# INTERN: An early investment in graduate student training and professional development

## Building the next generation science and engineering workforce



## www.nsf.gov/INTERN

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## The NSF Innovation Ecosystem

**Over** 



# Today's job market for graduate students

- 57% of Ph.D. and 79% of master's STEM graduates work in industry or government
- 83% of Ph.D. Engineers start careers in industry or government



How can we prepare students better to enter the science and engineering workforce?

### Immersive Exposure to....hard and soft skills

- Technical training and skills
- Innovation and entrepreneurship
- Business and economics
- Strategic thinking
- Working in diverse teams
- Project and time management
- Communication written & oral





#### The INTERN Program: Non-Academic Research Internships for Graduate Students

- NSF-INTERN Program created to help better prepare NSFsupported grad students for professional careers
- <u>www.nsf.gov/INTERN</u>
- Offered as <u>supplemental funding</u> to an active NSF Research Grant
- Pilot program launched in summer 2017
  - ENG, EDU, CISE/OAC
- Now a standing NSF-wide broad opportunity into the future



### **INTERN** – Model and Benefits

#### Host organizations may include:

- Industry laboratories or research ٠ and development groups.
- Start-ups or small businesses. ٠
- Government agencies and National ٠ Laboratories.
- Policy think-tanks.
- Non-profit organizations.

#### Up to \$55K for up to 6 months of internship

Funds for faculty co-mentoring

#### International students can participate

Governed by an Intellectual Property agreement between university and Host. NSF waives its IP rights

<b>Grad</b>	Hosts:
<b>Students:</b>	Mentor and
Access real	access a new
world	generation of
immersion	talent
NSF: Catalyze workforce Development	Universities: Build pathways to new/stronger links with



industry

### 1650+ INTERNs supported to date @ NSF A <u>sampling</u> of Host Organizations



### Wide range of host organizations





### **Benefits – Graduate Students**

- Real-world research training
- Communication and teamwork
- Better understanding of professional work practices and operations
- Exposure to legal, business, financial, human capital issues in the workplace
- Time and project management skills
- A better understanding of career options





### **Benefits – To PI and Universities**

- Student training recruitment and placement
- Sustainable relationships with industry
- Building partners for collaborations
- Better showcasing of faculty research programs
- Seeding industry with alumni and building networks



### **Benefits – To Industry**

- Access to NSF supported students / talent pipeline
- Discover and network with faculty
- Stronger and sustainable university relationships



What do INTERN participants have to say about their experience?!



# Lets hear from participants in the INTERN Program!

https://bcove.video/3SNMcHR



### A growing list of INTERN opportunities...

NSF has a growing list of INTERN funding opportunities of interest...

- 1. NSF 21-013 The broadest opportunity ... "the INTERN DCL"
- 2. NSF 21-029 : INTERN Opportunities at Air Force Research Laboratory (AFRL)
- 3. NSF 23-024 : Geothermal Energy area
- **4. NSF 23-112** : Human health and the Environment area
- 5. NSF 23-150 : Forensic Science area





# 2021 - US Air Force partners with NSF INTERN program

- "We see this partnership as a real win-win for AFRL and NSF as it aligns with the strategic workforce development goals of both organizations," said AFRL Chief Technologist, Dr. Timothy Bunning.
- NSF DCL 21-029: Nationwide opportunities at AFRL



## To date: 70 INTERNs from 39 universities have been supported at AFRL

AFRL Technology Directorate	Primary Location
Aerospace Systems Directorate (AFRL/RQ)	Wright-Patterson Air Force Base, Ohio
Information Directorate (AFRL/RI)	Rome, New York
Materials and Manufacturing Directorate (AFRL/RX)	Wright-Patterson Air Force Base, Ohio
Directed Energy Directorate (AFRL/RD)	Kirtland Air Force Base, New Mexico
Munitions Directorate (AFRL/RW)	Eglin Air Force Base, Florida
Sensors Directorate (AFRL/RY)	Wright-Patterson Air Force Base, Ohio
Space Vehicles Directorate	Kirtland Air Force Base, New Mexico



