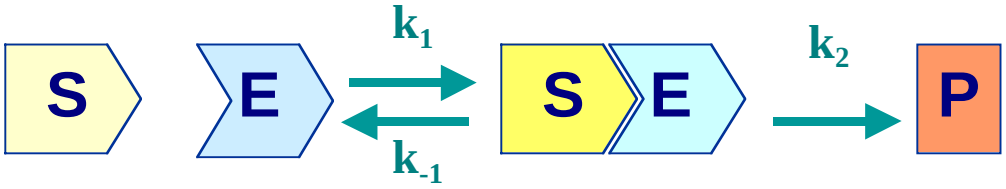
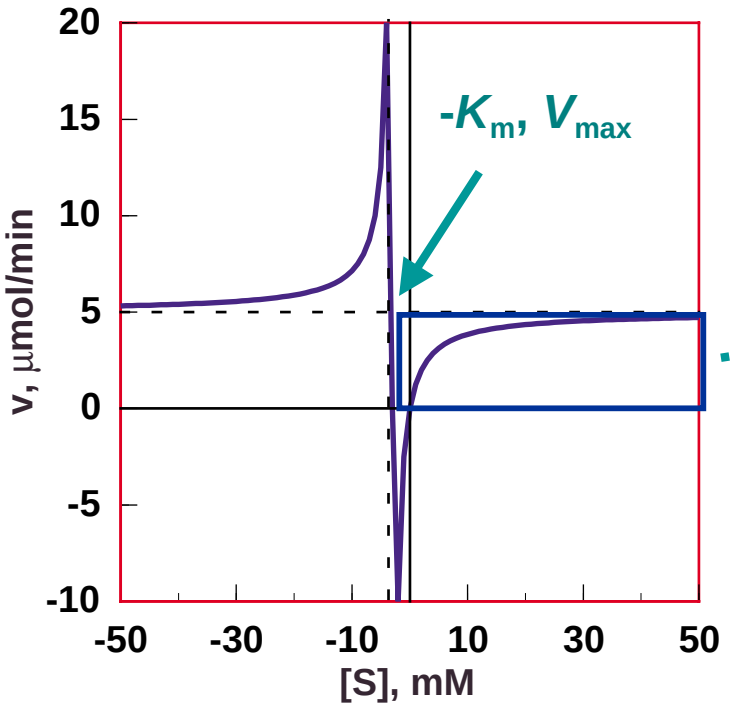
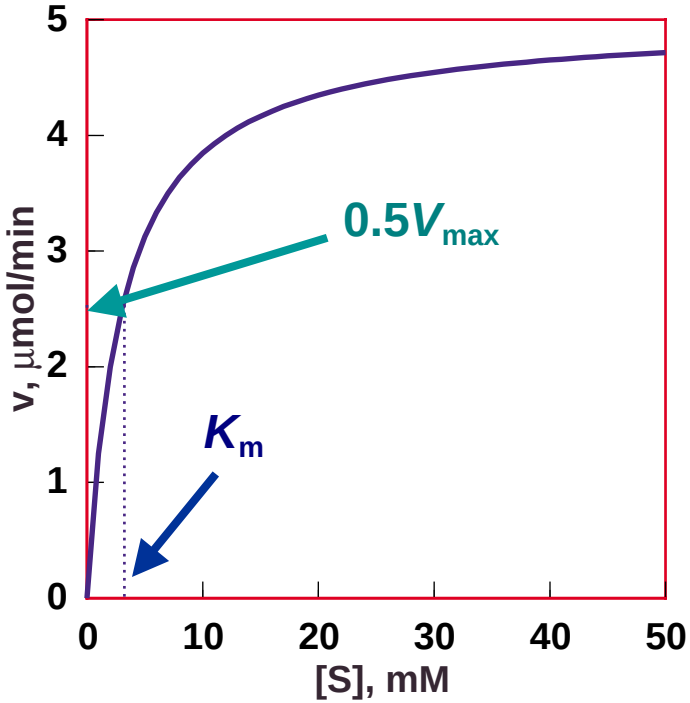
Enzymes



