How to write a good paper

• My experience
• A workshop
  Getting started as a successful grant writer and
academician
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Appeal to the reader

• Concise
• Easy to read
  • Use simple declarative sentences
  • Avoid complex syntax
• Comprehensible
  • Avoid complicated words, unusual abbreviations, jargon that is not explained
• Provide a road map
  • Use the abstract and the first paragraph to overview the direction of the paper
  • Use eye-catching headlines that convey your major points and lead you through the paper
• Get someone to read your paper and listen to their feedback
Conceptual flow - review

• Introduction
  1. Your idea in the first paragraph
• The body of the paper
  2. Supporting ideas and concepts
     • flesh out your idea
  3. Supporting literature
     • What do we already know?
     • Lead up to the gap in our knowledge
• Gaps in our knowledge
  • What information/techniques are lacking to address these gaps
• Summary
  • Why the idea is important
  • What approaches seem particularly fruitful
  • What insights will be gained with continued research in this fields
Conceptual flow - proposal

• Introduction
  1. Your idea in the first paragraph
• The body of the paper
  2. Supporting ideas and concepts
     • flesh out your idea
  3. Supporting literature
     • What do we already know?
     • Lead up to the gap in our knowledge
• Specific objectives
  • Hypotheses for each specific objective
• Experimental section
  5. Introduce and detail experimental design
  6. Possible outcomes and inferences
• Summary
  7. How will your experiments advance the field
1. Overview and objectives of your idea
   • The opening sentence is critical
     • Gripping, compelling
     • Put the research into its broader context
     • Convey the importance of everything that will follow
       • Avoid bland sentences
         • A lot of information is known about…
         • Many researchers have examined…
         • X is an interesting topic
     • Current knowledge (3-4 sentences)
     • Gap in our knowledge base that will be addressed
     • Why the gap is an important problem
What conceptual ideas are necessary to understand this research?

2. Supporting ideas and concepts
   • Review of any relevant theory
   • Review of the underlying concepts
   • Review of common assumptions or current opinion
     • For all of these, cite the original sources not secondary sources
     • Don’t start at the very beginning – general biology level
     • There may be compelling ideas at that level but deal with them in the most concise way and get to the meat of the issue
What do we already know?

3. Literature review
   • Summarize our current knowledge
   • Review literature that is at the cutting edge
   • Summarize approaches that have been used to investigate the issue
   • Introduce the study organism
   • Even if you don’t say it overtly, this section should be leading the reader to the gap in our knowledge that your work is trying to address
What work is needed to advance the field?

7. Summary
   • Why the work is important.
   • What your approaches are promising
   • Insights that can be expected to accrue as a result of this work
Comments on good science

- Expense has nothing to do with the quality of the science
- Technique has nothing to do with the quality of the science
- Recognizing true gaps in our understanding and finding clever and innovative ways of employing techniques has everything to do with the quality of the science
- Good science depends upon
  - Quality of the question
    - Targets areas that are hindering the advancement of knowledge
  - Appropriateness of the experimental design
    - Clever ways to address these target areas that will provide unambiguous answers
Comments on technical aspects

- Page numbers are essential! Line numbers are helpful.
- Don’t put hard page breaks after sections – absolute length is not relevant.
- Follow standard rules for scientific names, abbreviations, units, written vs. numerical numbers.
- Check your literature cited section when you are completely finished.
  - All citations are there?
  - No extra citations are included?
  - Use a standard format?
Comments on language

- Avoid the words “easy” and “obvious”
- Avoid colloquial expressions
- Avoid anthropomorphisms
  - Evolution is trying to...
- Avoid weak language “we believe that…” “we will try to…”
- Write with a positive spin