

Oral Presentations

20.109 Communication Workshop 4

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MIT BE
BIOLOGICAL ENGINEERING

Communication Lab

Helping you communicate effectively.

mitcommlab.mit.edu/be/



Feedback: titles and abstracts

- What did you think?
- Graded for communication efficacy more so than scientific accuracy
- General comments:
 - Balance need to formulate a strong claim with not overstating the knowledge gap
 - Methods/results is the evidence that backs up implication claim

Our Communication Workshops support your major assignments

Workshop 1: Figures (overview)

Workshop 2: Figure Captions & Titles

Workshop 3: Abstracts & Titles

Workshop 4: Oral Presentations

Workshop 5: Manuscripts

Workshop 6: Proposals

Mod 1 Report

Journal Article Presentation

Mod 2 Report

Research Proposal

If you've been to an oral presentation of a journal article, what is it like?

For everyone, what do you think a journal article presentation could be good for?

Why do we present journal articles?



- Learn how work has been done
- Practice evaluating what might be done differently or next
- Improve YOUR communication and scientific reasoning skills

109 goal: Show that you **understand** the paper

Clearly present to us:

- the **take-home** message
- why the experiments were done and how (**methods!**)
- How the **conclusions** were drawn from the results

Today we'll cover 3 aspects of presenting well

1. Craft a **story**
2. Design effective **slides**
3. Clearly **present** your slide deck

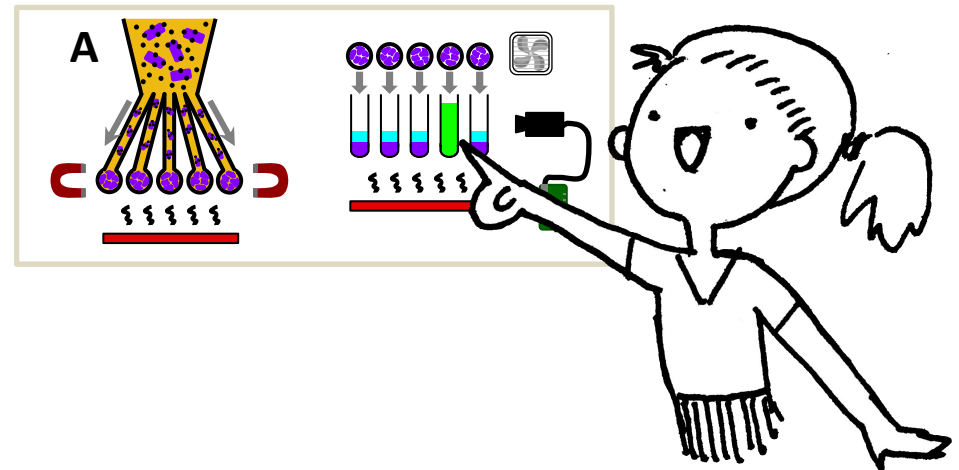


Image: Diana Chien

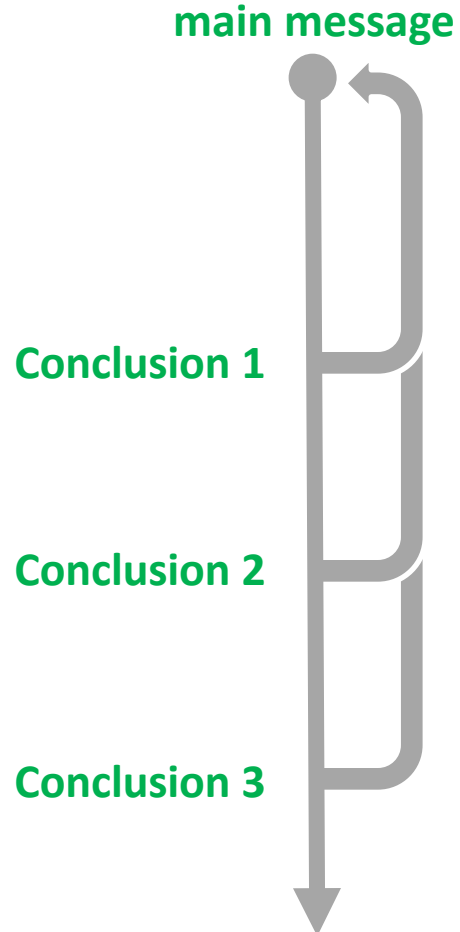
1. Craft a storyline from the paper

“Excellent students tell a story.”
-Noreen




Create a single storyline.

