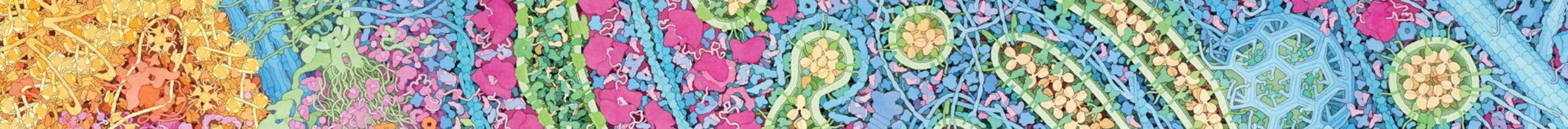


Playtime with Enzymes: Making Student Thinking Visible





Ruth Hutson, MSSE



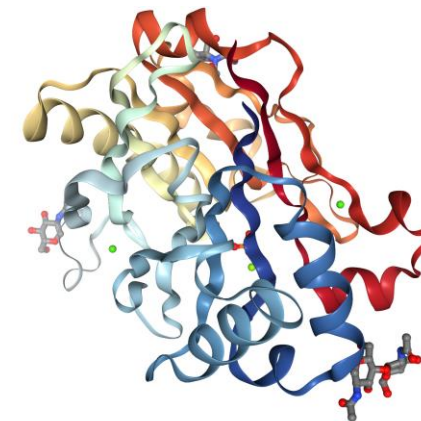
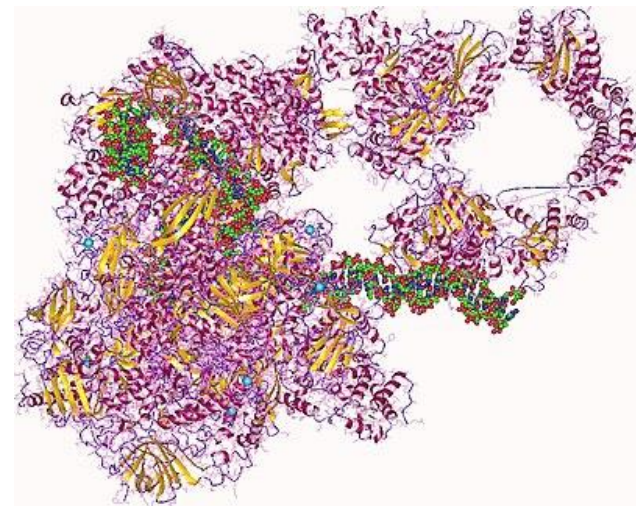
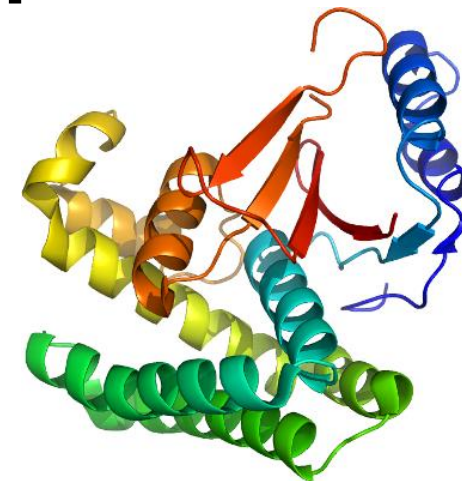
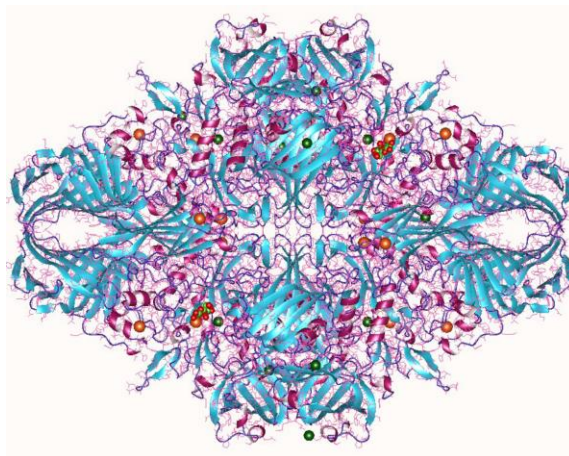
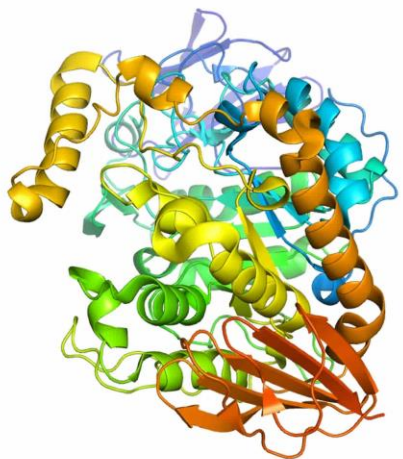
Who's Here

- Middle School, High School, Post-secondary
- Rural, Suburban, Urban
- Biology, AP Biology, Anatomy and Physiology, Other
- Where are you in your course?

