

Quiz & Solutions

1. $y = \frac{[PL]}{\{[P] + [PL]\}}$

Total $[P] = 1.0 \times 10^{-6}$ Total P

$y/[L]$	Expt.	$[PL]$	$y = [PL]/1.0 \times 10^{-6}$
313925	a	0.16×10^{-5}	1.6
254902	b	0.26×10^{-5}	2.6
164179	c	0.33×10^{-5}	3.3
76628	d	0.40×10^{-5}	4.0
39048	e	0.41×10^{-5}	4.1
23500	f	0.47×10^{-5}	4.7

Plot $y/[L]$ versus y
 \uparrow unbound $[L]$

slope = $-\frac{1}{K_d} = -103905$, $K_d = 9.64 \times 10^{-6}$

Find n from $y/[L] = 0$ intercept, $n = 5$

2. a. Electrostatic repulsion of negative charges of ATP
b. Resonance stabilization of ADP
c. steric crowding of ATP

3. Figure 6.19
Either 2 or 4 moles of ATP formed

4. 38 moles of ATP

5. 41%

6. 3.9%

7. a. ΔG_r° only valid for standard states, not the condition for actual biological processes
- b. Thermodynamics deals with closed systems, whereas biological systems are open.
- c. Some biological processes are kinetically controlled, not thermodynamically controlled. Catalyst important for kinetics.