Identify a **take-home message**; everything else leads to it.



Straight chronology is a common trap, but it's actually confusing.



The authors ligated DNA into a plasmid,
then they transformed it into cells,
then they looked at fluorescence data,
and then they had a calcium sensor.

But *why* did they do these things?
Lead with the why.

A story conveys logic & motivation



The authors wanted to engineer a calcium sensor's binding sensitivity.

To change the binding site, they did site-directed mutagenesis,

then they expressed the mutant protein in cells,

and then they assessed its binding properties with a fluorescent assay.

Organize your journal article presentation to **tell us a story**

Take-home message



Conclusion 1

- Identify the **main question/message**

Conclusion 2

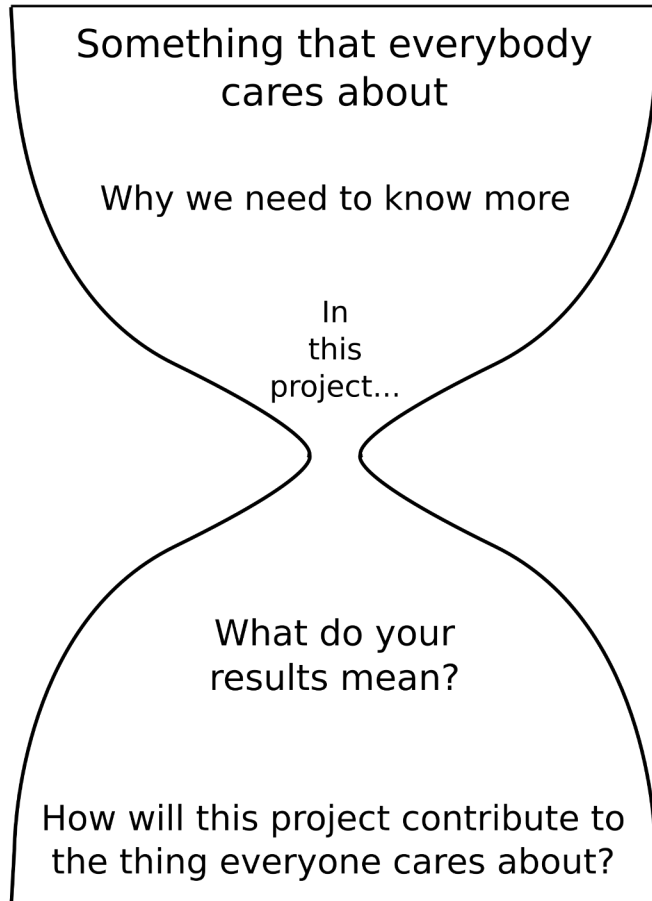
- Include only the **essential** results, key experiments and relevant data

Conclusion 3

- **Connect** results back to the message

- Explain **logic & motivation** with titles & transitions

The **hourglass structure** from abstracts helps with this storyline



General background

Specific background

Knowledge gap, Unknown

HERE WE SHOW...

