M1D8: Assess Protein Function

3/03/2016

1. Bernard M. Gordon MIT Engineering Leadership Program (GEL)
2. Quiz
3. (Quick!) Prelab Discussion
4. Excel Anaysis
5. Matlab Analysis
6. Start Mod1 Protein Engineering Summary!

MOD1 is OVER!

- **Lab notebook**
  - M1D1 will be graded by Jing (jgzhang@mit.edu)
  - revise before 10pm **tonight**

- **Assessments for M1:**
  - Protein engineering summary:

  due at **5pm on Saturday, March 12th**

  feedback on 03/17 from Noreen & Diana

  revision due **5pm on Monday, March 28th**
  - Protein engineering presentation:

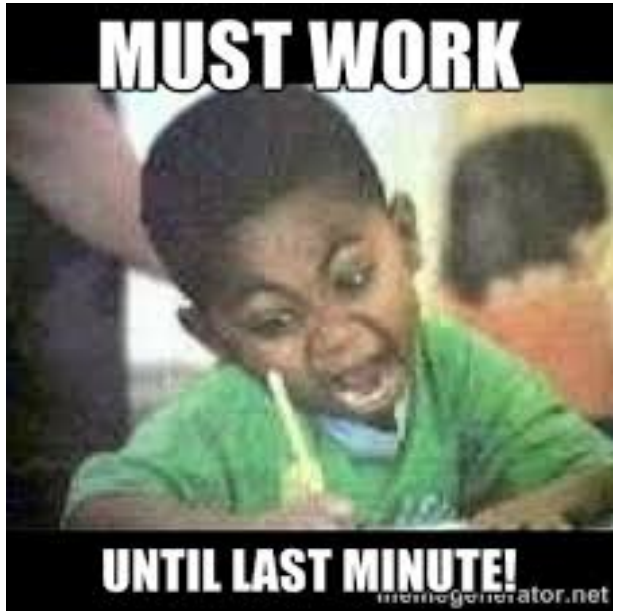
  due at **10pm on Tuesday, March 15th**
  - blog post due 03/29

- **extra office hours in 56-302:**
  - All instructors Sunday 03/06, 10am-4pm
  - Noreen W 03/09 and R 03/10, 6pm-9pm
  - Maxine T 03/10 and F 03/11, 9am-11am
  - Leslie W 03/09 and F 03/11 2pm-5pm

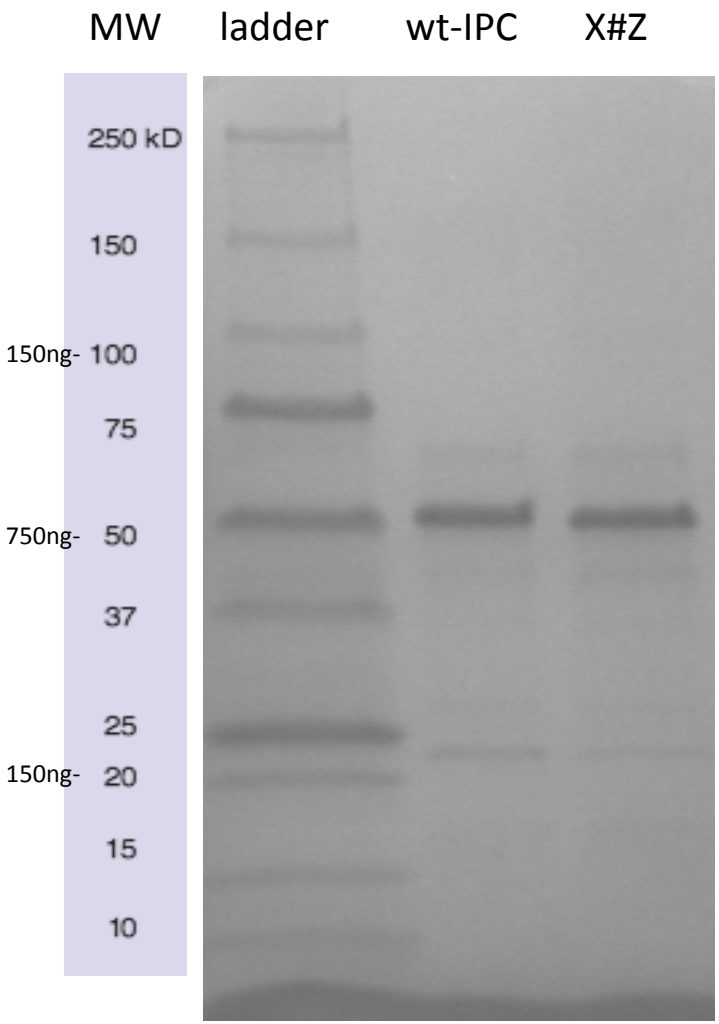
Reflection assignments

- **Due dates**
  - There are *no specified due dates* for these reflective blog posts
  - You must complete **one per module and a summary post at the end of class**. The end of a module is the day after you turn in your final report.
- There are suggested blog topics but feel free to be creative.
- A few additional notes:
  - Do not publish MIT logo
  - Do not post photographs with names tagged
  - Do not write malicious comments
  - Do not plagiarize