Workshop Learning Goals

- Identify and investigate the role of enzymes.
- Compare and contrast catabolism with anabolism.
- Explore several case studies and use physical models to explain what is happening at the molecular level.
- Have fun!

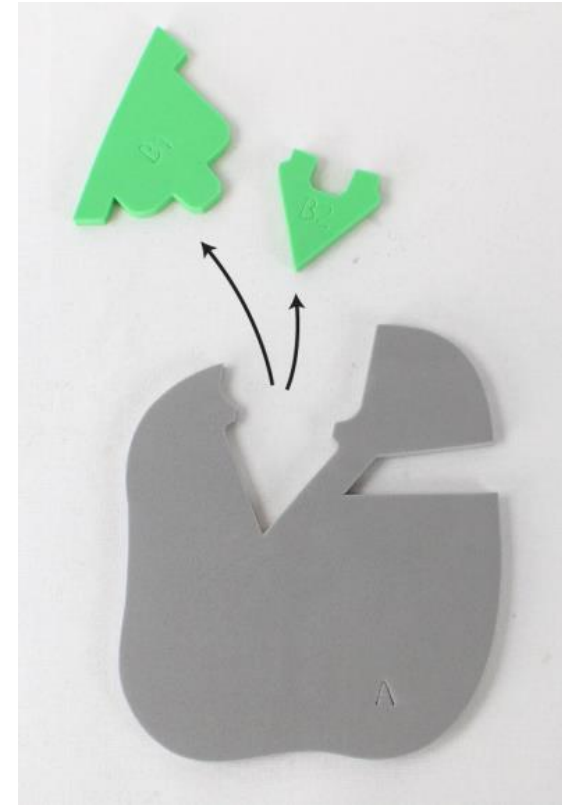
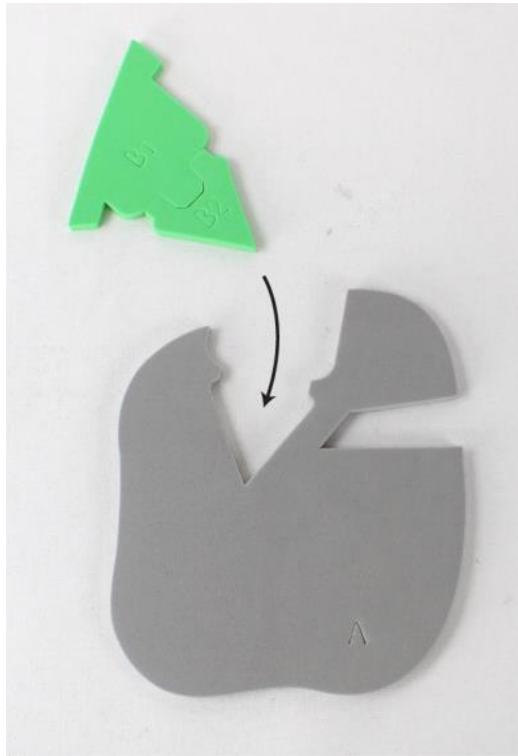
What Enzymes do You Use as Examples?