Results

Implication

Significance

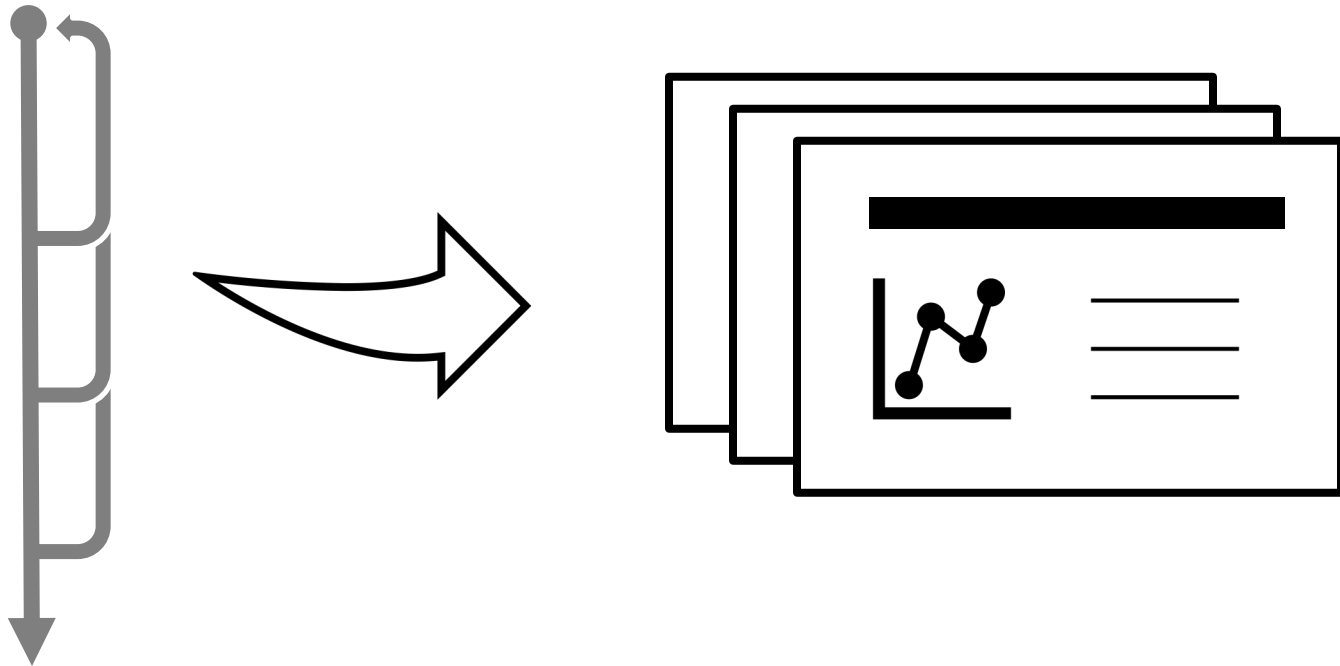
For your journal article presentation...

The authors told a story in their paper that you can follow in your presentation

...but you don't have to (and probably *can't* tell the whole thing in 10 minutes.)

Think about the story you want to tell and structure your presentation around that.

2. Design effective slides to convey the story



Good slides are a lot like good figures

1. Ask “What would help my audience understand this faster?”
2. If you’re not going to talk about something, **leave it out.**

- Make slide **title** a take-home message
- Show **minimal essential data**
- Maximize **signal-to-noise ratio**

Control time and space by separating, adding, and subtracting the original figures

- **Effective redundancy:** align visual, written, + spoken!

Make slide titles take-home messages

DON'T use

General descriptions of “what”

INSTEAD use

Sentences that answer “so what?”

Method EMK-1 Knockdown

EMK1 was knocked down in MDCK (kidney) cells using siRNA

Results Ca-switch

MDCK cells form a lumen after extracellular calcium changes

Mitochondrial ROS induction in cell lines

Mitochondrial ROS induction is decreased in adk knockout cells

Comparison of primer specificity

Primer 1 is better than Primer 2 at differentiating closely-related HIV strains

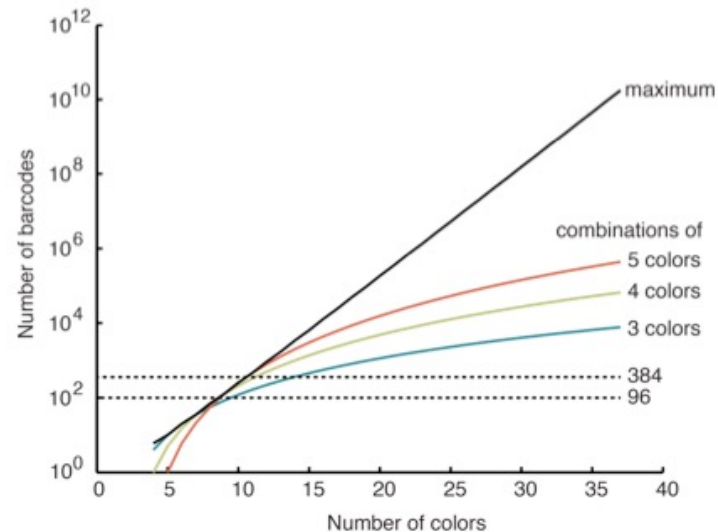
Use all parts of your slide to support your message.

