Talking Science

Designing and delivering successful scientific presentations

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Scientific objectives of a presentation

- Effectively communicate your science to a defined audience
- Demonstrate your expertise in your scientific area
- Generate interest in your research
- Encourage potential collaborative opportunities

Professional objectives of a presentation

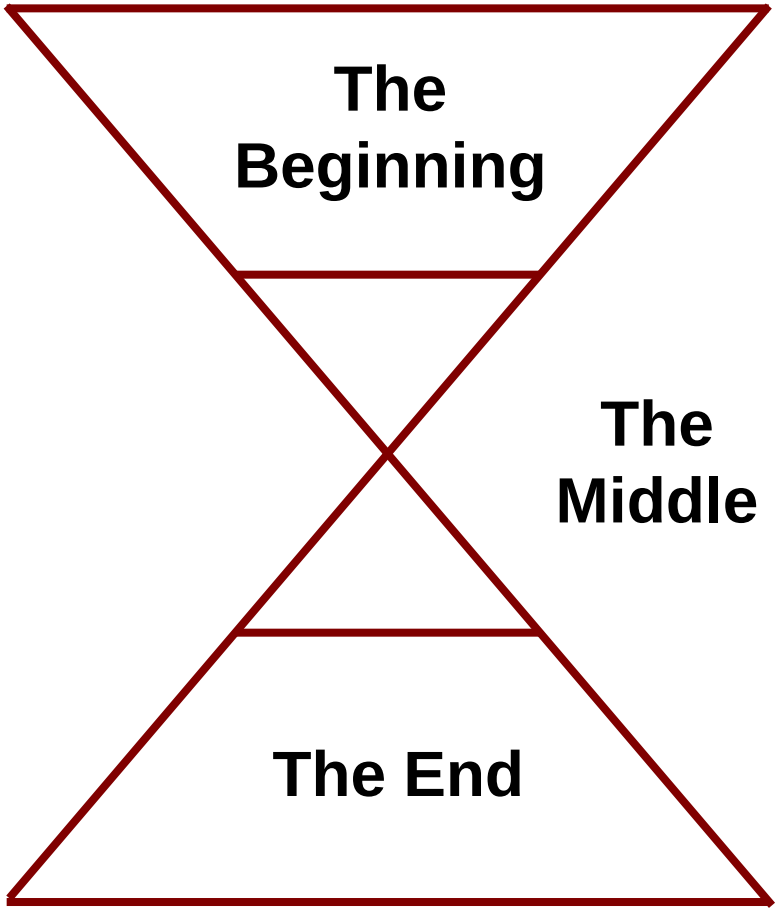
- Demonstrate your ability to communicate complex science to different types of audiences
- Establish your reputation as a scientist who understands the details as well as the big picture
- Promote career building & networking opportunities
- Get invited to give more talks

Different types of talks

- Meeting or conference
- Academic job talk
- Industry/private sector job talks
- Data clubs or interest groups
- Lab meeting presentations
- General/Informational talks

Elements of a good science talk

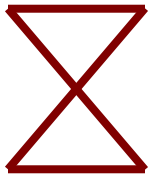
- Knowing your audience
- Creating an interesting story
- Presenting crisp, clean slides
- Having an engaging and confident delivery
- Mastering the Question and Answer period


The Beginning
The Middle
The End

The Beginning

- Primes the audience; introduces the subject matter
- Establishes the format and style of the talk
- Background
- Defines the question/problem you are seeking to answer/solve

The Middle



- Defines your hypothesis
- Describes your methodology
- Contains key findings or results
- Summary/recap with regards to the objectives of each of the assays or projects

