MIT BE
BIOLOGICAL ENGINEERING

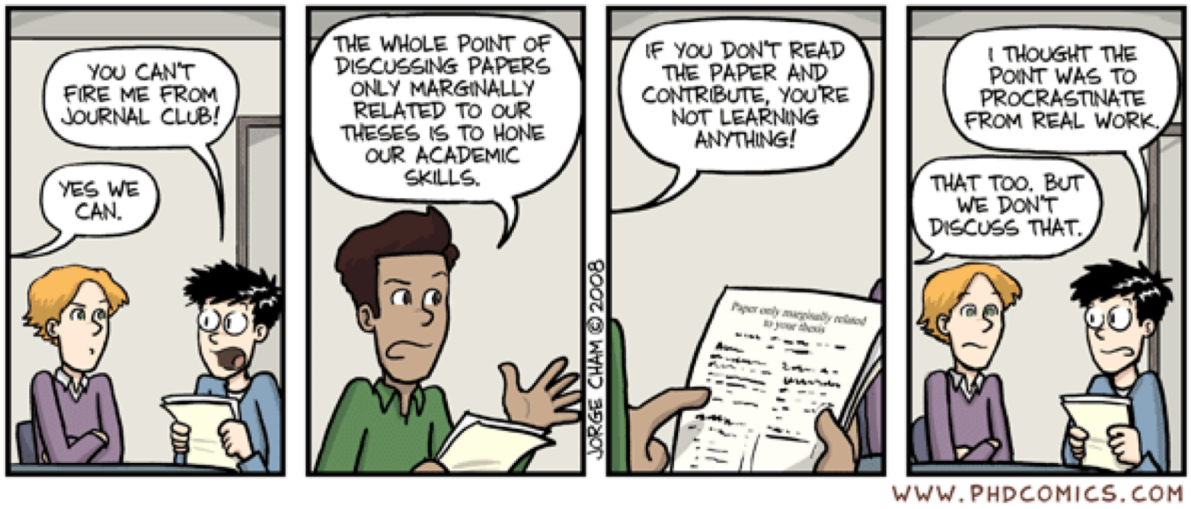
Communication Lab

20.109 Communication Workshop 3: Journal Clubs

Sean Clarke & Prerna Bhargava
BE Communication Lab Instructors
Fall 2018

be.mit.edu/communicationlab
Helping you communicate effectively.

How many of you have been to a journal club meeting before?



What are they like?

Journal clubs build transferrable skills

- Learn how to critically evaluate a paper
- Learn to communicate YOUR work better
- Essential professional activity
  - Stay up-to-date
  - Learn collaboratively

Journal clubs have different **objectives**
Know the 20.109 goals

In life:

- explain a method
- understand how a new method can be applied
- make sure people in your group read a really important paper
- determine how close a project is to your story

20.109:

Show that you understand the paper and can present clearly:

- the take-home message
- WHY and HOW the experiments were done
- what the conclusions were

