Giving an Effective Scientific Talk

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Tips for Effective Scientific Presentations

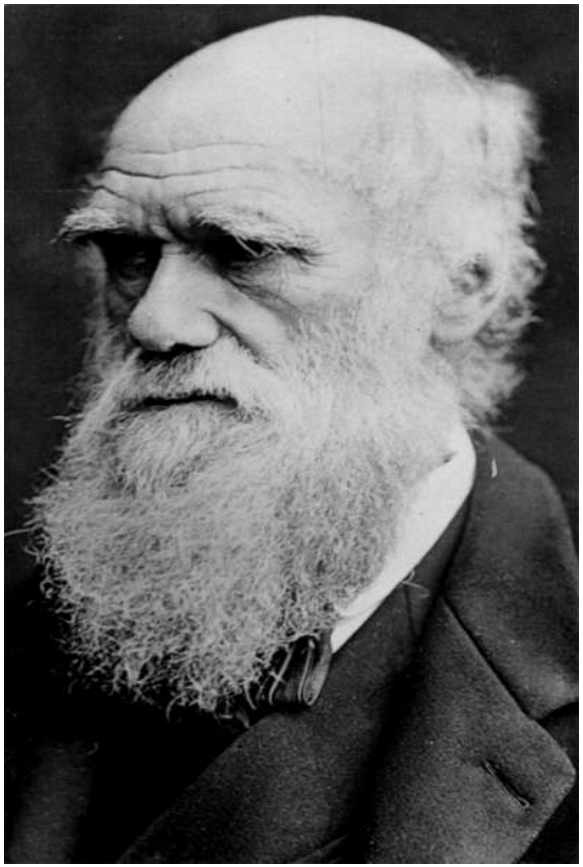
- Know the audience because they will determine the depth of your talk and you will more effectively be able to guage the level of questions.
- Prepare your talk well in advance and practice it with your lab, then make revisions and practice until you have a smooth presentation.
- Try to tell a story because this will be remembered better than a series of experiments, even if they are very elegant yielding excellent data.
- There are many ways to manage your anxiety, such as imagery, deep breathing, being well practiced, and anticipating answers to questions.
- Respect your audience by not running over time and don't ever apologize for a slide not being readable from the back of the room.
- Use your slides as prompts and don't ever read your slides.

Surveys show that the #1 fear of Americans is public speaking. Death is #2. That means that at a funeral, the average American would rather be in the casket than doing the eulogy.