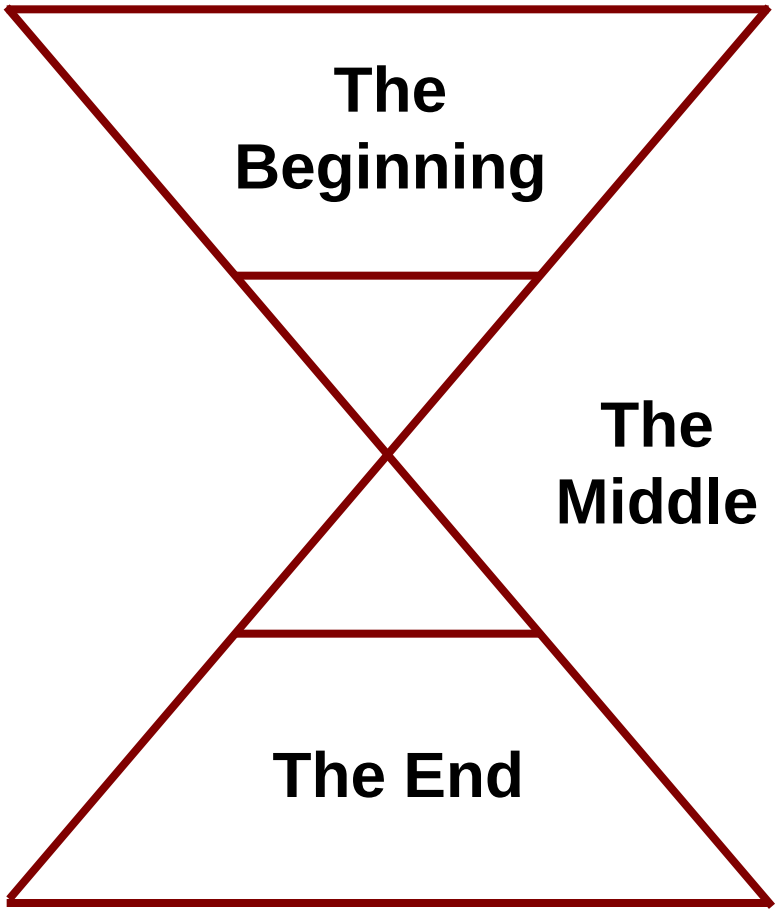
The End

- Discussion of the results
- Addresses the bigger picture
- Where does it go from here?
- Acknowledgements

