

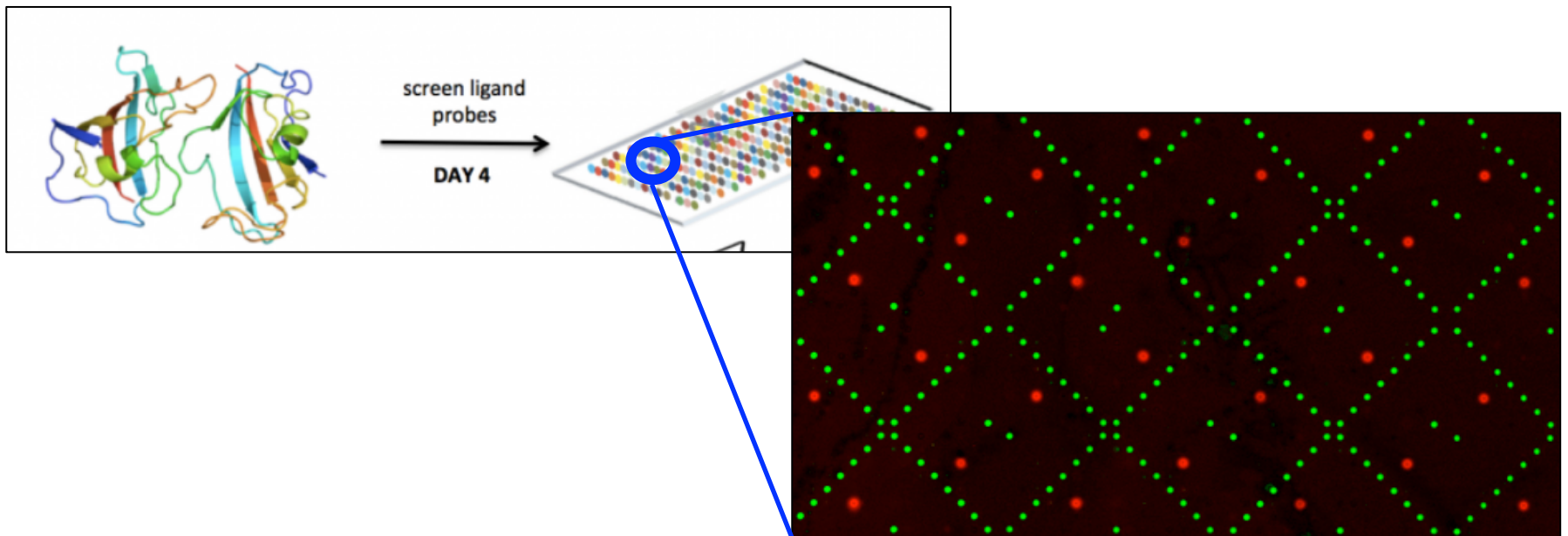
M1D4:Screen chemical library for FKBP12 binders

