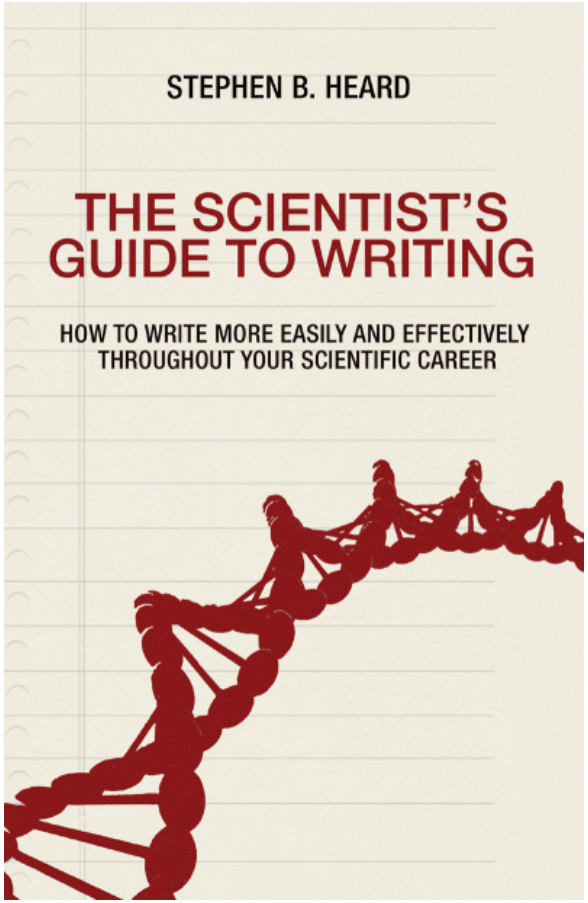
MBIO4030:
Core Molecular Microbiology Lab Techniques
Lab Slot 2, Tuesday September 10



Grades
(Communication component)

In class assignments 10%

- Short exercises in class
- Results presentation

Peer review 10%

- Two peer-evaluations

Scientific manuscript 30%

- Response to reviews
- Final report

Academic Integrity

http://www.umanitoba.ca/student/resource/student_advocacy/academicintegrity/students/a-to-i-what-is-academic-integrity.html

Plagiarism

How the University Sees it: "… the presentation or use of information, ideas, sentences, findings, etc. as one's own without appropriate citation in a written assignment, test or final examination."

Stephen Heard: Biol 4463/6463 Scientitic Writing Course Notes

1. quoting verbatim or almost verbatim from any source, including all electronic sources, without acknowledgement;
2. adopting someone else's line of thought, argument, arrangement, or supporting evidence without acknowledgement;
3. submitting someone else's work, in whatever form, without acknowledgement;
4. knowingly representing as one's own work any idea of another.

Academic Integrity

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Academic Fraud

How the University Sees it: "… includes falsification of data or official documents as well as the falsification of medical or compassionate circumstances/documentation to gain accommodations to complete assignments, tests or examinations."

Personation

How the University Sees it: "…the writing of an assignment, lab, test, or examination for another student. It can also be the unauthorized use of another person's signature or identification in order to impersonate someone else. Personation includes both the personator and the person initiating the personation."

Academic Integrity

http://www.umanitoba.ca/student/resource/student_advocacy/academicintegrity/students/a-to-i-what-is-academic-integrity.html

Inappropriate Collaboration

How the University Sees it: "… when a student and any other unauthorized person work together on assignments, projects, tests, labs or other work intended to be individual."

University of Manitoba additional resources:

http://www.umanitoba.ca/student/resource/student_advocacy/academicintegrity/students/student-academic-misconduct-faq.html

http://www.sci.umanitoba.ca/undergraduate-students/academic-resources/academic-integrity-2/

Communication labs

Lab slot 2 (today!): Introduction to Writing
Telling a story

Lab slot 3 (full slot): Writing Methods & Results sections

Lab slot 9 (partial slot): Displaying data: Figures & Tables

Lab slot 15 (full slot): Results Presentations
Writing an Introduction

Lab slot 16 (partial slot): Writing a discussion

Lab slot 18 (partial): Style & Revision

Lab slot 19 (partial): Providing feedback
Draft manuscripts due; handed out for peer review assignment