Today, we will discuss 3 aspects of presentation prep

1. Crafting a story
2. Designing slides
3. Presenting your slide deck orally

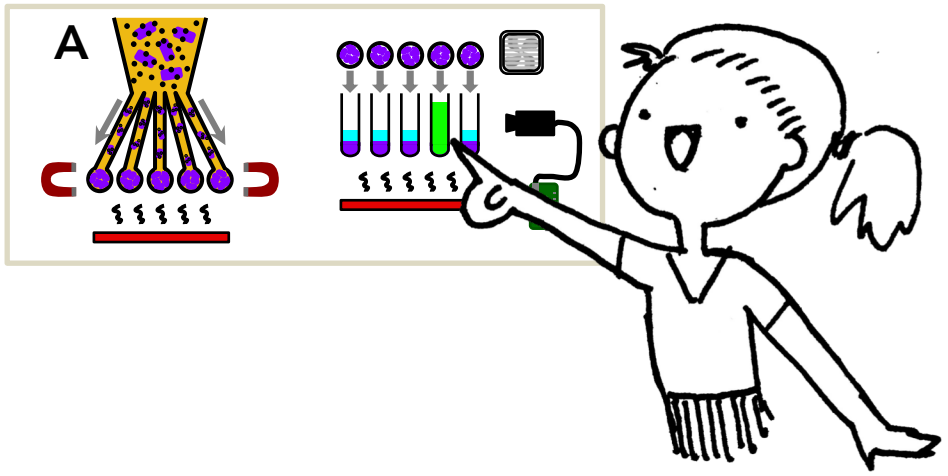


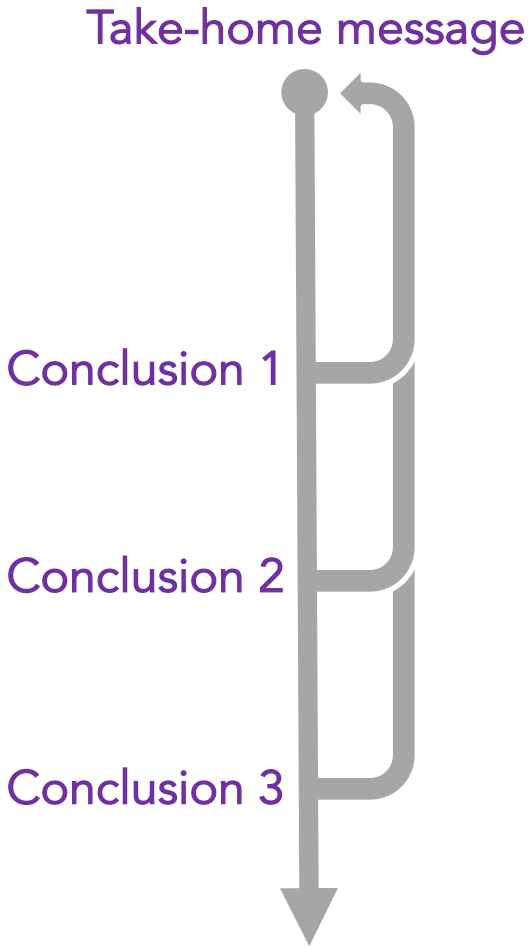
Image courtesy Diana Chien

1. Crafting a story

"Excellent students tell a story."
-Noreen

Create a single storyline.

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



Chronology is 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?

Storytelling conveys logic & motivation

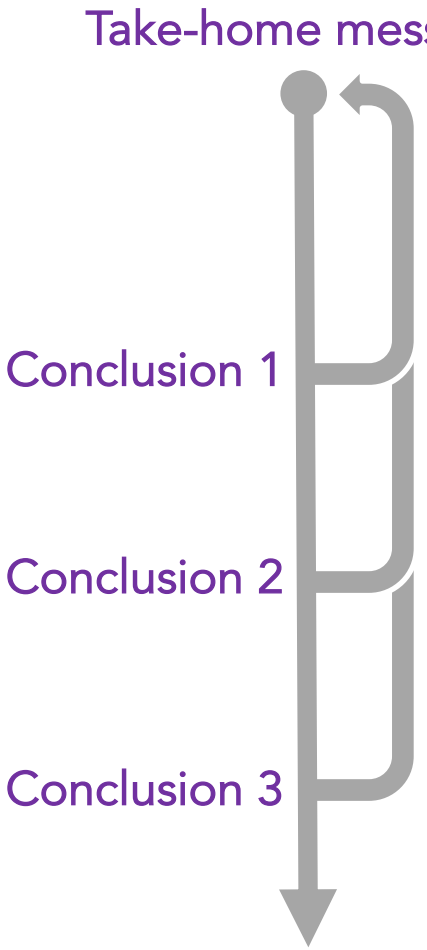
The authors wanted to engineer a calcium sensor's binding sensitivity.

