

M2D2: Measuring system performance

10/09/14

Lab business



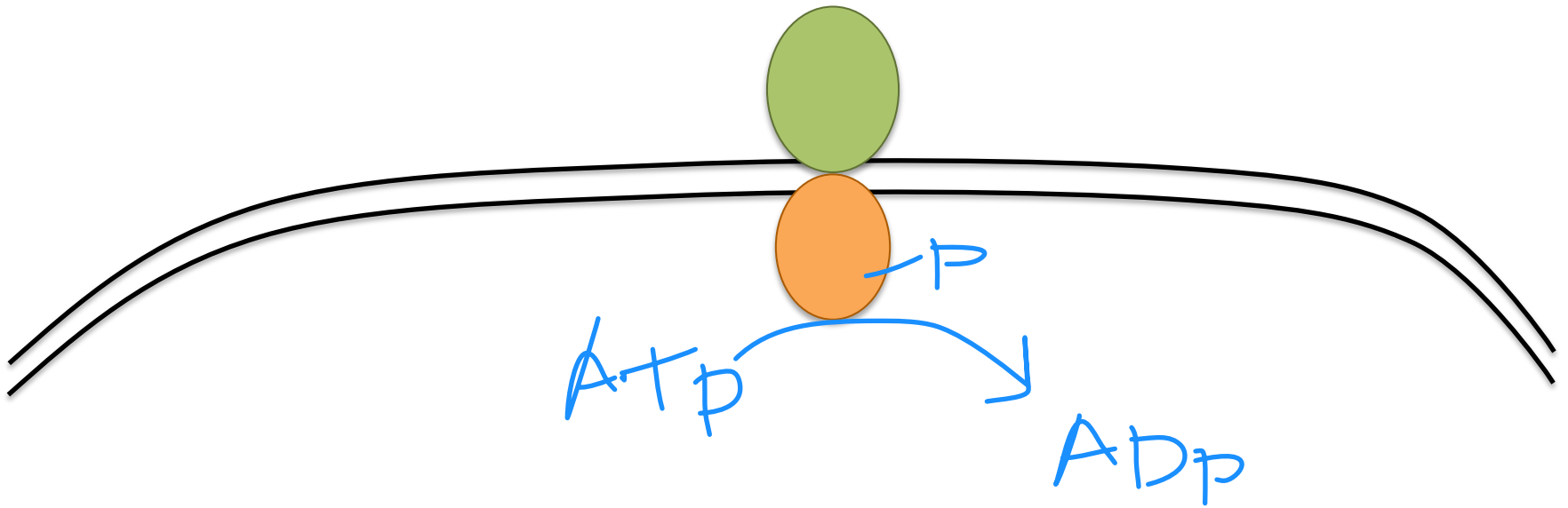
- Lab treat
- DNA engineering abstract and data summary
 - Due Friday, October 10 by 5pm
 - Office Hours:
 - Shannon – R 7-8:30p (Rm 56-302), F 10-11a (16-429b)
 - Agi – R 4-5:30p (16-336)
- Journal club presentations
 - Sign up to present on either M2D4 (October 21) or M2D8 (November 4)