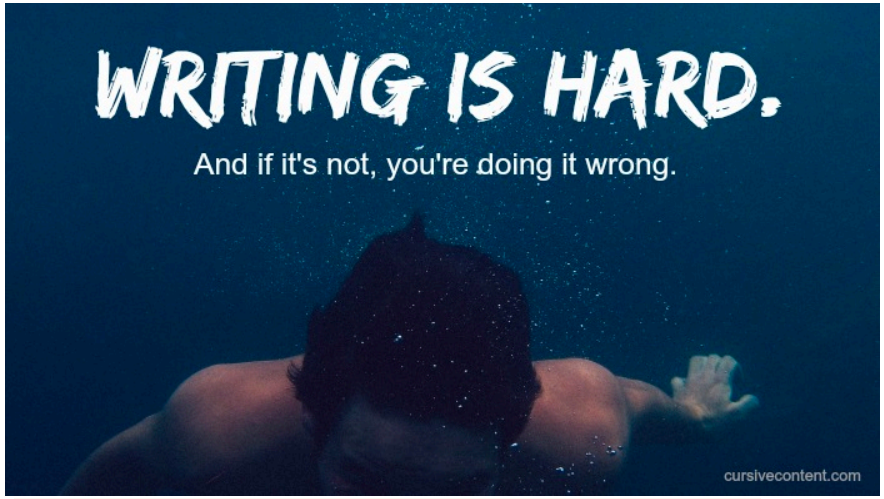
READING WEEK

Lab slot 20: Peer review assignment due

Lab slot 23 (partial): Writing for public consumption/non-scientists

Lab slot 25: Scientific manuscript due

Introduction to writing



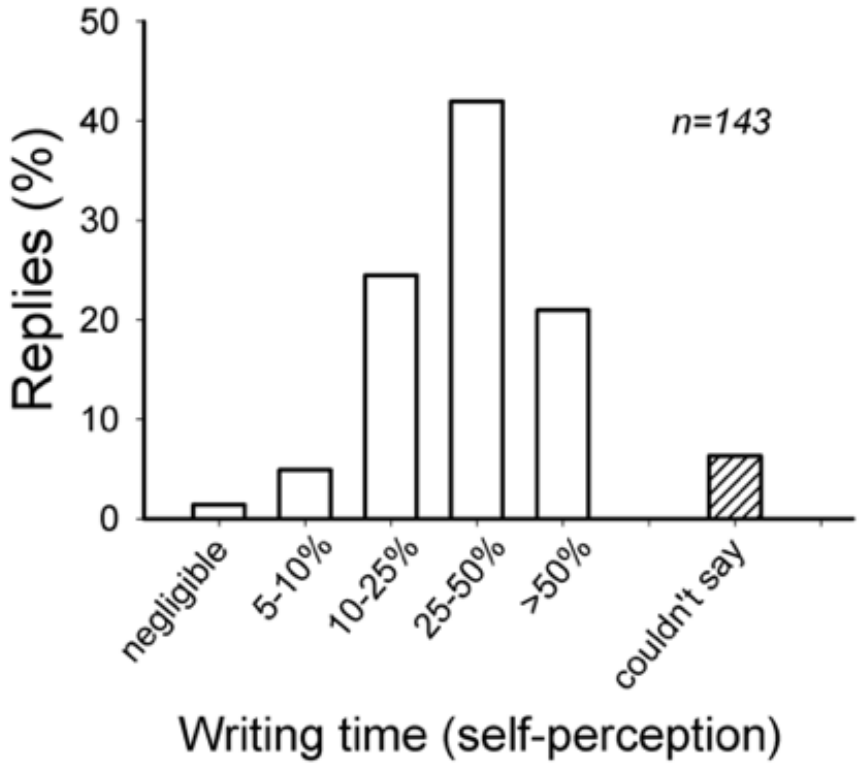
So let's stop pretending that writing should be easy and instead recognize the art of writing as just that – an art. A brave, vulnerable, worthwhile art.

Cursive Content

"Writing is hard work.
A clear sentence is no accident. Very few sentences come out right the first time, or even the third time.
Remember this in moments of despair.
If you find that writing is hard, it's because it *is* hard."

WILLIAM ZINSSER
"ON WRITING WELL"
(p9)

Q: How much time do academics spend writing?



