Research Grants: Who, what, where, why, and when?

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Roger’s Rules of Grantsmanship

1. There is never time to write a research proposal
2. Writing grant proposals is the closest you will ever come to earning the hourly rate of a lawyer or plumber
3. The funding rate of proposals not submitted is zero, with very little standard deviation
4. “Anything worth doing is worth doing badly” – G.K. Chesterton (1874-1936)
5. Don’t be afraid to ask for help
6. “Your success is my success.”

The Basics

○ Who awards research grants?
○ What will grants support?
○ Where do I learn more?
○ Why should I write grant proposals?
○ When should I submit grant proposals?

Who awards research grants?

○ Research Corporation (RC)
○ American Chemical Society-Petroleum Research Fund (PRF)
○ National Science Foundation (NSF)
○ National Institutes of Health (NIH)

What will grants support?

○ In general:
  ▪ Summer salary (PI and students)
  ▪ Research equipment
  ▪ Research supplies
  ▪ Travel to professional meetings
  ▪ Indirect costs

Research Corporation (RC) Cottrell College Science Awards

○ Single investigator
○ Multi-investigator
**Research Corporation (RC) Cottrell College Science Awards**

- **Single investigator**
  - For faculty in the first 3 years of first tenure-track appointment
  - $35,000 over 2 years; $10,000 institutional match required (startup funds excluded)
  - Chemistry, Physics & Astronomy, other fields for research projects with significant overlap with these fields
  - No preliminary data required
  - Proposal due 15 Jun 2013; Awards announced 15 Feb 2014

- **Multi-investigator**
  - Limited eligibility (see www.rescorp.org)
  - $75,000 (2) - $100,000 (3) for 2-3 years; $25,000 institutional match required
  - Interdisciplinary teams; all but one team member must be in first 6 years of appointment
  - One team member must be in Chemistry, Physics, or Astronomy; teams must be from at least two departments
  - Only one per institution concurrently
  - Preliminary data required
  - Proposal due 15 Jan 2013

**American Chemical Society-Petroleum Research Fund (PRF)**

- **Undergraduate New Investigator Grant (UNI)**
- **Undergraduate Research Grant (UR)**

**American Chemical Society-Petroleum Research Fund (PRF)**

- **Undergraduate New Investigator Grant (UNI)**
  - For faculty in the first 3 years of appointment
  - $50,000 over 2 years
  - Chemistry, Geology with some limitations
  - No preliminary data required
  - About 45 awards per year
  - Proposals due 1 Nov 2013

- **Undergraduate Research Grant (UR)**

**National Science Foundation (NSF)**

- **Transforming Undergraduate Education in Science (TUES)**
- **Major Research Instrumentation (MRI)**
- **Research Experiences for Undergraduates (REU)**
- **Research at Undergraduate Institutions (RUI)**
- **Research Opportunity Award (ROA)**
National Science Foundation (NSF)

General merit review criteria
- Intellectual merit
- Broader impacts

Additional criteria
- Integration of research and education
- Integration of diversity into projects or activities

transforming undergraduate education in the sciences (TUES)—Type 1 projects
- Up to $200,000 for 2-3 years
- Creating learning materials and strategies
- Implementing new instructional strategies
- Student-focused, with lasting impact on science education
- Can be used to integrate new instrumentation into the curriculum
- Proposals typically due in late May

Major Research Instrumentation (MRI)
- Up to $4,000,000 to purchase major shared research instrumentation (no match required for PUIs)
- To support existing research initiatives, interdisciplinary research, and integration of research and education
- Only 2 submissions per institution per year
- Success rates of ≈20-25%
- Proposals due 23 Jan 2014

Research Experiences for Undergraduates (REU)
- For thematically focused departmental or interdepartmental summer research
- Requires significant departmental research productivity and commitment
- Engages a significant number of students, including
  - Students who otherwise might not have opportunity
  - Early-career students
- Success rate of ≈10% for PUIs
- Proposals due 24 May 2013, 23 May 2014

Research at Undergraduate Institutions (RUI)
- Typically $10,000-$400,000 for 3 years; renewable
- For individual faculty research projects
- Requires preliminary data and significant prior research productivity
- Proposals require up to 5 page RUI impact statement
- Success rates of 20-30% depending on division
- May be submitted any time (deadlines or target windows vary: see www.nsf.gov)
  - MCB – 15 Nov 2013 (annual cycle)
  - CHE – September and October submission windows depending on subdiscipline

Research Opportunity Award (ROA)
- Typically ≈$25,000 including indirect costs
- Supplement to an existing NSF award
- Allows support as a visiting scientist in an NSF-funded laboratory
- Proposal is submitted through host institution
- May be submitted any time; consult program officer first
National Institutes of Health

- Academic Research Enhancement Award (AREA or R15)
  - $25,000—$300,000 for 3 years; renewable
  - Supports meritorious research; enhancement of research infrastructure; expose students to research
  - Limited to life sciences research
  - Requires preliminary data and prior research productivity
  - Success rates of ≈20%
  - Three funding cycles per year: February 25, June 25, October 25 (AIDS-related research is about 7 weeks earlier)

Where do I learn more?

- Program web site
  - ACS-PRF [http://www.acs.org/prf](http://www.acs.org/prf)

- Grant proposal guidelines (RTFM)
- Contact your program officer
- Partner with a CUR mentor

Why write grant proposals?

- Doing good science (and educating undergraduates) requires resources!
- “Your success is my success”
- Develops essential focus to your research efforts
- Develops visibility for your ideas in the larger scientific community
- Improves the contemporaneousness of your teaching

When should I submit grant proposals?

- Early career (first 3 years)
  - RC-CCSA
  - ACS-PRF UNI
  - NIH-AREA (biology)
  - Participate in NSF-TUES, NSF-MRI
- Mid-early career (second 3 years)
  - PRF-UR
  - NIH-AREA (life sciences)
  - NSF-RUI
  - Participate in or spearhead NSF-TUES, NSF-MRI
- Mid-career (6+ years)
When should I submit grant proposals?

- Early career (first 3 years)
- Mid-early career (second 3 years)
- Mid-career (6+ years)
  - ACS-PRF-UR
  - NIH-AREA (life sciences)
  - NSF-RUI
  - Spearhead NSF-TUES, NSF-MRI

When should I submit grant proposals?

- Established faculty re-entering active research
  - Use sabbatical leave or summer to join an existing research group to learn current skills, co-author publications to develop a track record (an NSF-ROA grant may help)
  - Participate in NSF-REU, NSF-MRI, NSF-CCLI proposals to gain exposure and develop preliminary data
  - Apply for PRF-UR, NIH-AREA award as appropriate—be productive!

When should I submit grant proposals?

- Institution with limited resources
  - Submit NSF-TUES grant proposal to acquire teaching infrastructure that has dual use for research
  - Encourage new faculty to submit "starter"-type grant proposals
  - Submit NSF-MRI to acquire major research instrumentation
  - Be productive!

What did you learn?

Got questions?