

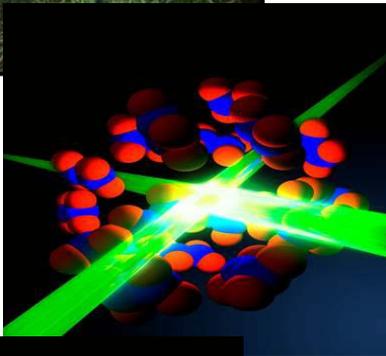


Overview of the DOE Office of Science Graduate Fellowship Program (DOE SCGF)



**Advanced Scientific Computing
Advisory Committee Meeting
(ASCAC)**

August 25, 2010



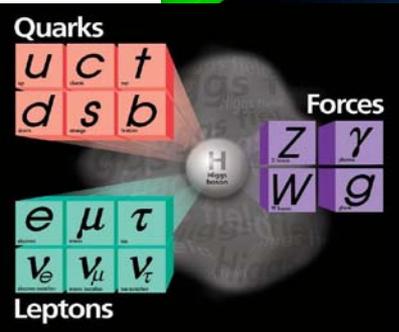
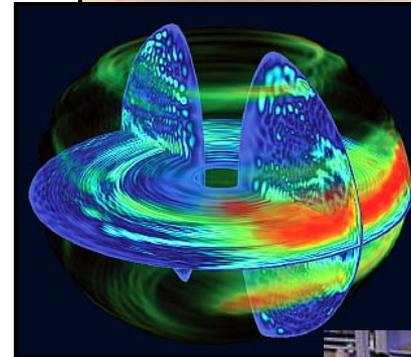
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Program Manager, DOE SCGF

**Office of Workforce Development
For Teachers & Scientists (WDTS)**

Office of Science

U.S. Department of Energy





Outline

- Overview of History and Management
- Eligibility and Benefit
- Merit-Based Review and Selection
- Results from 2009-2010 Competition
- Updates for 2010-2011 Competition



Science and Technical Workforce

Graduate Programs

- Graduate Research Awards
 - DOE SCGF
 - Lindau Meeting with Nobel Laureates

Undergraduate Programs

- Undergraduate Research Internships
 - SULI: Science Undergraduate Laboratory Internship
 - PST: Pre-Service Teachers
 - FaST: Faculty and Student Teams
 - CCI : Community College Institute of Science and Technology

High School & Middle School Programs

- NSB: National Science Bowl

Educator Programs

- FaST: Faculty and Student Teams
- DOE ACTS : DOE Academies
Creating Teacher Scientists
- Einstein Fellowship: Albert Einstein Distinguished Educator Fellowship



SC Program Offices (ASCR, BER, FES) have had graduate fellowships; SC leadership in 2008 decided a coordinated and prestigious SC graduate fellowship program was needed for all six research offices.

DOE SCGF Purpose:

- Support outstanding students pursuing advanced degrees in basic research in areas of physics, biology, chemistry, mathematics, engineering, computational sciences, and environmental sciences relevant to the Office of Science and DOE mission, and
- Encourage the development of the next generation of scientific and technical workforce in the U.S. in order to stay at the forefront of science and innovation.
- Encourage graduate students to pursue careers in basic research at DOE national laboratories and academia.

