The Road from Poster to Scientific Publication

Scott A. Minnich, Ph.D.
Carolyn H. Bohach, Ph.D.
University of Idaho
Moscow, ID
Session Topics

1. Why does INBRE track posters and publications?
2. Who’s creating posters and publications?
3. Differences between a poster and a publication.
4. Seven steps to turn your poster into a publication.
5. How can INBRE help you publish?
Idaho INBRE

Multi-million dollar grant for 11 institutions with the purpose to:

Increase biomedical research capacity
By mandate, more INBRE dollars go to Idaho undergraduate colleges than to Idaho research institutions.

CWI, CSI, LCSC, NIC, NNU, CoI, BYUI

~$6,000,000

UI, ISU, BSU, IVREF

~$2,875,000
Metrics that measure research capacity

- scientific presentations
- scientific posters
- scientific publications
- funded grant proposals
Every campus reports INBRE activities and we organize, store, and analyze the information using a database.
INBRE metrics: 2014 through 2017

Presentations & Posters: 1,281
Posters: 638

Scientific Publications: 262

Posters = 638
Who knows what ‘publish or perish’ means?
PUBLISH or PERISH

University of Idaho
Idaho State University
Boise State University
IVREF
Research-intensive Institutions
UI, ISU, BSU, IVREF

Posters  Publications
472  →  247

53.2% poster to pub conversion
Undergraduate Colleges
BYU-I, CoI, CSI, CWI, LCSC, NIC, NNU

Posters: 166
Publications: 15

5.7% poster to pub conversion
Do laboratories at the colleges that create more posters, publish more?
Surprisingly, the # of posters don’t increase the # of publications

<table>
<thead>
<tr>
<th>Faculty lab</th>
<th>Posters</th>
<th>Publications</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>42</td>
<td>2</td>
</tr>
<tr>
<td>b</td>
<td>24</td>
<td>1</td>
</tr>
<tr>
<td>c</td>
<td>13</td>
<td>3</td>
</tr>
<tr>
<td>d</td>
<td>10</td>
<td>0</td>
</tr>
<tr>
<td>e</td>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td>f</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>
A scientific publication is the GOLD Standard for scholarship.
What is an inconvenient truth in Science?

You haven’t done anything until it is published in a peer-reviewed journal.
Why aren’t faculty at undergraduate colleges publishing more?
Why should anyone publish papers?

For Faculty

• Add to mankind’s knowledge
• Get recognition from the Scientific community
• Improve your teaching skills
• Increase your students’ competitiveness
• Stay current in your field
• Get funding to continue your research

For Students

• Add to mankind’s knowledge
• Get recognition from the Scientific community
• Improve your training
• Get exposed to scientific rigor
• Get into graduate school
• Get into professional school
• Get a competitive job
• Impress your friends/lover
• Create something for your parent’s coffee table
Posters contribute to research but they do not carry the weight of a publication

WHY?
Differences

**Poster**
- Scientific idea exchange
- Critical feedback
- Preliminary data
- “testing the waters”
- Narrow audience
- No lasting imprint on the record

**Publication**
- Formal communication
- Peer-reviewed
- Wide audience
- Strict format
- Statistical rigor
- Editorial review
- **FOREVER in the record**
Publications demonstrate expertise and knowledge.

Publications are absolutely required to win competitive grant money.
“A peer-reviewed paper, even a small one, would do a lot to alleviate my concerns about the quality of the preliminary data.”

“Pubs In prep and meeting abstracts don’t count as publications and are irritating!”

“Although Dr. X has a good publication record from his PhD, he hasn’t published recently.”
It is easier than you think to turn a Poster into a Publication. You’re just steps away!
Anatomy of a Publication

- **Introduction**
  3-5 pages

- **Methods**
  5 pages

- **Results**
  5 pages with Figures and Tables

- **Discussion**
  3-5 pages (conclusion)

- **References**
  30-50
Posters have the “bones”

- Introduction short
- Methods schematic
- Results Figures and Tables
- Discussion Brief
- Conclusion bulleted points
- References a few
What can you and your professor do?

Take seven steps!
Step 1. Start with the Figures and Tables

a) Create **publication quality** Figures with legends.

b) Create **publication quality** Tables with Titles and footnotes.

c) Figures and Tables ‘stand alone’.

d) Order the Figs. and Tables to tell a story.

e) Write a paragraph for each Fig. and Table telling readers what to notice. Add measurements or observations that are not in the Fig. or Table.
Now, you have the *Results* section!

It answers the question: what did you measure and observe?

Scientific papers have 4-7 figures and tables. You already have them in your poster —flesh it out ---- put the flesh on your bones!
Step 2. Change your schematic methods into paragraphs

a) Write each technique as a succinct paragraph of how you made your measurements. Use enough detail so someone can repeat what you did.

b) Describe the methods in the order of their use in the Results section.

This is your Methods section.
It answers the question: how did you take the measurements?
Step 3. Expand your Introduction

a. Give background to explain why the experiments are important.

b. State the hypothesis.

This is the *Introduction* section.

It answers the question: *why* did you do the research?

Remember, your intro should be like a funnel, start broad and focus in to your hypothesis or question.
Step 4. Expand your discussion and conclusions

a. Explain the implications of the results.
b. DO NOT re-tell the results.
c. “The most important finding in this study was X. It was also shown that a, b, c.”

This is the *Discussion* section.

It answers the question: What do the results mean? How do the results fit into the current body of knowledge?
Step 5. Add authors, references, and acknowledgements

a. Authors and their order is up to the professor.
b. 30-50 references. This is NOT a review.
c. Acknowledge intellectual contributions not made by authors, any technical help, any reagents or strains supplied as gifts, your grant support, etc.
Step 6. Create the *Abstract*

a. Create the abstract from *sentences you have already written in the sections.*

b. This is the **MOST important component of the writing, because it is the most read** (often the **ONLY thing read**).
Step 7. Craft the *Title*

a. Accurate
b. Descriptive
c. Specific
d. Short
Good:
A structure for deoxyribose-nucleic acid

Bad:
The dependence of cell-free protein synthesis in E. coli upon naturally occurring or synthetic polyribonucleotides

Breaking the genetic code with defined polyribonucleotides
Summary of 7 steps

• Figs. and Tables – Results (what?)
• Methods (how?)
• Introduction (why?)
• Discussion (so what?)
• Authors, references and acknowledgements
• Abstract
• Title
Why aren’t people publishing?

• Time
• FEAR
  • Rejection
  • Criticism
  • That your thinking and logic are inferior
• No job-related incentive
• Need help
• Lack of money
• Need to do “one more experiment”
• Not enough experienced hands in the lab
  • Undergrads
  • graduate students
  • technicians
How can INBRE help faculty move Poster to a Publication?

• Writing help?
• Pay for page charges?
• Provide a writing consultant?
• Writing workshops?
• Writing groups?
• Peer partners?
Publishing is NOT insurmountable!
The road to Hell is paved with scientific works “In Prep”.