02/24/2017

1. Incubate FKBP12 with small molecule microarray (SMM)
2. Prelab discussion
3. Complete SMM screen and store slides

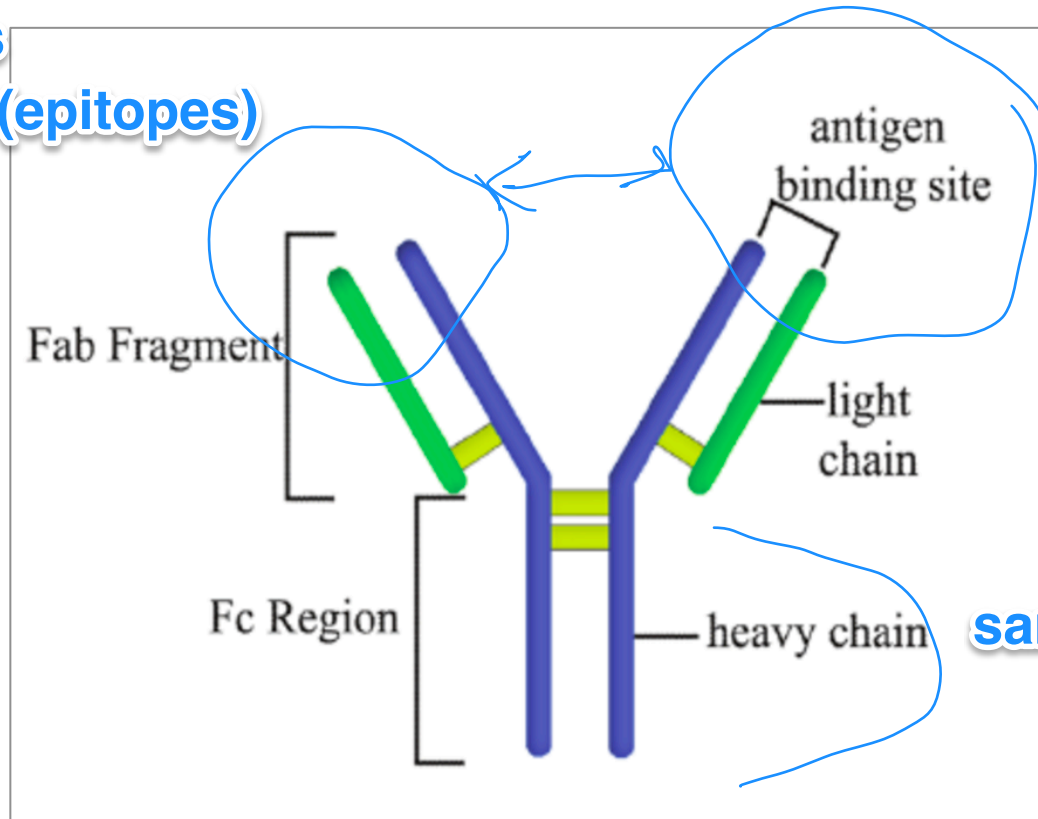
SMM screen logistics

- 1) Incubate FKBP12 with SMM
 - 12,000 spots
 - ~ 4,200 small molecules (x2)
 - 4 x 48 positive control spots: **rapamycin**
 - “X” pattern of **fluorescein** spots
- 2) Incubate with fluorescently labeled primary antibody to poly-histidine (6Xhis-FKBP12)



Antibodies are used as a tool to identify proteins

- protein
- plasma B cells
- bind antigens (epitopes)

