EPSCoR
Grant Writing Workshop

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Tackle Administrative stuff early

Get in touch with OSP early and find out what you need in order to submit a grant:

- online user account
- signatures needed
- budget issues

Read the NSF grant proposal guide:

- fonts / line spacing matters…do it right from the beginning!

Read the NSF instructions to proposal reviewers

- you want to know what they are asked to consider.

For CAREER Award applications, talk to your department chair early on about your plans

- they need to write a letter of support.

Ask for help / advice!

Talk to:

Colleagues who have served on review panels

Former advisors / mentors

Ask people to review your proposals and give them enough time to do it!

Swap proposals with friends

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Ask people to share their prior successful proposals and / or get yourself on a review panel!

When writing the grant

- Think of the reviewers …they are people like you!
- Carefully consider prior reviewer feedback on earlier work.
- Write simple sentence…nobody is impressed with linguistic prowess.
- Be as clear as possible…

  If you leave anything up to a reviewer to interpret for themselves they will interpret it incorrectly.

- Tell them why you consider your work important:

  "This work is important because…."

- Sell, sell, sell…but don't overstate!
- Recommend reviewers….but not too many.

The CAREER educational component

Faculty Early Career Development Program (CAREER Award):

> *Foundation-wide activity that offers … awards in support of junior faculty who exemplify the role of teacher-scholars through outstanding research, excellent education and the integration of education and research within the context of the mission of their organizations. Such activities should build a firm foundation for a lifetime of leadership in integrating education and research.*

Advice from colleagues RE: educational component

“Make it real” (i.e. it is important to take seriously)

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but does not need to be directly related"

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"Should have some form of measurable outcomes"

"Should have some tie to research…

but does not need to be directly related"

"Propose something you want to do because we'll expect you to do it!"

Educational topic I identified

Green Chemistry!

- Hot topic
- Something I'm interested in
- Aligns well with UVM's mission
- Easy to add to curriculum

Educational topic I identified

Green Chemistry!

1. Incorporate experiments into advanced lab
2. Go to green chemistry in education workshop (NSF-funded)
3. Incorporate experiments into undergraduate labs
4. Have upper level labs try to develop Green Chemistry experiments for lower level labs
5. Partner with ECHO center and undergrads to develop outreach materials…a great outcome and they want more partnerships!

Why partner with ECHO?

Info about ECHO included in grant:

- Only science center in area
- Broad reach into the Vermont and Upstate New York communities
- Over 150,000 visitors per year
- Have programs in place to reach disadvantaged citizens through an “open-door” program that makes the science center accessible to all
- Dedicated to educating the community on environmental issues; green chemistry falls nicely inline with their mission
- Employ trained outreach specialists who have expertise in making science accessible to a general audience

Linda Bowden
Lifelong Learning Coordinator
lbowden@echovermont.org

Other selling points:

Budgeted $7000 for two undergraduate students to work on the project.

Topic Identified!

Biodegradable plastics: Green Chemistry in action!

- Of current interest to many people
- Can discuss Organic Chemistry in a context familiar to public
- Great way to introduce Green Chemistry concepts and principles
- Promotes chemistry in a positive light (solving an environmental problem)
- Environmental implications pairs well with ECHO'S mission

How it was presented!

Workbench

How it was presented!

Workbench Panels

What is green chemistry?

Green chemistry is the use of a set of 12 principles that reduce the generation of hazardous substances in the design, manufacture, and application of chemical products.

The first principle of green chemistry is that waste prevention is better than waste clean-up.

Two volunteers pick up trash off a beach on Peirce Island in Portsmouth, N.H.

Goals of green chemistry include:

- reducing energy used in chemical synthesis
- reducing or eliminating toxic byproducts
- employing the concept of atom economy in chemical reactions

What are scientists researching?

Biodegradable Plastics

Biodegradable plastics are made of *polymers*, which are chains of repeating sub-units, called *monomers*: M

A non-degradable polymer:

M — M — M — M

The black links represent carbon-carbon bonds, which are not easily broken down by bacteria. This polymer will last in the environment for a very long time, potentially hundreds of years.

A biodegradable polymer:

M — M — M — M

The red links represent carbon-oxygen bonds, which are weaker than carbon-carbon bonds. Bacteria are able to break these bonds and use the resulting individual monomers as food.

Are biodegradable plastics the best solution?

Pros:

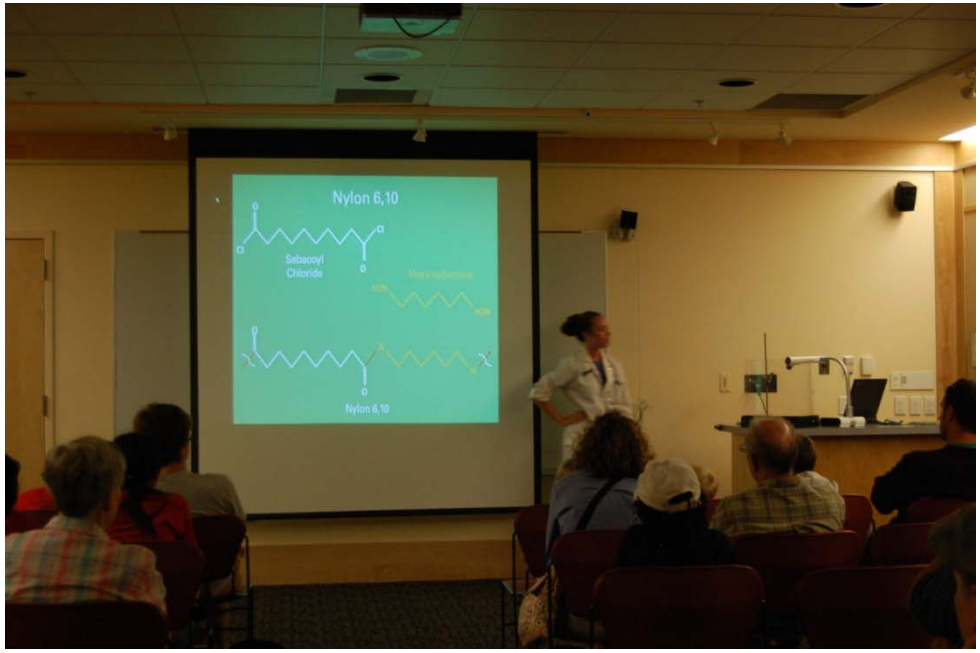
- They do not persist in the environment
- Fewer hazardous reactions are used in their synthesis
- They can be used for a variety of applications (i.e. grocery bags, eating utensils)

Cons:

- CO_2, a greenhouse gas, is a byproduct of degradation
- Landfill environments do not always allow for complete degradation
- They are less resilient than common plastics to harsh conditions (i.e. heat, moisture)

How it was presented!

Daily Presentations by Michelle and Eliza!



Including a demonstration and group participation!

How it was presented!

Plastic Garden

How it was presented!

Meet the Scientist

Presentation
Demonstration
Take home project

Summary

ECHO Center had over 45,000 visitors while our exhibit was on display!

Approximately 400 people directly interacted with Eliza and Michelle at the workbench and over 50% were under 18

Approximately 250 people attended the presentations over the course of the summer

Initially out of my comfort zone…but in the end quite fun and gratifying!

Eliza and Michelle have a great resume builder and are both now pursuing careers in teaching!

Funding provided by: