**Engaging Students in Research Ethics: A Cross-Campus Partnership**

Gail Steinhart  
*Cornell University*

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Engaging Students in Research Ethics: A Cross-Campus Partnership

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Research Data & Environmental Sciences Librarian
Fellow, Digital Scholarship & Preservation Services
Cornell University Library
GSS1@cornell.edu
RCR training for undergraduates at Cornell:

Partners

- Vice Provost for Research
- Vice Provost for Undergraduate Education
- Office of Research Integrity Assurance
- Office of Undergraduate Biology
- Office of Undergraduate Research
- Cornell Commitment
- Cornell University Library
In which of the following behaviors is an early-career scientist most likely to engage?

A. Dropping observations or data points from analyses based on a gut feeling that they were inaccurate.
B. Using another's ideas without obtaining permission or giving due credit.
C. Inadequate record keeping related to research projects.
D. Ignoring major aspects of human-subject requirements.
In which of the following behaviors is an early-career scientist most likely to engage?

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D. Ignoring major aspects of human-subject requirements.
Table 1 | Percentage of scientists who say that they engaged in the behaviour listed within the previous three years (n = 3,247)

<table>
<thead>
<tr>
<th>Top ten behaviours</th>
<th>All</th>
<th>Mid-career</th>
<th>Early-career</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Falsifying or ‘cooking’ research data</td>
<td>0.3</td>
<td>0.2</td>
<td>0.5</td>
</tr>
<tr>
<td>2. Ignoring major aspects of human-subject requirements</td>
<td>0.3</td>
<td>0.3</td>
<td>0.4</td>
</tr>
<tr>
<td>3. Not properly disclosing involvement in firms whose products are based on one’s own research</td>
<td>0.3</td>
<td>0.4</td>
<td>0.3</td>
</tr>
<tr>
<td>4. Relationships with students, research subjects or clients that may be interpreted as questionable</td>
<td>1.4</td>
<td>1.3</td>
<td>1.4</td>
</tr>
<tr>
<td>5. Using another’s ideas without obtaining permission or giving due credit</td>
<td>1.4</td>
<td>1.7</td>
<td>1.0</td>
</tr>
<tr>
<td>6. Unauthorized use of confidential information in connection with one’s own research</td>
<td>1.7</td>
<td>2.4</td>
<td>0.8 ***</td>
</tr>
<tr>
<td>7. Failing to present data that contradict one’s own previous research</td>
<td>6.0</td>
<td>6.5</td>
<td>5.3</td>
</tr>
<tr>
<td>8. Circumventing certain minor aspects of human-subject requirements</td>
<td>7.6</td>
<td>9.0</td>
<td>6.0 **</td>
</tr>
<tr>
<td>9. Overlooking others’ use of flawed data or questionable interpretation of data</td>
<td>12.5</td>
<td>12.2</td>
<td>12.8</td>
</tr>
<tr>
<td>10. Changing the design, methodology or results of a study in response to pressure from a funding source</td>
<td>15.5</td>
<td>20.6</td>
<td>9.5 ***</td>
</tr>
</tbody>
</table>

Other behaviours

<table>
<thead>
<tr>
<th>Behaviour</th>
<th>All</th>
<th>Mid-career</th>
<th>Early-career</th>
</tr>
</thead>
<tbody>
<tr>
<td>11. Publishing the same data or results in two or more publications</td>
<td>4.7</td>
<td>5.9</td>
<td>3.4 **</td>
</tr>
<tr>
<td>12. Inappropriately assigning authorship credit</td>
<td>10.0</td>
<td>12.3</td>
<td>7.4 ***</td>
</tr>
<tr>
<td>13. Withholding details of methodology or results in papers or proposals</td>
<td>10.8</td>
<td>12.4</td>
<td>8.9 **</td>
</tr>
<tr>
<td>14. Using inadequate or inappropriate research designs</td>
<td>13.5</td>
<td>14.6</td>
<td>12.2</td>
</tr>
<tr>
<td>15. Dropping observations or data points from analyses based on a gut feeling that they were inaccurate</td>
<td>15.3</td>
<td>14.3</td>
<td>16.5</td>
</tr>
<tr>
<td>16. Inadequate record keeping related to research projects</td>
<td>27.5</td>
<td>27.7</td>
<td>27.3</td>
</tr>
</tbody>
</table>

Note: significance of χ² tests of differences between mid- and early-career scientists are noted by ** (P < 0.01) and *** (P < 0.001).
How do graduate students in the life sciences learn about research and scholarly integrity topics?