The **title** conveys the "so what"

Optical barcoding scheme is easily scalable to ultrahigh library complexity (>384 combinations)

One message per slide:
only include data that supports that message

No unnecessary content:
only figures you discuss



Only 9 colors needed for library of 96
Only 11 colors needed for library of 384

Text supports the message,
not a script
(make sure font size is large
enough!)

Avoid light or bright colors and tiny fonts

Am I legible?

Am I legible?

Am I legible?

Am I legible?

Am I legible?

Am I legible?

Templates are just visual noise.
Avoid them.

My name - Today - Where we are



PowerPoint basics: 3. Style

Don't drown the audience with data.

Less is more.



Susan McConnell (Stanford),
Designing effective scientific presentations
<https://youtu.be/Hp7ld3Yb9XQ>

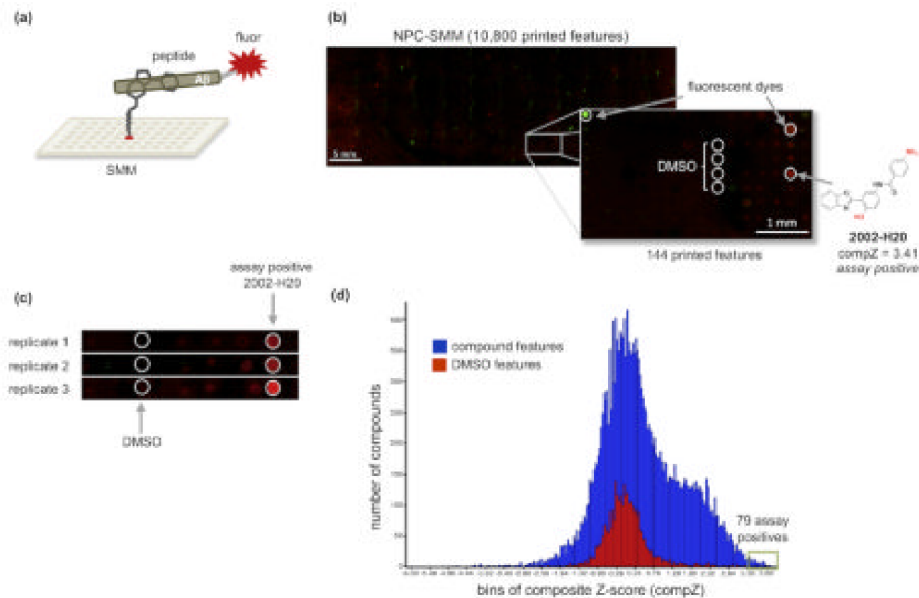
Activity:

~~How would you improve the slides you made?~~

How are you planning to design your slides?

Think about the tricks we just discussed!

What other modifications are you curious about?