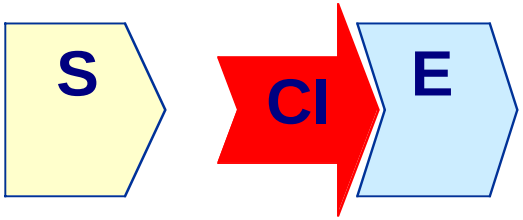
$$v = \frac{V_{max}[S]}{K_m + [S]}$$

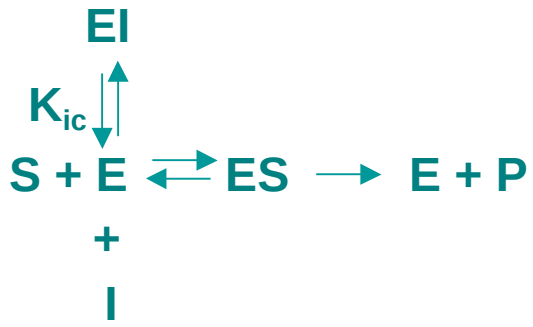




Competitive Inhibition

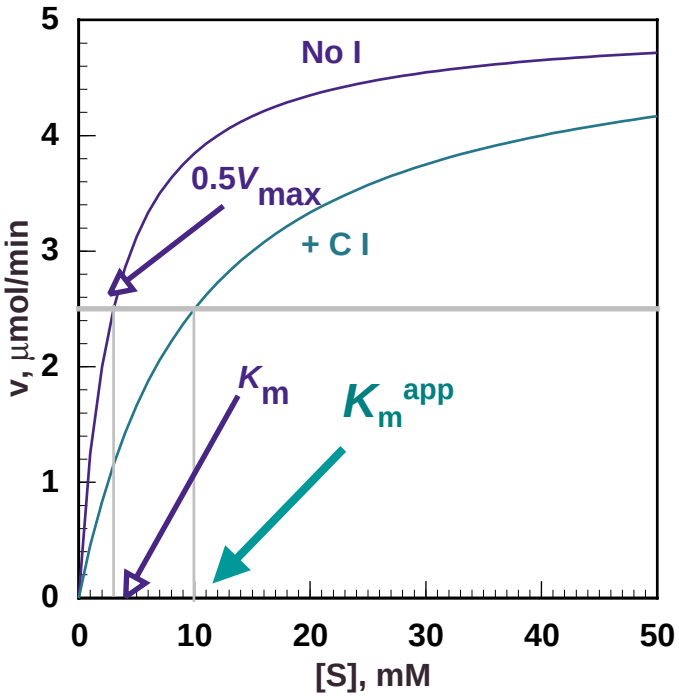
Competitive



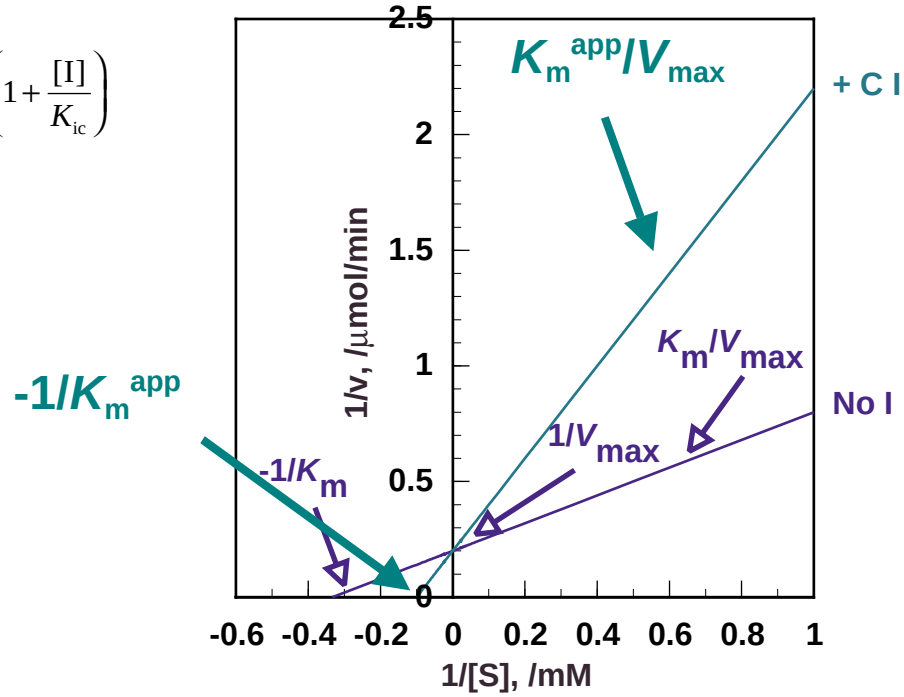


$$v = \frac{V_{max}[S]}{K_m + [S]} \qquad v = \frac{V_{max}[S]}{\alpha K_m + [S]}$$

