

In-class Activity: HIV Protease Proteopedia Assignment

- Key Points
 - Exploration of protein structure and function
 - Introduction to protein visualization and analysis
 - Review levels of protein structure, structure determination, and stabilization of protein structure.
 - Apply class material to a biochemical problem

You are going to explore the basic structure of HIV protease using Protopedia. Protopedia is like Wikipedia, but for protein structures. Protopedia has a short description of the structure of HIV protease along with green links that change the structure of HIV protease to highlight specific characteristics of the protein.

- 1) Go to http://www.proteopedia.org/wiki/index.php/HIV-1_protease
- 2) Read the four narrative paragraphs describing the structure of HIV protease.
- 3) Rotate the structure of HIV protease on the right of the page. Look at the dimer interface and the orientation of the two subunits.
- 4) Click the green links in the narrative text and watch how the structure of HIV changes.
- 5) Answer the following questions about the structure and properties of HIV protease.
 - a. Where in the structure of HIV protease does saquinivir bind?
 - b. Would you expect the Asp-Thr-Gly residues in catalytic triad of HIV to be completely conserved? Why?
 - c. Why is the flap region of the protease likely not stabilizing to HIV protease dimerization?
 - d. When the video shows the flaps on HIV protease moving, how was this video created? Have scientists actually visualized the movement of the flaps on HIV?
- 6) Upload your answers to Moodle. Copy the answers directly into the answer textbox on Moodle.