Oral Presentations:
How to translate data into an oral presentation

6.021J: Quantitative Physiology
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Technical Presentations

- Primary goal is to explain a technical finding (the message is primarily oral).
- Slides provide visual reinforcement of the spoken message.
- Bad slides can distract the audience by being irrelevant, confusing, or inconsistent.
Step 1: Complete your project

- Organize your data
- Locate trends in your data and isolate specific results
- Distill information to key points

Very similar to preparing a written report!
Step 2: Plan the presentation

- Who is the audience?
- How much time do you have?
  - Budget under time
- Equipment or room constraints?
Step 3: Draft the presentation

- Sketch candidate slides
- Combine slides to create story-board
- Develop 2-3 bullet points for each slide
- Add slides to fill in gaps, remove slides to eliminate redundancy
Results

- Develop 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
<table>
<thead>
<tr>
<th>T (°C)</th>
<th>$t_{p1}$ (ms)</th>
<th>$t_{p2}$ (ms)</th>
<th>Velocity (m/s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1.52</td>
<td>2.60</td>
<td>9.25</td>
</tr>
<tr>
<td>5</td>
<td>1.15</td>
<td>2.02</td>
<td>11.49</td>
</tr>
<tr>
<td>10</td>
<td>0.89</td>
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<tr>
<td>15</td>
<td>0.71</td>
<td>1.29</td>
<td>17.24</td>
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<tr>
<td>20</td>
<td>0.56</td>
<td>1.07</td>
<td>19.60</td>
</tr>
<tr>
<td>25</td>
<td>0.47</td>
<td>0.91</td>
<td>22.72</td>
</tr>
<tr>
<td>30</td>
<td>0.40</td>
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<td>22.72</td>
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<td>18.51</td>
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<tr>
<td>45</td>
<td>0.56</td>
<td>1.01</td>
<td>22.22</td>
</tr>
<tr>
<td>50</td>
<td>0.58</td>
<td>1.11</td>
<td>18.86</td>
</tr>
</tbody>
</table>
Three Effects of Temperature on Propagated Action Potentials

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

Temperature $\uparrow$ then:
- Velocity $\uparrow$ in Region 1
- Velocity $\downarrow$ in Region 2
- Propagation Fails in Region 3
Increasing Temperature Speeds Sodium and Potassium Conductances

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

- Distill Methods to key procedures
  - HH will use theoretical methods
- Numbered list is fine
- Do not show equations (unless they are extremely simple and friendly)
Methods: Calculating Velocity of Propagation

\[
\text{velocity} = \frac{1 \text{ cm}}{t_{p2} - t_{p1}}
\]
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

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

- Limit discussion points to most important details (related to Results)
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

- Explains the goals and purpose of the project
- Ideally, these goals and purpose relate to the Discussion points
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.

Title Slide

- Titles
  - Informative
  - Specific
  - Understandable at a glance
- Your name and partner’s name
- Date
Step 4: Edit the Slide Show

- Edit slides for coherence
- Check for balance and coherency in story-board
- Spell-check and proofread
Step 5: Prepare for Q&A

- Anticipate questions not covered in the presentation
- Brainstorm, considering:
  - Audience
  - Scope
- OK to acknowledge gaps in knowledge
Step 6: PRACTICE

- Make sure that you meet the time limit
- Practice speaking slowly
- Know your quirks
- Use visuals as cues, not note cards
- Know how to use the equipment
Step 7: The Big Day

- Arrive early
- Check equipment
- Check voice projection
  - How loudly do you need to speak?
- Have a printed copy of your presentation + backup
- If you get lost, stop and regroup.
Presentation Priority Given to:

- Sophomores (CIM)
- Must be available on 12/6 to present
- Both partners agree to present
- Successfully-written frog lab
- Undergrads over grad students
Presentation Details

- Presentations given on 12/6
  - Between 9am and 11am
  - 15 minute talk + 5 min Q&A
- All slides loaded on course computer prior to 9am
- Rough draft = all slides completed, including bullet points & transitions
- Writing clinic = mock presentation
Presentation Tips

- **Length:**
  - 7-8 slides for 15 minute presentation

- **Font Size:**
  - Title 44 pt
  - Subtitles 28 pt
  - Other text 20 pt
Tips, cont’d

- **Visual Elements:**
  - Should not interfere with text
  - Use animation sparingly
  - Understandable at a glance

- **Color Scheme**
  - Use a light background with dark text if the lighting is dim
  - Keep colors consistent
HH Grade Sheet: Presentations

- **First draft (10%).**
- **Critique (5%).**

**Presentation Structure (15%).**
A: all information is well organized in proper sections with smooth transitions between sections. Visual elements were effective.
B: overall organization is understandable but could be improved in one section of the presentation or in minor instances throughout the presentation.
C: repeated organizational problems that interfere with presentation coherence. Poor presentation of visual information.

**Delivery of Presentation (10%).**
A: delivery was clear with appropriate use of non-verbal gestures. Verbal articulation and timing were appropriate.
B: several awkward moments or slips in verbal clarity.
C: repeated awkwardness in presentation, and/or repeated problems with verbal clarity. Presentation too long.

**Clarity and Conciseness of Technical Information (10%).**
A: technical flow is clear: introduction motivates a topic, results focus on that topic, conclusions follow from results, relevant methods are described.
B: no more than one major lapse in technical clarity.
C: more than one major lapse in technical clarity.

**Conceptual Correctness (20%).**
A: interpretations of results are technically correct.
B: interpretations are not well supported.
C: major errors.

**Insightfulness (30%).**
A: Recognized an interesting issue and developed at least one way to understand it.
B: Thorough description of WHAT happened without a clear understanding of WHY it happened.
C: Confusion about what happened.