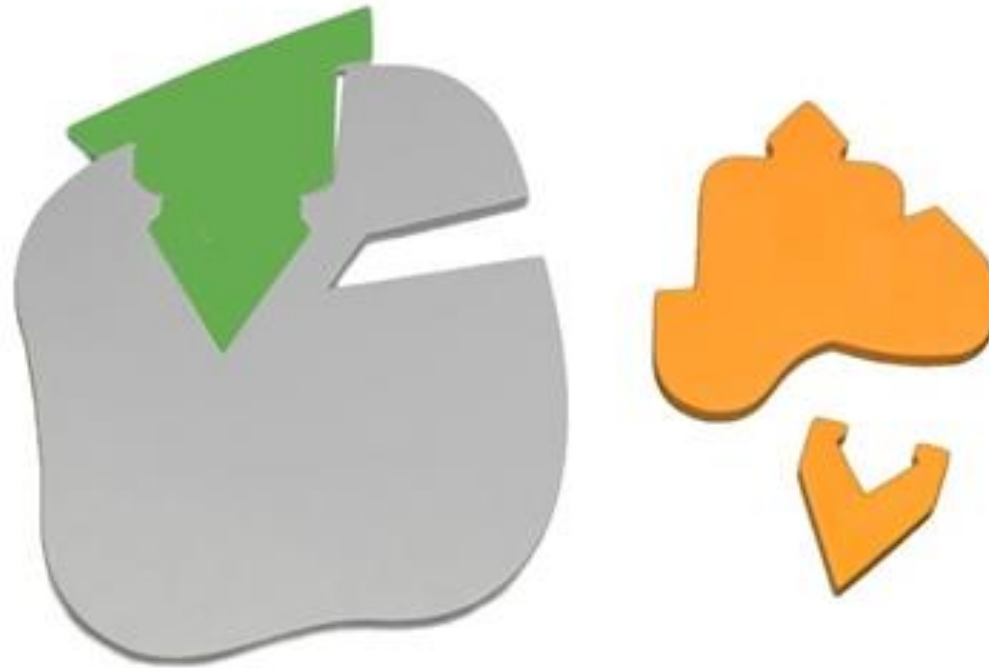
Identify the enzyme, active site, and substrate.