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

then they expressed the mutant protein in cells,

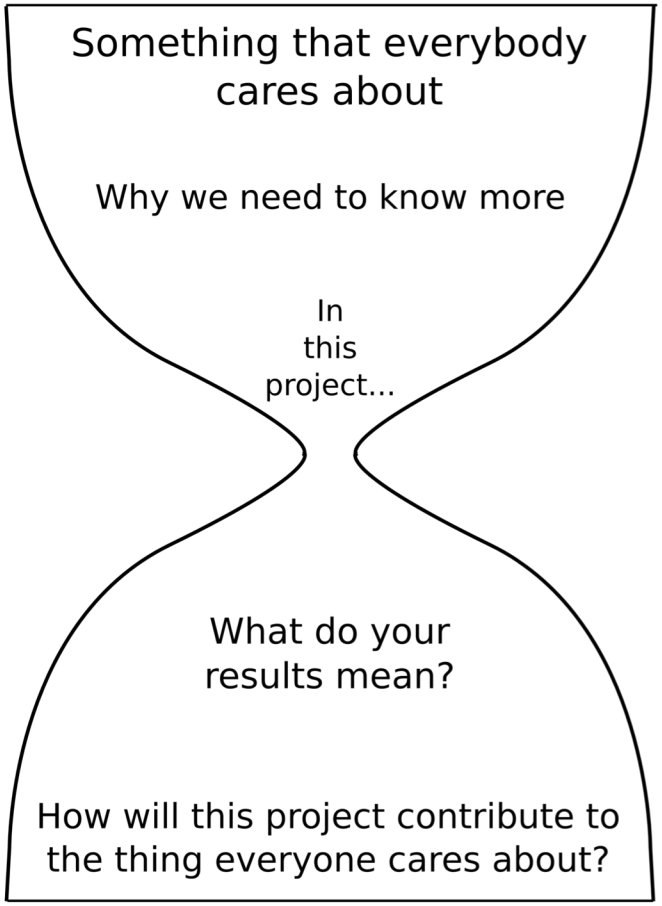
and then they assessed its binding properties with a fluorescent assay.

When you organize your journal club presentation, **tell us a story**



- Identify the question/message
- Include only essential results, key experiments and relevant data
- Connect all results back to the question/message
- Explain logic & motivation with titles & transitions

The abstract structure can help you build a compelling storyline.



General background

Specific background

Knowledge gap, Unknown

HERE WE SHOW...

Results

Implication

Significance

Activity

What storyline would you use for this paper?

Specific Gene Repression by CRISPRi System Transferred through Bacterial Conjugation

Weiyue Ji,[†,‡,□] Derrick Lee,[†,‡,□] Eric Wong,[†,‡,□] Priyanka Dadlani,[†,‡] David Dinh,[†,‡] Verna Huang,[†,‡] Kendall Kearns,[†,‡] Sherry Teng,[†,‡] Susan Chen,[†,§] John Haliburton,[†,∥] Graham Heimberg,[†,§] Benjamin Heineike,[†,§] Anusuya Ramasubramanian,[†,∥,#,▽] Thomas Stevens,[†,‡,⊥] Kara J. Helmke,[*,†,‡] Veronica Zepeda,[†,‡] Lei S. Qi,[†,○,◆,¶] and Wendell A. Lim[*,†,‡,⊥]

What content will you include?
Which parts of the figures would you choose to present?
What is their significance to the main question?

2. Designing effective slides

Good slides are a lot like good figures

Title = take-home message

Show **minimal essential data**

Maximize signal-to-noise

- Control pace: separate or mask figure panels
- Add or remove labels

Effective redundancy: align visual, written, + spoken!

"What would help my audience understand this faster?"

If you're not going to talk about something, leave it out.

Use all parts of your slide to support your message.