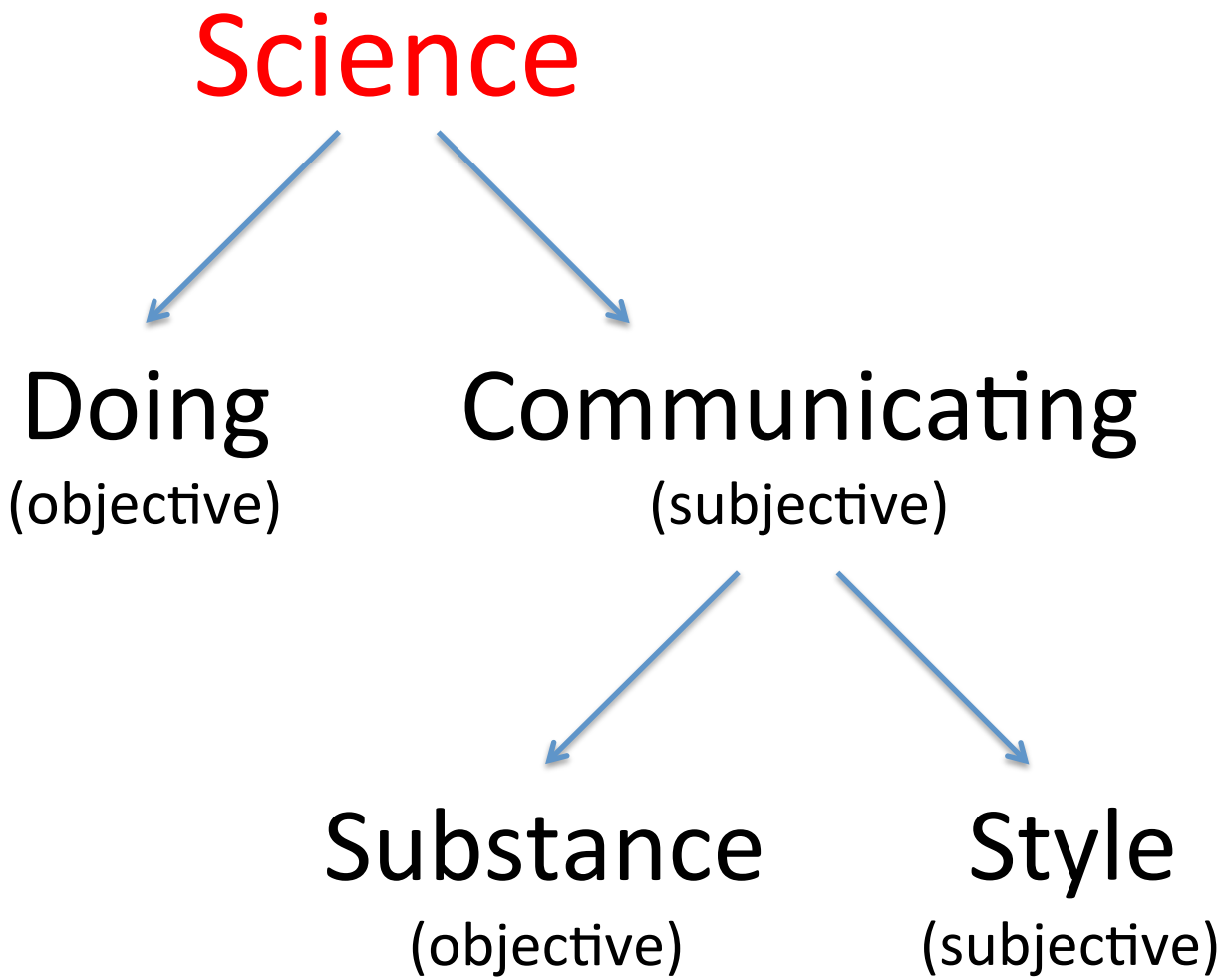
Science

Doing
(objective)

Communicating
(subjective)



Modern Synthesis in 1940s

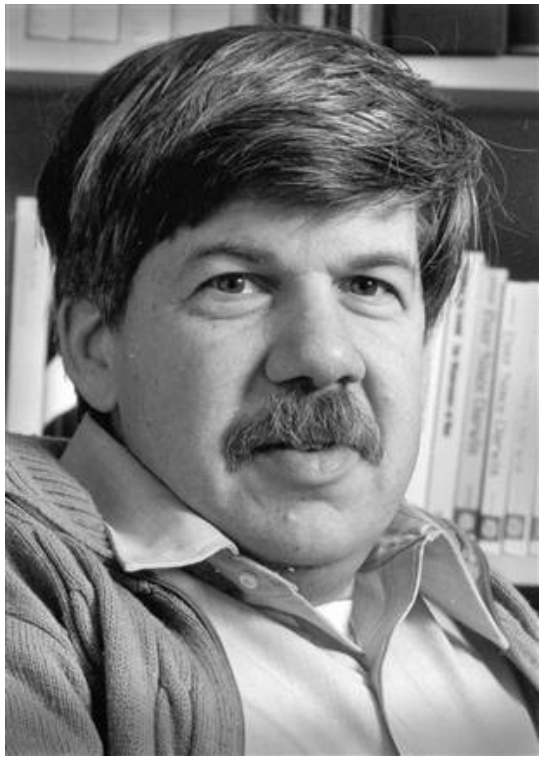

Science
Doing
(objective)
Communicating
(subjective)
Substance
(objective)
Style
(subjective)

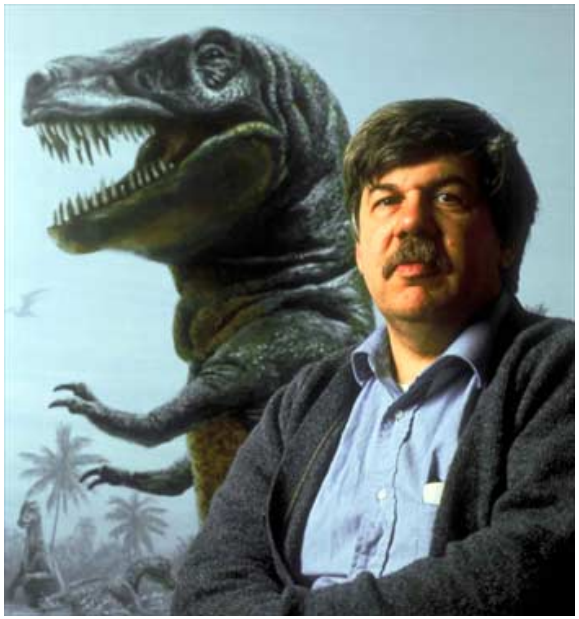
10 Rules for a Great Talk

(so you won’t embarrass yourself)

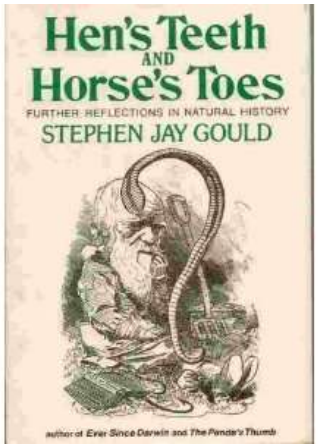
Rule 1: Arouse and Fulfill

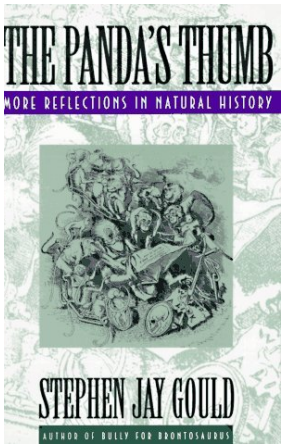
- Hook the audience
- Fulfill their expectation
- Motivate, then educate