30,000 ft

Ground Level

30,000 ft

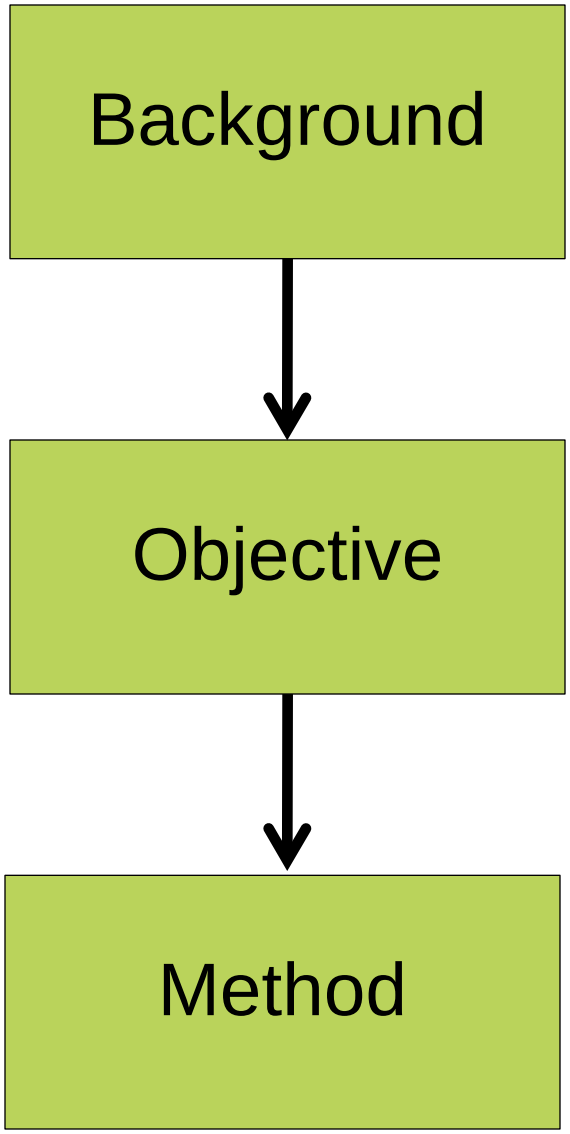


Creating the story

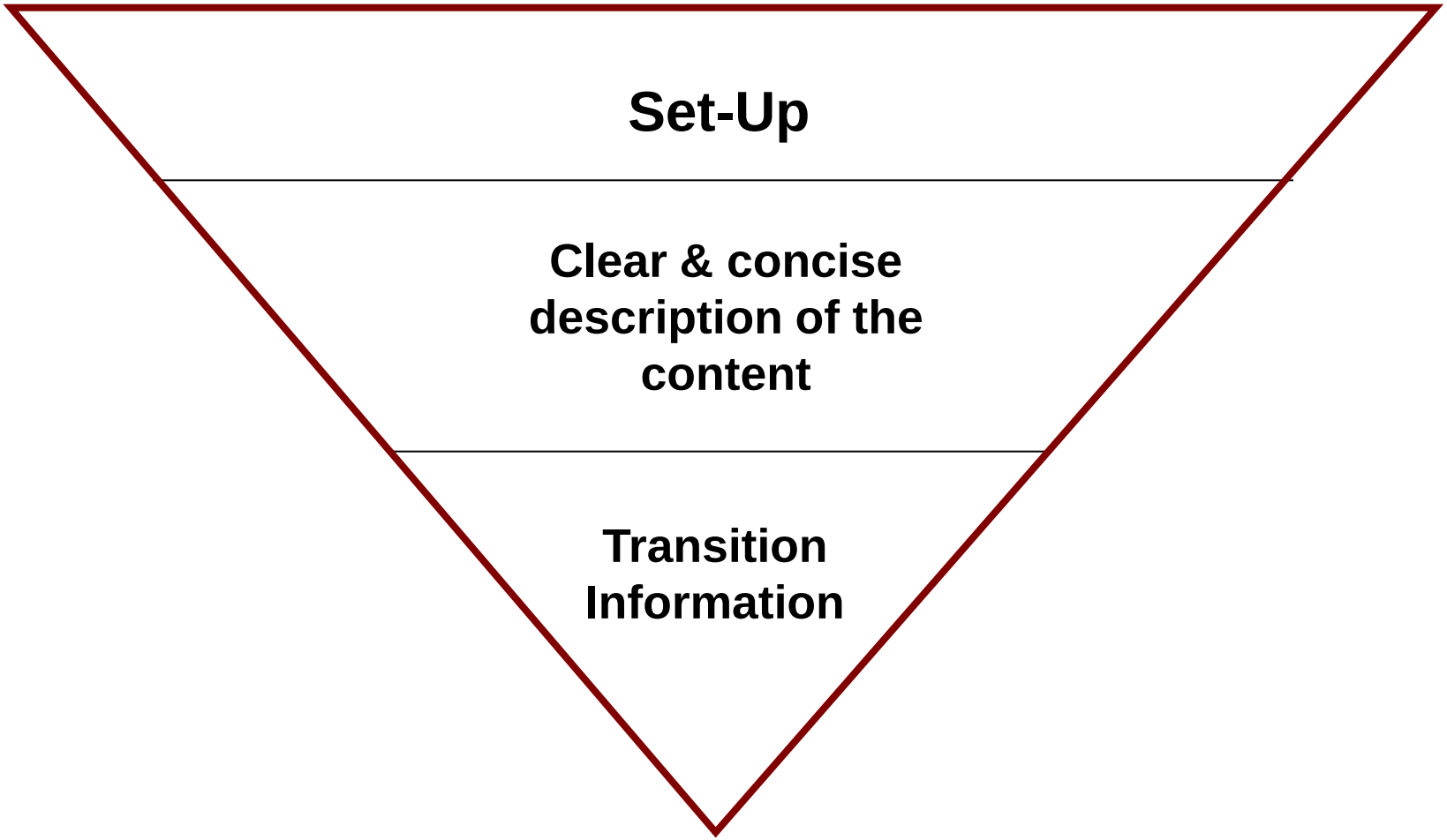
- Where do you start?
  - Start in the middle with the data
    - Choose the best - Less is more
- What's next?
  - Work your way outward
    - summary, methods, hypothesis
- Closing up the ends
  - Tackle the harder material
    - Conclusions and background

Topic transitions

- Establishes and helps you to maintain flow in the design process
- Helps to fill in the gaps and refine the message