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See https://scientistseessquirrel.wordpress.com/2016/06/30/how-much-time-do-you-spend-writing-survey-says/

Activity 1.1: Write your scientific elevator pitch

Write up a few sentences that answer the question:"What do you do?"
It should be ~2-3 minutes pitched for understanding by typical 2nd year student.
The work can come from a

- co-op work term
- summer reseaech project
- fourth year project
- previous class term project
- science-associated job or hobby

- **Introduction**– Necessary if you are the one making the introduction.
- **One-liner** – Think of this as a plainspoken thesis title. If you had one sentence to explain your research, what would you say?
- **Reel 'em in**– What is the major question/problem you study? What was your motivation (e.g. *I noticed X but no one was looking at it…*).
- **What are you doing?**– How are you answering this question? For example, you could describe your use of field surveys, experiments or modelling.
- **And?**– What have you found? What's next?
- **Why does this matter?** Don't think of it as a justification for your science. Think of it as an opportunity to show others the value of science.

https://sharingscience.agu.org/craft-an-elevator-pitch/

Activity 1.2: Get to know your group

Each member has 5 minutes to talk. In 5 minutes tell you group about:

(1) your academic background

- your degree program
- your emphasis within that degree
- why you are taking this class

(2) your career goals

- where you see yourself working in 10 years and the next step or steps that will get you there

(3) Your science elevator talk

After each member's talk, each <u>other</u> group member should ask a question.

Every paper tells a story

- In fiction, a "story" sets up and then resolves an interesting question in the reader's mind.
- How? By exposing *characters* to a *plot*.

A paper does the same thing:

- Question: what did you set out to learn?
- Characters: study species, reagents, apparatus, equations, etc.
- Plot: experiments, data analysis, etc.

Your paper *is not* a journal or a recipe.

Your paper is designed to tell the reader the thing(s) you've decided they need to know.

There's no story without the reader.
Your paper isn't written for you.

How do we effectively convey knowledge?

Narrative

noun

a spoken or written account of connected events; a story.

Randy Olson: Houston, We Have a Narrartive

One simple structure for story-telling: ABT

_____ and _____, but _____, therefore _____.

agreement

[these things are true and observable/known]

contraction

[problem statement]

consequence

[this is how we're addressing the problem]

Randy Olson: Houston, We Have a Narrartive

https://www.sesync.org/for-you/communications/toolkit/and-but-therefore-statement

One simple structure for story-telling: ABT

and	but	therefore
also	despite	so
equally	however	thuys
identically	yet	consequently
uniquely	conversely	hence
like	rather	thereupon
moreover	whereas	accordingly
as well as	although	as a result
furthermore	otherwise	henceforth
likewise	instead	for this reason
similarly	albeit	in that case

Randy Olson: Houston, We Have a Narrartive

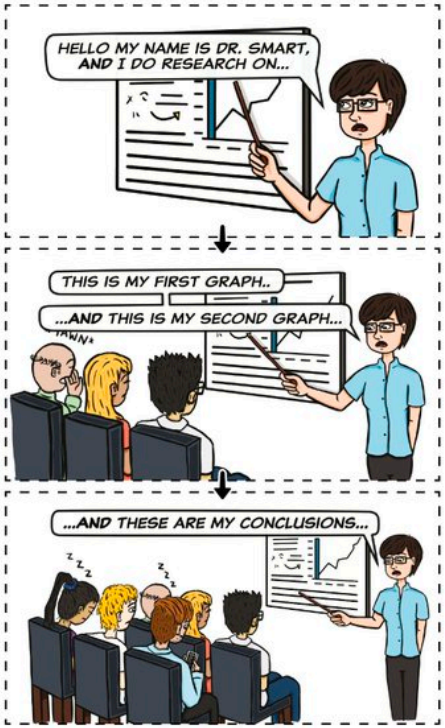
TELL THEM A STORY

HOW TO AVOID THE STANDARD BORING PRESENTATION

BY DR. TULLIO ROSSI
WITH THE ABT TEMPLATE DEVELOPED BY DR. RANDY OLSON

A PRESENTATION IS COMING UP...
WHICH KIND OF PRESENTATION ARE YOU GOING TO GIVE?