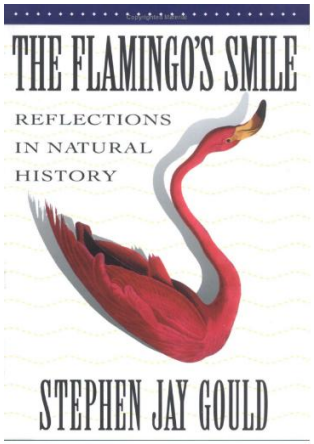


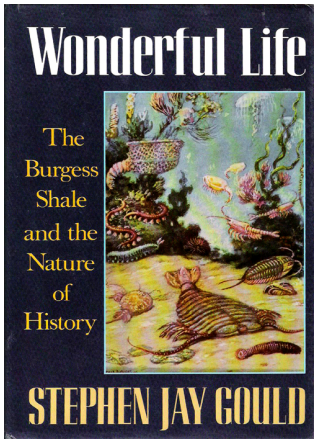


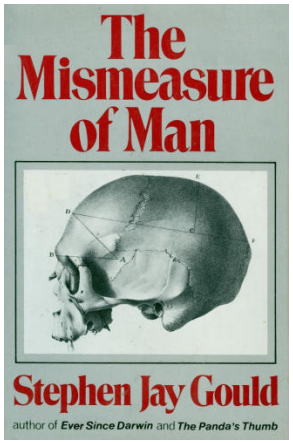
Stephen Jay Gould







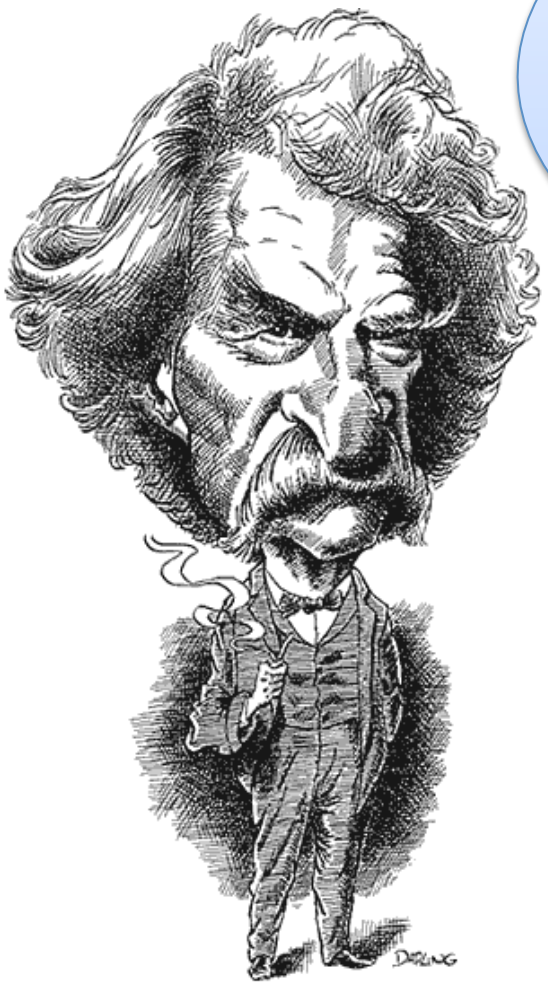




Preparing Your Talk

Rule 2: Know Your Audience

- Audience determines talk
- Who are they and how many?
- Why are they here?
- What do you want them to know?
- If invited and don’t know, ask



It usually takes me more than three weeks to prepare a good impromptu speech.

Rule 3: Don’t Procrastinate

- Make a schedule
- Same as writing a paper
- Set aside time each week

Weeks before talk	Activity
6	Background reading
5	Outline talk
4	Make slides
3	Practice
2	Revise
1	Final practice

Rule 4: Tell a Story in 3 Acts

- Act One
  - Hook, intro, your question & hypothesis
- Act Two
  - Things happen, methods & results
- Act Three
  - Interpretation & synthesis

