Academic and Research Integrity

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Orientation
August 31, 2016
Graduate School Success

Save the Date

2016
250TH ANNIVERSARY COMMENCEMENT

SUNDAY
MAY 15, 2016
12:30 p.m.
High Point Solutions Stadium
Piscataway, New Jersey

Join us for this very special occasion—a gathering of the Rutgers community and guests to celebrate this historic 250th Anniversary Commencement. Rain or shine.
Expectations

• Check and respond to email
• Ensure we have correct contact information
• Read handbooks
• Familiarize yourself with website content
• Complete and submit academic forms in timely manner
• Maintain 3.0 GPA
• Let us know if there is a problem
• Let us know when something good happens!
• Academic Integrity
• Research Integrity
Academic Integrity

- **Cheating:** Dishonesty of any kind with respect to examinations, large and small group activities, written exercises, journal club, laboratory, presentations or required web-based activities.

- **Plagiarism:** You must use your own words or paraphrase articles used with appropriate reference to the article cited.

- **Professionalism:** Includes both the application of academic integrity and honesty in your class participation and assignments and treating both classmates and faculty with respect. Professionalism also includes attendance at required sessions and checking your school email regularly!!
Examinations

- **Classroom examination:**
  Unless otherwise stated, no material (books, notes, calculators, computers) of any kind can be used during an examination.
  NO communications devices, especially cell phones.

- **Take-home examination or work:**
  Unless otherwise stated, research and writing must be done individually without assistance or exchange of information with others.
Why should scientists be trustworthy?

- Public, government and philanthropic agencies have high ethical expectations
- Potential to harm animal and human subjects
- Direct impact on human health
- Scientists have mutual interdependency

Whom do you typically trust to provide accurate information about important issues in society?

- Scientists: 3.98 average
- Friends or family: 3.09
- Nongovernmental organizations: 3.09
- Citizen groups: 2.69
- Journalists: 2.57
- Companies: 1.78
- Elected officials: 1.76
- Religious authorities: 1.55

How much do you trust what scientists say about the following topics?

- Neutral (3.0)
- Trust (4.0)
- Highly trust (5.0)
Retractions on the Rise

PubMed Retraction Notices - By Year

Publications and retractions by year 1977-

-Neil Saunders
Research Misconduct

- **Fabrication** - making up data or results

- **Falsification** - inaccurate representation of the results by changing or omitting data, by manipulating research materials, equipment or processes

- **Plagiarism** - appropriation of someone else’s ideas, results or words without giving appropriate credit

... in proposing, performing, reviewing research, or in reporting research results

- committed intentionally, knowingly or recklessly

- **DOES NOT** include honest error, conflicting data, differences of opinion, or differences in interpretations or judgments about data or experimental design.
Are You Authorized To Collect Data?

• Human subjects:
  – CITI training, IRB submission or addition

• Animal subjects:
  – IACUC approval, vivarium training and tour

• Radioactive materials:
  – Training

• Laboratory safety:
  – Training
Human Subjects: Informed Consent

- Voluntary: problems with prisoners, students, employees, children, etc.
- No undue inducements
- Must be understandable to subject
- Risks and potential benefits must be presented accurately
- Right to withdraw at any time
- Deception is generally not allowed
Animal Subjects: The Three Rs

• **Replace** the use of animals with alternative techniques, or avoid the use of animals altogether.

• **Reduce** the number of animals used to a minimum, to obtain information from fewer animals or more information from the same number of animals.

• **Refine** the way experiments are carried out, to make sure animals suffer as little as possible. This includes better housing and improvements to procedures which minimize pain and suffering and/or improve animal welfare.
Enhancing Reproducibility through Rigor and Transparency

Four areas that NIH is now requiring in applications and reviewing:

- **SIGNIFICANCE:**
  Describe Scientific premise: consider strengths and weaknesses of published research or preliminary data crucial to the support of the application (rigor of previous experiments; methodology, analysis and interpretation, relevant biological variables, authentication of key resources)

- **RESEARCH STRATEGY:**
  2) Describe rigorous experimental design and methods and how will achieve robust and unbiased results: sample size calculation for significance (# mice per group), randomize subjects, blinded, inclusion/exclusion criteria etc.