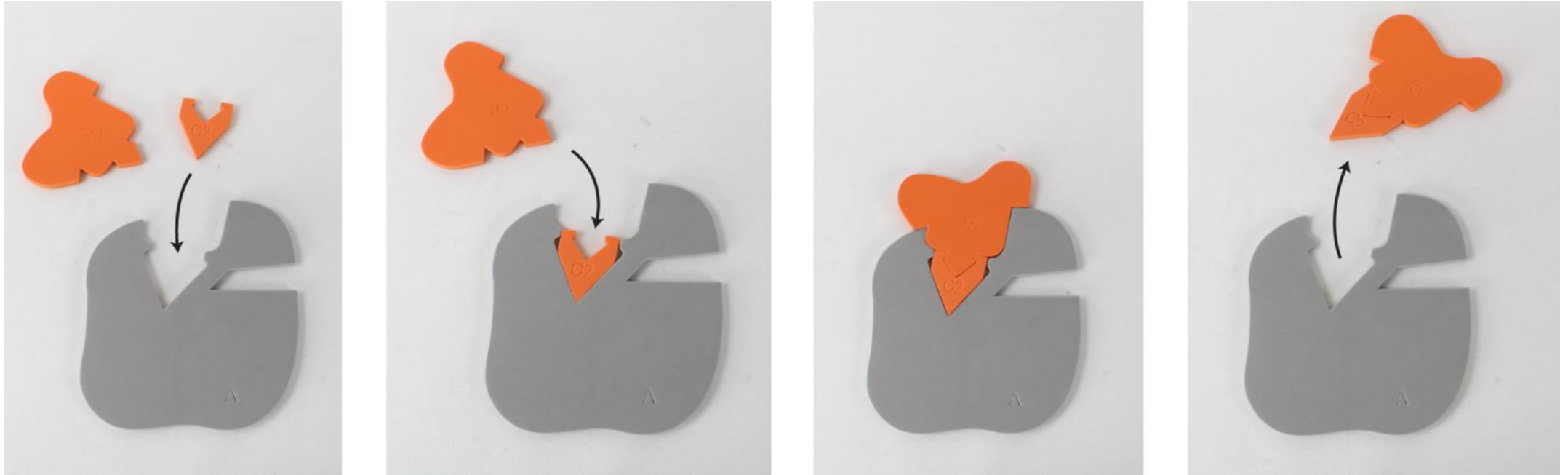
Modeling Enzyme Action: Catabolism



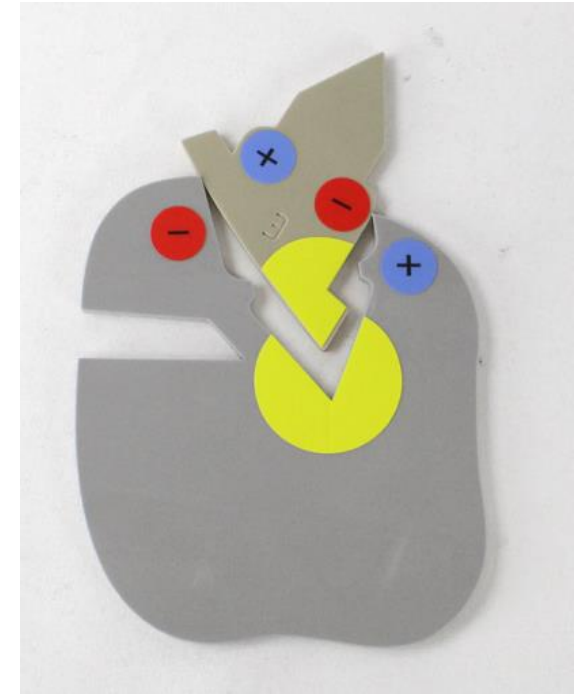
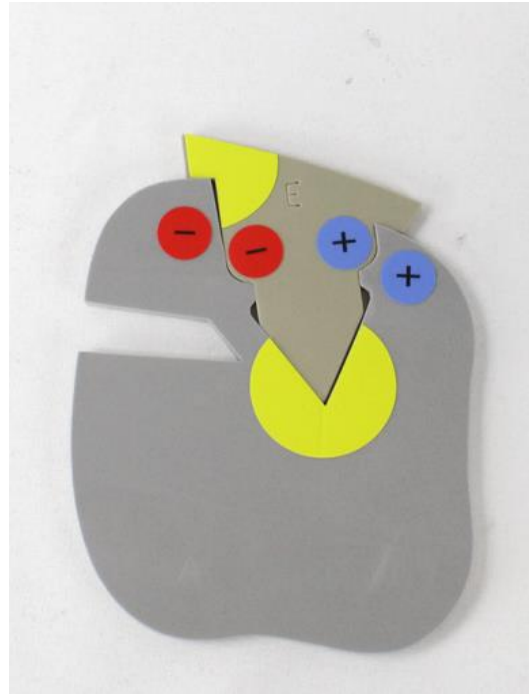
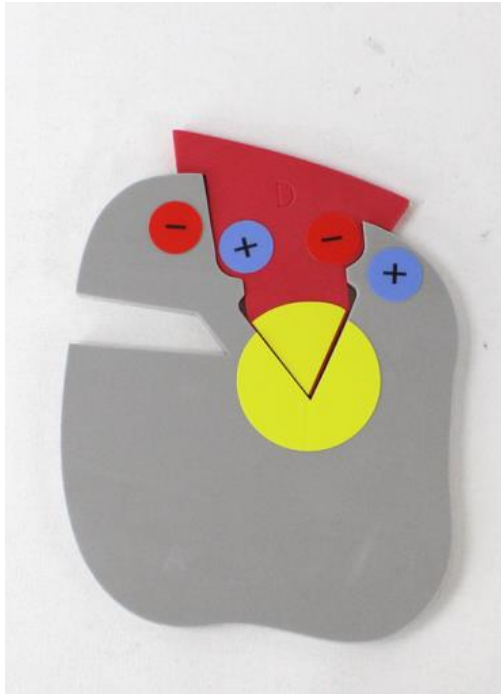
Induced Fit Model of Enzyme Action