A. Advisor  
B. Course / workshops  
C. Online / print  
D. None
How do graduate students in the life sciences learn about research and scholarly integrity topics?

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B. Course / workshops  
C. Online / print  
D. None

How do your graduate students learn about the following research and scholarly integrity topics?

Field/Discipline: Life Sciences

<table>
<thead>
<tr>
<th>General Topics</th>
<th>Advisor</th>
<th>Course</th>
<th>Workshops</th>
<th>Online/Print</th>
<th>None</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data Acquisition</td>
<td>74%</td>
<td>64%</td>
<td>26%</td>
<td>35%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Conflict of Interest/Commitment</td>
<td>72%</td>
<td>51%</td>
<td>25%</td>
<td>39%</td>
<td>2%</td>
<td>0%</td>
</tr>
<tr>
<td>Human Subjects</td>
<td>64%</td>
<td>48%</td>
<td>22%</td>
<td>58%</td>
<td>0%</td>
<td>7%</td>
</tr>
<tr>
<td>Animal Care</td>
<td>55%</td>
<td>27%</td>
<td>19%</td>
<td>48%</td>
<td>2%</td>
<td>21%</td>
</tr>
<tr>
<td>Research Misconduct</td>
<td>74%</td>
<td>62%</td>
<td>32%</td>
<td>42%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Publication/Authorship</td>
<td>74%</td>
<td>59%</td>
<td>28%</td>
<td>38%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Mentoring Relationships</td>
<td>76%</td>
<td>35%</td>
<td>19%</td>
<td>31%</td>
<td>1%</td>
<td>2%</td>
</tr>
<tr>
<td>Peer Review</td>
<td>74%</td>
<td>44%</td>
<td>19%</td>
<td>33%</td>
<td>1%</td>
<td>5%</td>
</tr>
<tr>
<td>Collaborative Research</td>
<td>75%</td>
<td>35%</td>
<td>8%</td>
<td>21%</td>
<td>4%</td>
<td>2%</td>
</tr>
<tr>
<td>Personnel Management</td>
<td>44%</td>
<td>21%</td>
<td>9%</td>
<td>15%</td>
<td>8%</td>
<td>0%</td>
</tr>
<tr>
<td>Financial Stewardship</td>
<td>45%</td>
<td>16%</td>
<td>5%</td>
<td>13%</td>
<td>9%</td>
<td>18%</td>
</tr>
<tr>
<td>Hazardous Materials</td>
<td>59%</td>
<td>32%</td>
<td>24%</td>
<td>48%</td>
<td>2%</td>
<td>14%</td>
</tr>
</tbody>
</table>
Responsible Conduct of Research (RCR) topics ORI/HHS:

- Data management practices
- Conflict of interest and commitment
- Human subjects
- Animal care
- Research misconduct
- Publication practices and responsible authorship
- Mentor/trainee responsibilities
- Peer review
- Collaborative science

Responsible Conduct of Research (RCR) topics from ORI/HHS:

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RCR topic: Data management practices

- Ownership
  - Funder’s role/interest
  - Institution’s role/interest
  - Research subjects’ role/interest
- Collection
  - Appropriate methods
  - Attention to detail
  - Authorization (human subjects, haz mat, ©)
- Recording
- Protection (preservation)
- Storage (safety, security)
- Sharing (what, when, with whom)

RCR topic: Publication practices and responsible authorship

- Authorship, contribution, role
- Components: abstract, methods, results, discussion, notes/bibliography, acknowledgements
- Problematic practices:
  - Honorary authorship
  - “Salami publication” or LPUs
  - Duplicate publication
  - Premature public claims

RCR topic: Peer review

• (not just about publications - )
• Assessing quality:
  • methods
  • calculations
  • logic/reasoning
  • supported conclusions
  • citations of relevant literature
• Judging importance
• Problem: bias (personal, methodological, ...)

References


