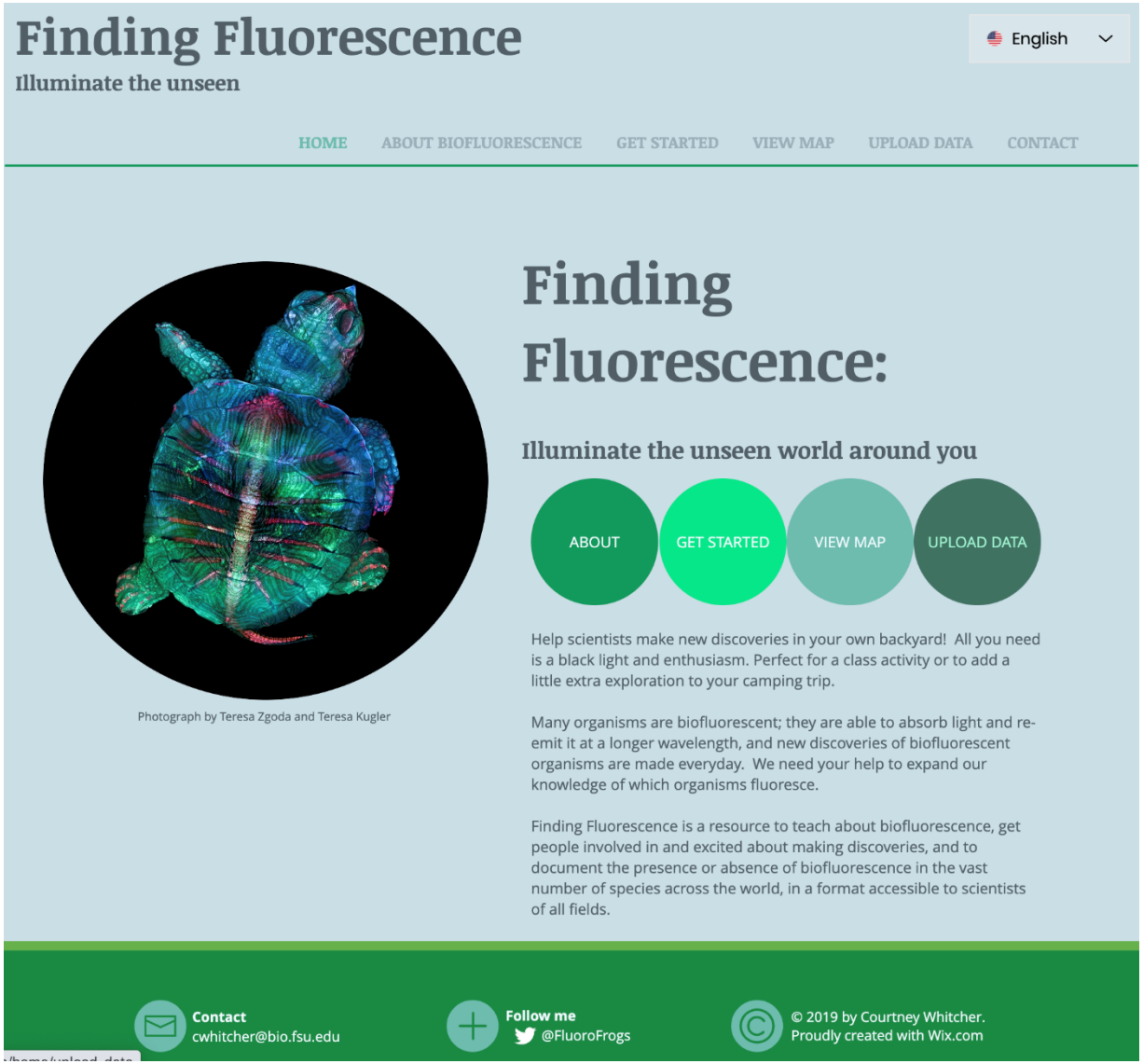
- convince reviewers that you can and will carry out your BI plan, and that it will effectively accomplish something that meets the description of at least one of the major 5 types of broader impacts.

