

### Bonus Project

Due: Monday, Nov. 29 by 12pm

**Objective:** To explain the function of a biological molecule using molecular visualization.

### Project

The goal of this bonus project will be to create a “Biomolecular Art Gallery” for display during the last week of class and during finals. Students will create mounted, printed visuals of a particular protein or other biomolecule, with a short description in the form of a caption. Each project should adhere to the following guidelines:

1. The subject matter should be obtained as a downloaded structure file from the Protein Databank. You should search for something that is interesting to you. Some ideas might be found by looking through the course text, especially the panels and figures, recent news articles, or by visiting the following “Molecule of the Month” site at the Protein Databank:

[http://www.pdb.org/pdb/static.do?p=education\\_discussion/molecule\\_of\\_the\\_month/index.html](http://www.pdb.org/pdb/static.do?p=education_discussion/molecule_of_the_month/index.html)

2. The visual should involve a picture rendered in Pymol or a similar visualization program. *The visual should represent the molecule in a manner conducive to understanding its function.* For example, a binding site could be highlighted in a specific color, specific interacting amino acids could be shown in a different representation, the geometry of a surface could be shown to elucidate the nature of a catalytic pocket, or a hinge region in a protein could be highlighted.
3. A brief caption at the bottom of the piece should provide the name of the molecule in bold, followed by a *short* paragraph describing: what organisms it appears in, what its function is, and *how* it functions (i.e., what drives the important interactions at hand). The end of the caption should also include *your name* and the *PDB ID* for the structure.
4. The picture and caption should be mounted onto a paper/cardboard picture mounting frame. Mounting boards can be found at any art store. The entire piece should be lightweight, solid as a single unit, and around 11” x 14” in size. The pieces will be displayed in the Engineering II third floor hallway.

### Evaluation

Projects will be evaluated on the basis of (a) use of different display modes and customization of the molecular visual to illustrate function, (b) understanding of function as described in the caption, and (c) professional and artistic appearance of the final result. Projects meeting this criterion will replace a student’s lowest quiz grade by 100%.