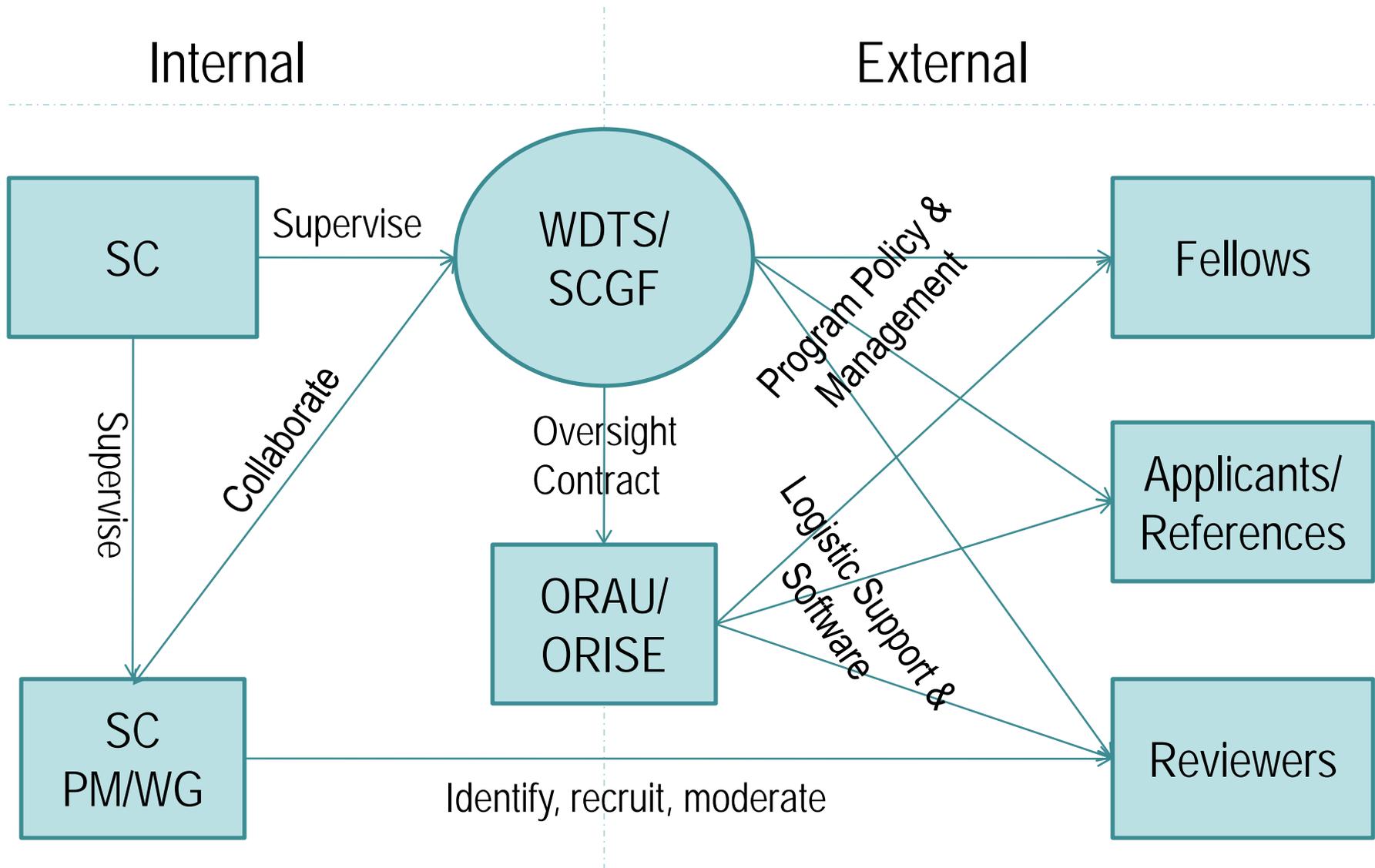
Support Level:

- ARRA funding (\$12.5M) provided a jumpstart for the program.
 - 80 fellowships (all 3 years, \$50,500/Fellowship plus annual meeting coverage)
- WDTS FY10 budget (\$5M) provides continuity.
 - 70 fellowships (1st year of 3 years, \$50,500/Fellowship plus annual meeting coverage)
- WDTS FY11 budget request (\$15M)

Note: ASCR graduate fellowship programs will continue and complement the SCGF program



DOE SCGF Program Development & Management





Eligibility and Application (FY 2010)

Eligibility

- U.S. citizen
- An undergraduate senior or first or second year MS and Ph.D. student at the time of applying
- Pursuing an advanced degree (research-based thesis/dissertation) in areas of basic research important to the Office of Science and DOE missions (ASCR, BER, BES, FES, HEP, NP)
- Not supported:
 - joint BS/MS degree programs, DVM, MBA, MD, joint MD/PhD, JD, or joint JD/PhD degree programs.

Application

- Application: education history, graduation education plan, honors/awards, publications, two essays (personal statement, proposed plan of research)
- Transcripts
- Three letters of recommendation



The DOE SCGF is a three-year award, totaling \$50,500 per year

- \$35,000 annual living stipend
- \$10,500 towards tuition and fees
- \$5,000 annual research stipend for research supplies, travel to conferences, and travel to DOE user facilities, text books, journal subscription, computer related purchase for graduate research and education.

Annual DOE SCGF Research Conference

Each year WDTS will hold a summer research conference at one of the DOE national laboratories.

- Provide an opportunity for fellows of the DOE SCGF program to share their research with other fellows
- Invited researchers from universities and the DOE laboratories to present their leading research development sponsored by Office of Science research programs
- Include guest lectures, tours of the host laboratory, professional development seminars, and workshops on how to access the DOE user facilities and collaborate with national laboratory researchers.
- Serve as an orientation for new fellows.

August 8-10, 2010, Argonne National Laboratory, Invitation-Only



Merit Review Criteria (FY 2010)

1. Academic Performance

- a. Do the courses taken by the applicant, the applicant's course grades, publications and/or awards reflect excellent academic performance?
- b. Does the applicant have research experience or other relevant experiences that demonstrate the applicant is well prepared for graduate research?
- c. Has the applicant demonstrated the ability to work effectively in a team and independently?