October 30

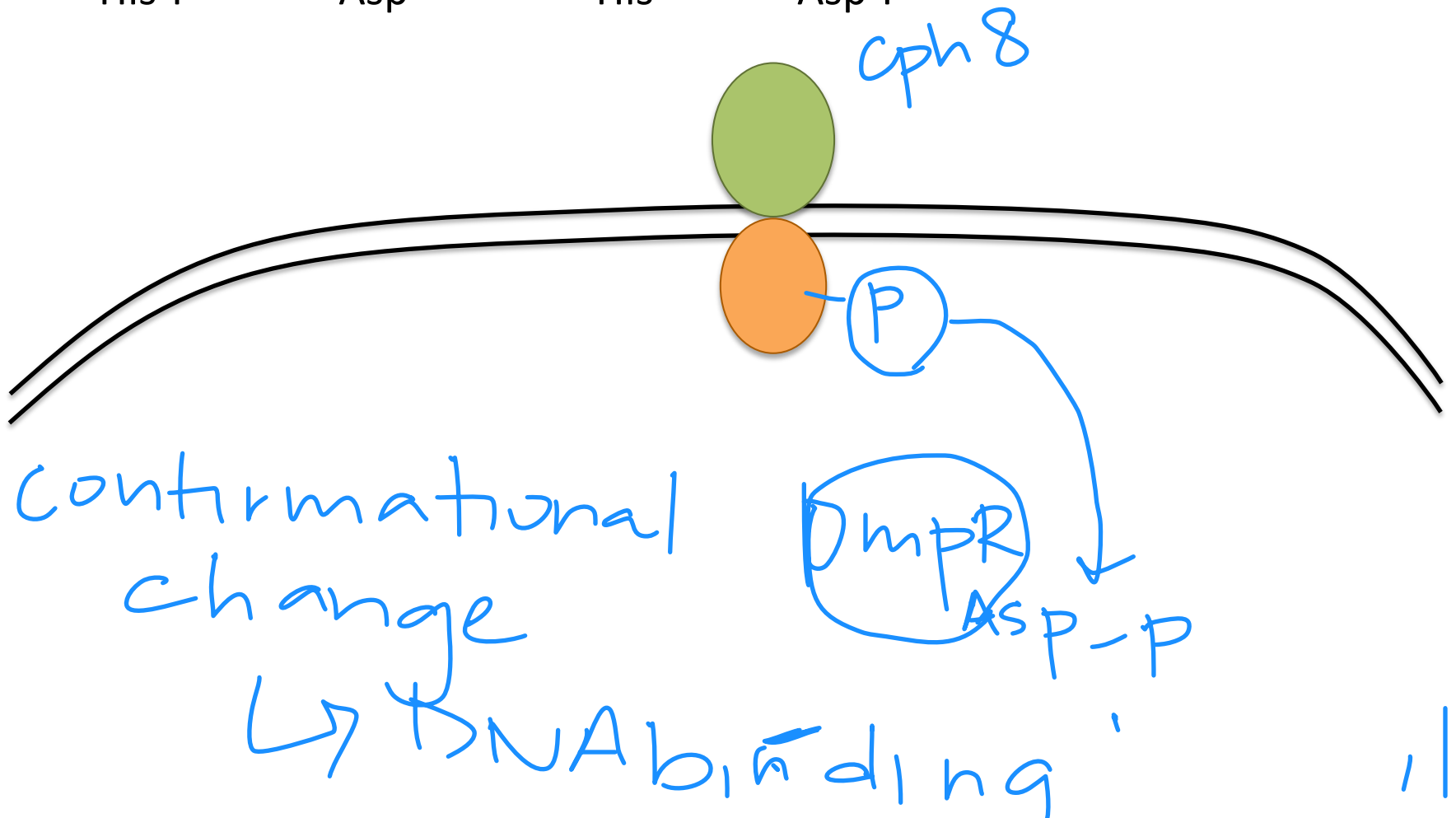
Two-component signaling

	Bacterial Photography System
Stimuli	Light
Histidine kinase	Cph8 - ^{oh} PI + PCB Enz
Response regulator	OmpR
Response	Color