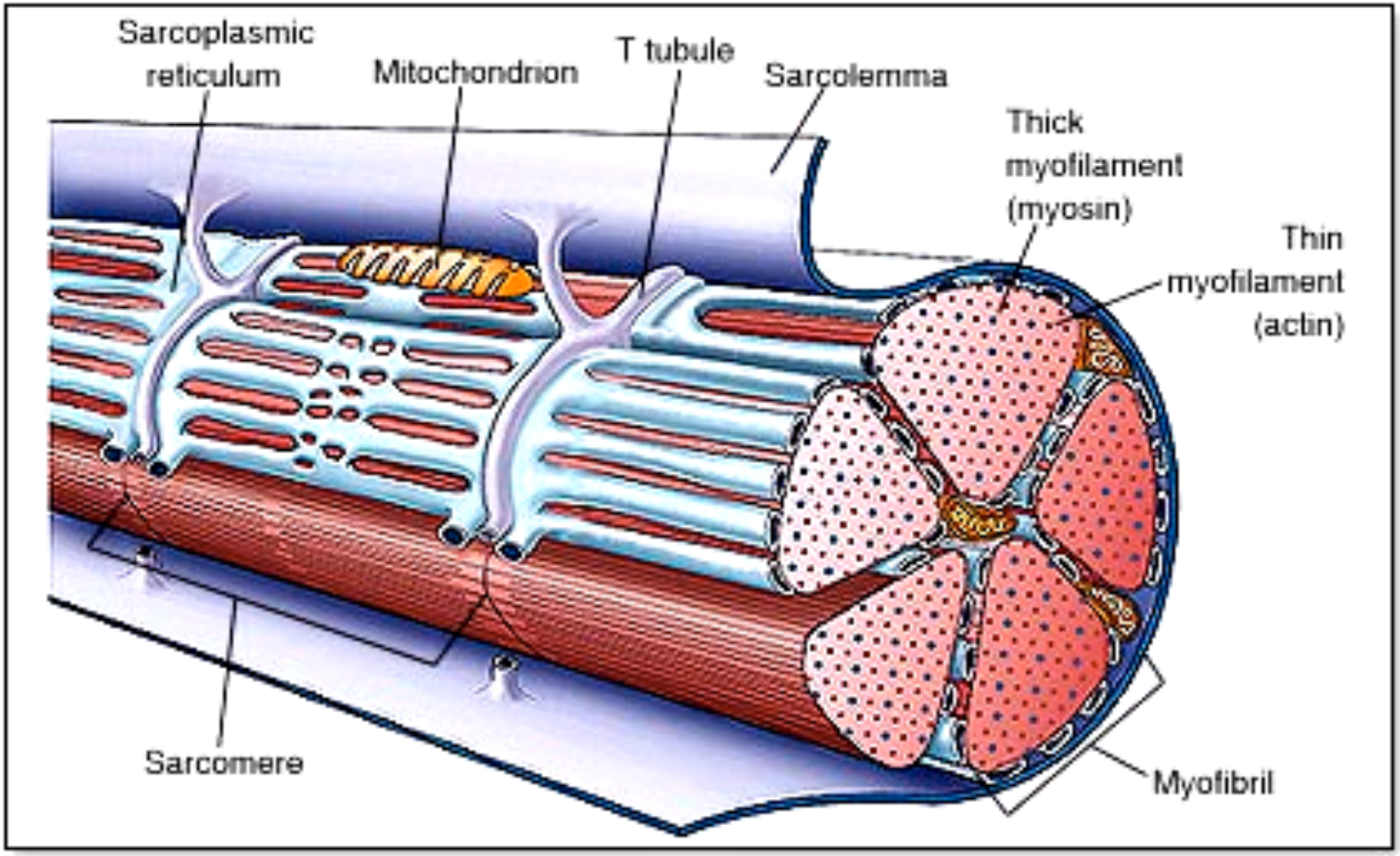
Going From Outline to PowerPoint

- Descriptive title; slides are prompts
- 4-6 bullets, 5 words per bullet
- Arial, Calibri, Cambria (not Helvetica)
- Titles: 36-44 pt, text: 24-36 pt
- Black text on white background
- Graphs & labels easily readable

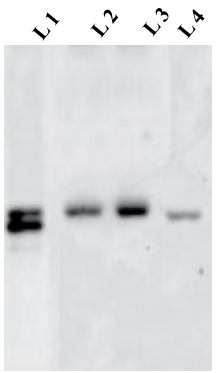
Muscle Contraction

- A specialized endplasmic reticulum called the sarcoplasmic reticulum (SR) surrounds each myofibril, following the sarcomeric pattern while maintaining an association with the the t-tubules.
- The SR acts as a calcium storage reservoir for the facilitation of muscle contraction through the release of calcium through the calcium release channel.
- The brain sends an electrical signal along the muscle sheath and down the T-Tubule. This signal initiates calcium release.
- The binding of calcium within the myofilament arrangement allows for binding between the myofilaments resulting in the sliding of the filaments which is known as contraction.
- For relaxation, calcium is removed via the sarcoplasmic reticulum's calcium pump causing the myofilaments to move to their original positions resulting in the relaxation of the muscle

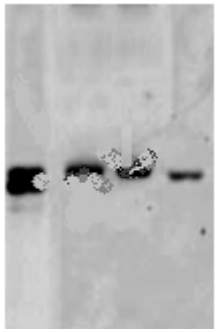
Muscle contraction is facilitated by Ca^{2+}



