

Drug Design Project: Information and Tips

Part of your grade in Drug Design courses will come from a development of a “Drug Design Project”. Students who will take the second quarter of Drug Design in Spring 2009 will be able to take their project to a completion and will present their projects during the annual Drug Design Poster Event. Students taking Chem 162 during the Winter 2009 will be able accomplish three important milestones toward completing the Project. Part of your grade will be based on your success in completing these milestones.

The milestones that you are expected to complete during the Winter 2009 are:

- 1) Select and characterize a disease that you plan to cure with a drug that you could design
- 2) Identify and provide validation for a molecular target relevant to the disease you selected. Note that you are allowed to embark into “chemical genomics” pathway in case there are no obvious targets. The latter approach still requires a thorough understanding of the disease and if you go with “chemical genomics” route, you should provide a comprehensive description of the biology and biochemistry of the disease
- 3) Propose an approach to identify lead compounds for development of a drug for the disease you selected. If you have a validated target, this typically means development of a specific biochemical, cell-based, or *in silico* assay. If you follow “chemical genomic” route, this would mean development of high-throughput cell-based screening methods.

You will receive a more detailed guidance on how to meet these four milestones throughout the quarter. You are expected to turn in your work on each milestone by the due dates specified; you’ll automatically receive 3 points per each milestone if you submit a significantly developed work by the due date. You will earn extra 5 points if you submit all milestones by the due date. You will receive feedback on your ideas that will help you to refine your proposal and you will submit the refined proposal on how to meet these four milestones at the end of the quarter. Each milestone in your refined proposal is worth 12 points. In summary, you could earn 50 points if you submit reasonably well developed plans by due dates and will resubmit perfect proposal by the end of the quarter.

What is expected in your final write-up? A written report (under five to six pages excluding references), with a title, references, graphics if helpful in explaining your ideas, and structures of compounds. Sections should include

- a background, in which you describe why there is a need for what you are proposing,
- the present state of the art, in which you outline what is known about the biology of the disease and discuss current approaches
- the validation, in which you discuss the target validation or approaches to one could take to find the target
- your approach, to identify lead compounds that can be further modified to design a better drug. This section needs to be fairly detailed. Make sure to explain your rationale (why this will work) and method (e.g. the principle of your assay).
- your self-criticism, in which you discuss potential up- and down-sides of your plan. Focus on material relevant to these four milestones and do not concern yourself with topics such as drug metabolism or side effects, which will be covered in the winter quarter class?