The goal of oral presentations and written reports is to explain a technical finding . . .

**BUT . . .** they’re not the same . . .

**Written Reports**
- Random reading (re-reference text)
- Reader controls pace
- Message is archival
- Reader must actively read
- Feedback not possible

**Oral Presentations**
- Linear (cannot “go back”)
- Speaker controls pace
- Message presented in the moment
- Audience can be passive
- Feedback possible (questions)
Step 1: Organize data & locate trends in data

Look at the entire data set & individual plots.
What interesting or unexpected trends do you see?
→ define main technical theme of your presentation

Step 2: Draft the presentation

“Story-board” method:
– Sketch candidate slides
– Develop 2-3 bullet points for each slide
– Integrate slides into a story-board
→ Revise slides & bullet points to better fit story-board
– Add slides to fill in gaps
– Remove slides to eliminate redundancy
Results

- Approximately 2-3 relevant figures
- Distill information about each figure into 2-3 bullet points
- Include key words in figures to remind yourself (and audience) of each bullet point
- Figure should allow listener to fill in gaps due to lapses in attention
- Use title “real estate” to add meaning
e.g., Results: Resting Potential vs. External Potassium Concentration
Results

- Velocity increased with temperature for range from 0 to 30 C.
- Velocity decreased with temperature for range from 30 to 35 C.
- Action potentials did not propagate for temperatures above 36 C.

Three Effects of Temperature on Propagated Action Potentials

Between 1 cm and 2 cm, peak decreases
- ○ less than 10%
- × more than 10%

Temperature↑ then

- Velocity↑ in Region 1
- Velocity↓ in Region 2
- Propagation Fails in Region 3
Results (continued)

- Why did high temperatures kill the action potentials?
  - Stimulation normally generates wave of activation (due to sodium currents) and wave of inactivation (due to potassium currents).
  - Temperature increases speed of both waves, but rate of increase is faster for inactivation
Methods

- Approximately 1-2 slides
- Use backup slides for additional details
- Distill Methods to key procedures
  - HH will use theoretical methods
- Do not show equations (unless they are extremely simple and friendly)
- Visual representations of methods are easiest to comprehend

Increasing Temperature Speeds Sodium and Potassium Conductances

... but rate of increase greater for potassium!
Methods

- Apply current stimulus in “Propagated Action Potential” simulation of HH model.
- Measure velocity of propagated action potential
- Repeat for temperatures from 0 to 50 C.
- Plot results

Methods: Calculating Velocity of Propagation

1) stimulate with current $I_S$
2) find $t_{p1}$, time to peak at 1cm point
3) find $t_{p2}$, time to peak at 2cm point
4) calculate

$$\text{velocity} = \frac{1 \text{ cm}}{t_{p2} - t_{p1}}$$
Discussion

• Approximately 1-2 slides
• Limit discussion points to most important details (related to your Results)
• Relate discussion points to your research purpose

Summary

• Increasing temperature increases velocity of propagation ... but only for a range of low temperatures.

• Increasing temperature above a critical temperature blocks the propagation of action potentials.

• Thermal block results because inactivation processes increase faster with temperature than do activation processes.
Introduction

• Approximately 1 slide
• Explains the goals and purpose of the project
• Ideally, these goals and purpose relate to the Discussion points
• Show logic of ideas in words or text
• Hypothesis not needed
• Meaningful graphic OK; bullet points OK

No outline slide!

Introduction

Question: Will action potentials propagate faster at higher temperatures?

Pro: Rates of many chemical reactions increase with increasing temperature. Therefore it seems reasonable that the electro-chemical reactions underlying neural conduction would occur more rapidly at higher temperatures.

Con: However, excessive heat leads to stroke, which represents profound neurological failure.

**Step 3: Prepare for Q&A**

- Anticipate questions not covered in the presentation
  
  Typical questions: extend an idea, refute an idea

- Brainstorm, considering audience & scope

- OK to acknowledge gaps in knowledge

- OK to prepare extra slides

- Use questions from Dry Run to help you prepare for final presentation.
Presentation Timeline

- **Rough draft : Nov. 27**
  = slides, bullet points, 1 page extended abstract
  = submit electronically, in PDF format

- **Until the writing clinic**
  = critique one peer group’s first draft (either electronically or on printouts)

- **Writing clinic : Nov. 29 & Dec. 1**
  = mock presentation, including Q&A
  = your critique on other group’s draft is due
  = get feedback from writing/technical/peer reviewer

- **Until the final presentation**
  = Fix the problem / practice

- **Final presentations : Dec. 6 & Dec. 8**
  = 12 minute talk + 3 min Q&A
  = submit final slides (PDF) electronically before the talk
  = bring one paper copy of your final slide, attach all the critiques (electronic/paper)