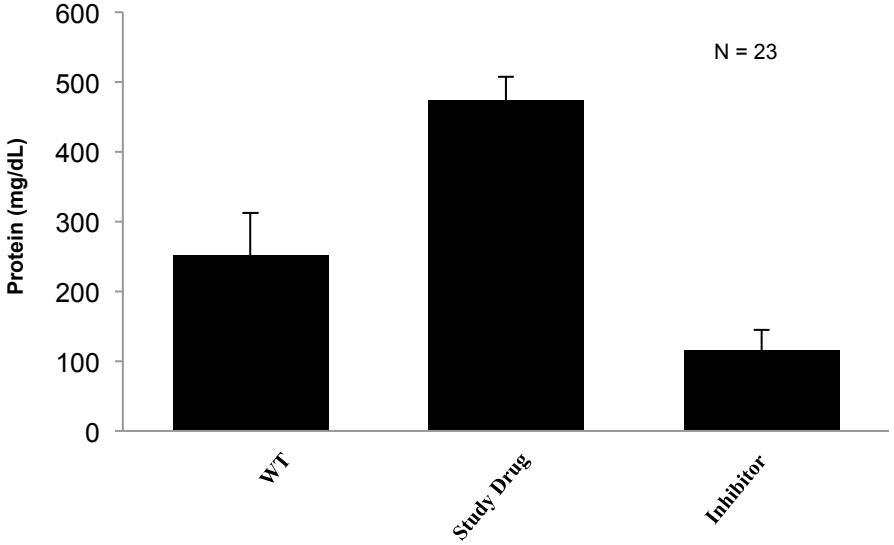
Results



Trial 1

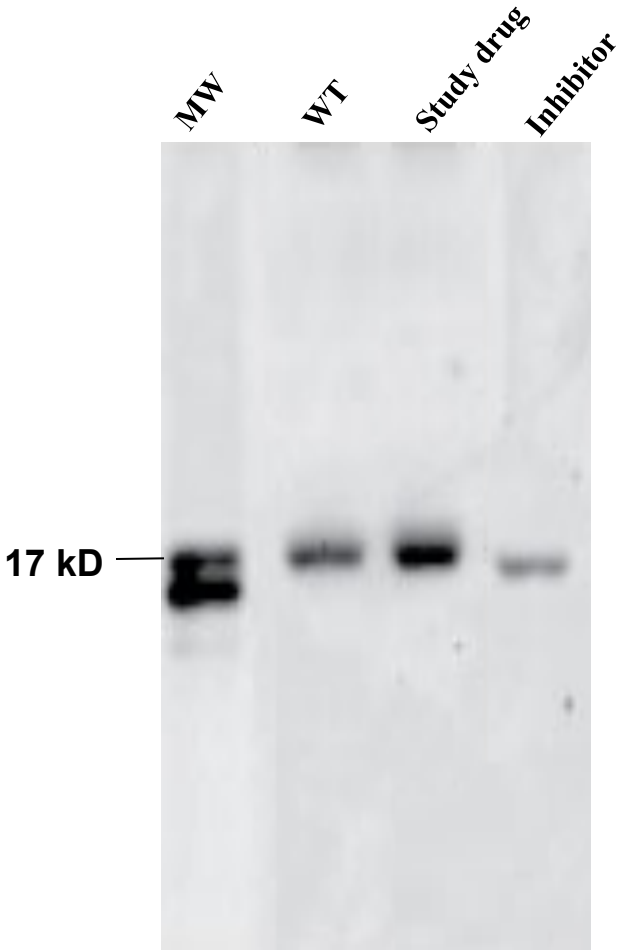


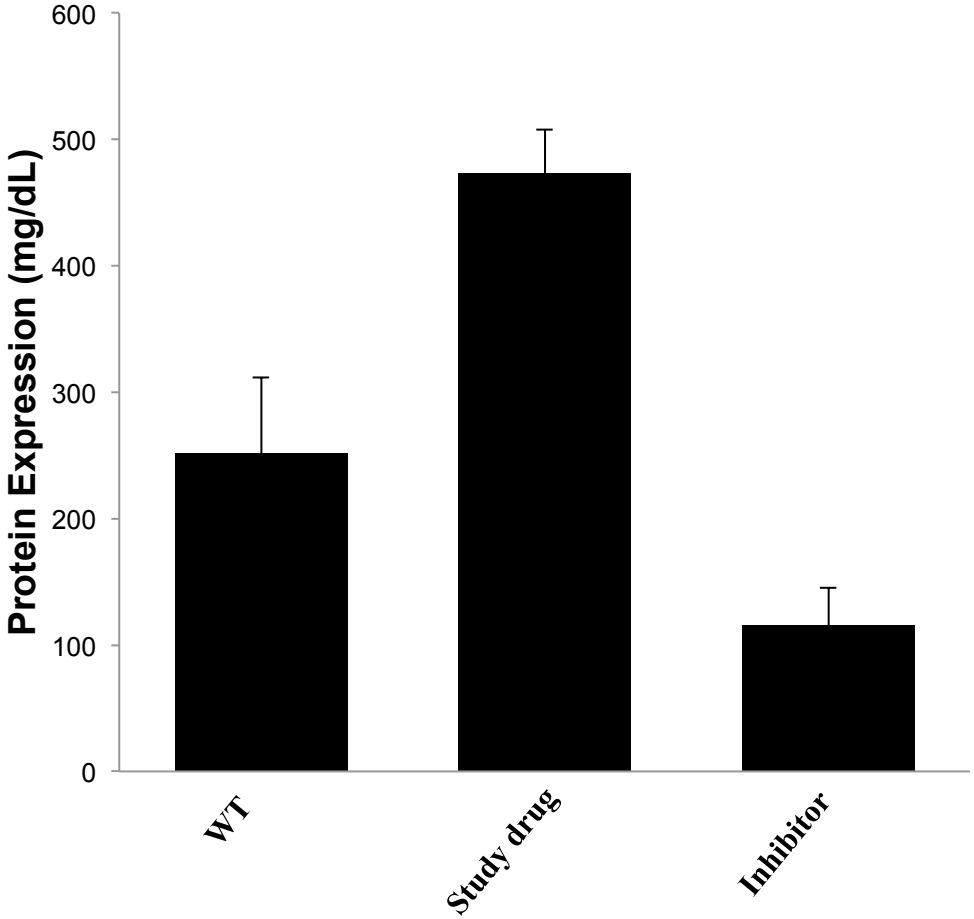
Trial 2



- 50 uM of study drug with 40 min incubation at 34o C
- Gel electrophoresis
- Western blot analysis
- Study drug increases protein expression as opposed to wild type

Study drug stimulates protein expression