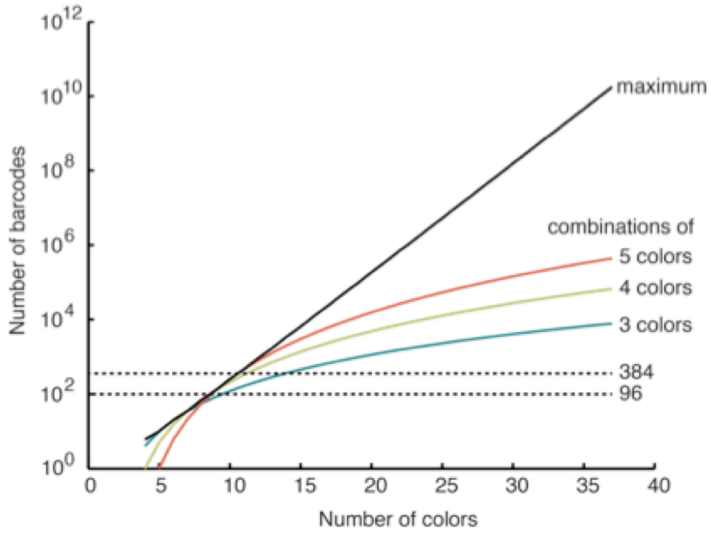
The title conveys the *"so what"*

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

No unnecessary content: only figures you discuss

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

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



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

14

Tony Kulesa, Georgia Lagoudas

Make slide titles take-home messages

	DON'T use	DO use
	General descriptions	*Sentences that answer "so what?"*
Methods	EMK-1 Knockdown	EMK1/Par1 was knocked down in MDCK (kidney) cells using siRNA
Results	Ca-switch	MDCK cells form a lumen after changing extracellular [Ca^{+2}]
	Mitochondrial ROS induction in cell lines	Mitochondrial ROS induction is decreased in adk^{-} cells
	Comparison of primer specificity	Primer 1 is better than Primer 2 at differentiating closely-related HIV strains

Avoid light or bright colors and tiny fonts

Am I legible?

Am I legible?

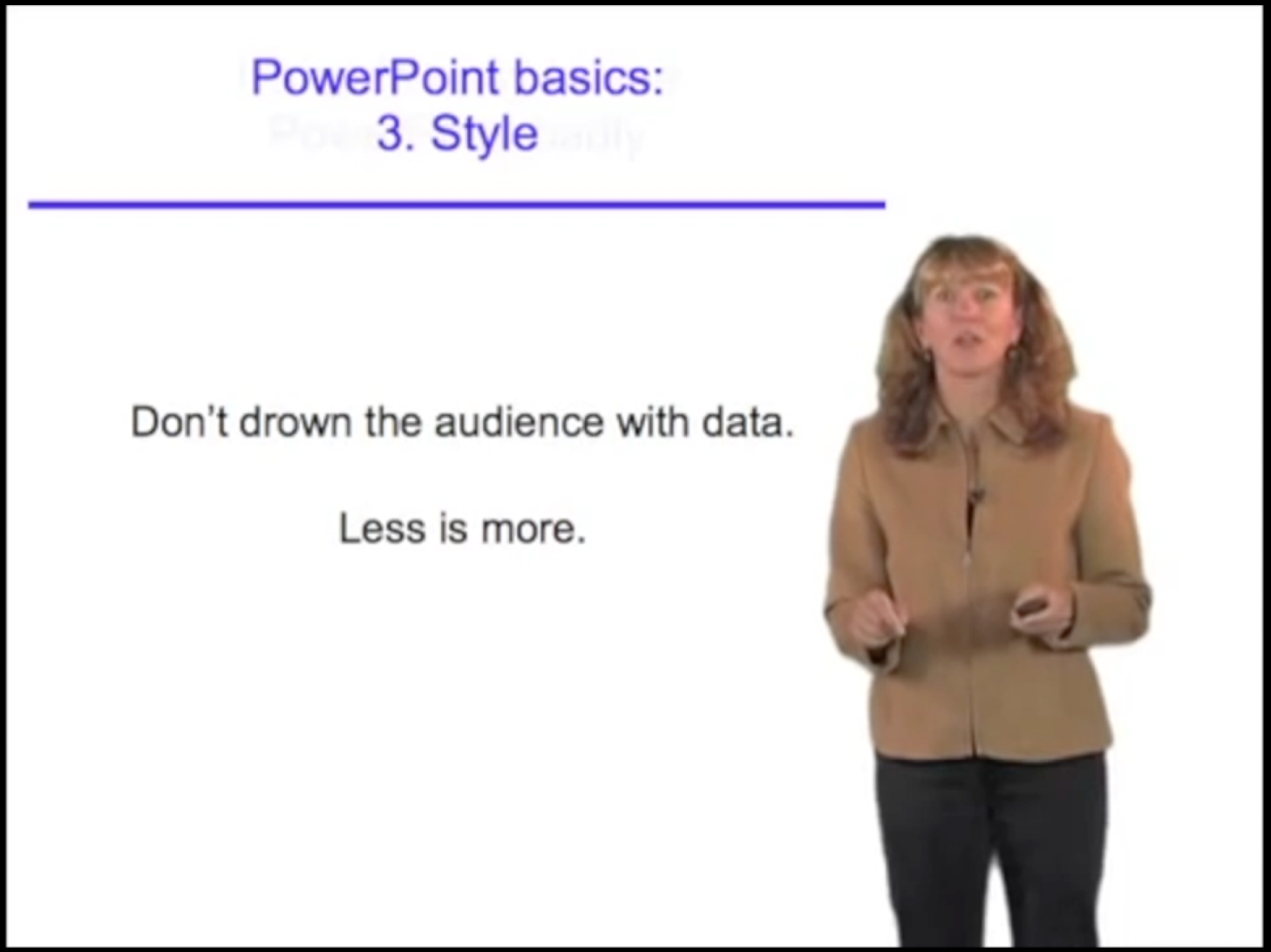
Am I legible?

