Publication Practices

- Publication in a peer-reviewed journal is the most important way of disseminating a complete set of research results and getting credit for the work.
- First to publish a view or finding gets most of the credit for the discovery or idea.
- Digital technologies and the internet are creating new forms of publication and rapidly changing landscape.
Publication: Key Issues

- The publication landscape is changing rapidly. What does it mean for researchers and how productivity is assessed by our peers?
- How do we determine the appropriate outlet to publish our research in this changing landscape?
- How do we compare journal quality vs. ease of publication in open-access journals versus more traditional outlets?
The Evolution of Publication

- Historically, numbers of papers and quality of journals have been the primary criteria for publication success.
- Recently, how one’s papers are cited have gained additional importance (e.g., H-index, etc.).
- Open access publishing is becoming more prevalent.
- Open access papers are immediately available online, with no restrictions on access or use, but authors usually have to pay a publication fee.
Faculty Concerns: Publication

- Speed and efficiency with the handling and review of their manuscript
- How quickly will the paper appear on-line and then in print?
- What is the reputation and quality of the journal?
- Do they have a prestigious editorial board?
- Are papers in the journal well cited?
Journal Impact Factors (+)

- Have been viewed as an objective criteria for journal quality by assessing how often papers published in the journal are cited by the research community.

- Such a metric can then be applied to (and by) authors and professional evaluators.

- A similar criteria can be applied to individual authors in that the collective impact of their work can be assessed (i.e., citation indexes).
Journal Impact Factors (–)

- Organized efforts (scientific societies) to stop the use of journal impact factors in judging an individual researcher’s work
- Impact factors were never intended to be used to evaluate individual researchers, only journals
- Impact factors tend to bias certain disciplines over others, thus are not objective metrics
- Such metrics may also be a disincentive for conducting risky research – work in highly cited areas are cited more often
Open Access

‘Green’ open-access approach:
All data must be publicly accessible within 6 months of publication, so modest author control

‘Gold’ open-access approach:
Data available as soon as the paper is published, with on-line papers directly linked to data sets along with software and analysis tools that enable easy re-use for applications such as text-mining, meta-analyses, etc.
Open Access “Watchdogs”

- Jeffrey Beall’s blog (Univ. of Denver)
  - maintains a list of “potential or probably predatory scholarly open-access publishers”

- Directory of Open Access Journals (DOAJ)
  - out of Copenhagen, lists open-access journals that have been reviewed for quality
What is an “Author”?

- An individual who receives a byline on a published paper
- There are different authorship standards depending on publication and discipline
- Authorship is one of the most common disputes in conducting research
Why is authorship important?

- In scholarly communication, order of authorship indicates amount of involvement, responsibility, and credit for research.

- It counts for students & postdocs trying to get positions and for faculty promotion & tenure decisions.

- It indicates individuals who can be contacted for further information and clarification.
Why Do We Need to “Define” Authorship?

The present environment for authorship and publication is in a rapid state of flux.

This is due to the changes in the way authorship is being defined and the subsequent increase in the number of articles written and journals to publish them.

A paradigm shift is promised for the coming years.
Who is entitled to be an author?

The average number of authors rose from one author in 1925 to more than six in 2010.

A few examples of how authorship statements vary by discipline follow . . . .
Who is entitled to be an author?

ICMJE (International Committee of Medical Journal Editors):

"Authorship credit should be based only on substantial contributions to

(1) conception and design or analysis and interpretation of the data;

(2) writing the article or revising it critically for important intellectual content;

(3) final approval of the version to be published.

Conditions 1, 2 and 3 must be all met"
Who is entitled to be an author?

From the Federation of American Societies for Experimental Biology (FASEB), some key phrases:

- each author to have made an important scientific contribution to the study
- must be thoroughly familiar with the original data
- must have read the complete manuscript
- and to take responsibility for the content and completeness of the manuscript
Requires 2-3 of the following:

- CONCEPT: the idea for the research; framing the hypotheses
- DESIGN: planning the methods to generate results
- SUPERVISION: oversight and responsibility for the organization and course of the project and the manuscript
- RESOURCES: funding, equipment, space, personnel vital to the project
- MATERIAL: biological materials, reagents, referred patients
- DATA COLLECTION &/or PROCESSING: responsibility for doing experiments; organizing and reporting data
- ANALYSIS &/or INTERPRETATION: statistical analysis; modeling
- LITERATURE SEARCH: responsibility for this necessary function
- WRITING: responsibility for creating all or a substantive part of the manuscript
- CRITICAL REVIEW: reworking the manuscript for intellectual content before submission, not just spelling and grammar checking
- OTHER: for novel contributions
Authorship Issues with Large, Interdisciplinary Research Teams

- Authorship disputes occur more frequently
- Lack of clear assignment of responsibility among all the potential authors is the usual cause of such disputes
- Who answers questions about the paper that may arise after publication?
Most Common Authorship Structure in Large Lab Groups