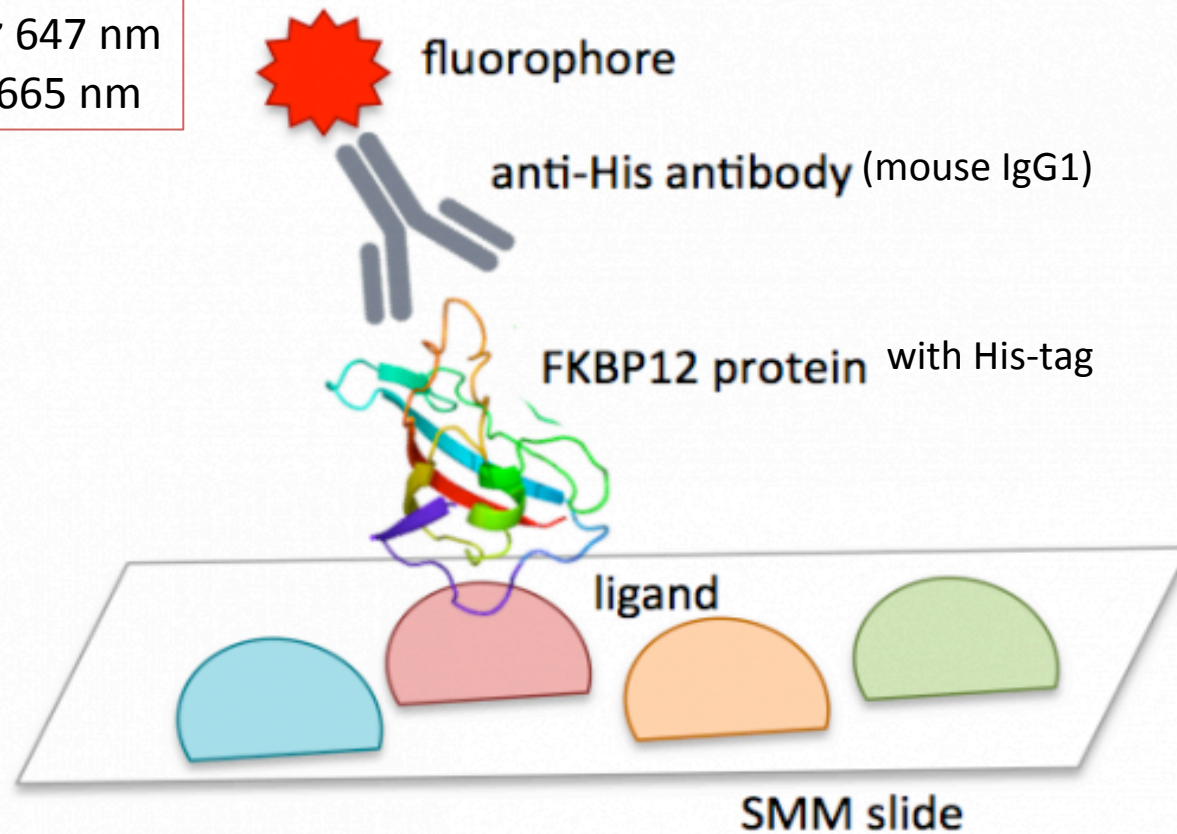


same for each species

Using immunofluorescence to detect FKBP12-ligand binding

Alexa Fluor 647

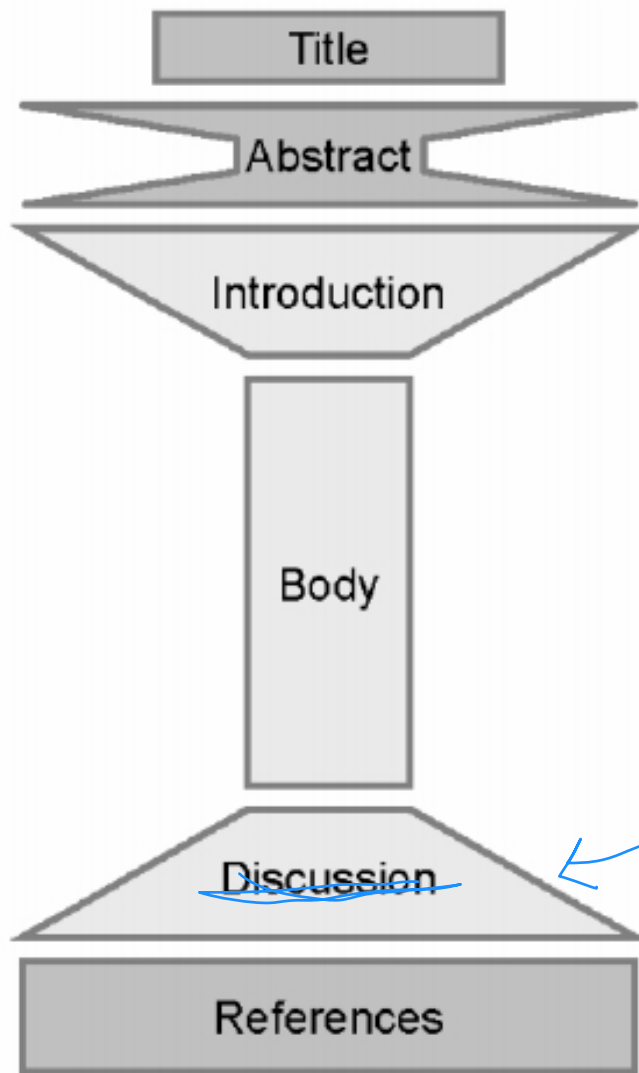
- excitation ~ 647 nm
- emission ~ 665 nm



