

# EPA Office of Research & Development (ORD) Research Opportunities

*April Richards*



**Agricultural and Biological Engineering Department Heads  
Combined Multi-State Meeting @ USDA**

## NCER's Programs

*National Center for Environmental Research (NCER)  
is ORD's extramural research arm*

[www.epa.gov/ncer](http://www.epa.gov/ncer)

- Science To Achieve Results (STAR)
  - Targeted Research Grants through RFAs
  - Exploratory/Futures Grants
  - Competed Centers
- Fellowship Programs
  - STAR Graduate
  - Greater Research Opportunities (GRO) Undergraduate
- People, Prosperity and the Planet (P<sup>3</sup>)
- Small Business Innovation Research (SBIR)





# Science To Achieve Results (STAR) Grants

# NCER's STAR Research Priorities

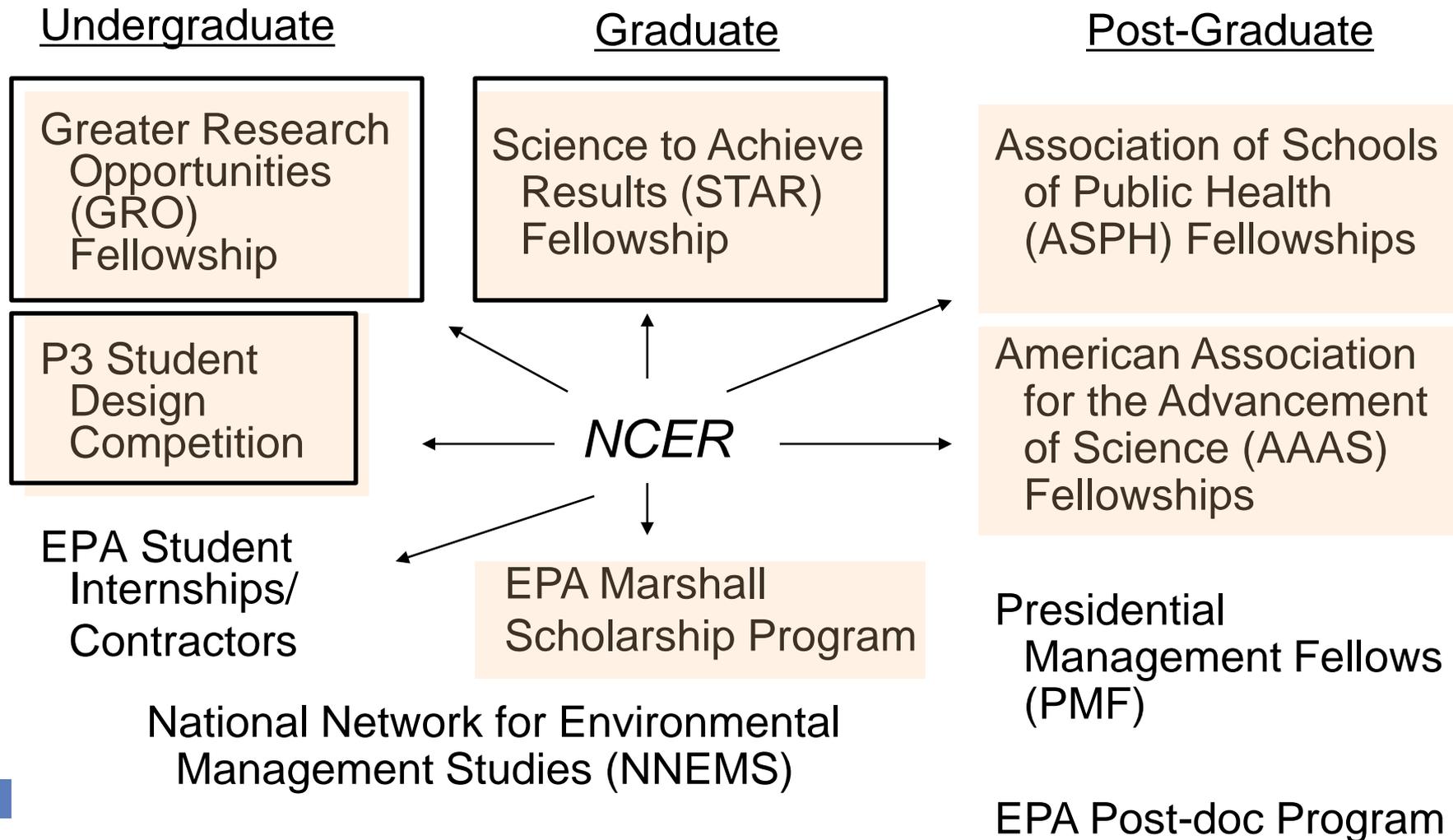
- Air Research
- Global Change
- Ecological Services
- Human Health Research
  - Children's Health
  - Tribal Centers
- Endocrine Disrupting Chemicals
- Computational Toxicology
- Drinking Water
- Sustainability
- Nanotechnology
- Exploratory Research





