Involving Undergraduate Students in Research

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Why should NSERC care about Undergraduate Students?

Recent SRI International surveys revealed that undergraduate research opportunities increased participants’:

- Understanding of how to conduct a research project
- Confidence in their skills
- Awareness of what graduate school is like
- Interest in pursuing STEM careers
- Interest in pursuing graduate studies (PhD)

Undergraduate Student Research Awards (USRA) Program

Program Objectives:

- To stimulate student’s interest in research
- To encourage students to undertake graduate studies and pursue a research career

Much more than a summer job!
USRA Program

- Running since early 1980’s
- Feedback hugely positive
- Simple application forms and process

<table>
<thead>
<tr>
<th>University USRA</th>
<th>Industrial USRA</th>
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<tbody>
<tr>
<td>3500 awards</td>
<td>842 awards in 2006</td>
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<td>68 universities in Canada in 2006 and 2007</td>
<td>232 companies participated</td>
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Number of USRA awards


URU URI total
USRAs Offer Students…

- Opportunity to earn money
- Research experience relevant to studies
- Professional skills development
- Industrial or university experience
- Interactions with professors, researchers, graduate students, technicians
- Co-op placement - USRAs can be concurrent
- Prestigious NSERC award on CV
- Chance to visit other university/city - travel funds available
USRAs Offer Universities...

- Bright research assistants
- Up to 75% of salary costs paid by NSERC
- Universities administer program internally (lots of flexibility)
- Opportunities for graduate students and post-docs to develop their mentoring skills
- Potential future graduate students
USRAs Offer Companies..

- Bright research assistants
- Up to 75% of salary costs paid by NSERC
- Up to 10 students per year per company
- Potential future employees
- Easy application & award administration process
USRS Offers Society…

- Improved science literacy and awareness
- Promotion of research, discovery and innovation
- Establishment/acceleration of NSE careers
- Contribution to development and growth of university and industrial research
Research must be Eligible

- Research must advance knowledge in the Natural Sciences and Engineering
- Psychology: Consult Program Guide for Students and Fellows and Eligibility Criteria
- IN DOUBT: Send a summary to NSERC (schol@nserc.ca)
USRA in Small Universities

- Minimum quota is 4 awards
- May request exceptions to rule that USRA supervisors must hold NSERC research grants.
- USRA assistance can help new professors get research program established, obtain Discovery Grants
- Small institutions grow along with Faculty research programs and funding
Chemistry USRAs in Small Univ.

- 4 profs in chemistry granted exceptions to be USRA supervisors in last 2 years (2007 and 2006)
- 296 awards in chemistry in 2006 (8.5%)
- 55 awards in chemistry in 2006 at small universities (18.5% of chemistry awards)
- 83 awards in chemical engineering in 2006
- 7 awards in chemical eng. at small universities in 2006 (8%)
USRAs
Chemistry Research Examples

- RISE (Reactive Intermediates Student Exchange, http://www.risecanada.ca/)
- Summer exchange program for chemistry students
- Employment in lab of RISE group member at different university
- RISE at sixteen institutions in Canada including 2 small universities (Acadia, UPEI)
- Awards concurrent with USRA
USRA Examples in Small Univ.

- Identification of anti-cancer agents in wild plants and invertebrates
- Study of potential electro-catalysts for wastewater treatment and metals production
- Testing new small-molecule organic semiconductors for electronic devices
- Measuring mercury and selenium contamination in lakes
- Testing new electrochemical biosensors to detect phenolic pollutants in wastewater
- Identification of chemistry changes in cement with addition of sugar or starch
International Undergraduate Research Experience

Hanyue Zhao, Mechanical Eng., McGill University, Summer Research in Berlin,
Participant in the 2006 Research Internship in Sciences and Engineering (RISE) program from German Academic Exchange Service (DAAD)

“...My research has been an eye opening experience, in terms of learning from a foreign country as well as gaining a deeper perspective on working within a research environment. I hope to progress towards this area after the completion of my Bachelor.”