M1 major assignments

- **Data summary** (15%)
 - in teams, on Stellar
 - draft due **03/13**, final revision due 03/27
 - bullet points, .PPTX
- **Mini-presentation** (5%)
 - individual, video via Gmail
 - due 03/18
- **Lab quizzes** (extra credit on homework grade)
 - M1D3, M1D5, and M1D7
- **Notebook** (5% total)
 - one day will be collected and graded by Rob on M1D7
- **Blog:** <http://be20109s17.blogspot.com/> (participation: 5% total)
 - by 04/03

Content of M1 Data Summary



(1) **Title**: take-home message

(2) **Abstract**: the only page *not* in bullet points

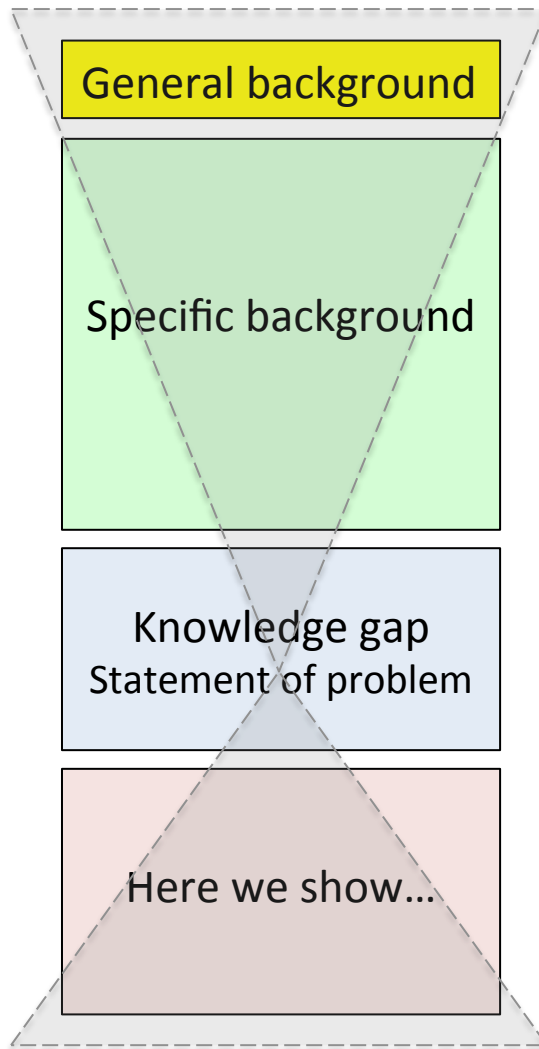
(3) **Introduction**: background and motivation, bulleted text

(4) **Results and interpretation**: present and discuss the data, transitions from one page to the next, bulleted text

(5) **Implications and future work**: tie this back to your motivation, bulleted text