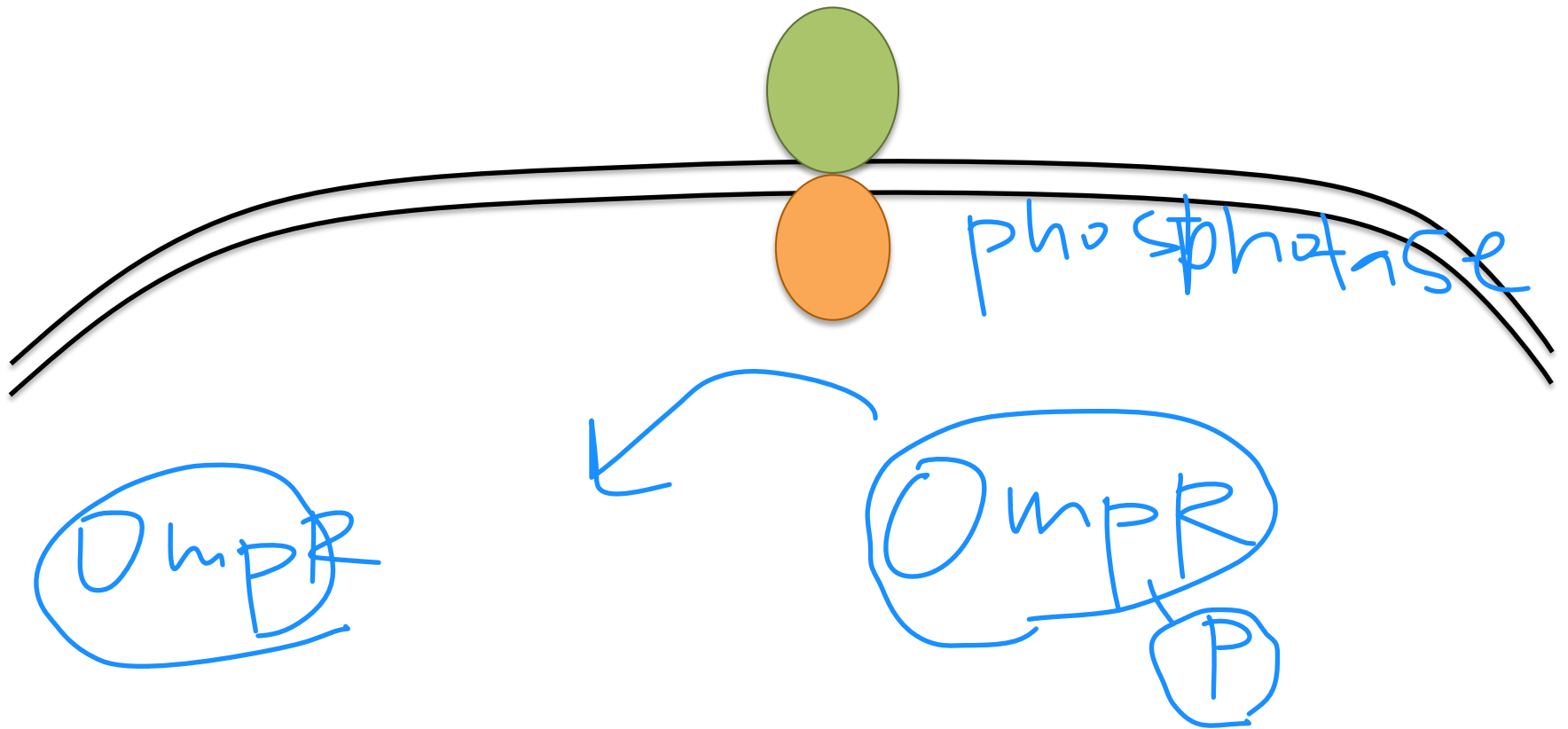
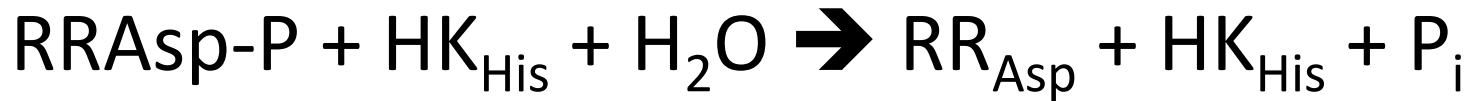
Phosphorelay – Rxn I



Phosphorelay – Rxn II



Phosphorelay – Rxn III

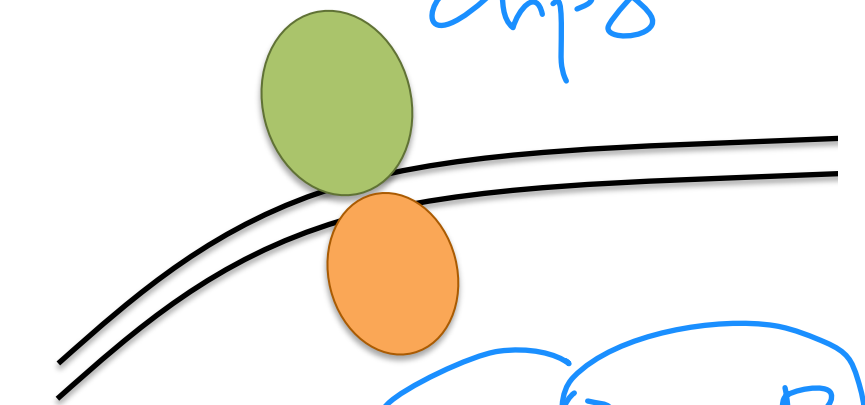


dark

The big 'picture'