THE STANDARD LIST-LIKE PRESENTATION



THIS WAS AN AND-AND-AND* TYPE PRESENTATION

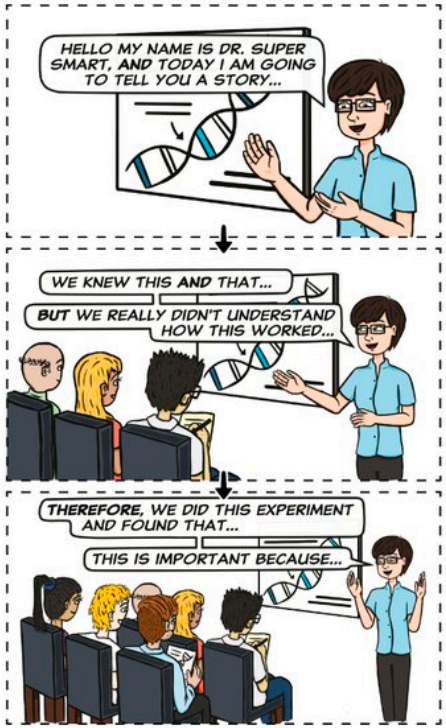
IT IS A BORING LIST OF FACTS

IT DOES NOT TELL A STORY

IT HAS NO NARRATIVE STRUCTURE

NOT THE WAY TO GO!

THE ENGAGING STORY



THIS WAS AN AND-BUT-THEREFORE* TYPE PRESENTATION

IT IS ENGAGING

IT TELLS A STORY

IT HAS NARRATIVE STRUCTURE

THE WAY TO GO!

- **AND:** SET UP - BACKGROUND
- **BUT:** PROBLEM - CONFLICT - DRAMA
- **THEREFORE:** JOURNEY -> SOLUTION

*SOURCE: DR. RANDY OLSON

Finding and Planning Your Story

1) What is the central question? What is your answer?
2) What background information is required?
3) Which experiments, data, and analyses belong?
4) What is the interpretation of your results?
5) What is the best order to present things?

An outline is a guide, but your story can change as you write it.

The order you did the experiments is <u>not</u> necessarily the order you present them in.

It's a tool to get away from a blank page, but don't let it handcuff you or your creativity.

Adapted from Stephen Heard: Biol 4463/6463 Scientitic Writing Course Notes

Outline i. The story summary

1) What is the central question?
2) Why is this question important?
3) What data are needed to answer the question?
4) What methods are used to get those data?
5) What analysis must be applied for the data to answer the question?
6) What data were obtained?
7) What were the results of the analysis?
8) How did those results answer the central question?
9) What does this answer tell us about the broader field?

Outline ii. The subhead outline

1) Introduction
    - 1.1 Context in the field
    - 1.2 Central question
    - 1.3 Approach to the question
2) Methods
    - 2.1 Study species
    - 2.2 Experimental methods
    - 2.3 Statistical analysis
3) Results
    - 3.1 Experiment one (e.g., "3.1 Sequencing experiment)
    - 3.2 Experiment two (e.g., "3.2 PCR of coding region")
    - …
    - 3.x Experiment x
4) Discussion
    - 4.1 How results answer the question
    - 4.2 Possible weaknesses, loose ends
    - 4.3 Broader implications for the field

Outline iii. The topic-sentence outline

Each paragraph in your paper will have a topic sentence.
All your intendend topic sentences can be a detailed outline.
Each point is a statement, not a topic.

For example:

Subhead outline:

3.1 Sequencing experiment

Topic-sentence:

Sanger sequencing determined there was a small deletion in the coding region of *LacI*.

Activity 1.3: Outlining three ways

As a group choose one of the provided papers.

1) Read it superficially (the point is not to absorb every detail; if you don't understand every aspect that's okay!)

2) With your group develop each of the following outlines (each student in the group should record their own copy of each):
   1. Story summary
   2. Subhead outline
   3. Topic-sentence outline

3) Individually spend ~ 5 minutes writing an ABT
   Share and compare the different ABTs written in your group.

Adapted from Stephen Heard: Biol 4463/6463 Scientitic Writing Course Notes

Assignment One

Each student should turn in

1) Your elevator pitch
2) A copy of your preferred style of outline. Write a couple of sentences that tell me why you prefer this style over the others.
3) Your ABT

Include your name and student number on each page.