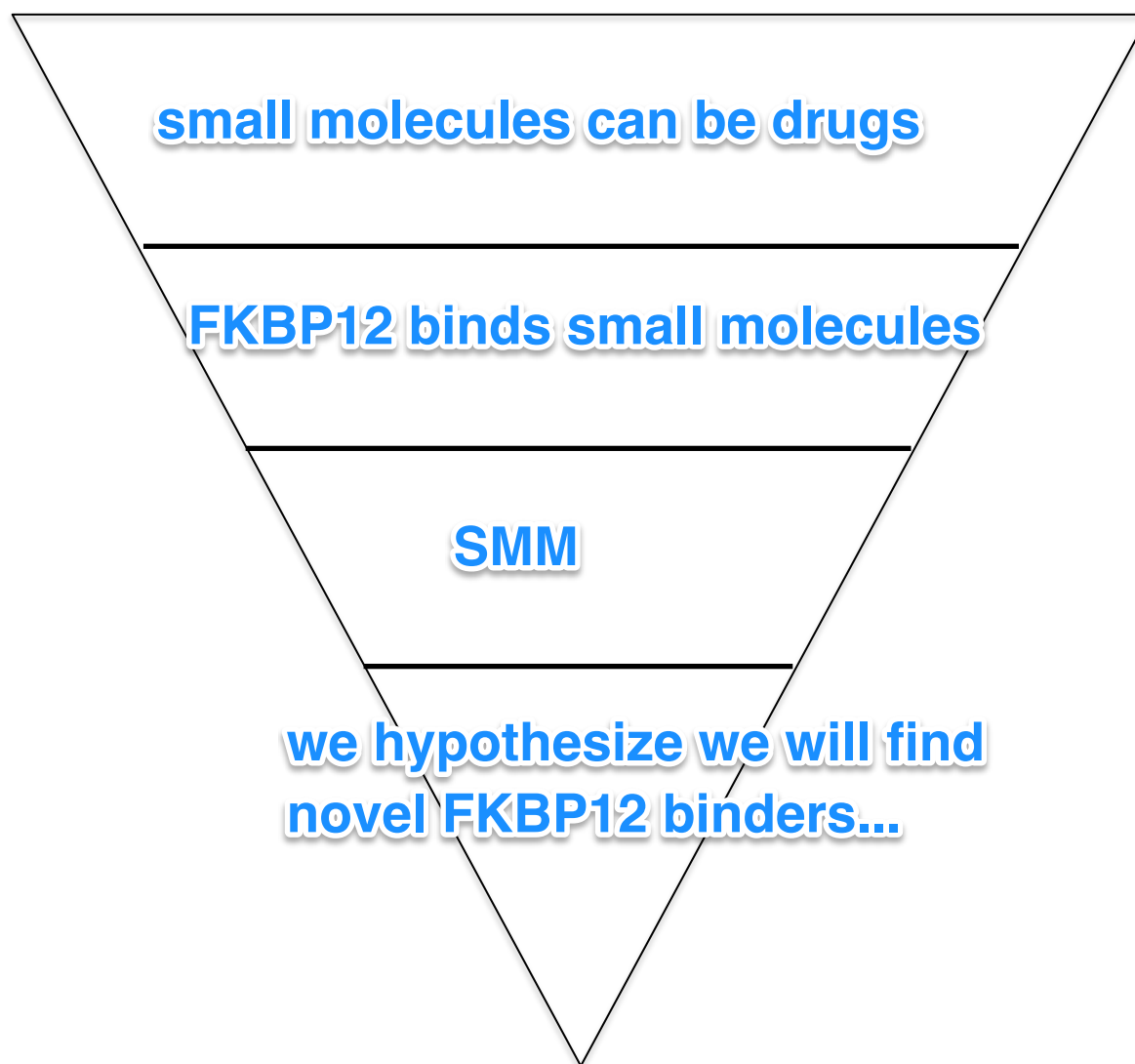
(6) **References** (*not* in bullet points)

What goes into an **background and motivation**?





- Your research is anchored in a general topic that your audience cares about.
 - focus on outsiders
- All information connects your project with the general topic.
 - minimum essential information
 - accurately represents the field
 - correctly referenced, give credit
- The question you address is clearly articulated, connected to the background, and appears meaningful.
 - give evidence of incompleteness of current understanding, of value of investigation
 - **include your hypothesis**
- A preview of your findings and their implications fills the demonstrated gap.
 - light on Methods

Outline of background and motivation (HWM1D5)



How do you easily format references?