“A few summers ago I had a job working in a marine biology lab. It turns out I don't like marine biology that much, but one thing that stuck with me about the experience was a phrase [my mentor used] ... ‘However long you think it's going to take, double it and add two.’ ... Human beings are amazing at overestimating their own competence. Whether it's how long an group meeting will take, or how many hours you will spend studying for an exam, or how many months it will take to finish your UROP project, or how much time you need to finish your Mod2 report, however long you think it's going to take: double it and add two.” -Former 20.109er via our class blog



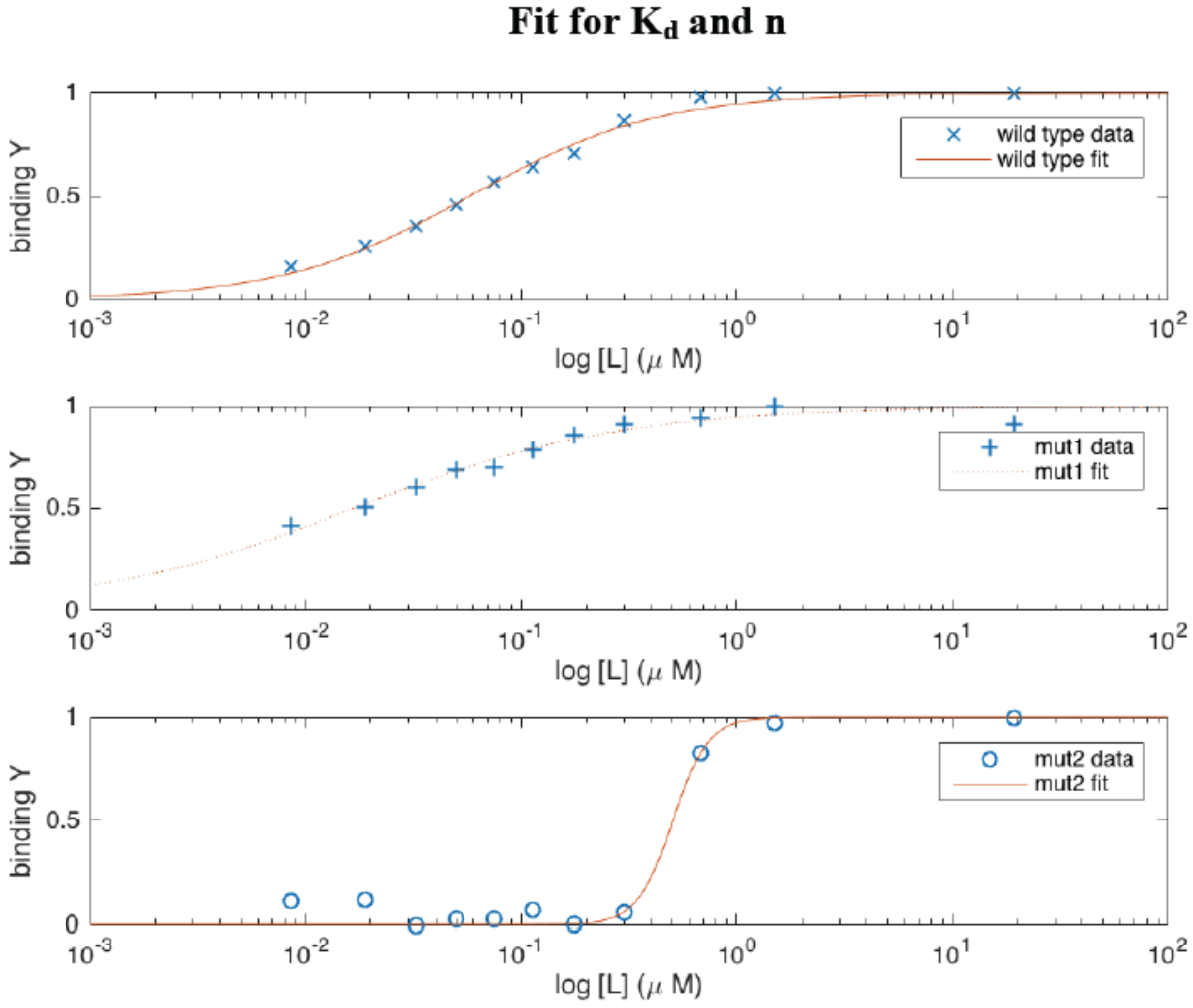
Estimate protein concentration using microBCA assay or unstained ladder



- microBCA assay extrapolation from BSA standard curve; *data posted to discussion page today*
  - don't forget dilutions and units!
- Or comparison with unstained ladder
  - 50 kDa band has 750 ng / 10 µL
  - your wt-IPC is 2 x as bright
  - hence [wt-IPC] = 1500 ng / 15 µL
  - and [IPC(X#Z)] = 1500 ng / 15 µL
  - Convert to M (mol/L) using 1 Da = 1 g/mol

Part 2: fit K_d and n

$$Y = \frac{L^n}{K_d^n + L^n}$$



WT
$K_d = 0.0578$
$n = 1.0050$

Mutant 1
$K_d = 0.0167$
$n = 0.7001$

Mutant 2
$K_d = 0.5045$
$n = 5.3167$

Please check your mutant on M1D7 Discussion Page

Start your version of the story…