Research Funding Opportunities for Early-Career Physics Faculty

Mats Selen, University of Illinois
(for Richard Wiener Senior Program Director
Research Corporation for Science Advancement
Tucson, Arizona)

rwiener@rescorp.org
www.rescorp.org
Mission and Vision

‘Bet on the youngsters. They are long shots but some of them pay off.’

Frederick Gardner Cottrell

Mission Statement

The Mission of Research Corporation for Science Advancement is to advance early stage, high-potential, basic scientific research.

Vision

RCSA provides catalytic funding for research and sponsors conferences to support:

- Early career faculty
- Innovative ideas for basic research
- Integration of research and science teaching
- Interdisciplinary research
- Building the academic leadership of the future
Established 1912
by Frederick Gardner Cottrell
106 Years

Operates with private endowment

Funds research projects primarily from Chemistry, Physics & Astronomy
RCSA has an Amazing History

• Supported over 18,000 scientists

• 41 Nobel Laureates including
  Earnest Lawrence  Robert Hofstadter
  I.I. Rabi          Joseph Taylor
  Percy Bridgeman   Frederick Reines
  Felix Bloch       Robert Richardson
  Edward Percell    Carl Wieman

Donna Strickland (CS 2000)
Two Flagship Programs
(both focus on early career faculty)

- SCIALOG

- Cottrell Scholar
Scialog (Science & Dialog)

• Holds annual workshops on important interdisciplinary areas of research
• Builds networks of researchers across disciplines
• Seeds new collaborative teams to pursue highly innovative “blue sky” projects
• Selection as a Scialog Fellow is by invitation
• Many participants are Cottrell Scholars
Interdisciplinary Scialog Topics

- Solar Energy Conversion
  - chemistry/engineering/materials
- Molecules Come to Life
  - physics/biology
- Time Domain Astrophysics
  - astrophysics/astronomy/data science
- Advanced Energy Storage
  - chemistry/engineering/materials
- Chemical Machinery of the Cell
  - chemistry/biology
Cottrell Scholar Award

• 24 outstanding young scientists join the ranks each year (16 R1 + 8 PUI)
• Support innovative/transformative research
• Develop early career faculty committed to outstanding research & teaching
• Build/sustain a community of teacher-scholars – the Cottrell Scholars Collaborative
• Promote a culture of excellence in academic science research, education & leadership

Teacher/Scholar Model
## Your Institution has Invested in You

<table>
<thead>
<tr>
<th>Resources</th>
<th>Expectations</th>
</tr>
</thead>
<tbody>
<tr>
<td>◇ Startup Package</td>
<td>◇ 2 or more proposals yr 1</td>
</tr>
<tr>
<td>◇ Reduced Loads</td>
<td>◇ Set up research yr 1</td>
</tr>
<tr>
<td>◇ Grant Matching</td>
<td>◇ Involve students yr 1</td>
</tr>
<tr>
<td>◇ Travel Support</td>
<td>◇ Revise proposals yr 2</td>
</tr>
<tr>
<td>◇ Equipment Funds</td>
<td>◇ Present results yr 2 &amp; on</td>
</tr>
<tr>
<td>◇ Student stipends</td>
<td>◇ Publish results yr 2 &amp; on</td>
</tr>
<tr>
<td>◇ Pre-tenure Sabbatical</td>
<td>◇ Renew grants yr 3 &amp; on</td>
</tr>
<tr>
<td></td>
<td>◇ Great teaching yr 1 &amp; on</td>
</tr>
<tr>
<td></td>
<td>◇ Service yr 1 or 2 &amp; on</td>
</tr>
<tr>
<td></td>
<td>◇ Fly over tenure bar yr 6</td>
</tr>
</tbody>
</table>

Your Institution has Invested in You
Big Picture Expectations

Establish & maintain a productive, exciting, well-funded research program that involves students & flourishes for decades while simultaneously being a great teacher!

Strategy:
Integrate research & teaching to succeed

This is what the Cottrell Scholar program is looking for.
How do you select a core idea to build a research proposal around?

• It should move the field forward

• It should be something that excites you
Reviewers Look For:

- Significance
- Originality
- Feasibility

Ask Yourself This:
What would the reaction of the best people in the field be to your idea?
Statement of the Problem & Scientific Significance

• Put your science in context
• Show knowledge of the field with complete up-to-date references
• Include a clearly stated hypothesis or key idea
• Make a compelling case for significance and originality
Plan of Procedure

• Be specific! Provide details!
• **Address feasibility issues and include alternative routes**
• Quantitatively estimate expected improvement compared to previous work
• **Show long-term goals and sustainability**
• Make the case your research program will attract future funding
• **Show how your research program involves students**
• Have a realistic scope & timeline.
Richard’s “3 Most Important Things to Do before Writing a Proposal”

• Read the guidelines & FAQ

• Read the guidelines & FAQ

• Read the guidelines & FAQ

Then Talk with a Program Officer

www.rescorp.org
Senior Program Directors:

Silvia Ronco  sronco@rescorp.org

Richard Wiener  rwiener@rescorp.org

For questions related to a faculty perspective:

Mats Selen  mats@Illinois.edu