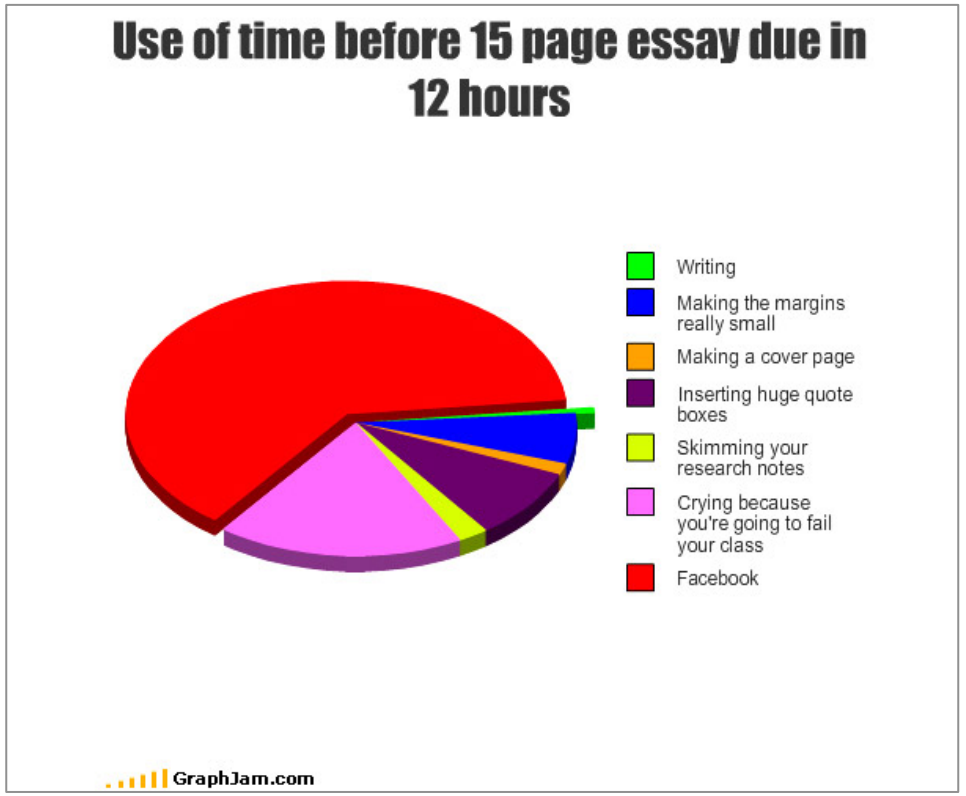
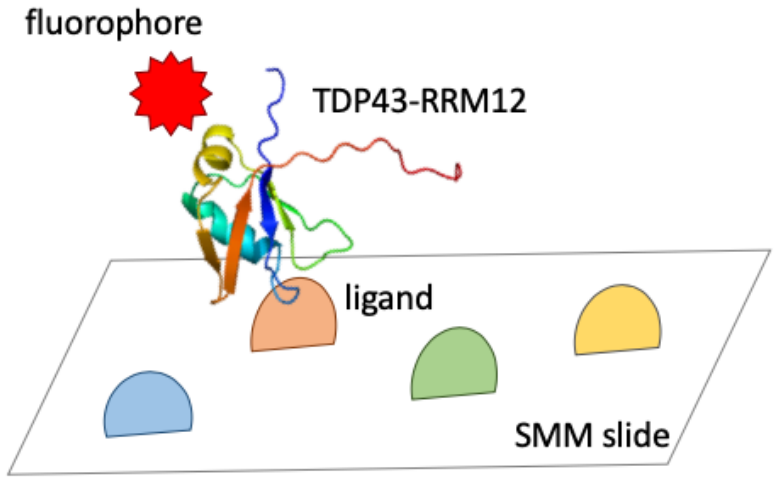
M1D5:
Scan SMM slides to identify binders of TDP43

