Learning Goal i.: Find, use and present relevant primary literature, protein sequences, structures and bioinformatics tools

Learning Objective	*Excellent*	*Acceptable*	*Poor*	*Unacceptable*
Find and use appropriate literature to illustrate the big picture aspects of the work	Identifies big picture of field or component of study background, states focus of the study, provides significance of study.	Funnel approach applied to intro but one or two aspects missing (i.e. broad field or significance, etc.)	Most components of funnel approach present, but not presented in logical order.	Funnel approach not taken nor are the components presented. Lacks enough information for reader to understand current field or
Find and use appropriate literature to document specific background to the enzyme and their hypothesis	Introduces model system, describes relevant previous study(ies) and their findings pertaining to focus of the study. Not a history section.	Introduces model system but missing relevant background to current study or does not relate to current study or is overly long with non-essential background.	Introduces model system but does not provide relevant background to current study.	Does not introduce model system or relevant background.
Use appropriate data bases to obtain sequence information and analyze using Clustal Omega	Rationalizes choice of sequences, justifies number of sequences, illustrates trends in alignment appropriately, discusses evolutionary relationships of sequences	Lacks 1 or 2 points of excellent	Runs Clustal omega but does not select sufficient sequences to draw conclusions	No rationale to selection of sequences, lacks 3-4 points of excellent
Use the protein data base to obtain 3D coordinates for a protein and use Pymol or other visualization tools to illustrate key features of the protein and their hypothesis	Produces several visually effective pictures clearly illustrating appropriate different aspects of structure-function relationships	Pictures show basic ideas but not as effective as excellent	Pictures lack clarity or necessary detail	Minimal image of protein. No detail or insight into structure-function relationships shown
Use appropriate bioinformatics tools to design primers for mutagenesis	Accurately designs primers accounting for codon usage, GC Clamp, & Tm	Designs primers but does not give appropriate detail in excellent answer	Designs primers but does not take into account codon usage etc	Mistakes in primer design, wrong codon, insufficient length etc
Depending upon format of presentation: General flow/organization. Grammar/spelling/general attention to detail	Logical flow from global to particular study point of view. Engaging writing style. Clearly connects ideas.	Solid order & structure. Inviting writing style. Effectively moves the reader through the text.	Organization is functional; some order lacks logical pattern and structure.	Lacks cohesive structure, difficult to follow.
Team Work and Peer Evaluation	Clearly engaged in and contributing to all aspects of the project, discussions and presentations	Contributes to many but not all aspects of the project	Contributes to limited aspects of the projects	Minimally, if at all, contributes.