Modeling Enzyme Action: Anabolism



Modeling Enzyme Action: Specificity



Modeling Inhibition

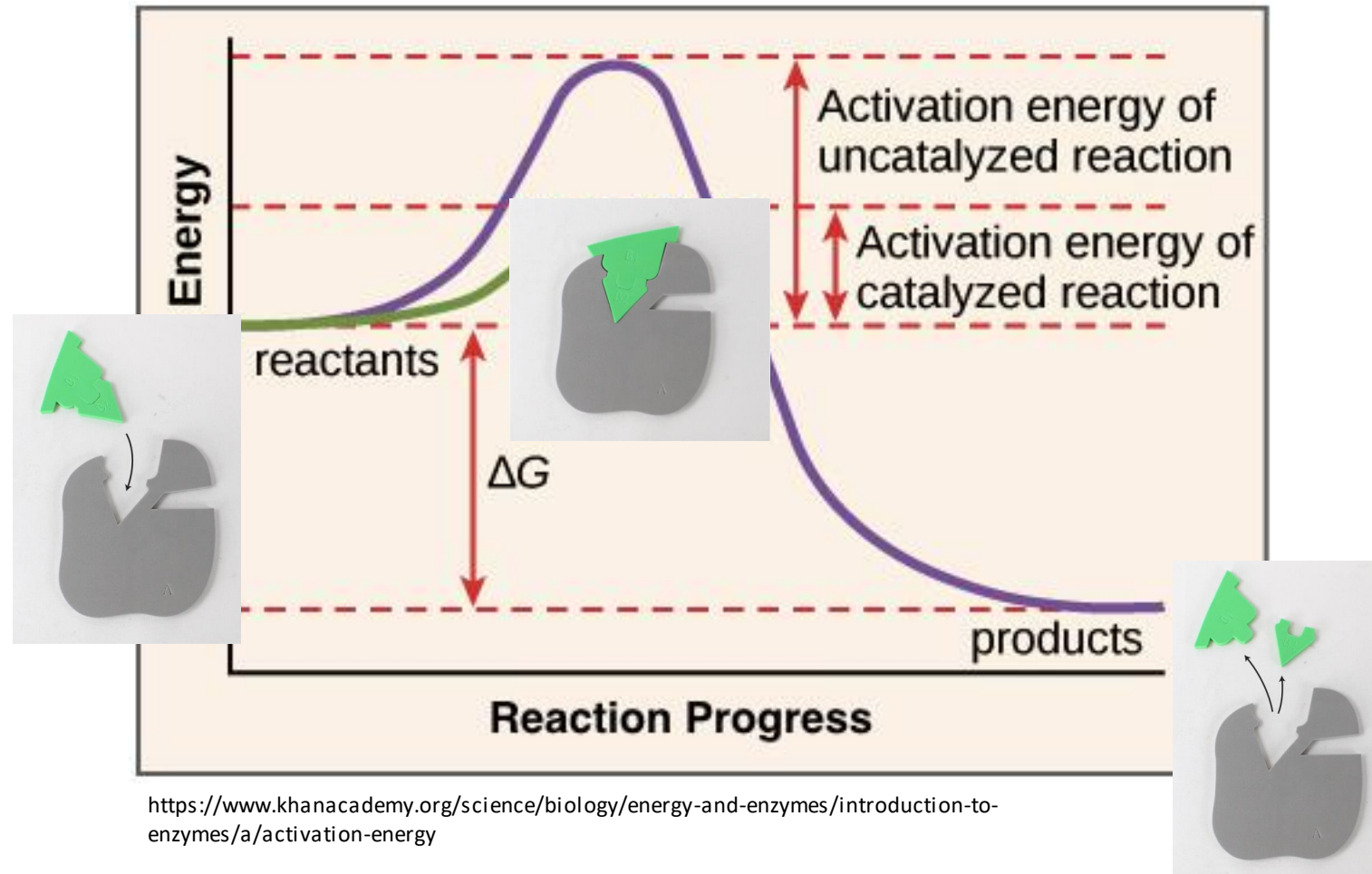


Competitive Inhibition

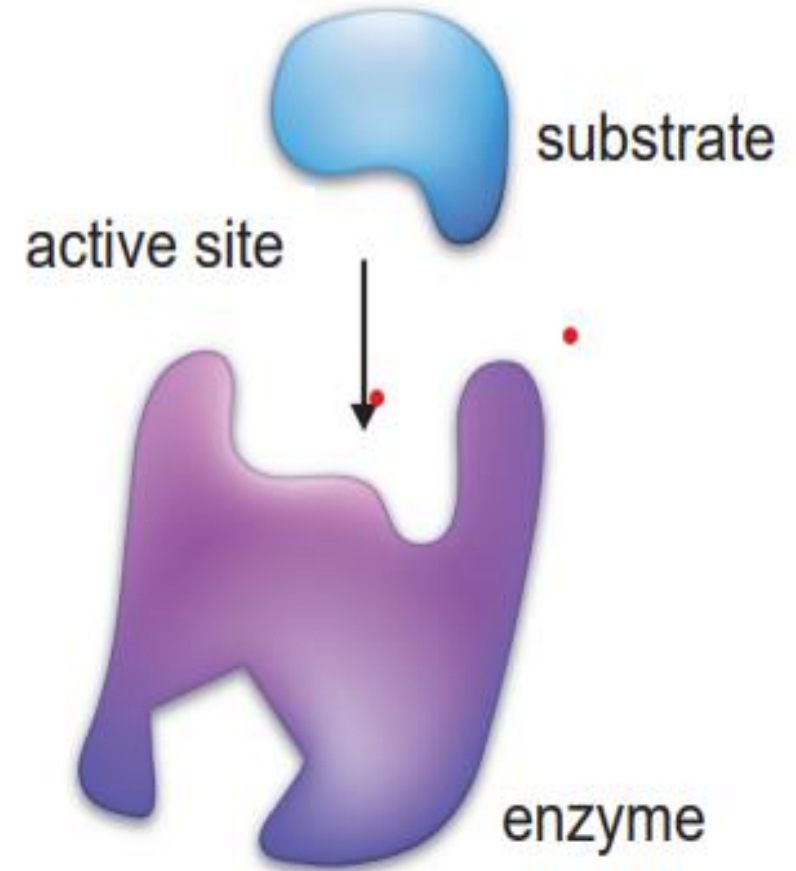


Noncompetitive Inhibition

Modeling Enzyme Action: Activation Energy



Assessment: After examining the model of the enzyme, design a competitive or non-competitive inhibitor for the enzyme. Explain how its action would inhibit the substrate binding to the enzyme.



Workshop NGSS Connections

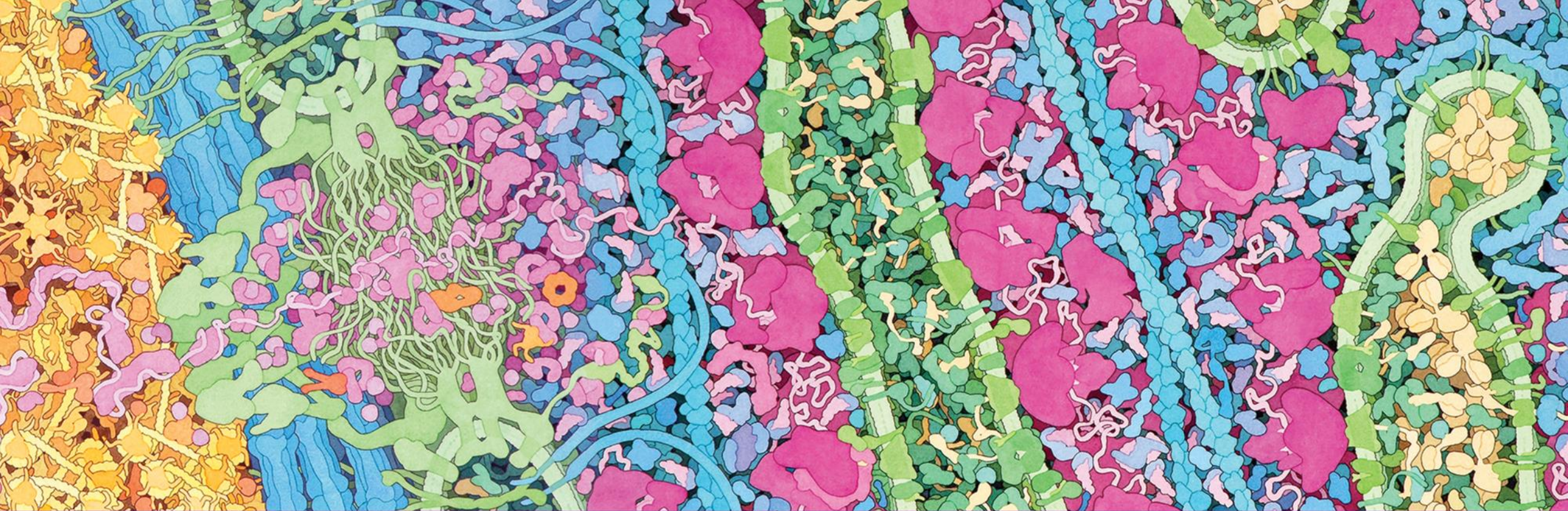
(and/or other applicable standards)

SEPs	CCCs	DCIs	TEKS
Planning and Carrying Out Investigations	Systems and System Models	HS-LS1-2	Student Expectation-B2.E
Developing and Using Models	Stability and Change	HS-LS3-2	Student Expectation B.9C
Asking Questions (for science) and Defining Problems (for engineering)	Cause and Effect: Mechanism and Explanation		

We value your opinion!
Let us know what you
think.

Scan the QR
Code and
complete this
short survey.





3d molecular
designs

Transforming Science Learning