# Fellowship Programs

# The EPA Supports Environmental Education



# Fellowships: Program Goals & Highlights

## **STAR Graduate Fellowship Program**

- ✓ Encourage promising students to obtain advanced degrees and pursue careers in environmentally related fields
- ✓ Support basic and applied research in environmentally-related research areas conducted by the nation's best and brightest students

## **GRO Undergraduate Fellowship Program**

- ✓ Encourage promising students to pursue careers in environmentally related fields and to continue their education beyond the baccalaureate level
- ✓ Stimulate and support interest in environmentally-related research and development at institutions of higher education that receive limited federal funding, including in particular institutions with substantial minority enrollment

**~1700 STAR/GRO Fellowships since 1995**

**~\$110M have supported fellows since 1995**



# STAR Fellowships Overview

- 2-yr financial support for Master's students
- 3-yr financial support for Doctoral students
- Provides up to \$42,000 each year
  - Up to \$12,000 for tuition and fees
  - \$25,000/yr = stipend
  - \$5,000 = expense allowance



- Up to 105 awards expected for Fall 2011
- Topic Areas

Global Change

Clean Air

Drinking Water

Water Quality:

- Hydrogeology and Surface Water
- Coastal and Estuarine Processes

Human Health:

- Public Health
- Risk Assessment and Risk Management

Ecosystem Services:

- Aquatic Systems Ecology
- Terrestrial Systems Soil and Plant Ecology
- Terrestrial Systems Animal Ecology

Emerging Environmental Approaches & Challenges:

- Innovative Investigations for Oil Spill Impacts
- Social Sciences
- Information Science

Tribes and American Indian/Alaska Native/Pacific Islander Communities

Nanotechnology

Science & Technology for Sustainability:

- Environmental Entrepreneurship
  - Green Engineering/Building/Chemical Products & Processes/Materials Development
  - Green Energy/Natural Resources Production & Use
- Land Protection  
Pesticides and Toxic Substances

# GRO Fellowships Overview

- Financial support for students in their last two years of undergraduate study
- Students must attend a GRO eligible institution (<\$35M in R&D)
- Provides up to \$48,900 over 2 years
  - Up to \$10,000 for tuition and fees
  - \$7,200/yr = stipend
  - \$2,500 = expense allowance
  - \$9,500 = 12 week summer internship at an EPA facility
- Up to 40 awards expected for Fall 2011
- Topic Areas
  - Natural and Life Sciences
  - Environmental Science and Interdisciplinary Programs
  - Engineering
  - Social Sciences
  - Physical Sciences
  - Mathematics and Computer Science





# Fellowship Program Contacts

## **STAR/AAAS/ASPH:**

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## **GRO:**

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**WEBSITE & LINKS to RFAs:** <http://www.epa.gov/ncer/fellow/>

Supporting the Next Generation of Scientists, Engineers, and  
Environmental Policy Makers!