$$\frac{1}{v} = \frac{K_m}{V_{max}}\frac{1}{[S]} + \frac{1}{V_{max}} \qquad \frac{1}{v} = \frac{\alpha K_m}{V_{max}}\frac{1}{[S]} + \frac{1}{V_{max}}$$

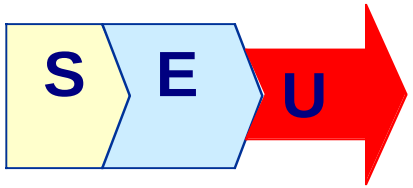


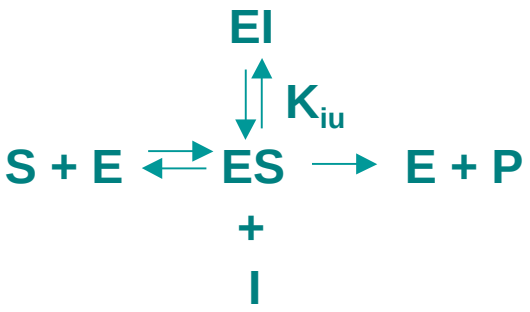
$$\alpha = \left(1 + \frac{[I]}{K_{ic}}\right)$$



Uncompetitive Inhibition

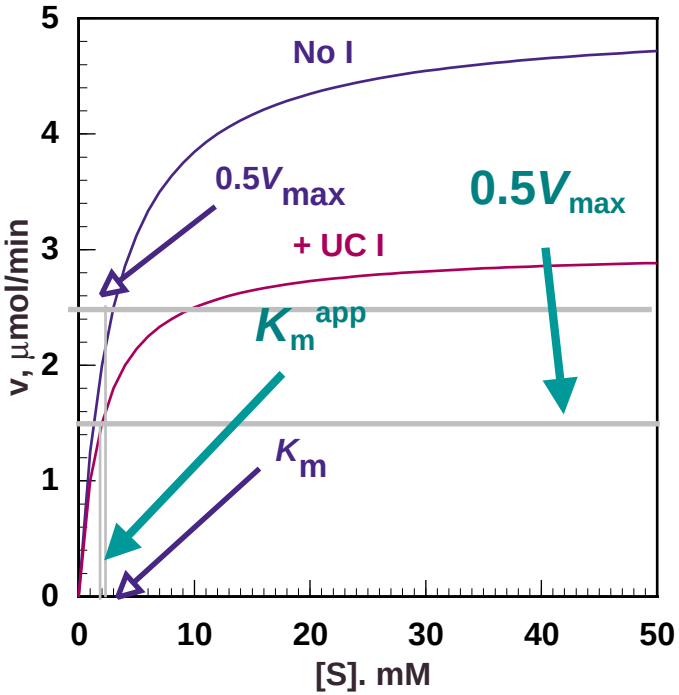
Uncompetitive (catalytic)