<http://libguides.mit.edu/bioleng>

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Biological Engineering: Home

Tools and support: Citation Management, Off campus access, Scholarly Publishing

Manage your Information

Manage your Information - Contains links to research guides for citation management, managing personal digital content, managing and publishing data, and personal content management tools.

Mendeley - Manage citations and PDFs using a desktop client that syncs with web-based account that supports small group collaboration. Setting up Mendeley is free. The Libraries support Mendeley Institutional Edition which gives MIT users additional web server storage and other features.

Endnote - Widely used application designed to help you to organize citations and create a bibliography. MIT does not offer a site license for EndNote. There's a web version that's free for MIT users through [Web of Science](#).

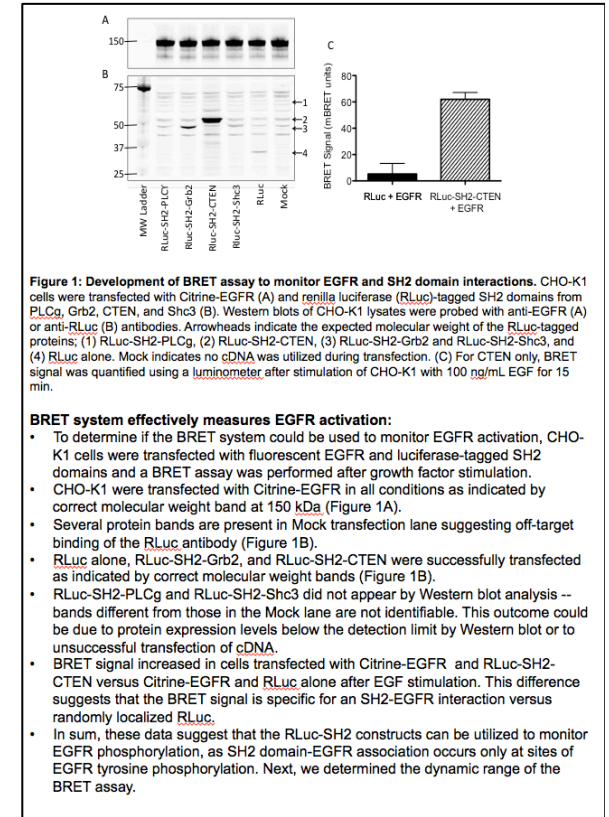
Zotero - A free, open-source program that can be downloaded as a browser extension for Firefox, Chrome, and Safari or as a standalone program. For many databases and websites, it can tell when a list of books or articles is displayed, so citation information can be saved with just a few clicks:

To help you write Results for HWM1D5

1. What is the overall goal of the experiment?
2. What was your expected result?
 - What are the expected band sizes on your gel?
3. What evidence do you have that your result is correct or incorrect?
 - What controls did you perform and were the results as you expected?
4. What was your result?
5. In sum, what do these data suggest or indicate?
6. What does this motivate you to do next?

The meat of your paper

- Figures and captions
 - Decide on these first
 - Use subpanels (A., B., C.)
 - Text: limited on figure, explicit in caption
 - reasonable size (1/3 of page)
 - descriptive title
 - caption purely descriptive of image, factual
 - intro sentence in caption
- Results and Implications
 - **goal/topic/purpose/intro**
 - What you did: experiments and expectations, including controls
 - What you found:
 - **interpretation of result**
 - **-transition/motivation/next step**



Example M1 “Results & Interpretation” slide (on wiki)

Today in lab:

1. Complete FKBP12 + SMM incubation, wash carefully!
 2. Incubate SMM with His antibody, wash carefully and store at 4°C, protected from light
- Homework due Wednesday, M1D5
 - Background and Motivation
 - 3-7 topic sentences, using the “funnel” outline, bulleted
 - include reference list and reason you chose that reference
 - Results section associated with M1D4 figure
 - address questions in the prompt, bulleted