N = 23

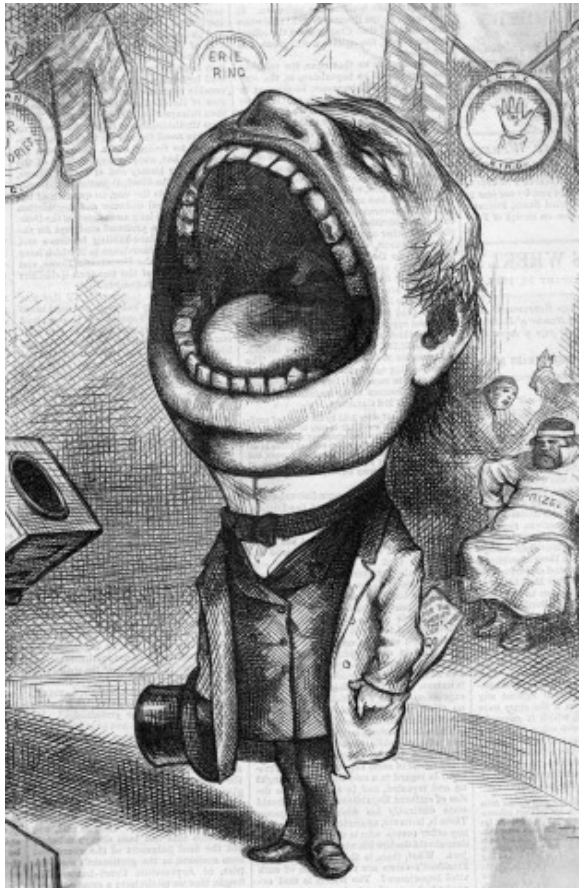
Rule 5: Practice Early and Often

Practice

Practice

Practice

Delivering Your Talk



Rule 6: Managing Your Anxiety

- Preparation & practice → confidence
- Imagery exercises
- Visit room before talk
- Arrive early & run through slides
- Relaxation, deep breathing
- Audience is your friend