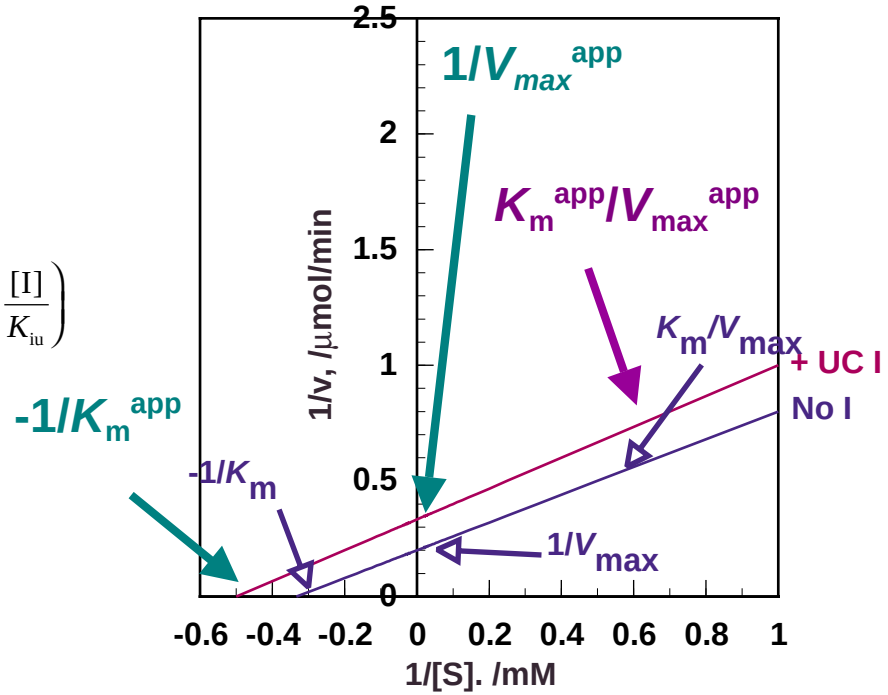


$$v = \frac{V_{max}[S]}{K_m + [S]} \qquad v = \frac{V_{max}[S]}{K_m + \alpha'[S]}$$

$$\frac{1}{v} = \frac{K_m}{V_{max}}\frac{1}{[S]} + \frac{1}{V_{max}} \qquad \frac{1}{v} = \frac{K_m}{V_{max}}\frac{1}{[S]} + \frac{\alpha'}{V_{max}}$$

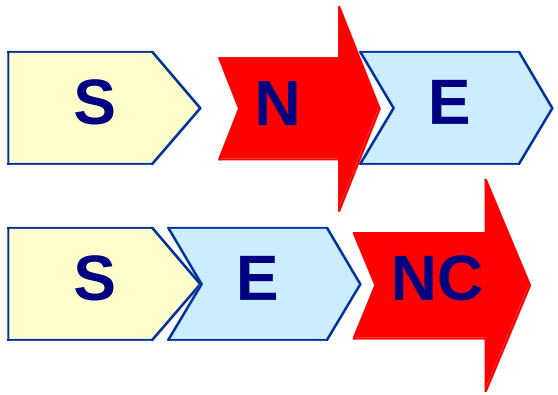


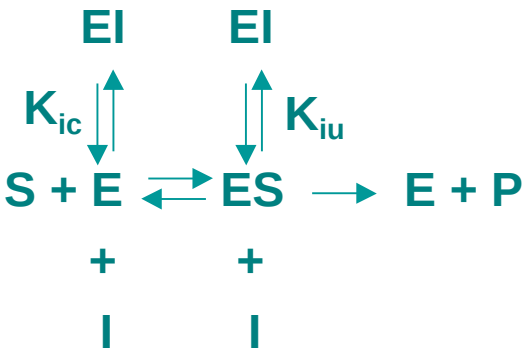
$$\alpha' = \left(1 + \frac{[I]}{K_{iu}}\right)$$