Chen et al, 2010

3. Present your story clearly



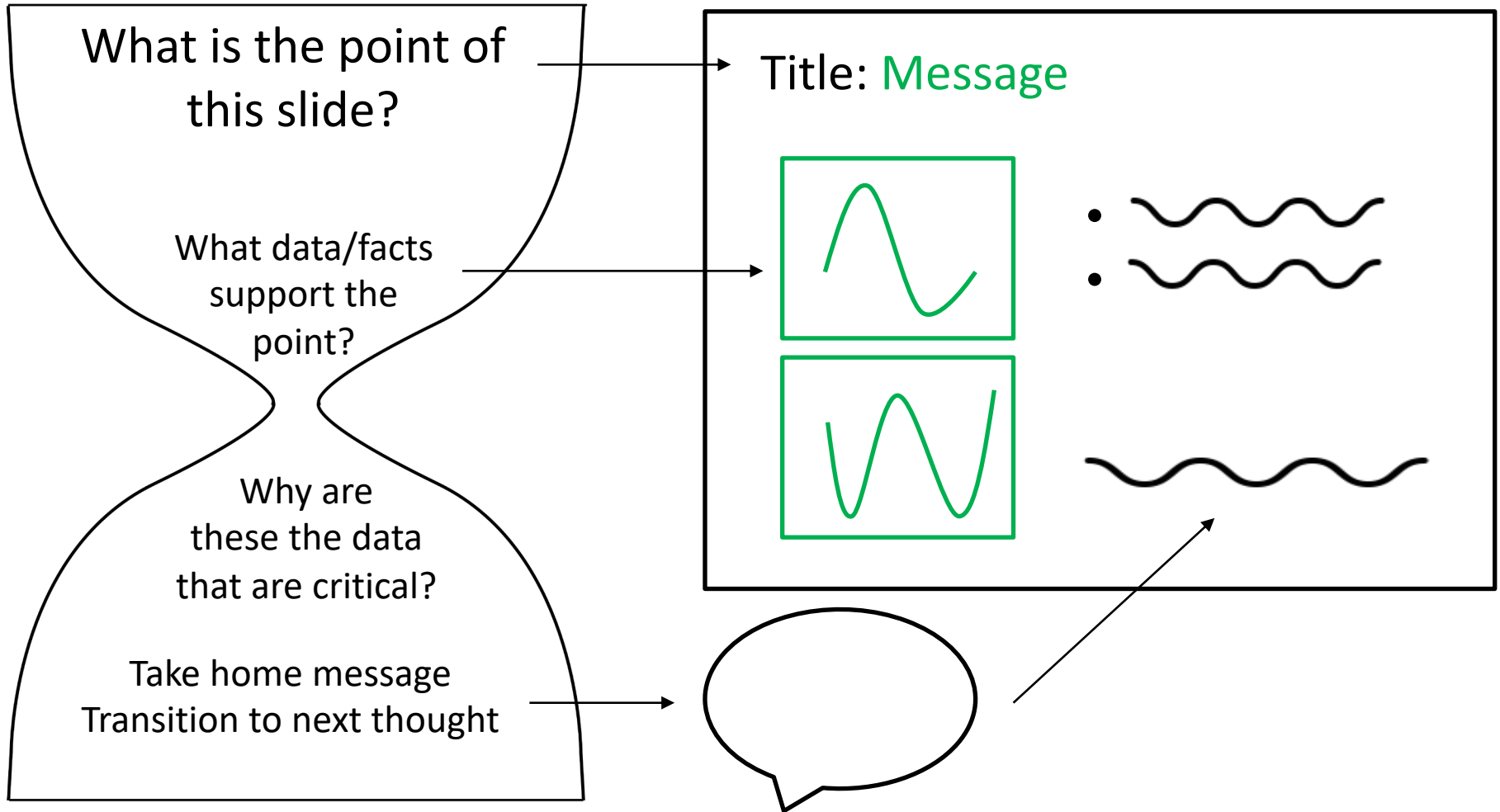
We're a friendly audience, so help us out



- **Practice** the take-home messages and transitions
- **Record yourself** to get timing right (**10 min**)
- If you're ***not*** going to talk about it, **take it out**

We'll ask you about **METHODS**, **be ready** to explain how things work and how the authors know things

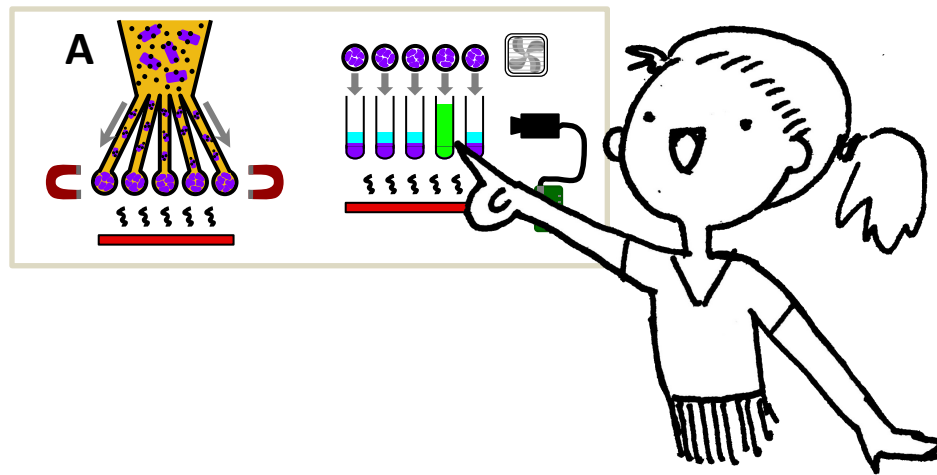
Think about what you'll say with each slide!