# People, Prosperity and the Planet (P3)

## EPA's P3 Award Program

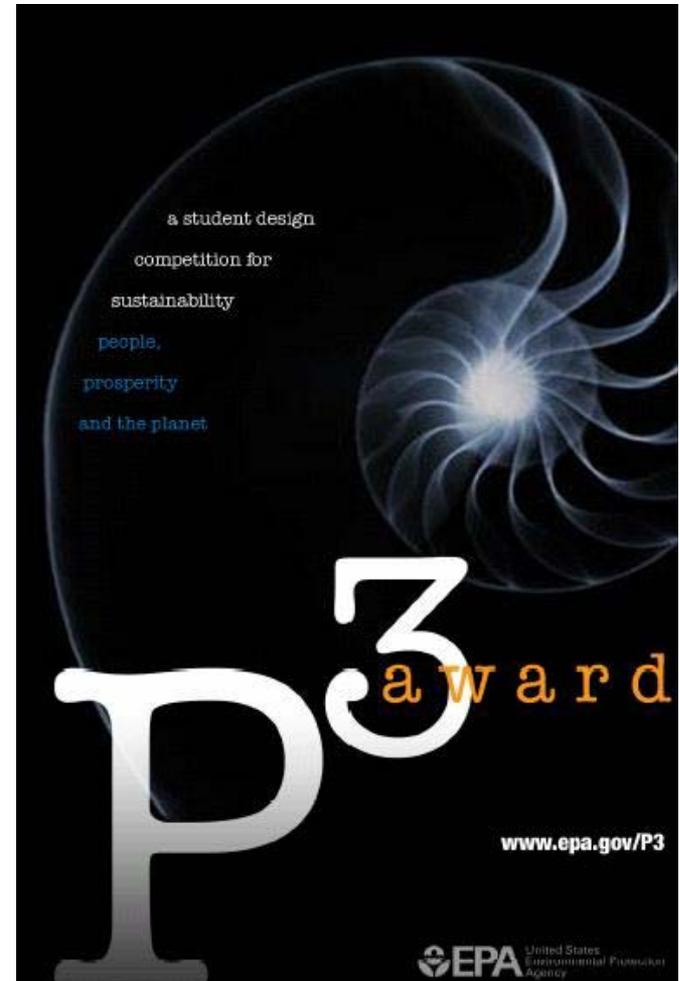
- Launched in 2004 as two-phase grant competition
- Designed to
  - Harness the energy and creativity of interdisciplinary student teams
  - Infuse students with an awareness of their impact on the planet, the economy, and society
  - Support integration of sustainability principles into engineering curricula
  - Support implementation of practical projects by students

## P3 Project Areas

- Open to sustainability challenges in **developed** and **developing** world in five challenge areas:
  - **Water** - water quality or conservation; drinking water treatment and supply...
  - **Energy** - reduction in air emissions through innovative strategies for energy production and energy distribution; energy conservation; inherently benign energy...
  - **Agriculture** - irrigation practices; reduction or elimination of pesticides; nutrient management...
  - **Built Environment** - environmental benefits through innovative green buildings; transportation and mobility strategies; and smart growth...
  - **Materials & Chemicals** - materials conservation; renewable, bio-based feedstocks; inherently benign materials and chemicals through green chemistry and green engineering; biotechnology

## P3 Program Process

- **Solicitation open August through December 2011.**
- Student teams compete for \$15,000 award to develop their designs
- Proposals evaluated by panel of outside experts (Spring Year 1)
- Phase I awards made beginning following academic year (Fall Year 1)
- Student teams prepare Project Report of their Phase I activities and Proposal for Phase II (Spring Year 2)
- Successful student teams bring their designs to the National Mall at the National Sustainable Design Expo (Spring Year 2)