Am I legible?

Am I legible?

Am I legible?

Templates are visual noise.



Susan McConnell (Stanford),
Designing effective scientific presentations
https://youtu.be/Hp7Id3Yb9XQ

Activity:

How would you improve your slide(s) for Figure 2?

Think about the tricks we just discussed!

Specific Gene Repression by CRISPRi System Transferred through Bacterial Conjugation

Weiyue Ji,[†,‡,□] Derrick Lee,[†,‡,□] Eric Wong,[†,‡,□] Priyanka Dadlani,[†,‡] David Dinh,[†,‡] Verna Huang,[†,‡] Kendall Kearns,[†,‡] Sherry Teng,[†,‡] Susan Chen,[†,§] John Haliburton,[†,∥] Graham Heimberg,[†,§] Benjamin Heineike,[†,§] Anusuya Ramasubramanian,[†,∥,#,▽] Thomas Stevens,[†,‡,⊥] Kara J. Helmke,[*,†,‡] Veronica Zepeda,[†,‡] Lei S. Qi,[†,○,◆,¶] and Wendell A. Lim[*,†,‡,⊥]

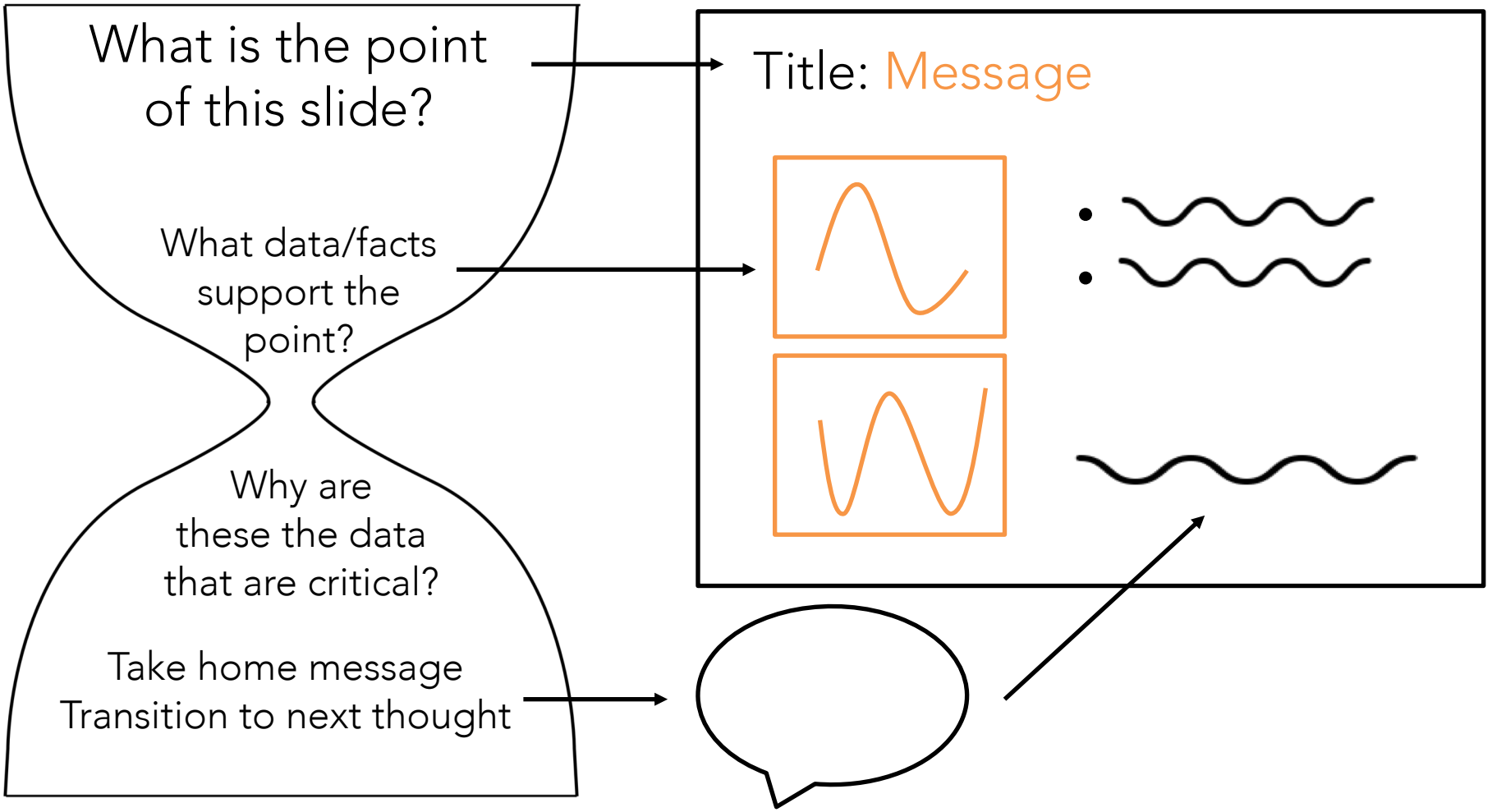
3. Oral presentation skills

We're a friendly audience, so help us out

- **Practice** the take-home messages and transitions
- **Record yourself** for **10-minute** timing
- If you're **not** going to talk about it, **take it out**

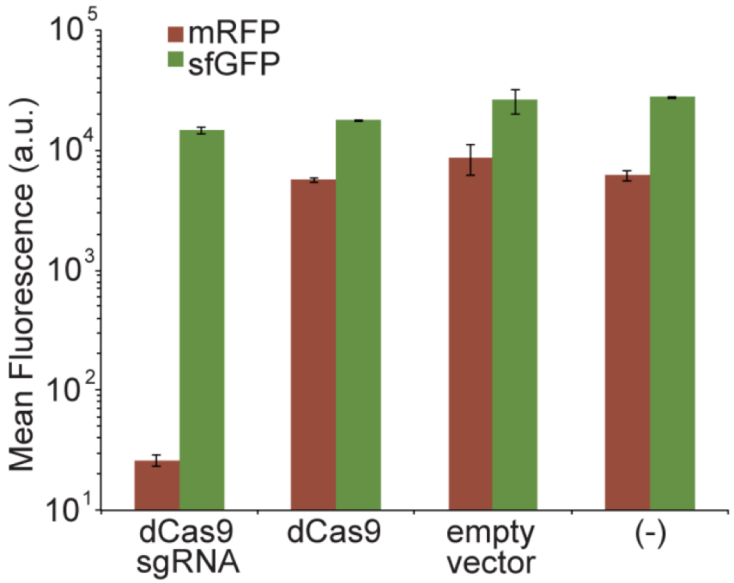
We'll ask you about **METHODS**

Think about what you'll say with each slide!