Rule 7: Don’t Read Your Slides

Corollary 7a: Look at audience

Muscle Contraction

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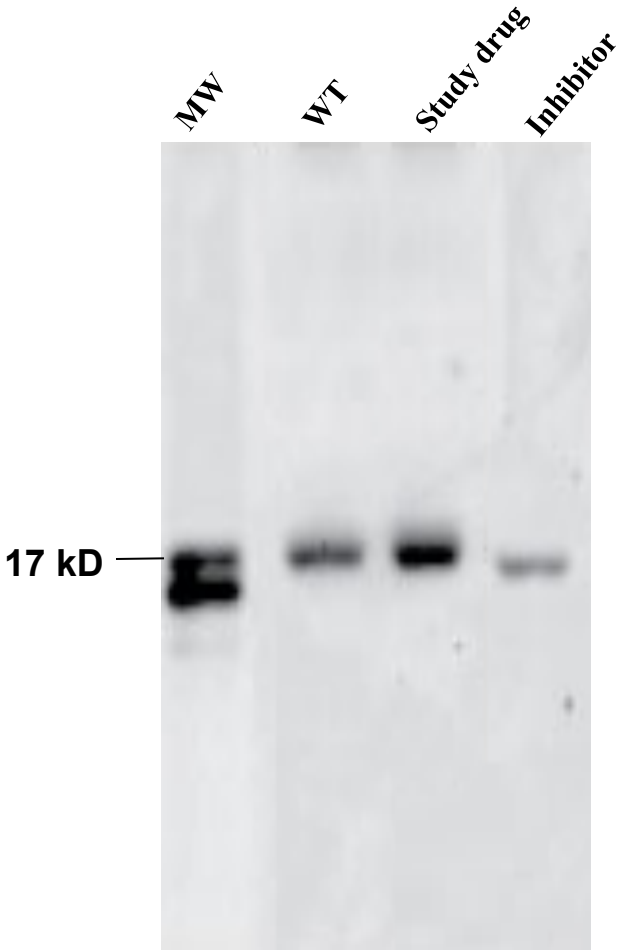
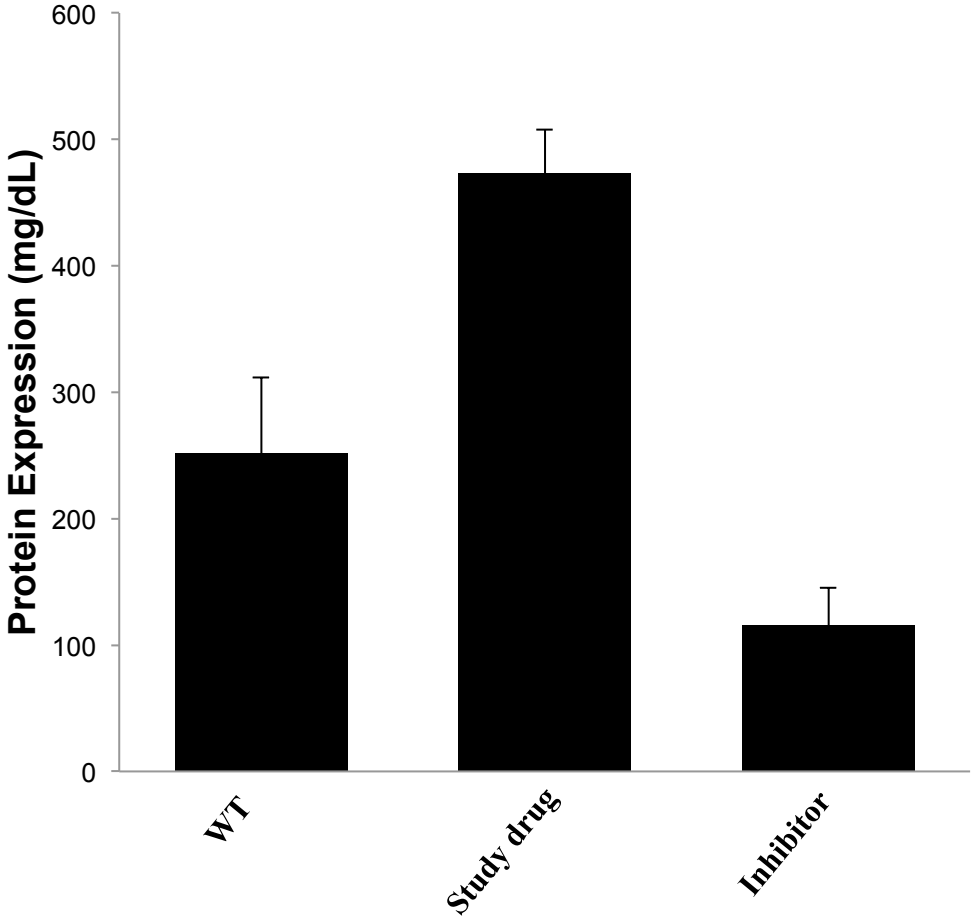
Rule 7: Don’t Read Your Slides

Corollary 7a: Look at audience

Corollary 7b: Don’t put on a laser show

Study drug stimulates protein expression





N = 23

Rule 8: Respect Your Audience

- Don't **EVER** run over time
  - Talk for 75-80% of total time
  - About 1 slide per minute
- Don't **EVER** apologize for a slide

Rule 9: Anticipate Questions

- Boundaries of your research
- Theory & Practice
- Past & present
- Quirky questions

Rule 9: Anticipate Questions

Boundaries of your research

- How did you measure . . .?
- Would you get the same result if you . . .?
- Would your results generalize to . . .?

Rule 9: Anticipate Questions

Theory & practice

- Do you think this research could help . . .?
- What are some practical implications?
- Would your results support theory X?