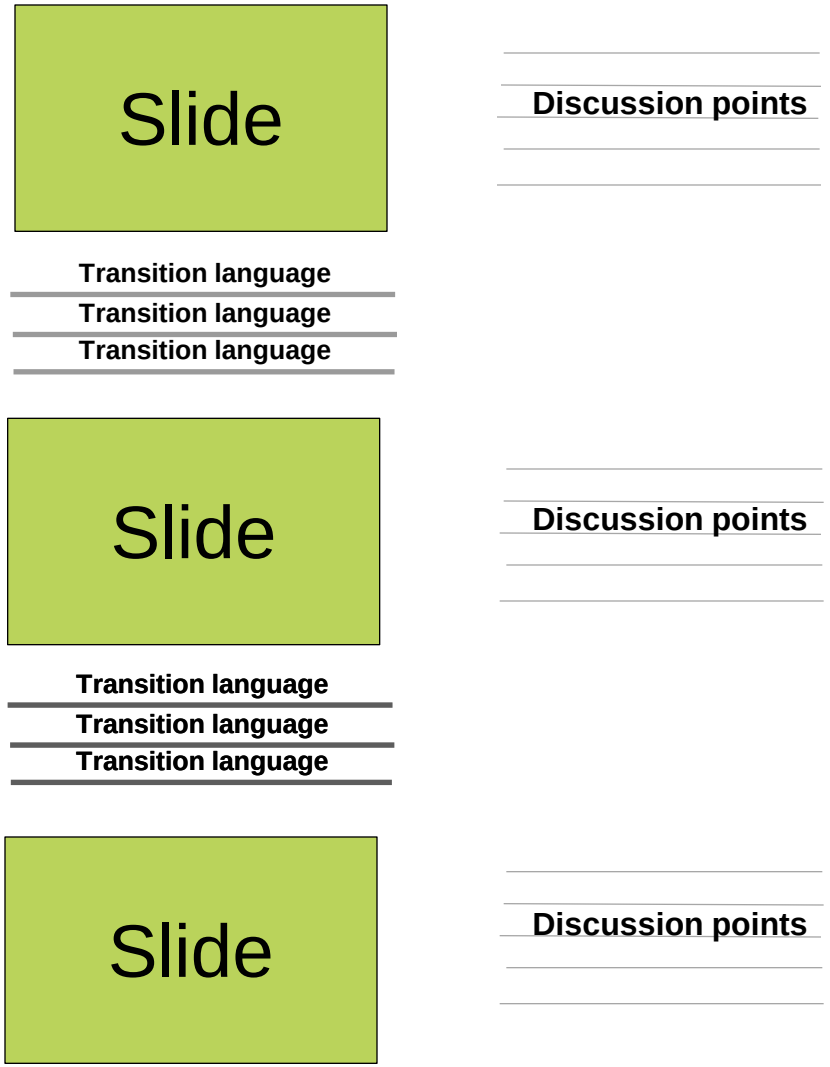


Philosophy of a slide

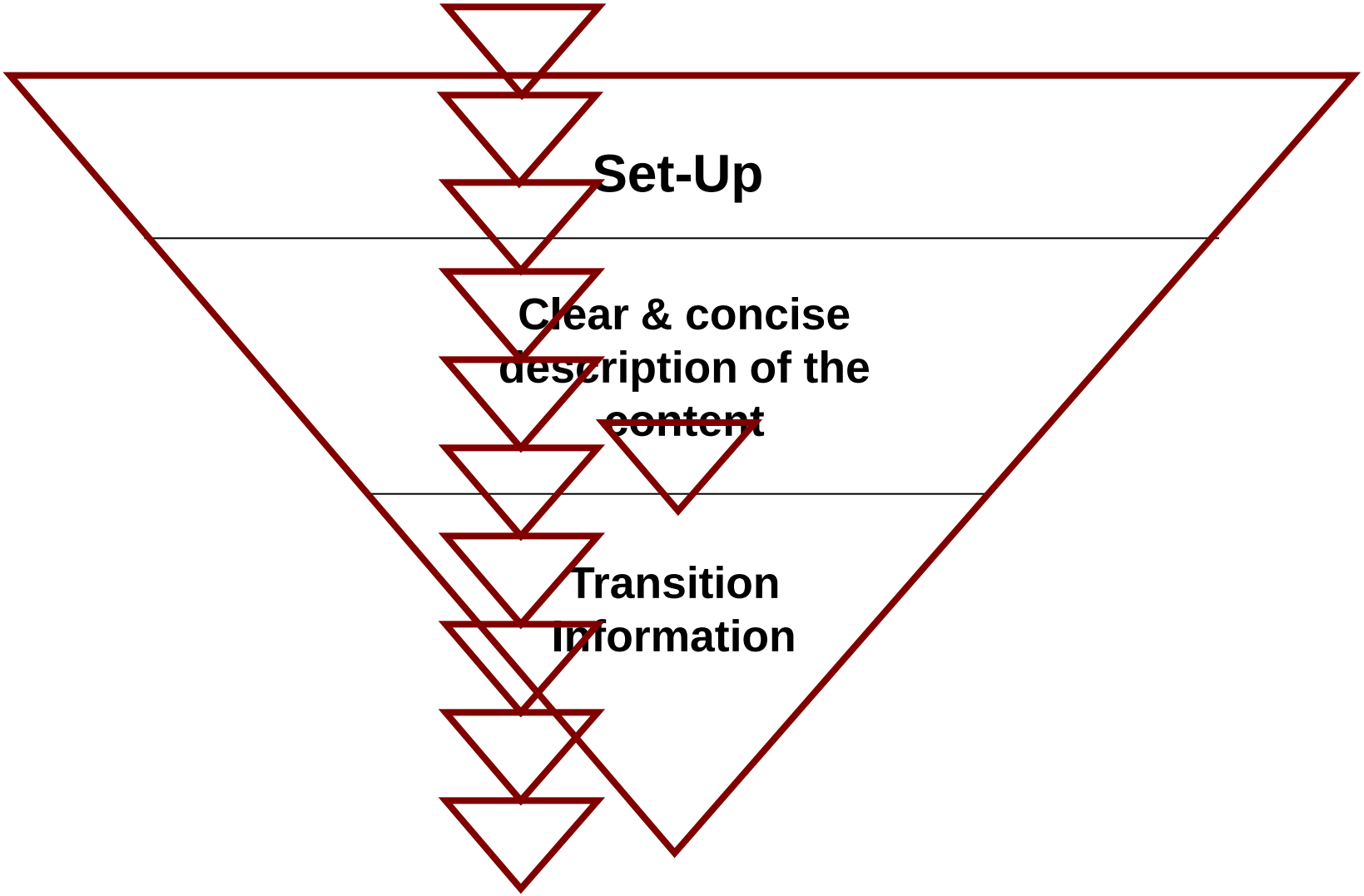


Slide to slide transition

- Helps to fully develop slides before and after
- Clarify what major points you want to make in each section
- Bridges slides to one another
- Maintain overall flow



Flow


Set-Up
Clear & concise description of the content
Transition information

A good slide contains…

- A title that is a declarative statement
  - Could your slide titles tell a bulk of the story?
- Figures that are large, clean, and crisp
- Labels and text that are clearly readable
- Added arrows or indicators that point to difficult things to see
- Sufficient white space

Slide basics

- High picture/text ratio
- Consistent formatting appearance
- Every aspect should be clear and readable
- Backgrounds
  - White, black, or dark blue
- Bulleted information
  - Succinct
  - Key “pieces” of information
- Custom animation
  - Avoid unless it adds value or helps makes a point
  - Aid to making a point

Font basics

- Type
  - Arial, Times New Roman
- Capitalization
- Size
  - Titles – 40 to 44 pt
  - Subtitles – 26 to 36 pt
  - Labels or sub-points – 18 pt or large enough to be seen clearly
  - Lines – 2 pt or greater
- Color
    - Contrasts strongly with background
    - Primary colors, avoid pastels or lighter colors