Noncompetitive Inhibition

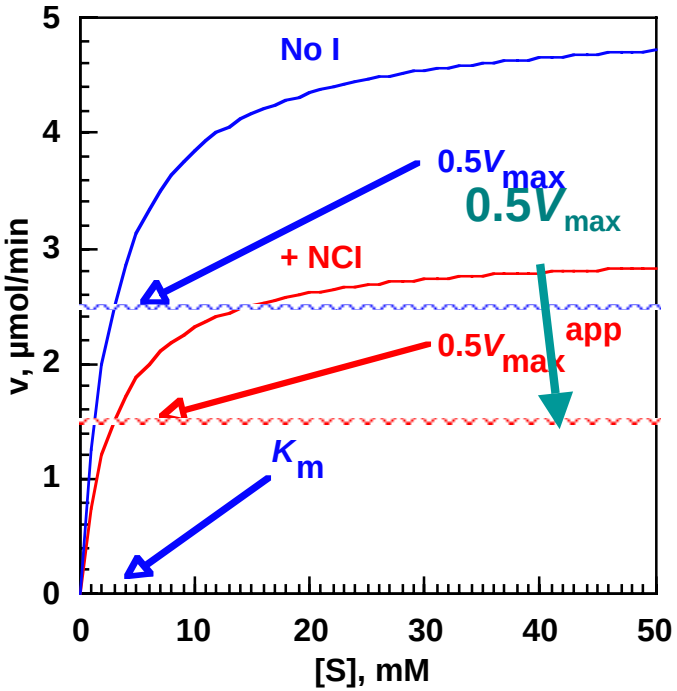
Noncompetitive (mixed-type)





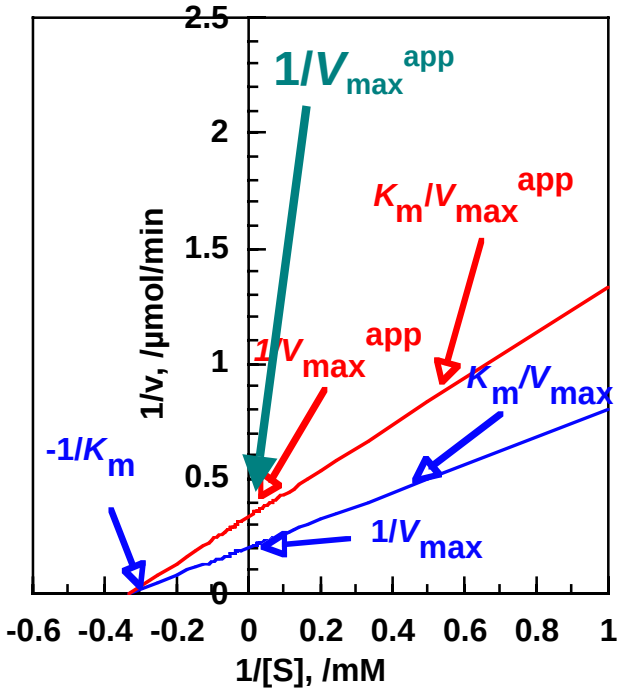
$$v = \frac{V_{max}[S]}{K_m + [S]} \qquad v = \frac{V_{max}[S]}{\alpha K_m + \alpha'[S]}$$

$$\frac{1}{v} = \frac{K_m}{V_{max}}\frac{1}{[S]} + \frac{1}{V_{max}} \qquad \frac{1}{v} = \frac{\alpha K_m}{V_{max}}\frac{1}{[S]} + \frac{\alpha'}{V_{max}}$$



