

# SCHEDULE OF EXPERIMENTS

---

---

**ALL OF THE CLASSES WILL BEGIN WITH AN INTRODUCTION INTO THE  
EXPERIMENTAL DESIGN AND UNDERLYING HYPOTHESES**

**Basic Molecular Biology** 1

**Guidelines for Working in the Lab**

A. SAFETY RULES	15
B. LIQUID MEASUREMENT UNITS	17
C. PIPETTOR OPERATION	18
D. BASIC DILUTIONS	21
E. SERIAL DILUTIONS	24
F. INSTRUCTIONS FOR DISPOSAL OF LABORATORY WASTE	26

**JAN 5, 2011 FIRST DAY OF CLASS**

- A. COURSE OVERVIEW
- B. SAFETY LECTURE/VIDEO
- C. ANIMAL CARE LECTURE
- D. DETERMINE LAB GROUPS AND CHECK OUT EQUIPMENT

---

**JAN 7, 2011**

A. PIPETTING	29
B. DILUTIONS	29
C. BACTERIOLOGICAL TECHNIQUES: STREAKING FOR SINGLE COLONIES ON AGAR PLATES	32
D. CALIBRATION OF PIPETTEMEN	34

**JAN 12, 2011**

HANDOUT

**ANALYSIS OF MURINE LYMPHOCYTE POPULATIONS**

- A. INTRODUCTION TO LYMPHOCYTE BIOLOGY
- B. REMOVE THYMUS, SPLEEN AND BONE MARROW
- C. ISOLATE LYMPHOCYTE POPULATIONS

## SCHEDULE OF EXPERIMENTS

---

**JAN 14, 2011** HANDOUT

- A. PREPARE THYMOCYTE POPULATIONS FROM ANALYSIS BY FLOW CYTOMETRY

**JAN 19, 2011** HANDOUT

- THYMOCYTE POPULATIONS AND LIFE SPAN
- ANALYZE THYMOCYTES BY FLOW CYTOMETRY.

**JAN 21, 2011** HANDOUT

- A. INTRODUCTION TO CELL LIFE AND CELL DEATH
- B. IN VITRO LIFESPAN OF THYMOCYTES

---

**JAN 26, 2011**

- A. INTRODUCTION TO BIOLUMINESCENCE 35
- B. COURSE OBJECTIVES 37
- C. PART 1 ISOLATION OF CHROMOSOMAL DNA FROM *VIBRIO FISCHERI* 40

---

**JAN 28, 2011**

- A. PART 2: ISOLATION OF CHROMOSOMAL DNA FROM *VIBRIO FISCHERI* 45

---

**FEB 2, 2011**

- A. SPECTROPHOTOMETRIC ANALYSIS OF *VIBRIO* DNA 47
- B. *SAL* I RESTRICTION DIGESTION OF *VIBRIO FISCHERI*

## SCHEDULE OF EXPERIMENTS

---

AND PGEM DNA 50

---

### FEB 4, 2011

AGAROSE GEL ELECTROPHORESIS OF *SAL* I RESTRICTION  
DIGEST AND ESTIMATE OF DNA QUANTITIES FROM GEL 55  
SET UP LIGATIONS OF *VIBRIO FISCHERI* DNA  
WITH PGEM DNA 62

---

### FEB 9, 2011

- A. CHECKING THE SUCCESS OF THE LIGATION REACTIONS  
BY GEL ELECTROPHORESIS 65
- B. TRANSFORMATION OF COMPETENT *E. COLI* DH5 $\alpha$  CELLS  
WITH RECOMBINANT PLASMIDS 67
- 

### FEB 11, 2011

- A. COUNT COLONIES AND RE-STREAK ANY GLOWING  
COLONIES FROM ORIGINAL TRANSFORMATION 71
- 

### FEB 16, 2011

- A. AMPLIFICATION OF *LUXAB* GENES FROM *VIBRIO FISCHERI*  
DNA BY THE POLYMERASE CHAIN REACTION (PCR) 75
- B. START OVERNIGHTS FOR EXPERIMENT TO SIZE AND  
SEQUENCE *VIBRIO FISCHERI* *SAL* I INSERTS 77

# SCHEDULE OF EXPERIMENTS

---

---

## FEB 18, 2011

- A. CHECKING THE SUCCESS OF THE PCR REACTION BY GEL ELECTROPHORESIS 85
- B. ALKALINE LYSIS MINIPREP: PURIFICATION OF PLASMID DNA 86
- C. RESTRICTION DIGESTS WITH *SAL* I 91
- D. CLEAN UP PCR PRODUCTS 92

---

## FEB 23, 2011

- A. RUN GEL OF THE PRODUCTS OF THE *SAL* I RESTRICTION DIGESTS 95
- B. RESTRICTION DIGEST OF *LUX* PLASMIDS, PCR PRODUCTS, AND CLONING VECTOR PUC18 FOR SUBCLONING *LUXAB* 97

---

## FEB 25, 2011

- A. AGAROSE GEL ELECTROPHORESIS OF *ECOR*V/*SAC*I DIGESTS FROM PREVIOUS LAB 99
- B. CUT BAND OUT OF GEL AND PURIFY DNA FROM AGAROSE FOR CLONING 100

---

## MAR 2, 2011

- A. QUANTIFICATION OF DNA FROM A GEL 107
- B. SUBCLONING *LUXAB* INTO A PLASMID VECTOR-

## SCHEDULE OF EXPERIMENTS

---

LIGATION	108
----------	-----

---

### **MAR 4, 2011**

A. MAKING COMPETENT DH5 $\alpha$ CELLS	115
--	-----

B. TRANSFORMATION OF LIGATION PRODUCTS INTO DH5 $\alpha$ CELLS	116
---	-----

---

### **MAR 9, 2011**

A. SCREENING FOR CLONES CONTAINING <i>LUXAB</i> BY ADDING EXOGENOUS ALDEHYDE	119
---	-----

---

### **MAR 11, 2011**

FINAL EXAMINATION