

Guide for Lab Report #1 (250 points)

Experiments

Week #1 Polymerase chain reaction (ignore Sterile Technique and Use of Pipettors)

Week #2 Analysis of GFP coding sequences produced by the polymerase chain reaction

Week #3 Assembly of a recombinant plasmid encoding a maltose-binding protein-GFP hybrid protein

Week #4 Small-scale preparation of plasmid DNA

Week #5 Analysis of restriction digests by agarose gel electrophoresis

Formatting (15 points total)

- Prepare the report with a word processor (5 points)
- Double spaced (3 points)
- Numbered Tables and Figures properly referenced in the text (3 points)
- Name, section, date, in the header of each page; page number at the bottom (2 points)
- Do not use the pronoun "I" (2 points)

Title (5 points)

- Title must be a single descriptive sentence

Introduction (30 points total)

- Very briefly describe:
 - the end purpose of the work (10 points)
 - concepts and techniques used (10 points)
 - results (10 points)
- See page 5 of the manual for more information

Methods (25 points total)

- Briefly describe methods used with references to page numbers in the manual for greater detail (15 points)
- Include all deviation from what is described in the manual whether deliberate or accidental (10 points)

Results (75 points total)

- Introductory sentence for each experiment including its purpose (15 points)
- Succinct descriptions of pertinent results for each experiment (30 points)
- Week #2 (10 points)
 - Gel image with descriptive caption and products and molecular weight standards labeled
 - Table of gel results with descriptive caption
- Week #3 (10 points)
 - Table with descriptive caption should include:
 - Number of colonies obtained from the ligation reactions (with and without insert)
 - Fraction of green colonies in each case
 - Number of colonies obtained with the positive control DNA
 - Calculated transformation efficiency for successful GFP transformants
- Week #5 (10 points)
 - Gel image with descriptive caption and products and molecular weight standards labeled
 - Table of gel results with descriptive caption

Discussion (100 points total)

- For all relevant experiments, detail your logic in drawing your conclusions, what the data suggest, what the expected results were, how the predicted results compared with the actual results, and why they may have differed (45 points)
- Describe any flaws with the experiments and how you might solve them by proposing future experiments or modifications (10 points)
- Week #2 (10 points)
 - Analyze PCR products in each lane used including explanations for unexpected results
- Week #3 (15 points)
 - Analyze transformation results
 - Address the effectiveness of the method and its limiting factors
- Week #5 (20 points)
 - Analyze products in each lane used including explanations for unexpected results
 - Describe your predicted structure of the plasmid encoding the in-frame MBP-GFP fusion protein
 - Describe the predicted structure of the plasmids harbored by the green colonies