Rule 9: Anticipate Questions

Past & present

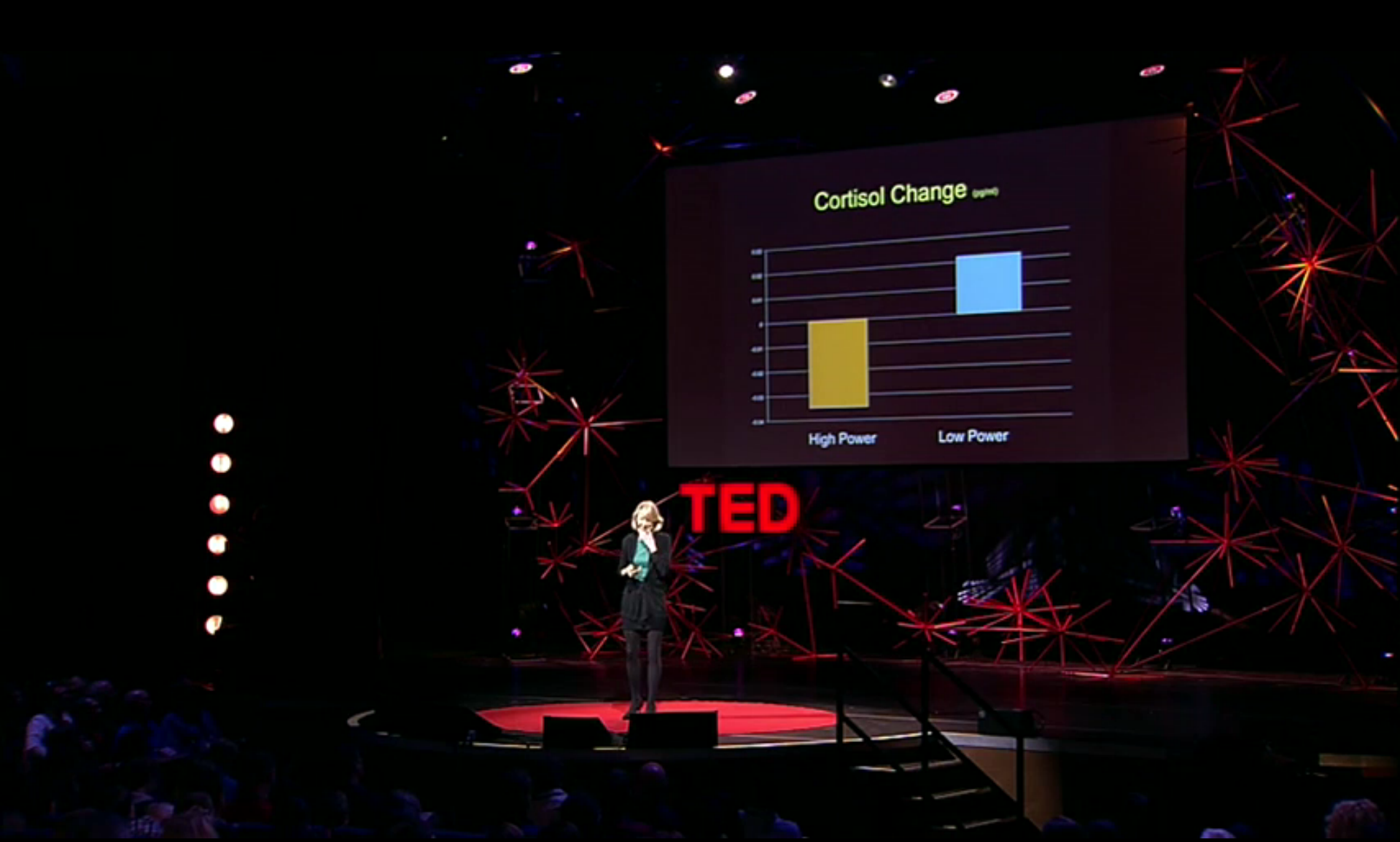
- Where will you go next with your research?
- How do you see your results in relation to past work in this area?

Rule 9: Anticipate Questions

Quirky questions

- Person making a statement
- “Let’s talk after the session.”
- Ask to repeat a confusing question
- Find a grain of relevance
- OK to say, “I don’t know.”

Rule 10: Be Yourself, but Maybe Fake It


Cortisol Change
High Power
Low Power
TED

Rule 10: Be Yourself, but Maybe Fake It

- Cuddy: fake it until you become it
- Be likeable, smile
- Critical for job talk
- Treat every talk as a job talk

10 Rules for Talking Success

1. Arouse & fulfill
2. Know your audience
3. Don’t procrastinate
4. Outline your talk
5. Practice early & often

10 Rules for Talking Success

6. Manage your anxiety
7. Don’t read your slides
8. Respect your audience
9. Anticipate questions
10. Be yourself

“There are two things more difficult than making an after-dinner speech: climbing a wall leaning toward you and kissing a girl leaning away from you.”