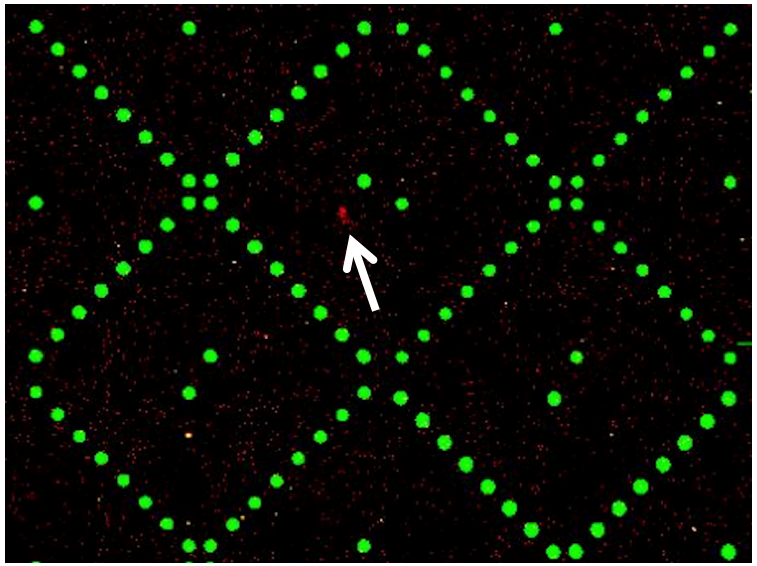
1. Prelab discussion
2. Scan slides (demo in Koehler Lab)
3. Review paper & Outline Data summary figures



Identifying binders of TDP43-RRM12

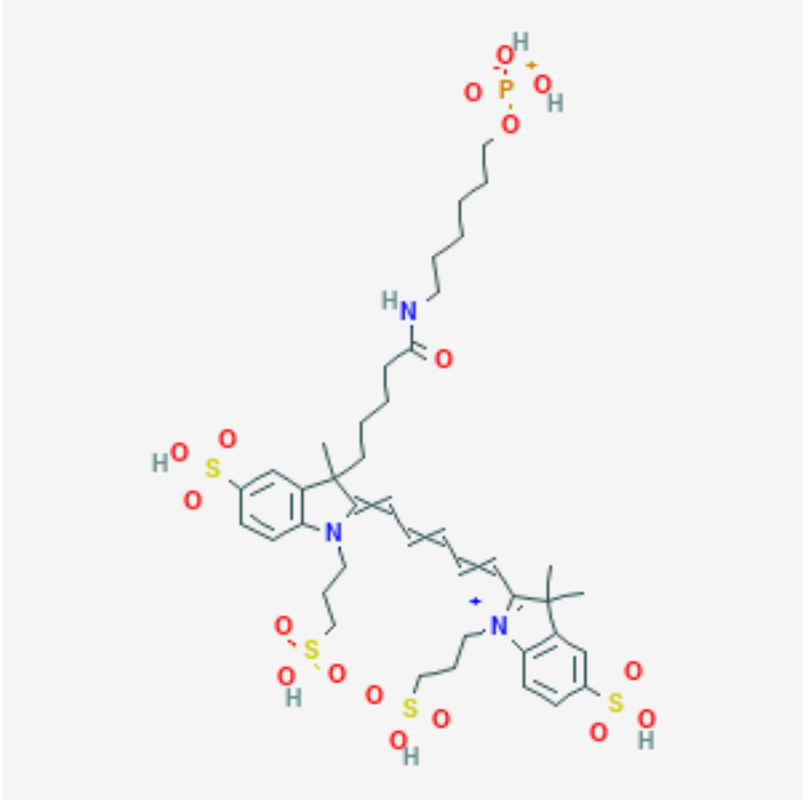
- How were SMM slides prepared to promote ligand attachment?
- How does ligand attachment / orientation benefit protein binding?
- What are the controls?
- How are ligand binders identified?