## **INTERN: Eligibility**

- Graduate student is supported on an active NSF award
- NSF Graduate Research Fellowship recipients
- International Students are eligible
- Must have completed at least one academic year before internship
- Making satisfactory progress towards the completion of their degrees

Note: Some restrictions apply. Review DCL for details.



www.nsf.gov/INTERN

## **INTERN: Period of Support**

Up to six months of support for an internship

- Up to two supplemental requests may be made on a grant
  - allows the student two internship periods up to six months each (i.e., a maximum of 12 months per student).



## **INTERN: Funding Amount**

# Not to exceed \$55,000 per student per six month period

Up to two INTERN requests can be made sequentially for a student



## INTERN: Rolling Submissions & Deadlines

- Target date (not a deadline)
  - April 15 in each fiscal year.
- Supplemental funding requests may be submitted at any time
- Decisions made on a rolling basis
- Internal Program Officer review



### **INTERN: Allowable Expenses**

- Travel, tuition and fees, health insurance, stipend and temporary relocation costs for the graduate student
- \$2,500 for PI co-mentoring travel
- \$2,500 materials and supplies for student
- Spousal and dependent travel are not permitted
- University indirect costs in accordance with institution's approved/negotiated indirect cost rate.



# INTERN <u>Supplement</u> Proposal: Nuts and Bolts!

- Two-page summary describing the internship include a concise statement from the student describing how the activity will better prepare him/her to enter the workforce.
- Resume of the student
- Letter of collaboration/mentorship from the host organization
- PI Letter:
  - Include a statement confirming that neither the graduate student nor the PI has a financial interest in the organization hosting the internship.
  - Confirm that the student meets the eligibility requirements
  - describe how the proposed internship activity will contribute to the student's graduate education experience and how it is synergistic with the NSF grant
- Budget and budget justification



### INTERN Intellectual Property (IP) Agreement

- IP Agreement : The NSF awardee and the organization hosting the graduate student must agree in advance as to how intellectual property (IP) rights will be handled.
- A signed agreement on IP (including publication and patent rights) must be submitted before the supplemental funding will be awarded.
- NSF is responsible neither for the agreement reached nor the IP information exchanged between the NSF awardee and the host organization.





### How do you find a suitable Host?

- Work with your University's connections
- Faculty networks
- Build your network via professional networking websites
- Search the NSF portfolio of supported high-tech Startups and Small Businesses (Small business Innovation Research Program)
- Use keyword "SBIR"
  <u>https://www.nsf.gov/awardsearch/</u>
- Share information on the NSF funded INTERN opportunity with prospective Hosts



### Explore INTERN: Write to your Program Officer

#### Professional development:

- What are the near-term career goals of the student and how might the proposed traineeship experience add to the professional development for the student?
- How might the technical work in the internship broaden the exposure for the student going beyond what the NSF grant work currently provides?
- How is it synergistic with the NSF Grant?
- Who is the Host: Brief description of the Host organization and why it represents a good opportunity for an INTERNship for the student
- **Mentorship:** How will the student be mentored and progress assessed over the internship?
- **Engagement:** What % of the total internship period will the student spend at the Host organization? Is an immersive internship planned?



**Grant Info:** What is your Grant Award Number? Expiry date?

### Impactful Outcomes...

- Eye-opening exposure for INTERNs to the professional world
- INTERNship work is often very impactful
  - Publications, Invention disclosures, patents, impact on thesis research
- Helps engagement with technology startups levels playing field
- Empowers Faculty to build new partnerships with Host organizations

"What is good for our students and their future, is good for the university and our programs" ...Quote from PI



## **Cross-NSF INTERN Team**

- **ENG**: Dr. Prakash Balan (<u>pbalan@nsf.gov</u>)
- EDU: Dr. Christopher L. Hill (chill@nsf.gov) or Dr. Joel Schildbach (jschildb@nsf.gov)
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# Thank you! Questions?



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