Fatal Flaws (Advice from a Panelist)

Panelists advised to weight Intellectual Merit and Broader Impacts *equally*

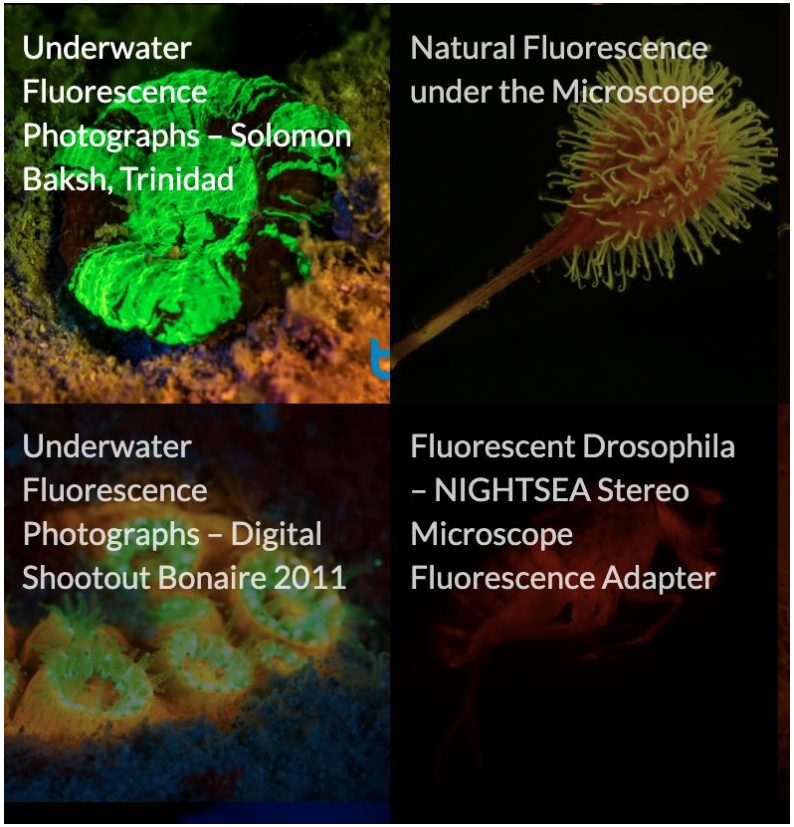
- Weak *history* of Broader Impacts (in Personal Statement)
- Weak *future* plan for Broader Impacts related to proposed research (in Research Statement)
- Vague Broader Impacts—need both specific history (not laundry list, but a story) and specific future plan
- Mundane Broader Impacts
- Too much overly personal information or too negative in Personal Statement
- Weak Intellectual Merit in Research Statement