2. Scientific and/or Technical Merit of Proposed Plan of Research

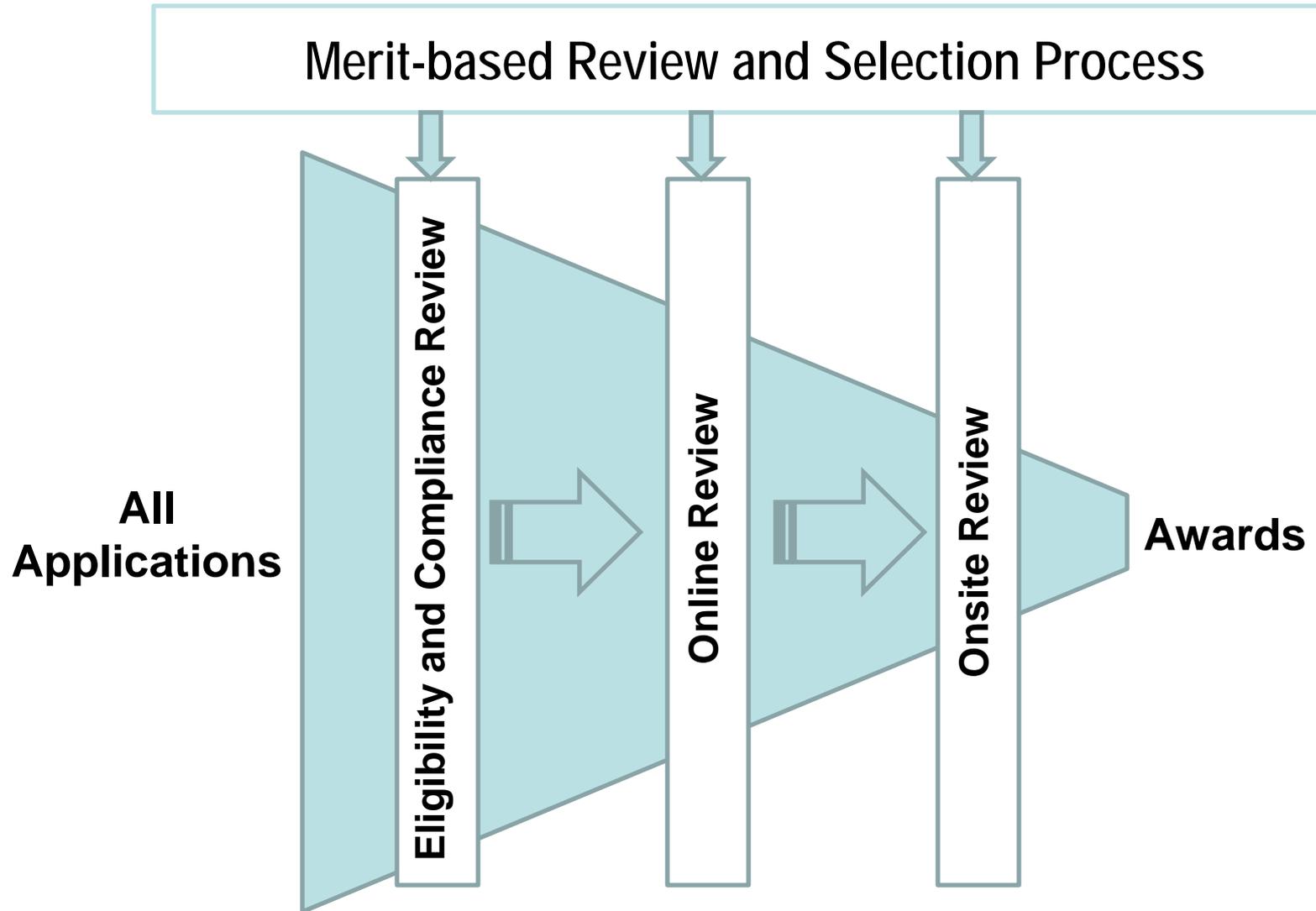
- a. Is the proposed research novel or have the potential to make meaningful contributions to the forefront of the field?
- b. Is the proposed method or approach appropriate?
- c. Does the proposed plan demonstrate a strong understanding of scientific and technical challenges in the proposed area of research?
- d. Is the proposed plan of research sufficiently relevant to the [Office of Science mission areas](#)?

3. Scientific and Technical Contributions Outside of the Classroom

- a. Has the applicant participated in activities that benefited the applicant's scientific professional community?
- b. Has the applicant demonstrated leadership in activities or projects related to the applicant's scientific professional community?
- c. Are the applicant's career goals and objectives well aligned with the broader goals of the Office of Science and Department of Energy?