  3) Consider relevant biological variables for vertebrate animals or human subjects: e.g. Sex, weight, age, genetic strain etc.

  4) Authentication of key biological and/or chemical resources; how plan to authenticate; methods to ensure identity and validity e.g. Cell lines (not mis-identified or contaminated), speciality chemicals, antibodies, other biologicals
Fabrication and Falsification

Best way to prevent scientific misconduct is promote good research practices:

• Good record keeping
• Solid basis for data selection
• Talking to each other, to PI, to other researchers; don’t get isolated
Data Acquisition and Lab Tools

• Data are the basis of science
• Who owns them?
• Data entry into lab book
  ✓ Date
  ✓ What you did
  ✓ Why you did it
  ✓ How you did it
  ✓ Where the materials are
  ✓ What happened
  ✓ Your interpretation
  ✓ Contributions of others
  ✓ What’s next
• Notebooks - paper or electronic (not erasable)
• Computer files (not editable)
• Physical samples (not removable)
• Confidentiality
• Keep for how long?
Definition: Plagiarize

• “to steal or pass off as one’s own (the ideas or words of another)”

• “to present as one’s own an idea or product derived from an existing source.”

Webster’s Seventh New Collegiate Dictionary
turnitin.com

- **Turnitin** Software is licensed by Rutgers University.
  - **Turnitin** compares your paper to digital content on the web, archived digital content, student papers and thesis, and published journal articles.
  - It does not determine plagiarism, instead it detects matched content.
- Create your own Sakai site to check your paper
  - View the following video for directions on how to https://youtu.be/Ee6LfhvR0zQ
- Check your paper using Turnitin before you submit them to classes or your advisor.
Research Papers

• Proper citation should be given immediately after every idea or fact that derives from another source.
• Acknowledge direct quotes or statements with quotation marks.
• Some facts are considered common scientific knowledge and do not need to be cited (e.g., “all eukaryotic cells are enclosed by membranes”).
• Self plagiarism is still plagiarism!
• A complete bibliographic reference is written at the end of the paper.
• USE ENDNOTE and identify the citation format required (APA, AMA, etc.)
  http://www.libraries.rutgers.edu/health_sciences/endnote
• When citing online resources that are not available in print, include the website’s URL and the date the information was found.
• If you are unsure, what or how to cite, ask a faculty member or a librarian.
• Rutgers Libraries Citing Sources of Information Toolkit
  http://libguides.rutgers.edu/CitingSources
Oral and Poster Presentations:

• All text should be in your own words. Ideas or data taken from other sources should be cited on a slide (preferable) or orally.

• In the case of poster presentations, cite material in a bibliography, similar to a written paper.

• Any figures not produced by the presenter in an oral presentation or by the authors in a poster presentation must be attributed.
Definition: Copyright

“the exclusive legal right to reproduce, publish and sell the matter and form of a literary, musical or artistic work.”
Note that this includes scientific publications.

Copyright protection is extended to anything that is “fixed in a tangible medium”

- An article
- An email message
- A website
- A doodle on a napkin

Webster’s Seventh New Collegiate Dictionary
Asking Permission to use copyrighted material

- Identify the owner (author or publisher?)
- Send a letter/email requesting permission to use a table, graph or other data or an entire work.
- Permission is not automatically assumed if you have not heard from the owner. Continued effort is required - or do not use the source.
- The Library can help you find the owner.
- Use of figures without permission for teaching purposes is allowed.
What if You Suspect Cheating or Professionalism Violations?

Report it:

- During the exam/exercise to the proctor
- As soon as possible after the exam/exercise to either the course director, program directors
  - GSBS Assistant Deans: Janet Alder and Smita Thakker-Varia
  - GSBS Sr. Assoc. Dean: Jim Millonig
- Talk to the GSBS Student Ombudsperson
  - Dr. Peter Lobel lobel@cabm.rutgers.edu 848-445-9831
What if You Suspect Research Violations?

