In order to generate knowledge in biology, we need to understand the techniques that create information in addition to comprehending the work that has been done previously. Therefore, in addition to learning laboratory techniques, we will learn to review primary scientific literature. Every day will be a combination of multiple laboratory and classroom sessions that will help develop students’ overall scientific abilities.

The first week of the course will predominantly be spent introducing students to a wide array of techniques. During the second week, students will utilize these techniques to pursue scientific questions of their own design. The program will end with students presenting their work at a research symposium open to friends and family.

**Daily Program Schedule***

**Day 1: Monday, July 17**
- **Morning** - Lab: Bacterial Culture  
  Class: Scientific Measurement and the Molecules of Life
- **Afternoon** - Class: Introduction to primary research literature  
  Lab: DNA extraction and Polymerase Chain Reaction

**Day 2: Tuesday, July 18**
- **Morning** - Lab: Agarose Gel Electrophoresis  
  Class: Gene Expression and Cloning
- **Afternoon** - Lab: Mammalian Tissue Culture  
  Class: Begin to go over primary paper

**Day 3: Wednesday, July 19**
- **Morning** - Lab: Transfection  
  Class: Primer Design
- **Afternoon** - Lab: Protein extraction and Polyacrylamide Gel Electrophoresis

**Day 4: Thursday, July 20**
- **Morning** - Lab: RNA extraction and reverse transcription
- **Afternoon** - Lab: PCR and Fluorescence Microscopy

**Day 5: Friday, July 21**
- **Morning** - Lab: Western Blotting
- **Afternoon** - Experimental Design for Group Projects

**Saturday, July 22 – Sunday, July 23:** Weekend Activities TBA

**Day 6: Monday, July 24**
- All day - Group Cloning Projects Begin / Scientific Paper Review
Day 7: Tuesday, July 25
All day- Laboratory work / Scientific Paper Review

Day 8: Wednesday, July 26
Morning- Journal Club
Afternoon- Laboratory Work

Day 9: Thursday, July 27
All day- Laboratory Work / Presentation Prep

Day 10: Friday, July 28
Morning- Final Data Acquisition / Presentation Prep
Afternoon- Research Symposium

*Please note that the schedule details are subject to change.*