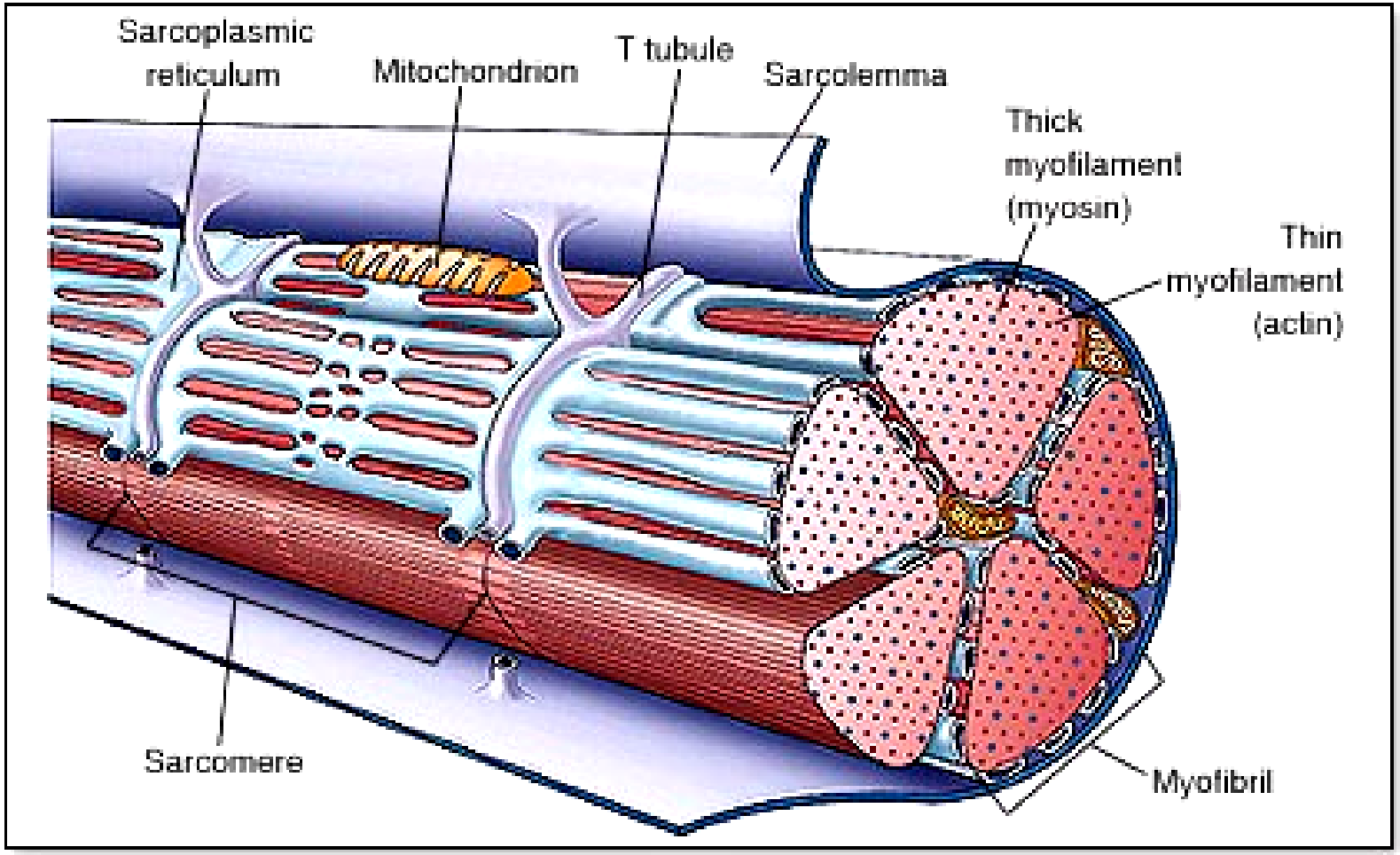
Example of a background slide

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

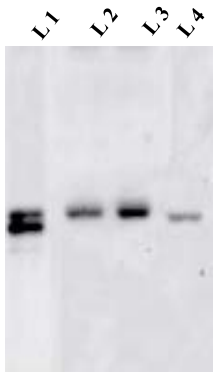
What would be a better alternative?