Alexa fluor 647 used to visualize ‘hits’

- Associates at high molar ratios without self quenching
  - Enables high sensitivity
- pH-insensitive over a wide molar range
- Has high fluorescence quantum yield and high photostability
  - Allows detection of low-abundance targets
- Remains active after excitation

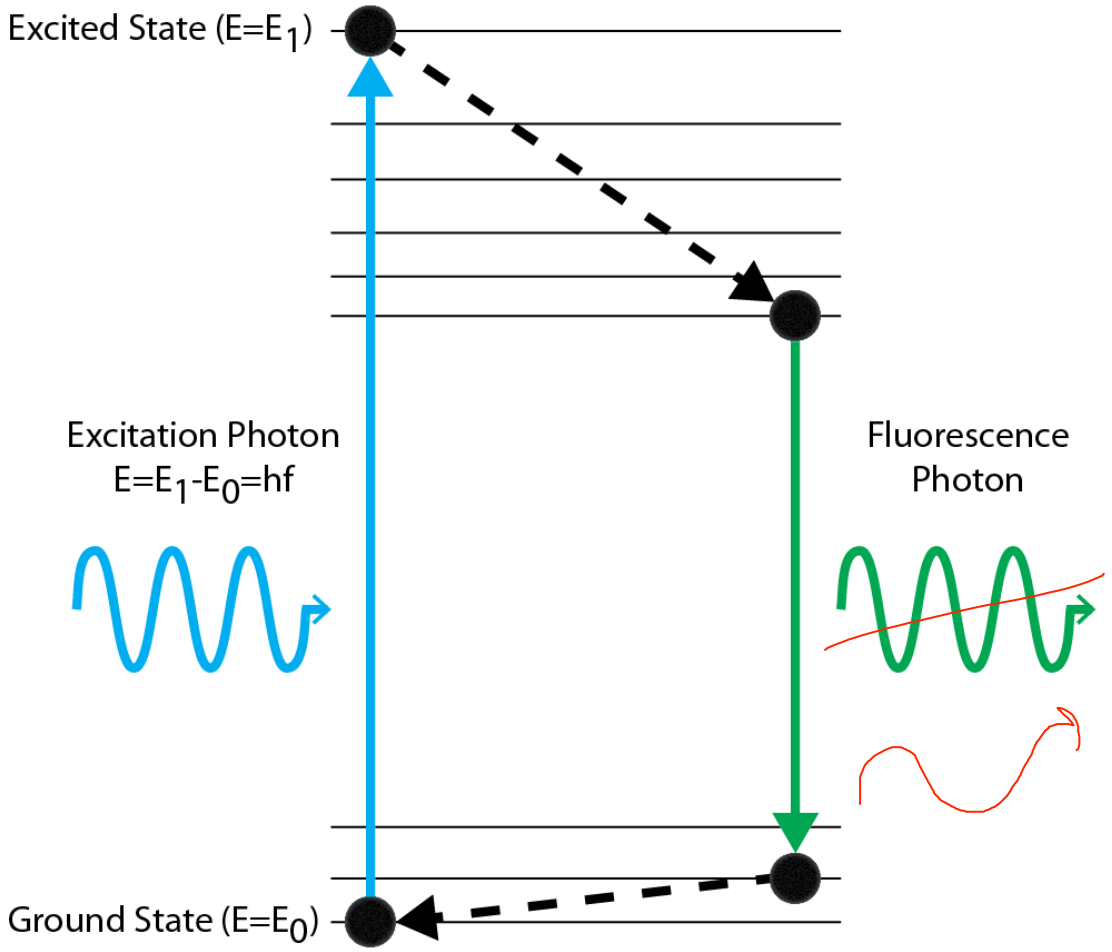


How is fluorescent signal generated?