Report it immediately to either:

- PI
- Senior Associate Dean for Research: Celine Gelinas
- The RWJMS Research Ombudsperson
  Dr. Paul Manowitz manowitz@rutgers.edu 732-235-4347
Protection and Responsibilities of “Whistle Blowers”

• Initially, the identity of a complainant can be kept confidential.

• Should the allegation lead to an inquiry or investigation, testimony by the complainant may be required.

• The University is committed to the protection of “good-faith” whistleblowers.

• However, “whistle-blowers” whose allegations which prove to be untrue and which are found to have been made in bad faith will be subject to appropriate disciplinary actions by the University.
Policies of Rutgers

• Student handbooks online at http://rwjms.rutgers.edu/gsbs/current/student_handbook.html for additional information about expected professional conduct and policies. Ignorance of rules is not an excuse!

• Rutgers Academic Integrity Policy: http://academicintegrity.rutgers.edu/integrity.shtml

• Rutgers Policy on Research Misconduct 90.2.2 http://policies.rutgers.edu/view-policies/research-section-90#2
Graduate Student Associations

• Joint Molecular Biosciences GSA
  http://rwjms.rutgers.edu/gsbs/student_affairs/association.html

• NeuroConnections
  https://sites.google.com/site/ncc4rwjms/

• Rutgers Association of Toxicology Students
  http://www.rci.rutgers.edu/~tox/rats.php

• Biomedical Engineering Student Society (BESS)
  http://bess.rutgers.edu/

• NJ Seeing Labs
  http://seedinglabs.org/tag/rutgers/

• Rutgers GSA
  http://gsa.rutgers.edu/
Research Papers (continued)

● Using the exact wording of another author is rarely done in scientific papers. If you do, the words must be in quotes followed by a citation:

e.g., “Cats are very friendly animals” [Smith et al., 2003].

• Ignorance of appropriate citation guidelines is not an excuse so it is always safer to cite sources rather than omit citations.

• Keep all notes regarding research papers at least until your grade is finalized.
Research Papers

• Proper citation should be given immediately after every idea or fact that derives from another source.

• Some facts are considered common scientific knowledge and do not need to be cited (e.g., “all eukaryotic cells are enclosed by membranes”).

• Paraphrasing is the use of sentences or ideas that are very close to what someone else has written or said. Paraphrasing written or oral work by others is not permissible.

• Say things in your own words and cite the authors.

• Self plagiarism is still plagiarism!

• If you are unsure, what or how to cite, ask a faculty member or a librarian.

• A complete bibliographic reference is written at the end of the paper. USE ENDNOTE

http://www.libraries.rutgers.edu/health_sciences/endnote
As a Student:

• All work submitted in a graduate course must be your own.
• It is unethical and a violation of the University’s Academic Integrity Policy to present the ideas or words of another without clearly and fully identifying the source. Inadequate citations will be construed as an attempt to misrepresent the cited material as your own. Use the citation style preferred by your discipline.
• Students may never:
  • Quote or paraphrase another, including material from the Internet, without complete citation;
  • Cite a source that has been identified through a secondary source but has not been consulted;
  • Collaborate with others on assignments or exams without the explicit permission of the instructor;
  • Use materials during an exam that have not been sanctioned by the instructor of the course;
  • Look at or copy the work of another student during an exam;
  • Submit the work completed in one class to fulfill an assignment in another without
Plagiarism