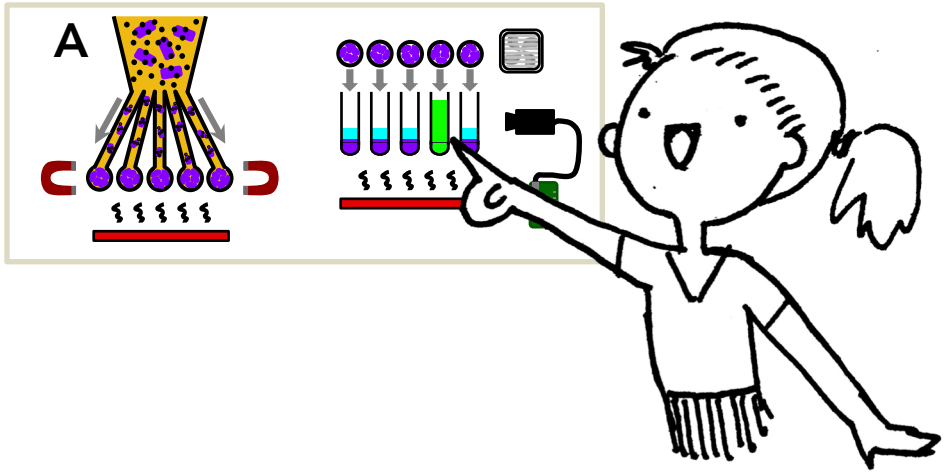


How would you present this slide?

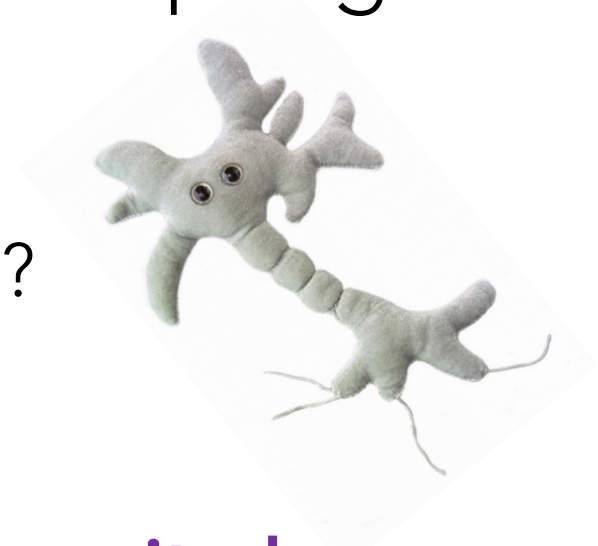
Conjugation of the CRISPRi plasmid allows for specific suppression of mRFP



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



Manage nerves by accepting them



Who doesn't get nervous?

Reframe it:
"I'm nervous because I'm **excited** *to present."*

Be **kind** to yourself.
Don't fight or suppress the feeling.
Channel it to positive things
steady belly breathing & eye contact.

We have questions, you have answers

Q&A is a critical part of presentations.

Let the questioner finish.
Give yourself time to think.
Make sure you understand the question.
Do your best, use reasoning, but don’t guess.

(What goes on the screen?)

Avoid common 109er pitfalls

DON'T	DO
Start so late you don't have time to digest the paper	Give yourself time to read the paper 2-3 times
Be exhaustive List experiments chronologically	Be selective Tell a story
Lose points for time (9.5-10.5 min)	**Practice** until you know you can hit the time limit
Forget to cite the paper	Include citation in your title slide
Say "we did this"	"The authors did this"
Use illegible labels	Use ≥20pt font Make your own figure labels if helpful Use legible font colors

Getting help is a sign of strength

Ask us if you are unsure or have a different idea

Practice your presentation with a Comm Fellow
http://be.mit.edu/becommunicationlab

Watch the rest of

Designing effective scientific presentations
https://youtu.be/Hp7Id3Yb9XQ

Susan McConnell, Stanford