light

crp8



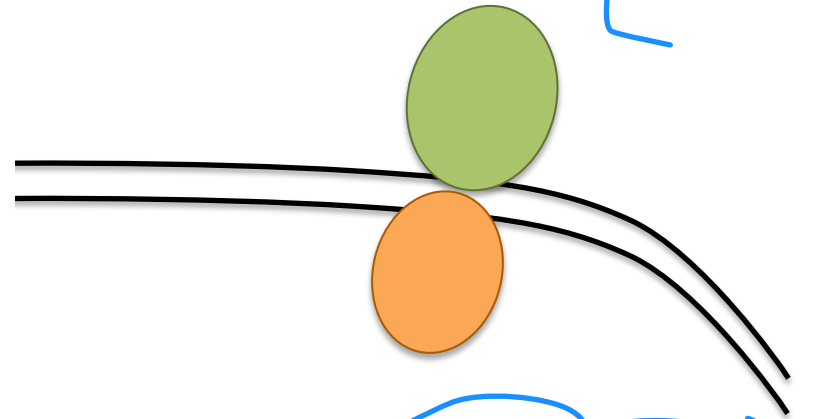
OmpR

OmpR_P

black color change

ompC

lacZ



OmpR_P

OmpR

no color



Measuring system performance

1. Measure OD
2. Lyse cells
3. Start reaction
4. Stop reaction
5. Measure cell debris
6. Measure yellow product
7. Calculate activity

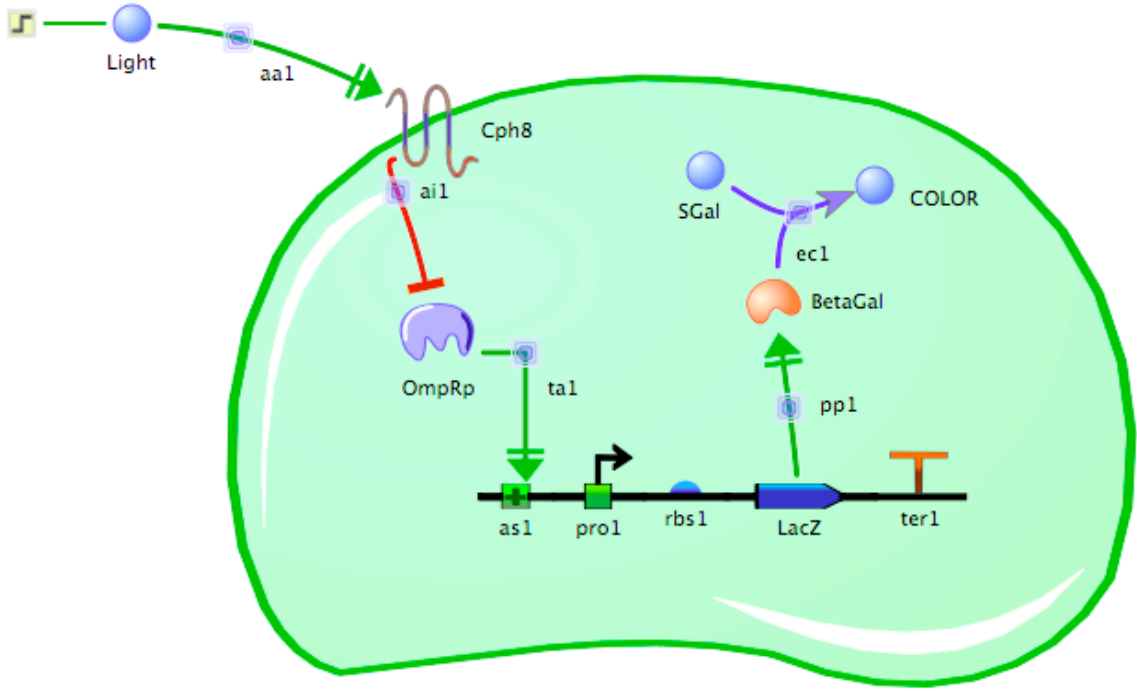
NB466*

NB5

6. Measure yellow product * 0.3 - 1.0

$$MU = 1000 * \frac{(Abs_{420} - (1.75 * Abs_{550}))}{(t * v * Abs_{600})}$$

Bacterial photography simulation



cell

Today

- Atissa will share oral presentation skills to help you prepare for your journal club presentation
- You will further examine the engineered bacterial photography system
 1. Measure and observe system performance (NB466)
 2. Take your own 'colloid'
 3. Determine how to 'virtually' improve the system

TinkerCell