

NSSEFF

NATIONAL SECURITY
SCIENCE & ENGINEERING
FACULTY FELLOWS

PART OF THE NATIONAL DEFENSE
EDUCATION PROGRAM

National Security Science and Engineering Faculty Fellowship (NSSEFF) Program

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NSSEFF Program Overview



- Established in 2008
- Currently sponsored by Director of ASD(R&E) Basic Research Office
 - Funded by the National Defense Education Program until FY14
- 6 competitions have been held

Goals are to

- provide extensive, long-term financial support to university faculty and staff scientists and engineers to conduct bold and ambitious “blue sky” basic research on topics of interest to DOD.
- foster long-term relationships between STEM faculty members, their students, and DOD.

Grant Information



- Tenured faculty and full time staff at Ph.D.-granting educational institutions are eligible
- Single-investigator research grants, although collaboration is encouraged
- Up to \$3M in total costs for up to 5 years per award
- Security clearance is not required for award
- Fellows are expected to participate in DOD activities
 - Workshops, lab visits, program reviews, host DOD visitors at their site, serve on advisory panels, send students to lab internships
- Approximately 10 Fellows selected each competition
 - 58 current and former Fellows

Current DOD Research Areas of Interest



- Engineering Biology
- Quantum Information Science
- Cognitive Neuroscience
- Novel Engineered Materials
- Applied Math & Statistics
- Manufacturing Science
- Other research fields with high potential

NSSEFF Program Philosophy



Q: What are the specific goals that differentiate the NSSEFF program from the normal array of OXR programs that range from SI to MURI to Centers to in-house lab research?

A: NSSEFF enables purely scientific investigations that require sustained investment for a long period of time.

- For basic scientific research only
- Funding level is higher than that generally given for scientific study programs → research will be larger in scope and longer in duration than typical OXR funded research
- Not aimed at solving a particular technological problem
- No milestones
- Focused on projects that might achieve major scientific breakthroughs
- Results expected to lead to revolutionary advances in DOD in the long term

NSSEFF Program Philosophy



Q: (2) **What are the specific goals that differentiate the NSSEFF program from the normal array of OXR programs that range from SI to MURI to Centers to in-house lab research?**

• OXR SI (single investigator):

- Science is coupled with a military need.
- \$100-200K/yr for 3 yrs

• MURI (multi-university):

- Multiagency program overseen by DOD (ARO, ONR, AFOSR).
- Supports multidisciplinary basic research in areas with potential for both defense and commercial apps
- Typically ~\$0.5-1.5M/yr for 3 yrs + 2 additional option yrs
- Greater sustained support than SI awards.

• DARPA award:

- Mainly high risk, high payoff technology development for military missions
- Some basic research (~10% of \$3B budget)
- Teaming between industry and universities common
- Larger programs than OXRs
- Funding typically \$100K - \$10M/year up to 4 years

NSSEFF Program Philosophy



Q: (3) **What are the specific goals that differentiate the NSSEFF program from the normal array of OXR programs that range from SI to MURI to Centers to in-house lab research?**

• Centers (UARCS)

Maintain sustained excellence in a particular field. Needs sources of funding indefinitely.

- Perform research
- Host lectures and workshops

• In house DOD Laboratories

- Maintain DOD's technology base and support users in the field.
- Translate user needs into technology requirements for industry.
- Support user in application of emerging technology and introduction of new systems.
- Basic research and exploratory development focused on new and improved military functional capabilities.

NSSEFF Program Philosophy



Q: Why shouldn't the services individually (or jointly, as with DURIP, etc.) run the selection and execution of the program so they can ensure appropriate coordination/integration with their other programs?

A: The oversight of OSD enables the long term, exploratory nature of the NSSEFF projects, and identifies department wide needs.

Competition Process Overview



- Applicants submit 3 page white papers.
- White papers are reviewed by general technical experts in the DOD and other government agencies.
- Panels discuss their papers and put forward names for consideration as semi-finalists.
- Invited semi-finalists (~20-30) submit full proposals, CV, budget, 3 letters of recommendation.
- Proposals are reviewed online by specific subject matter experts in academia and government. The white paper panelists review all proposals from their panel.
- Panels meet to recommend awards.
- Basic Science Director selects Fellows.

Competitions 1-6



	Round 1	Round 2	Round 3	Round 4	Round 5	Round 6
• White papers received	358	490	678	138	153	185
• NSSEFF semi-finalists	20	17	21	26	21	30
• Fellows selected*	8	10	11	10	7	15

*3 Fellows have won 2 awards each

Interactions Between Fellows and DoD



- Fellows present their work at DOD-sponsored conferences.
- Fellows serve on panels and participate in DOD program reviews.
- Fellows participate in workshops for ASD(R&E)'s Basic Science Office to discuss future horizons in basic science.
- Fellows collaborate with DOD researchers on joint projects.
- Trips for Fellows and their students to the 3 service labs (ARL, NRL, AFRL).
- DOD's STEM development office funded 15 internships in DOD research labs for the Fellows' students in 2010.
- Non-selectees – In 2009, NDEP funded 4 non-selectees as regular OXR grants due to service specific interest in a modified version of some ideas.