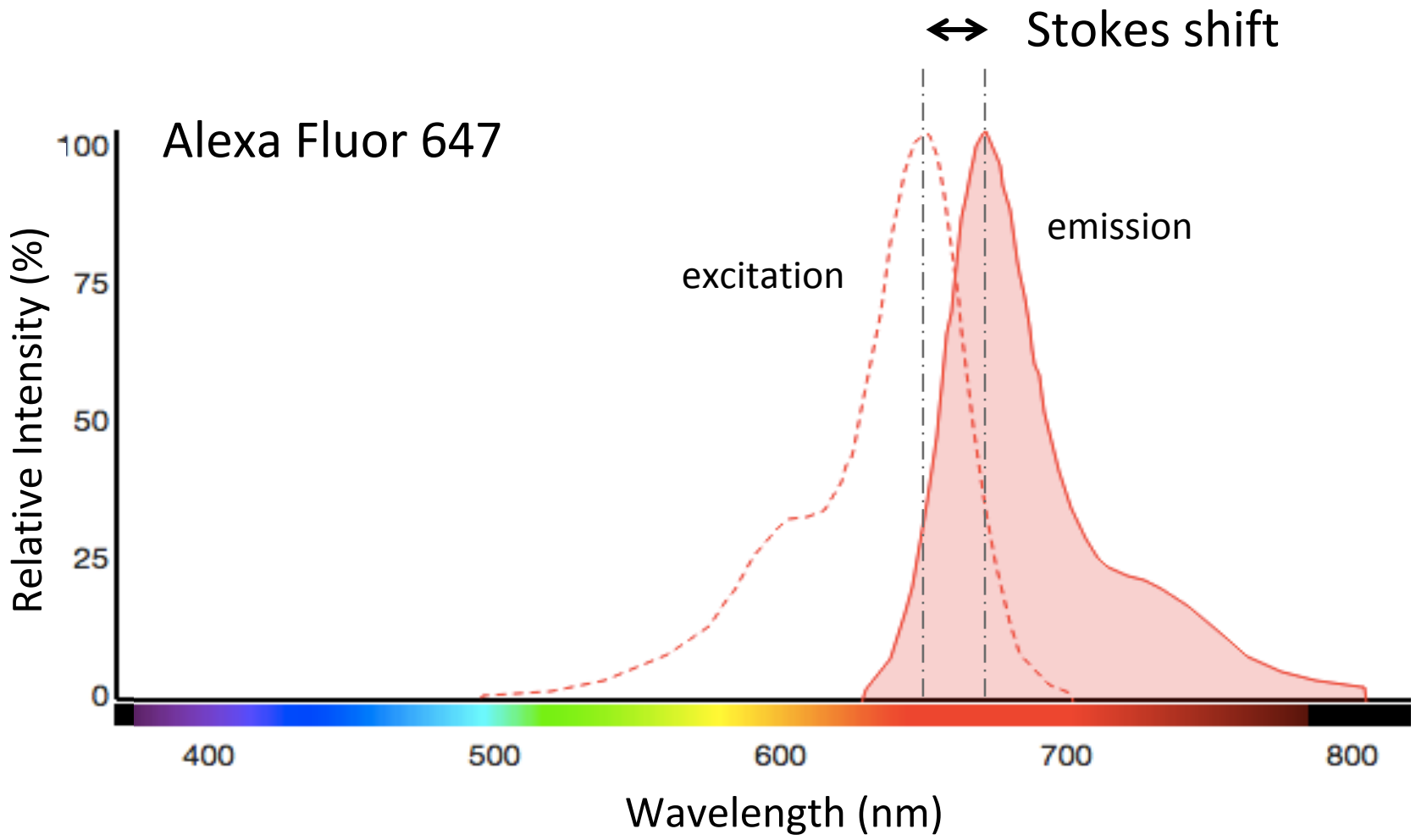
- Fluorescent molecules absorb light energy at a specific wavelength
- As molecule returns to ground state, photon is emitted
- Emitted photon is:

LOWER _____ energy and

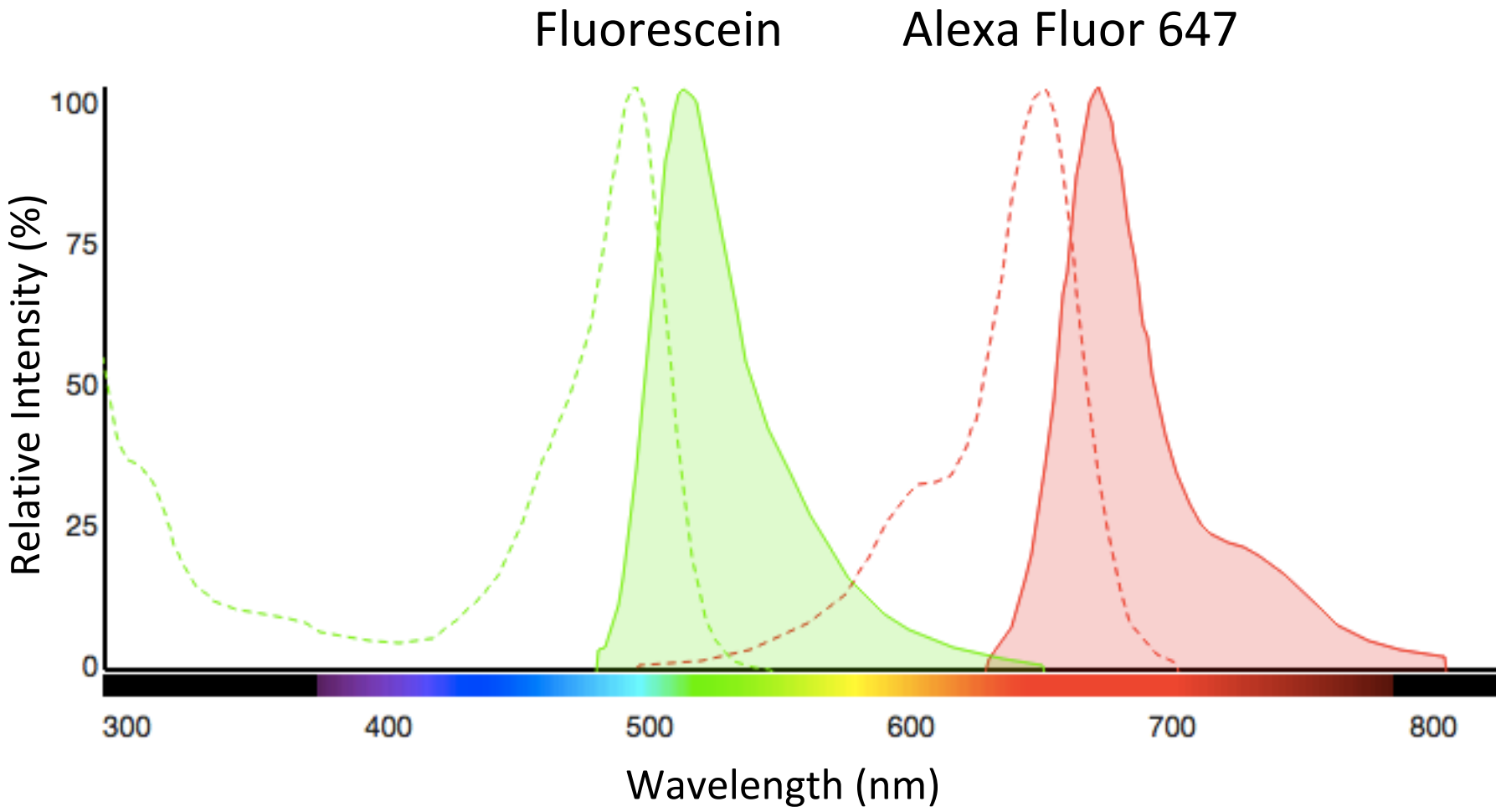
LONGER _____ wavelength than excitation photon