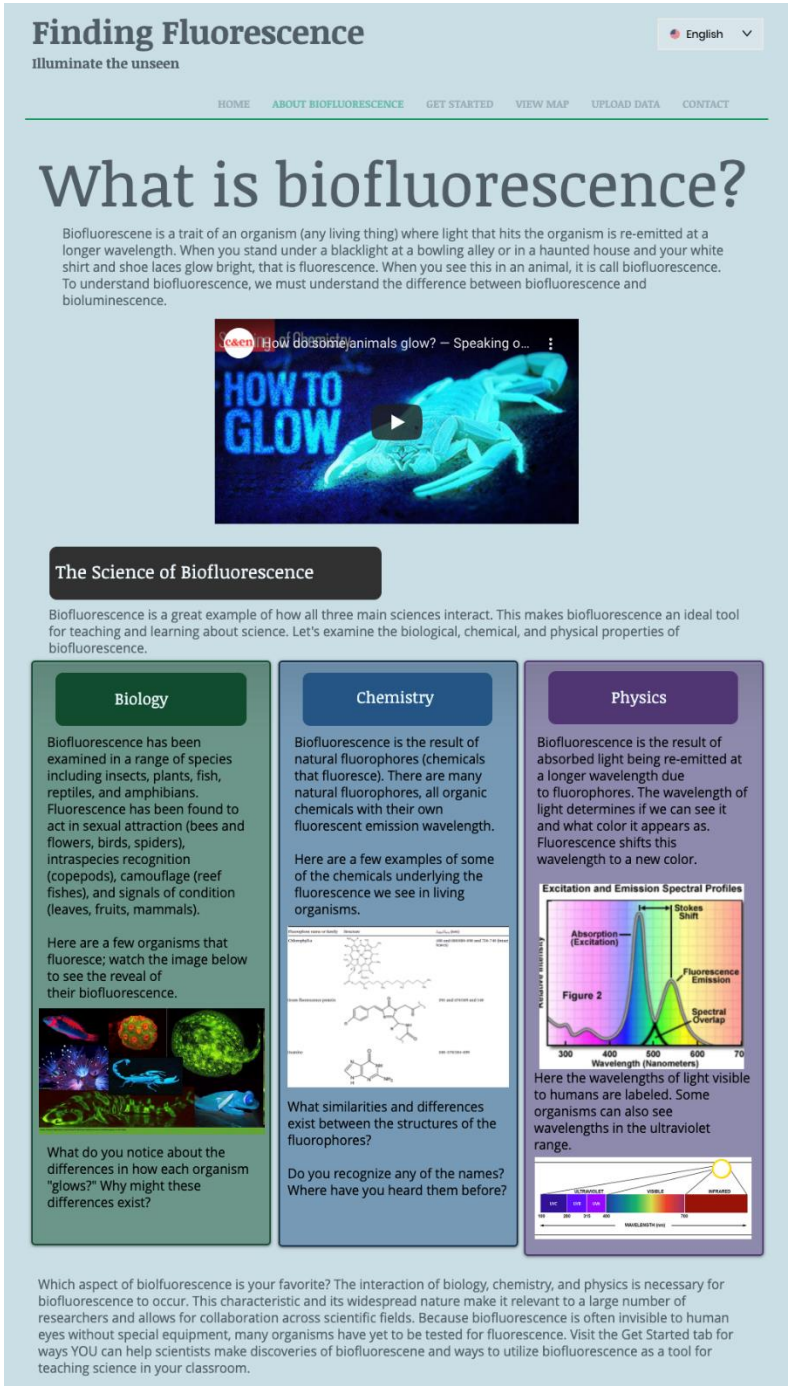
Ideas for Broader Impacts



Broader Impacts:

Finding Fluorescence website by Courtney Whitcher



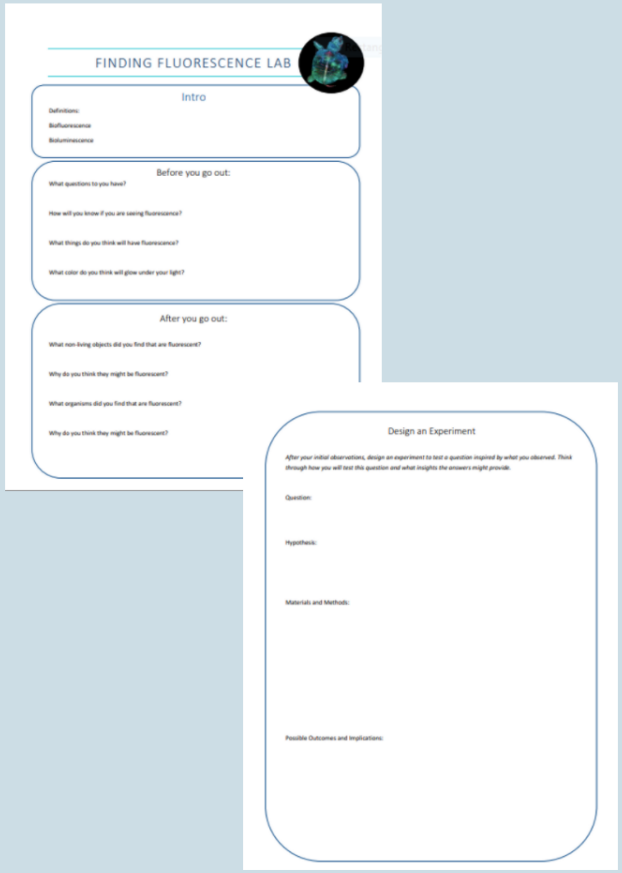


Broader Impacts: *Finding Fluorescence* K-12 Activities

Lab Activities for Classrooms

Biofluorescence provides a unique opportunity to teach and learn about the three main topics of science (biology, chemistry, and physics) in one lesson. Find downloadable worksheets linked below. These can be used in the classroom or at home. Check back often as new modules are continually added and being expanded upon to provide resources for students of all ages.