Muscle contraction is facilitated by Ca^{2+}

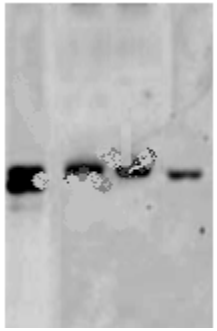


Example of a data slide

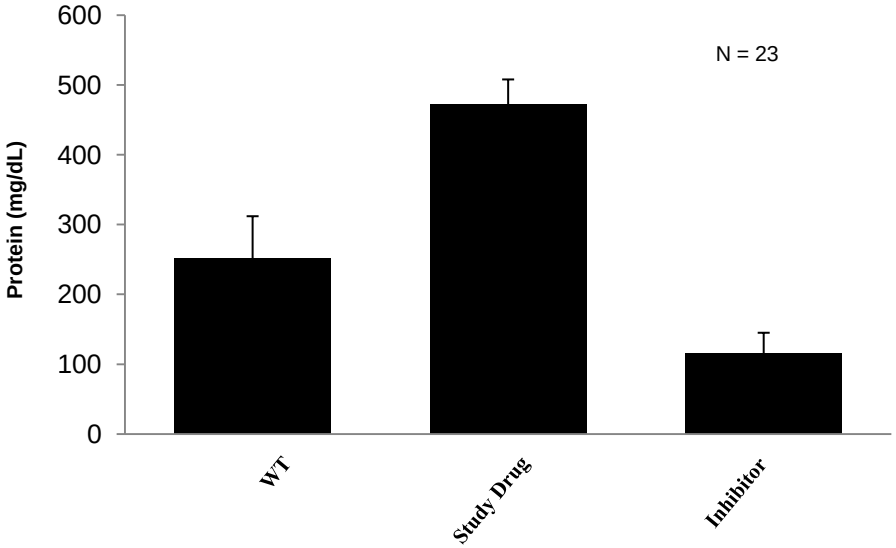
Results



Trial 1



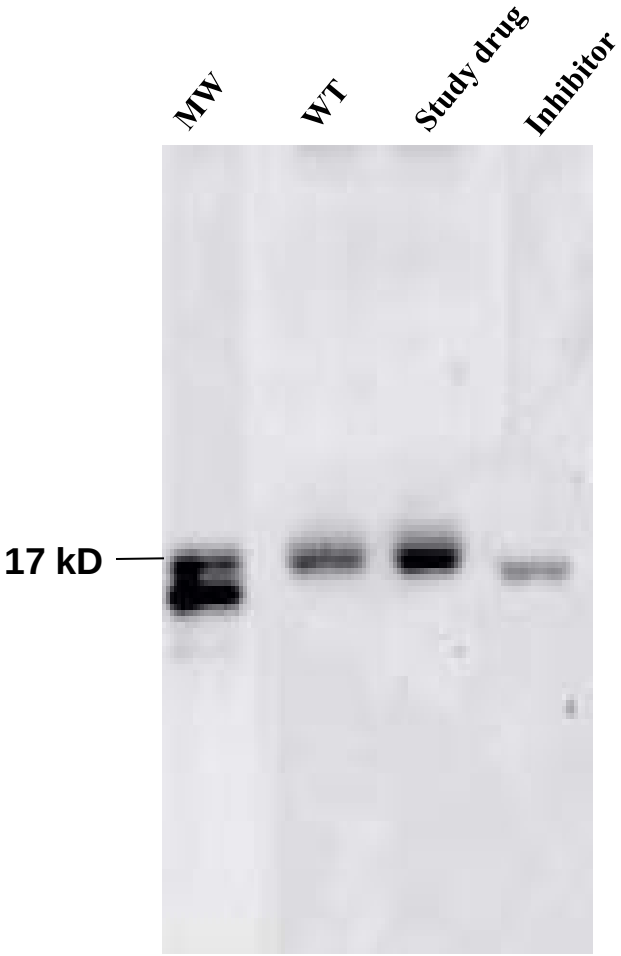
Trial 2

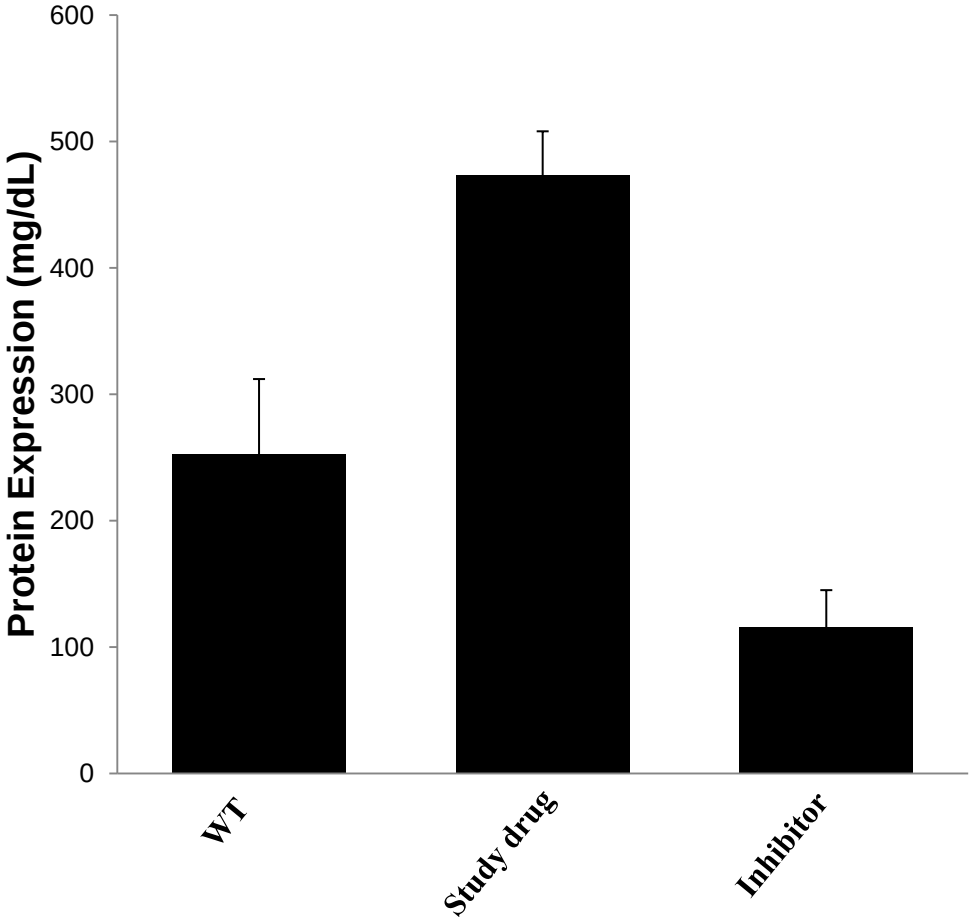


- 50 uM of study drug with 40 min incubation at 34o C
- Gel electrophoresis
- Western blot analysis
- Study drug increases protein expression as opposed to wild type

How could this be made better?