Fluorescent molecules have unique emissions



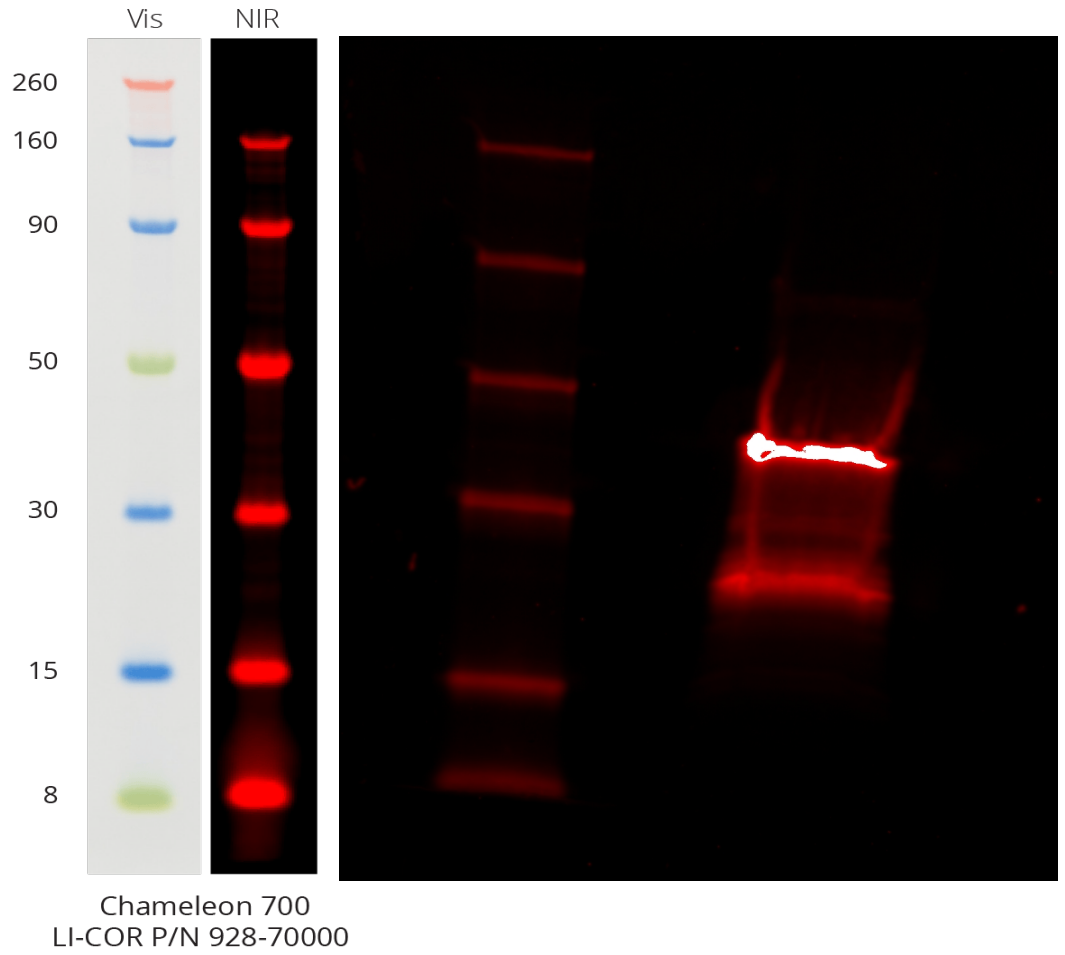
Why do we measure in two channels?



Why else is Alexa Fluor 647 label useful?

- Fluorescent signal not specific to SMM screen, can be used to visualize labeled protein with various imaging tools

- Are you confident you have the correct protein from the SDS-PAGE experiment?



For today…

- Will go in groups to Koehler Laboratory for demonstration
- Work with your partner to outline Data summary figures and future works experiments
- Get a start on the homework due M1D6!

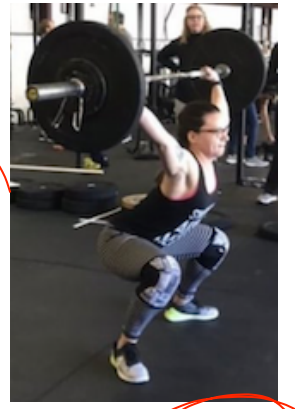
For M1D6…

- Draft overview schematic for Mod1 Data summary
  - Don’t forget the TITLE and CAPTION
- Outline of the script for your Mini-presentation

Notes on overview schematics…

What does Noreen do all day?