- Plagiarism is the use of another person’s words, ideas, or results without giving that person appropriate credit. To avoid plagiarism, every direct quotation must be identified by quotation marks or appropriate indentation and both direct quotation and paraphrasing must be cited properly according to the accepted format for the particular discipline or as required by the instructor in a course.
- Some common examples of plagiarism are:
  - Copying word for word (i.e., quoting directly) from an oral, printed, or electronic source without proper attribution;
  - Paraphrasing without proper attribution, (i.e., presenting in one’s own words another person’s written words or ideas as if they were one’s own);
  - Submitting a purchased or downloaded term paper or other materials to satisfy a course requirement;
  - Incorporating into one’s work graphs, drawings, photographs, diagrams, tables, spreadsheets, computer programs, or other nontextual material from other sources without proper attribution;
  - Cheating: Cheating is the use of inappropriate or prohibited materials, information, sources, or aids in any academic exercise. Cheating also includes submitting papers, research results and reports, analyses, etc. as one’s own work when they were, in fact, prepared by others.

From the Rutgers University Policy on Academic Integrity
Academic Integrity Policy

- Academic Integrity Policy
- The University Policy on Academic Integrity recognizes
- two types of violations: separable and nonseparable. For graduate students, however,
- nearly all violations are considered potentially separable. The sanction for separable violations
- of the Policy may be “Dismissal from a graduate or professional program...Permanent expulsion from the University with a permanent notation of disciplinary expulsion on the student’s transcript.”
- (Rutgers University Policy on Academic Integrity).
- The following actions are some examples of separable violations. (See the Policy for the full list.)
- ● Plagiarism
- ● Copying or using unauthorized materials, devices, or collaboration on a major exam.
- ● Having a substitute take an examination.
- ● Making up or falsifying evidence or data or other source materials for a major assignment, including falsification by selectively omitting or altering data that do not support one’s claims or conclusions.
As a Researcher

- Data must be accurate and complete. Appropriate credit should be given to all who contribute to a project.
- The following actions would, in most cases, constitute a violation of the researcher’s ethical code:
  - Falsify/fabricate data or results;
  - Selectively withhold data that contradicts your research;
  - Misuse the data of others;
  - Present data in a sloppy or deceptive manner;
  - Fail to maintain accurate laboratory notebooks;
  - Fail to credit authors appropriately.
  - *All* contributors should be acknowledged;
  - Sabotage/appropriate the research of another;
  - Misuse research funds or university resources for personal use;
  - Develop inappropriate research/industry relationships for personal gain;
  - Fail to comply with federal and/or Rutgers guidelines for the treatment of human or animal subjects.
 Academic Integrity

• Properly acknowledge and cite all use of the ideas, results or words of others
• Properly acknowledge all contributors
• Make sure that all work submitted …. is produced without the aid of unsanctioned materials or unsanctioned collaboration
• Treat others in an ethical manner

From the policy on Academic Integrity at Rutgers
Research Integrity

• Defined by the Federal Government (NIH)
  – Plagiarism
  – Fabrication
  – Falsification

• Good, Honest Record Keeping is Essential!

• Any concerns,
  – ombudsperson
  – Campus Committee on Research Integrity
Ethics Web Resources

• Office of Research Integrity
  http://ori.dhhs.gov

• Poynter Institute, Indiana University
  http://poynter.indiana.edu
Does Funding Source Matter?

• 603 consecutive papers and presentations on leg orthopedic prostheses:
  – Total hip replacement implants
    • Commercially funded: 93% positive
    • Independently funded: 37% positive
  – Total knee replacements
    • Commercial: 75% positive
    • Independent: 20% positive
  – Investigators receiving royalties reported no negative outcomes

Research Papers:

Research papers usually include background material from journals, textbooks and websites.

All material used to develop an idea or concept in a research paper must be properly cited.
Data Selection

Data selection is a normal part of research but how do you know when you can throw out data?