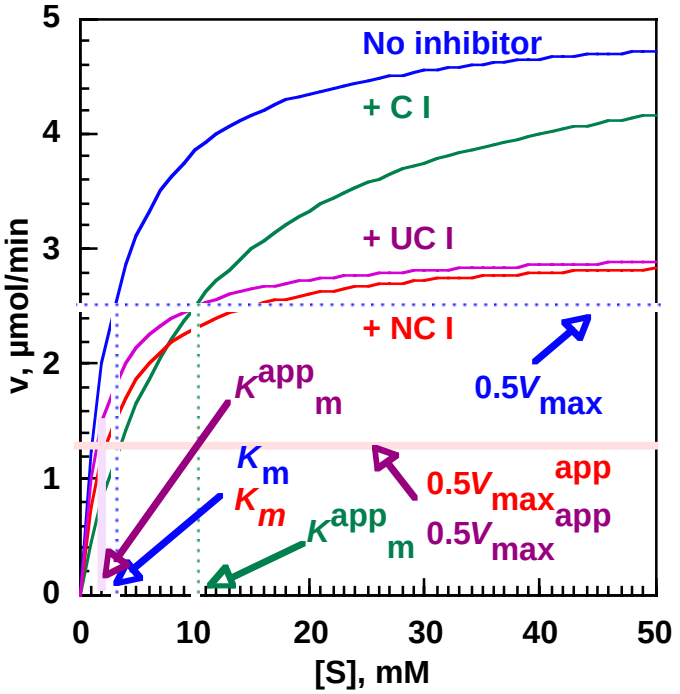
$$\alpha = \left(1 + \frac{[I]}{K_{ic}}\right)$$

$$\alpha' = \left(1 + \frac{[I]}{K_{iu}}\right)$$



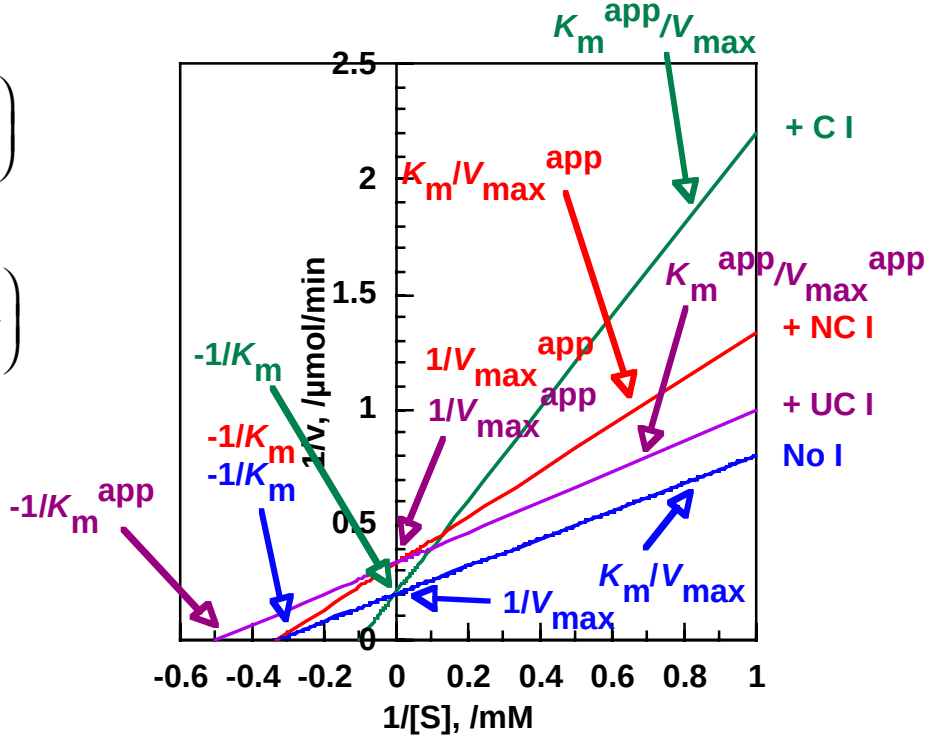
Enzyme Inhibition Summary

$$v = \frac{V_{max}[S]}{K_m + [S]} \qquad v = \frac{V_{max}[S]}{\alpha K_m + \alpha'[S]} \qquad \frac{1}{v} = \frac{K_m}{V_{max}}\frac{1}{[S]} + \frac{1}{V_{max}} \qquad \frac{1}{v} = \frac{\alpha K_m}{V_{max}}\frac{1}{[S]} + \frac{\alpha'}{V_{max}}$$



$$\alpha = \left(1 + \frac{[I]}{K_{ic}}\right)$$

$$\alpha' = \left(1 + \frac{[I]}{K_{iu}}\right)$$



Neat or what?