Wake up at 5a and brush teeth



Workout at CWCF in Somerville, MA

Eat breakfast and drink coffee while watching the local news

Iron clothes and get ready for the day

Walk to work at MIT

Check, respond to emails and review lecture slides

Teach T/R laboratory section from 1-5p in 56-322

Walk home

Make and eat dinner

Brush teeth and go to bed at 9p

What should be in the Title and Caption?

Title: State what is shown / represented in the schematic

Caption:

- Explain the flow of information using concise / clear language
- Expand on text shown in figure labels to eliminate excess wordiness / clutter from the figure
- Define all abbreviations / jargon / labels / symbols

Revised example:

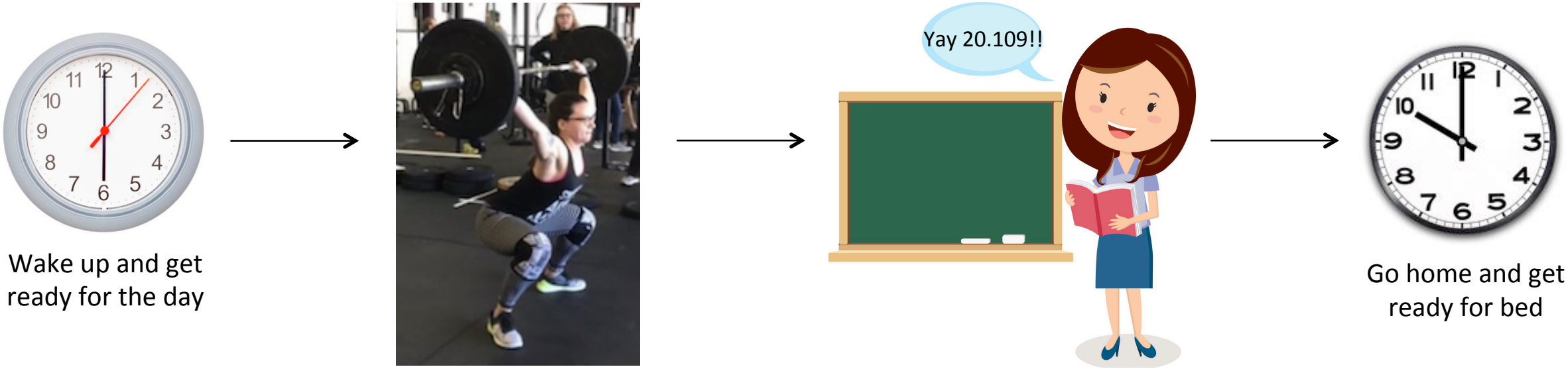


Figure 1: Average week day for Noreen. Over the course of a normal day Noreen is active from 5a until 9p. In the morning, she exercises at CWCF. After her workout she teaches 20.109 at MIT. CWCF = Commonwealth CrossFit, MIT = …

Notes on Mini-presentation homework…

- Bullet / outline format
- Follow time and content guidelines:
  - Introduce yourself and your research project
  - Clearly state hypothesis to identify main question
  - Be quantitative when stating results (NOT “this was more/less than...”)
  - For now, use placeholder statements for key findings

Rubric for Mini-presentation

Category	Elements of a strong presentation	Weight
Introduction	• Introduce yourself and the research • Summarize the background information necessary to understand the research • Provide a clear and concise description of the central question / hypothesis	25%
Methods & Data	• Provide ONLY the method information necessary to understand the results • Give complete and concise explanations of the results • Relate the results to the central question	25%
Summary & Conclusions	• Highlight the key finding(s) relevant to the central question / hypothesis	25%
Organization	• Give a logical, easy-to-follow narrative • Include transition statements	15%
Delivery	• Show confidence / enthusiasm and speak clearly • Use appropriate language (technical or informal, as appropriate) • Be mindful of the time limit (3 minutes +/- 15 seconds!)	10%

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