✓ Repeat experiments
✓ Control experiments
✓ Statistical analysis
✓ Use your best unbiased scientific judgment
✓ Be open about your process of selection; discuss with others in the lab
✓ Ask colleagues for advice
Conflict of Interest

• A conflict of interest is present when an actual or potential personal or institutional financial benefit threatens the objectivity of the design, conduct, analysis, or reporting of research or program results.
• Can mean appearance of such a conflict
• Expectation of unbiased results reporting
• Types of COIs
  o Intellectual Bias
    – Pet theories, personal preference
  o Conflict of Financial Interest
    – You (or a spouse or relative) benefit financially from a relationship which may lead to bias in research
  o Conflict of Commitment
    – Affects ability to perform primary duties (to employer/program)
  o Institutional Conflict
Patents Protect Intellectual Property (IP)

- Patent priority based on date of invention in US
- Invention must be new, not “prior art”
- Must be reduced to practice in patent application
- Protecting trainees’ right to publish
- Foreign patents require separate application
- Inventor may not be “owner” of patent (usually employer)
Responsible Research Involving Human Subjects

• History
  - Nuremberg Trial and Code: voluntary consent
  - Tuskegee Syphilis Study
  - Puerto Rico Birth Control Study
  - Belmont Report (1978): respect, beneficence, justice

• All human experimentation must be approved by an Institutional Review Board

• Outsourcing does not bypass ethics requirements
Special Topics

- IACUC: Protection of animal subjects (reduction, refinement, replacement)
- IRB: Protection of human subjects
- Chemical safety
- Radiation safety
- Containment of hazardous or infectious agents
- Right to know laws
1. “Highly pathogenic H5N1 influenza virus emerged in 1997 in Hong Kong and has been causing widespread avian infections. In humans, H5N1 flu has proved to be “highly lethal but poorly transmitted”.

2. As of January 2012, there are 577 documented human cases in 15 countries, but 340 of them (59%) died. Most of these infections were transmitted from bird to human, but a small number are human to human events.

3. The controversy began when influenza researchers announced in September 2011 at a flu conference in Malta that they had created mutants forms of the H5N1 influenza virus that were transmissible between ferrets.

5. The two researcher labs submitted manuscripts to Science and Nature. The manuscripts were reviewed by the NSABB.

6. The NSABB is an external advisory board to the National Institutes of Health; its charge includes providing “advice, guidance, and leadership regarding biosecurity oversight” of research with scientific value but the potential for malicious use (so-called “dual-use research”).

7. The NSABB advised that the manuscripts be revised and published with redacted details on the specific mutations and with increased discussion of public health values of the work, as well as a description of increased safety and security research practices.

8. In Jan 2012, a group of international researchers declared a 3 month moratorium on H5N1 transmission research.

9. WHO held an international meeting in mid-February with 22 scientists and public health experts; they concluded that the work should be published in full after the moratorium.

10. The NSABB reversed its position at the end of March and voted that the two papers should be published in their entirety (although there have since been accusations of bias by members of the NSABB).
F.B.I., Laying Out Evidence, Closes Anthrax Case

By SCOTT SHANE
Published February 19, 2010

WASHINGTON — More than eight years after anthrax-laced letters killed five people and terrorized the country, the F.B.I. on Friday closed its investigation, adding eerie new details to its case that the 2001 attacks were carried out by Bruce E. Ivins, an Army biodefense expert who killed himself in 2008.

A 92-page report, which concludes what by many measures is the largest investigation in F.B.I. history, laid out the evidence against Dr. Ivins, including his equivocal answers when asked by a friend in a recorded conversation about whether he was the anthrax mailer.

“If I found out I was involved in some way...” Dr. Ivins said, not finishing the sentence. “I do not have any recollection of ever doing anything like that,” he said, adding, “I can tell
What causes misconduct behavior?

- Pressure for funds
- Pressure for publication
- Pressure for graduation/job/promotion (self, family, supervisor)
- Pressure to get positive results (lie to preserve the truth)
- Ignorance of rules of scientific conduct
- Substandard lab procedures
- Poor judgement/carelessness
- Insufficient supervision
- Professional conflicts/non-collegial work environment
- Overworked/insufficient time
- Poor communication/coordination
- Lost/stolen/discard data
- Reliance on others/permission
- Language barrier
- Personal or psychological problems
General advice

• A few “bad eggs”
• Throughout career in science, you must remain vigilant
• Some issues may seem obvious, others represent “grey areas”
• Seek help from friends, colleagues, mentors or officials
• How do we prevent misconduct?
Case F2 Dealing with Suspicions of Misconduct

Dr. Carlos Gonzalez is a well-known investigator at the peak of his career. He has a reputation for being brilliant, demanding, and intensely competitive. The University values him greatly and he receives offers to move to highly attractive positions elsewhere on a regular basis. His laboratory publishes on average 30 papers a year and he is always included as author.

