# BIO 311C Spring 2010

#### **Final Exam**

Date:Wednesday 12 MayTime:7:00 - 10:00 p.m.Location:CMA A2.320

The Final Exam will be comprehensive, but with emphasis on the subject matter covered since Exam 3.

Friday's lecture period will be devoted to a review of topics prompted by student questions.

Lecture 39 – Wednesday 5 May

## **FINAL EXAM**

The Final Exam will contain ~ 60 multiple choice questions and 4 - 6 additional questions. i.e. It will be approximately 50% longer than the previous exams.

You will be allowed the full 3 hours of the exam period to answer the questions.

Please inspect final exams from previous years (on the course web site) to get an idea of the length of the Exam and the kinds of questions that may be asked.

#### Review

#### **Steps in the Synthesis of Enzymes of a Metabolic Pathway**



Note: These enzymes are produced from information of genes that are adjacent to each other.

#### **Unit of DNA Expression**



Regulation of the rate of transcription of genes tha code for the enzymes used in the metabolic pathway for the synthesis of the amino acid trp.



#### Expression of the *trp* Operon in Prokaryotes



A unit of regulation of DNA expression in prokaryotes is called the operon.

In many operons, a segment of DNA adjacent to the promoter, or between the promoter and the unit of transcription, is used to regulate the level of expression of the unit of transcription. That regulatory segment of DNA is called the operator.

#### Synthesis of trp Repressor Protein



At a DNA site, completely distinct from the site of the *trp* operon, transcription and translation of a gene called *trp*R occurs at a low level all the time, so trp repressor is always present in the cell at low levels. Thus, there is no operator site on the trpR operon.



## The repressor protein is inactive except in the presence of tryptophan (trp). It becomes active when bound to trp, which serves as an allosteric activator.

### **Summary of Some Broad topics Covered in this Course**

- kinds of atoms and chemical bonds important in biological molecules
- structure and functions of components of prokaryotic and eukaryotic cells
- classes of molecules of central importance in living cells
- principles of chemical reactions as applied to metabolic processes
- respiration and photosynthesis
- cell communication
- information flow in cells (including regulation)
- viruses