Study drug stimulates protein expression

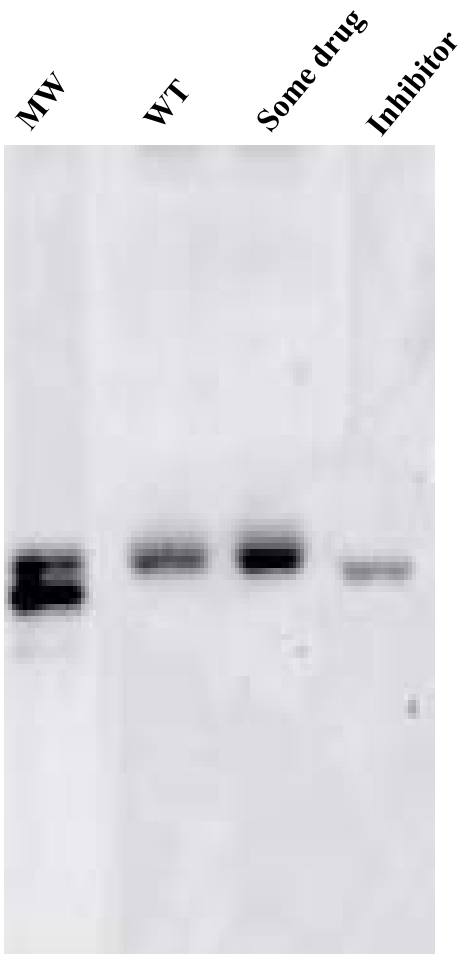


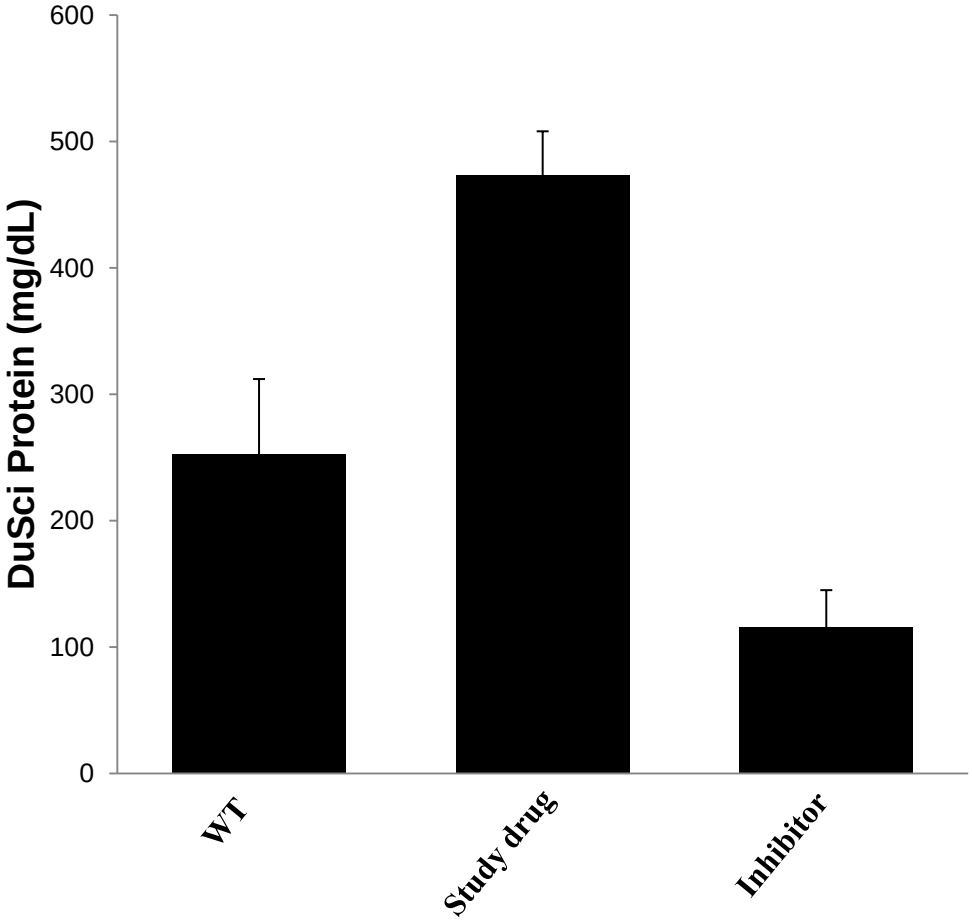


N = 23

What language could use in describing a result slide to enhance its impact for the audience?

Study drug stimulates protein expression





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The Delivery

- Tell a good story
- Be aware of your pace
- Choose an optimal position
- Time slide transitions with transition language
- Be engaging and personable
- Eye contact with the audience
- Be excited about the material

Question and Answers

- Make sure you understand what is being asked
- Repeat the question
- Avoid long digressions
- Steer controversial topics offline
- Not all questions are good or easy
- OK to say “I don’t know”

Final thoughts

- Practice early, practice often
- Get feedback from different perspectives
- Is the information relevant/extraneous?
- Don’t add slides or change the delivery at the last minute
- Envision yourself giving the talk
- Allow for personal time to gather yourself
- Don’t panic if something goes wrong
- Could do you do the talk without slides?

Resources

Office of Intramural Training and Education

http://www.training.nih.gov