- **Primary Author**: graduate student or post-doc that takes the lead on the experiments and writes the primary draft of the paper

- **Senior Author**: faculty advisor (mentor) or lab lead P.I. who coordinated the experiments and worked closely with the primary author on manuscript preparation
The primary author (student, post-doc) is listed as the first author, followed by other lab members or faculty from the student’s supervisory committee that made significant contributions, by order of contribution, and the senior author (usually the PI) is then listed last.
First (Primary) Author

- Author that composes/writes the first draft of the manuscript
- Generally performs more of the experiments than any other authors
- Shares responsibility for the entire paper and study with the Last (Senior) Author
Middle Authors

- Contributed significantly to the study
- Rank in authorship corresponds to the extent to which they contributed to the study (usually decided by Senior Author)
- Takes specific responsibility for their contribution and general responsibility for the paper
Last (Senior) Author

- Shares responsibility for the entire study, including the written manuscript, with the First Author
- Generally is head of the research group conducting the study
- Often conceived the study, obtained funding, and should have contributed to most aspects
A Critically Important Practice: Assigning Authorship

- The selection of authors (and author order) for a paper should be jointly agreed upon by all the collaborators on a project as soon as the group has decided on the assignment of responsibilities and workload for the project.

- Failure to achieve such consensus at the outset can have serious repercussions later (e.g., author deletion or insertion).
Consequences of More Extreme Precipitation Regimes for Terrestrial Ecosystems

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Amplification of the hydrological cycle as a consequence of global warming is forecast to lead to more extreme intra-annual precipitation regimes characterized by larger rainfall events and longer intervals between events. We present a conceptual framework, based on past investigations and ecological theory, for predicting the consequences of this underappreciated aspect of climate change. We consider a broad range of terrestrial ecosystems that vary in their overall water balance. More extreme rainfall regimes are expected to increase the duration and severity of soil water stress in mesic ecosystems as intervals between rainfall events increase. In contrast, xeric ecosystems may exhibit the opposite response to extreme events. Larger but less frequent rainfall events may result in proportional reductions in evaporative losses in xeric systems, and thus may lead to greater soil water availability. Hydric (wetland) ecosystems are predicted to experience reduced periods of anoxia in response to prolonged intervals between rainfall events. Understanding these contingent effects of ecosystem water balance is necessary for predicting how more extreme precipitation regimes will modify ecosystem processes and alter interactions with related global change drivers.

Keywords: climate change, drought, ecosystems, precipitation, soil water
Ethics and Authorship

**Gift Authors** – listed out of a sense of obligation (mentors, etc.); generally did not contribute directly to the research or writing

**Honorary Authors** – gratuitous authorship to those who have not met authorship criteria (typically prestigious colleagues)

Both practices erode confidence in research
“Ghost Authors” — failing to list as authors individuals who contributed significantly to the work

Examples: students not given credit or professional writers

It is misconduct if the ghost author is from a financial interest that has a clear COI

A 2009 article in *Science News* estimated that ca. 10% of biomedical publications have ghost authors, often related to clinical research
Authorship responsibilities

- Good writing
- Accuracy
- Context and Citations
- Publishing negative results
- Disclosing conflicts of interest
- Acknowledging sponsorship
- Ensuring IP rights are respected
Authorship “Mistakes”

References Cited:
- Paraphrasing from a source without proper attribution – this is plagiarism
- Secondary citations without obtaining the original document you are citing
- Using outdated references for innovative methodology (might not be innovative)
- Inaccurate citations – using reference software can ensure accuracy, should check links for URLs frequently
Authorship “Mistakes” (cont’d)

- Excluding problematic data or results and not detailing why that information was excluded
- Publishing substantially the same results in more than one journal – called “republishing”
- Fragmentary publication (LPU’s) – can lead to potentially inconsistent messages from research groups to the research community (are also shown to not be cited as well)
Over-manipulation of images without a clear description of changes made to the image

Some examples follow . . . .
Gross manipulation of blots.

A  Original image  Manipulated image

1  2  3  4  1  2  3  4

B  Original image  Manipulated image

1  2  3  4  1  2  3  4

Rossner M, Yamada K M J Cell Biol 2004;166:11-15
Manipulation of blots: cleaning up background.

Rossner M, Yamada K M J Cell Biol 2004;166:11-15
Misrepresentation of immunogold data.

Original image

Manipulated image

Rossner M, Yamada K M J Cell Biol 2004;166:11-15
Authorship: Summary

- Need to define what an “author” is so that all authors meet the definition and know in advance
- Order is important – primary and senior authors, plus supporting authors
- Authorship responsibilities and mistakes
- Appropriate rules for images
Assessment of Scholarly Productivity: A Changing Landscape

- Traditional Publications
- Digital Objects (data, images, video, etc.)
- Digital Systems (web sites, databases, blogs)
- Services & Tools (software applications, analysis tools, data acquisition, visualization)