One of Dr. Gonzalez’s first year postdocs, Dr. Grace Hung, comes to him and says that a very important result recently published by his laboratory in the Proceedings of the National Academy of Sciences was fraudulent. This paper has already received considerable attention.

Dr. Hung says the principal author, Dr. Edward Lansing, made up most of the data because a key assay was not working. This was discovered, she noted, when she tried to utilize the assay. Dr. Lansing has worked with Dr. Gonzalez for five years. The two have published several papers together and have become personal friends. Dr. Gonzalez hardly knows Dr. Hung.

QUESTIONS

1. How should Dr. Gonzalez respond to this complaint? How should he deal with:
   a) Dr. Hung?
   b) Dr. Lansing?
   c) The data that have now been called into question?
   d) The institution in which all three individuals work?
   e) The journal in which the possibly fraudulent data were reported?

2. Assume Dr. Gonzalez is unresponsive to Dr. Hung’s complaint. How might Dr. Hung follow up on her concerns?

3. Assume that Dr. Gonzalez proceeds by asking Dr. Lansing obliquely about the assay used for the project, mentioning that Dr. Hung seems to have some kind of problem with it. In spite of Dr. Gonzalez subtlety, Dr. Lansing suspects that this inexperienced postdoc has planted some serious suspicions in Dr. Gonzalez’s mind.
   a) Since Dr. Lansing is confident of the accuracy if his work, how should he respond to Dr. Gonzalez?
   b) Should Dr. Lansing approach Dr. Hung, and if so, what should he say to her?
Examples of appropriate behavior in:

- examinations
- research/capstone papers
- oral presentations
Ethical Scientific Conduct

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Assistant Dean of Graduate Academic and Student Affairs, GSBS – NB/Pisc
Why Publish?

• To let other people know your results.
  o Can your data be confirmed?
  o Can alternative hypotheses explain your data?
• To get grants.
• To get promoted / not fired.
• When you ready to publish? Tell a complete story, reproducible data, significant contribution
Authorship

- Who should be an author? Significant contribution to the design, experimentation, and reporting of the work; DECIDE EARLY
- First and last authors get the most credit for papers.
- First author did the bulk of the work and is usually a student / post-doc.
- Last author is PI.
- Dual authorship.
- New initiative to identify contribution of each contributor (not exactly same as author) of a paper (Rennie et al., JAMA 278:579, 1997)
- Rewards and responsibilities of authorship: credit and blame
The Review Process

1. Can only submit a manuscript to one journal at a time.
2. Make sure all of the co-authors have seen the manuscript and agree to its content.
3. Where to submit?
4. Provide a good cover letter.
5. Talk with the editor (for some journals).
6. Suggest appropriate PEER reviewers. Must be knowledgeable, objective and impartial.
7. Submission
8. Receive comments. What to expect from peer review?
9. How to respond to reviewer critiques?
10. Revise / resubmit

Juan Miguel Campanario found that "at least eight articles that would eventually earn the Nobel Prize for their authors were initially rejected outright by reviewers."
## How common is misconduct?

### 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>Other behaviours</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 $\chi^2$ tests of differences between mid- and early-career scientists are noted by ** ($P < 0.01$) and *** ($P < 0.001$).
What Are Your Responsibilities as a Reviewer?

• Do not review work on which you are not an expert.
• Do not review work on a subject where you are involved in a contentious dispute.
• Do not delay.
• Do keep the work confidential.
• Do not appropriate work from a paper or grant you are reviewing.