Review and Selection (FY 2010)





- 150 Ph.D., Master's students, and undergraduates (at the time of applying)
- Majored in physics, chemistry, computer science, material science, engineering, earth/atmospheric/planetary science, biology and environmental sciences, nuclear science and engineering
- Going to 51 academic institutions, across 25 states

Research Relevance to SC Programs

SC Research Offices

Advanced Scientific Computing
Research (ASCR)

Biological and Environmental
Research (BER)

Basic Energy Sciences (BES)

Fusion Energy Sciences (FES)

High Energy Physics (HEP)

Nuclear Physics (NP)



More Statistics

Gender Distribution

Total Awards: 150

Female	51	
Male	99	

Enrollment At the time of applying

Total Awards: 150

Undergraduate	22	
First Year Graduate Student	56	
Second Year Graduate Student	72	



SCGF and SC Mission

- At the first annual meeting earlier this month, Fellows spent 2½ days meeting with SC-supported researchers from labs and universities, and learning about the national scientific user facilities.
- Fellows also learned about the tremendous research capabilities and employment opportunities that exist across the DOE national laboratories.
- This group of graduate students is excited to be a part of the DOE Office of Science research community...and are now likely to be more informed than most of their advisors about the Office of Science mission and how to access the SC user facilities for their own research.
- SC Program Managers have been encouraged to include the Fellows in their program announcements for funding opportunities, scientific workshops, featured talks at annual meetings, etc.



2010 Annual SCGF Research Meeting: Activities Relevant to ASCR Office

- **Laboratory Tour (August 8, 2010)**
 - Argonne Leadership Computing Facility (ALCF), 1.5 hours, highly interactive, led by ANL scientists Paul Messina, Scott Parker, Jeff Hammond
- **Three Science Talks (August 9, 2010; out of total 12)**
 - Chaired by Barbara Helland
 - *Using Simulation to push the Frontiers of Science*, by Dr. Tony Mezzacappa, ORNL
 - *Basic Research for High Performance Computing—Challenges on the Path to Exascale*, by Dr. Andy White, LANL
 - *The Fusion Simulation Project*, by Dr. William Tang, PPPL
- **Four Research Posters (August 9, 2010; out of total 30)**
 - *Finding the Science Needles in the Data Haystack*, by Dr. Chandrika Kamath, LLL
 - *ITAPS: Interoperable Mesh and Geometry Technologies for Advanced Petascale Simulation*, by Dr. Lori Freitag-Diachin, LLL
 - *Cloud computing for Science Applications*, by Dr. Shane Canon, LBL
 - *Frameworks for Exascale Simulation*, by Dr. Paul Fischer, ANL
- **User Facilities Panel (August 10, 2010)**
 - DOE high-performance computing facilities and access by Barbara Helland (Panelist)



DOE SCGF Working Group

(Thank You!)

SC Offices	FY 2010 Competition	FY 2011 Competition
Basic Energy Sciences	Dr. Larry Rahn	Dr. Larry Rahn
Basic Energy Sciences	Dr. P. Thiyagarajan	Dr. Mike Markowitz
Basic Energy Sciences	Dr. Eliane Lessner	
Fusion Energy Sciences	Dr. Darlene Markevich	
Fusion Energy Sciences	Dr. Samuel Barish	
Fusion Energy Sciences	Dr. Nirmol Podder	Dr. Nirmol Podder
Nuclear Physics	Dr. Eugene Henry	Dr. Eugene Henry
Nuclear Physics	Dr. Lino Miceli	Dr. Lino Miceli
Advanced Scientific Computing Research	Dr. Karen Pao	Dr. Karen Pao
Advanced Scientific Computing Research	Dr. Richard Carlson	
Biological and Environmental Research	Dr. Noelle Metting	Dr. Prem Srivastava
Biological and Environmental Research	Dr. Todd Anderson	Dr. Rickey Petty
High Energy Physics	Dr. John Boger	
High Energy Physics	Dr. John Kogut	Dr. John Kogut
Workforce Development for Teachers and Scientist	Sue Ellen Walbridge	Dr. Ping Ge
Deputy Director for Science Programs	Dr. Julie Carruthers	Dr. Julie Carruthers



Timeline

Major Activity	Key Dates for FY 2010 Competition	<u>Estimated</u> Key Dates for FY 2011 Competition (Public announcement pending)
Program Announced, Accepting applications	September 20, 2009	September, 2010
Applications Due	November 30, 2010 (~3,300 received)	TBD
Online "Peer" Review	Jan. 22-Feb. 21, 2010	TBD
Onsite Merit Review Panels	Mid-March, 2010	TBD
Notification	March 31, 2010	April , 2011



- **COV in May 2010**
 - As a part of WDTS office COV
 - Subcommittee of Basic Energy Science Advisory Committee (BESAC)

- **Improvement for FY 2011**
 - Lessons learned in FY 2010
 - Application improvement
 - Onsite and online Review improvement



Thank you!

<http://www.science.energy.gov/scgf>

DOE SCGF Q&A

ping.ge@science.doe.gov