Try not to read off a script.

Practice with a script then convert to bullet points

You can also use gestures to guide the audience through complicated data.



Manage nerves by accepting them

Who doesn't get nervous? Be **kind** to yourself.

Reframe it:

*"I'm nervous because I'm **excited** to present."*

Channel the feeling, don't fight it.

steady belly breathing

eye contact

smile



What happens at the end? [↶] hint

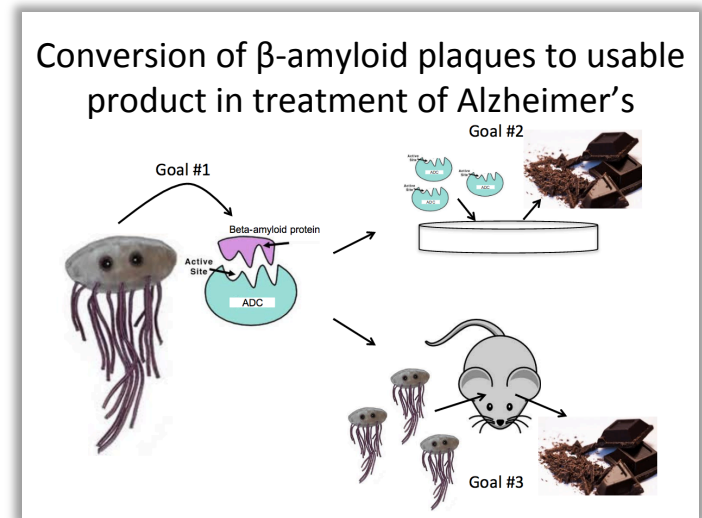
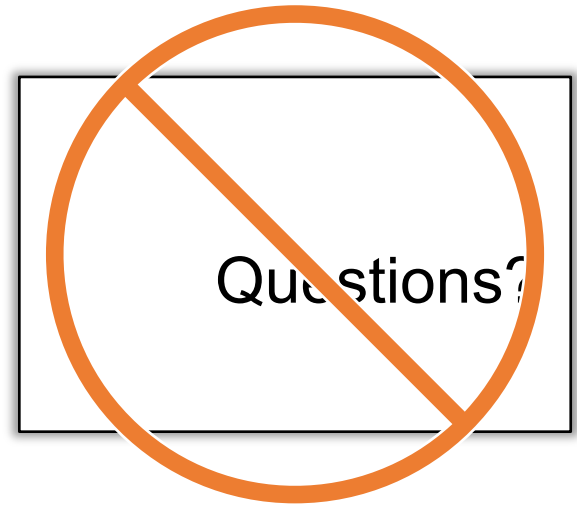
Time

Let the questioner finish.
Give yourself time to think.

Thought

Make sure you understand the question.

Do your best, use your reasoning,
but don't guess or just say you'll
look into it.



(What goes on the screen?)

It's easy to avoid common pitfalls

DON'T

Start so late you don't have time to digest the paper

Be exhaustive (it's exhausting)
List experiments chronologically

Lose points for time (9.5-10.5 min)

Forget to cite which paper it is

Say "we did this"

Use illegible labels

DO

Give yourself time to read the paper carefully 2-3 times

Be selective about what you present
Tell a story

Practice until you hit the time limit

Include citation in your title slide

"The authors did this"

Use ≥ 20 pt font

Make your own helpful figure labels

Use legible colors

Getting help is a sign of strength!

Ask us if you are unsure or have an idea you want to try

Practice your presentation with a Comm Fellow

mitcommlab.mit.edu/be

Watch the rest of *Designing effective scientific presentations*

<https://youtu.be/Hp7ld3Yb9XQ>

Susan McConnell, Stanford

Our next steps

- Slides will be posted on the wiki (“Communication” tab)

Your next steps

- Refer back to these tips, put together effective journal article presentations, and practice!
- Make a Comm Lab appointment to get feedback on your oral delivery/slides or anything communication related
- Keep thinking about presentations and slide design as you go to other classes and lectures!