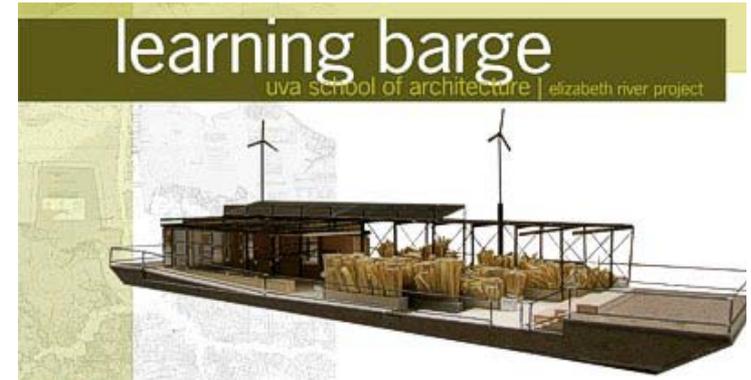


**6th Annual P3 Awards  
April 16-17, 2011  
National Sustainable Design Expo  
(on the mall)**

**[www.epa.gov/P3](http://www.epa.gov/P3)  
[nolt-helms.cynthia@epa.gov](mailto:nolt-helms.cynthia@epa.gov)**

## P3 Success Story – Learning Barge

- Floating laboratory and education center on the James River
  - Powered by wind and energy
  - On board grey water bed wetland filters
  - K-12 Education
  - Water quality monitoring
  - Administrator Jackson invited to the launch fall 2009
  - Barge featured on NPR and other media





# Small Business Innovation Research (SBIR) Program

## EPA SBIR Mission

- Supports small businesses to develop and commercialize innovative technologies to solve priority environmental problems



## Federal SBIR Program

- 11 Agencies/Departments participate
- Over \$2.0 Billion in 2010

## EPA SBIR Program

- Annual Competitive Solicitations
  - Next solicitation open March 2011**
- Award about \$5 million dollars annually
- Two-stage proposal review: external peer review followed by internal relevancy review by EPA staff

# EPA SBIR Awards

- **Phase I**

- Proof of Concept
- \$80,000
- 6 months

- **Phase II**

- Develop Phase I technology with focus on commercialization
- Base \$300,000
  - Commercialization Option (\$70,000)
- 2 years

# Anticipated EPA SBIR Solicitation Topics for 2011

- Drinking Water Technology
- Green Building
- Innovation in Manufacturing
- Greenhouse Gases
- Monitoring and Control of Air Pollution
- Biofuels and Vehicle Emission Reduction
- Waste Management and Monitoring
- Homeland Security

# Collaboration with NSF SBIR on Environmental Technologies

- NSF Phase I Solicitation
  - Scheduled for Spring release
- Almost All EPA Environmental Topics Covered by NSF
- NSF Budget ~\$150 million
- Proposal requirements are different



## **EPA-SBIR Success Story – Membrane Technology and Research, Inc.**

### **Recovery and Recycling of Valuable Feedstock From Plant Reactor Purge Gas**

- MTR developed a membrane separation system to improve process economics and reduce air pollution by recovering and recycling feedstock from the purge stream of industrial reactors.
- The annual revenue generated by using the membrane system to recover feedstock is between \$200,000 and \$400,000 annually for a typical ethylene oxide plant.
- MTR systems are in use worldwide to recover ethylene from the argon purge stream in ethylene oxide and vinyl acetate plants, with an ethylene recovery capacity of 3,700 tons per year (8.1 million lbs/yr).

## For More Information...

- EPA SBIR website: [www.epa.gov/ncer/sbir](http://www.epa.gov/ncer/sbir)
  - 2009 Phase I Solicitation (now closed)
  - Searchable database of all funded projects
  - SBIR Success Stories
- Contacts
  - April Richards, Acting Program Manager      richards.april@epa.gov