

Announcements (M3D5)

- Final quiz and final FNT next time; notebooks today
- **Mod 3 report** due M3D7, 5 pm
 - work in supergroups (tell me in advance if not)
 - less formal, but clear and concise
- **Mod 3 research proposal** presentations on M3D8
 - more on next slide
- Day 7 lecture
 - Atissa on presenting with a partner → be there!
- Day 8 lecture: special topics in TE
- Final lecture: class discussion/evaluation; party

Final project: Research proposal

Slide + content
after Shannon H

* Measure + Model || Manipulate + Make * never just this "M"

Appropriate subject matter:

biology
↓
molecular engineering → DNA, RNA aptamers, protein sensor
system engineering → holistic systems biology, technology (HT-screening, novel assay, etc)
biomaterial/cell eng. → TE; drug delivery; cf Fall Ø for energy applications (inorganics)

What is biological engineering?

biology Q:

what kinase
phosphorylates
protein X?

} ⇒ extend - novel screening method
to - how can we quantify the rxn. kinetics?
BE?
- can we predict phosphorylation?
* read the FAQ *

Appropriate scope:

think years, not months
think big (what do we mean by novel)
think outside the 109 lab → talk to other faculty

indirect ELISA steps

$\Delta = \text{CN}$

$\circ = \text{other proteins}$

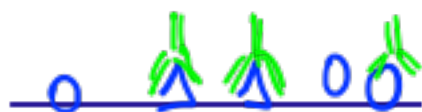
① bind proteins → wash



② block w/milk



③ 1° Ab



④ wash w Tween 20



1° Ab = α -CN
(rabbit-raised)

⑤ 2° Ab



⑥ substrate for AP
→ colorimetric rxn.



2° Ab = α -rabbit
(goat-raised)

samples spin 5'

* AP (like mZ)

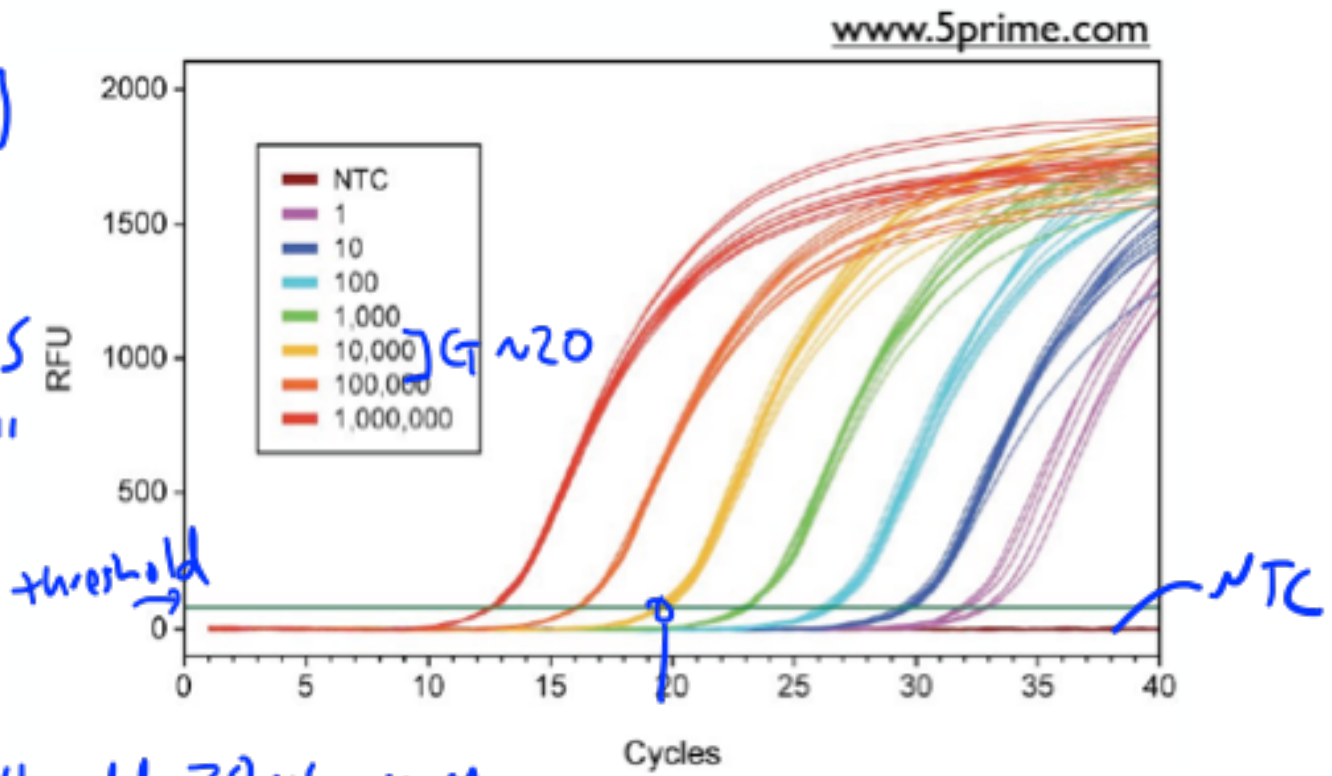
recall: pepsin + elastase - protease treatments

qPCR basics

- Real-time tracking of [DNA]
- Threshold cycle

* $C_T \uparrow$ as [cDNA] ↓
for gene of interest ↓

* II I 18S
Red 1-1-2 2-1-2-2 " "
0.19
:



5μL cDNA → well add 20μL M.Mix

- Be very careful pipetting samples today (amount, location)!