Use the language menu at the top of the page to visit the Spanish version of the site and download the worksheets below in Spanish.

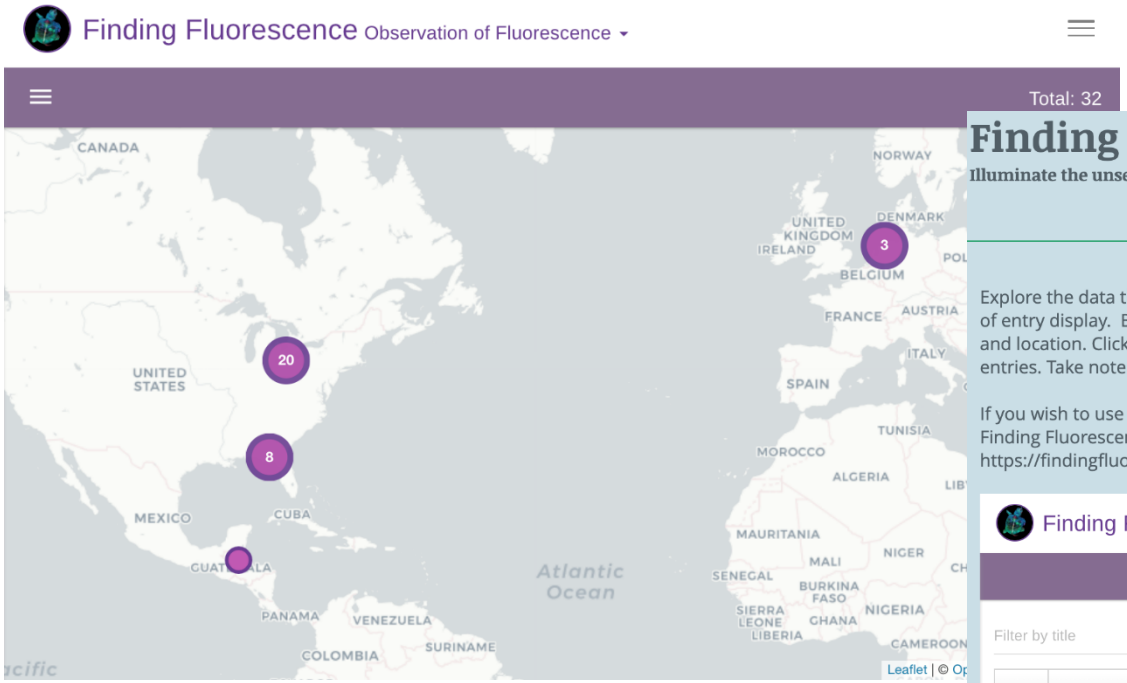


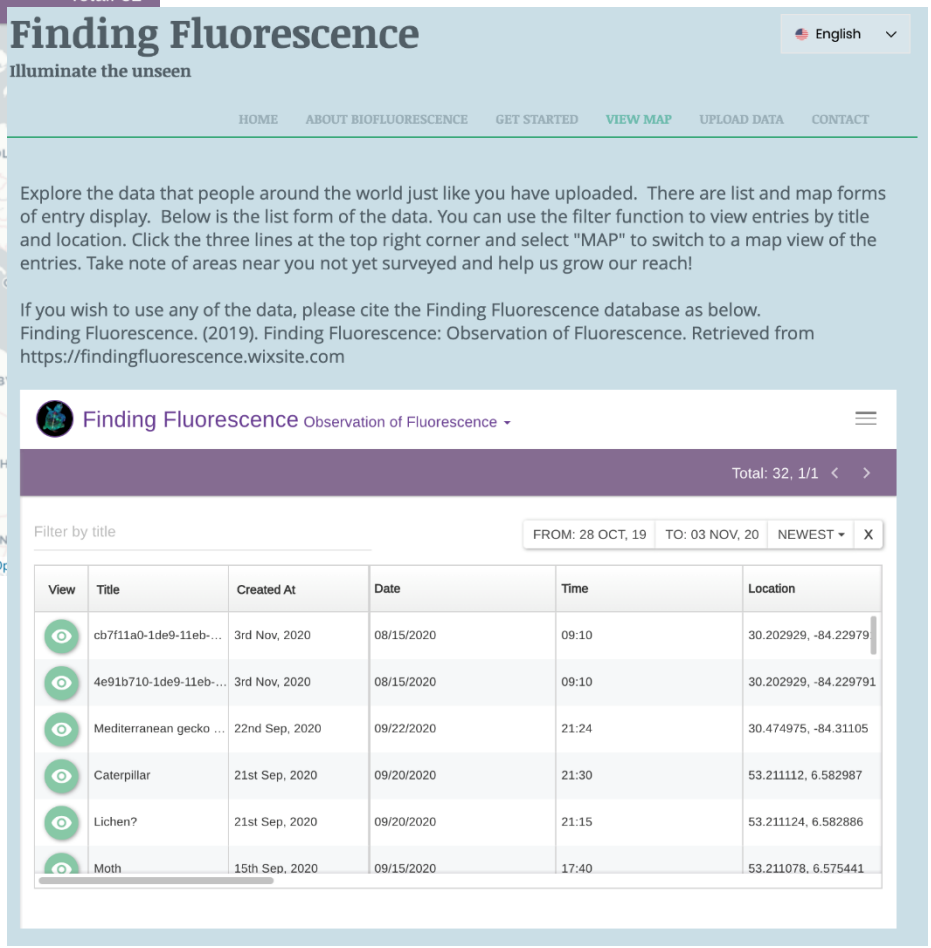
Classroom Resources

MODULES:

- Biology of Biofluorescence Worksheet
- Chemistry of Biofluorescence Worksheet
- Physics of Biofluorescence Worksheet
- Finding Fluorescence Lab

Broader Impacts: *Finding Fluorescence* Citizen Science Outreach





Bonus Material

To assess Intellectual Merit and Broader Impacts, Panelists are instructed to consider:

To what extent do the proposed activities suggest and explore creative, original, or potentially transformative concepts?

Is the plan for carrying out the proposed activities well-reasoned, well-organized, and based on a sound rationale? Does the plan incorporate a **mechanism** to assess success?

How well qualified is the individual, team, or organization to conduct the proposed activities?

Are there adequate resources available to the PI (either at the home organization or through collaborations) to carry out the proposed activities?

Broader Impacts

Advance discovery and understanding while promoting teaching, training, and learning, for example, by training graduate students, mentoring postdoctoral researchers and junior faculty, involving undergraduates in research experiences, and participating in the recruitment, training, and professional development of K-12 mathematics and science teachers.

Broaden participation of under-represented groups, for example, by establishing collaborations with students and faculty from institutions and organizations serving women, minorities, and other groups under-represented in the mathematical sciences.

Enhance infrastructure for research and education, for example, by establishing collaborations with researchers in industry and government laboratories, developing partnerships with international academic institutions and organizations, and building networks of U.S. colleges and universities.

Broaden dissemination to enhance scientific and technological understanding, for example, by presenting results of research and education projects in formats useful to students, scientists and engineers, members of Congress, teachers, and the general public.

Benefits to society may occur, for example, when results of research and education projects are applied to other fields of science and technology to create startup companies, to improve commercial technology, to inform public policy, and to enhance national security.

Encouragement

Awardees are not composed of only Ivy League superstars!

Diversity is an asset: students from rural areas, underrepresented groups, disabled, economically-disadvantaged, first generation college or graduate student, financial challenges

Talk about these things in your GRFP personal statement!

Applicants who have overcome major challenges and persevered are likely to succeed—write about your experience in the GRFP application