

**Division of Life Science**  
**The Hong Kong University of Science & Technology**  
**LIFS3020**  
**Molecular & Cellular Biology II**  
**(2023)**

**1. Instructors**

<b>Instructors</b>	<b>Office</b>	<b>Extension</b>	<b>E-mail address</b>
Randy Y.C. POON (Course Coordinator)	Room 5526	x8703	rycpoon@ust.hk
Pingbo HUANG	Room 5463	x7305	bohuangp@ust.hk

**2. Teaching Assistant**

NA

**3. Meeting Time and Venue**

**Date/Time:** Monday: 16:30-17:50  
Friday: 12:00-13:20  
**Venue:** Room: 4619, Enterprise Center

**4. Course Description**

Cellular regulation is at the heart of proper function of an organism. An understanding of the molecules and pathways that ensure proper cellular regulation is fundamental in comprehending the normal physiology of the cells and the causes of various disorders. This undergraduate core course provides backgrounds and principles in various fields of cellular regulation. In-depth discussion of selected topics is also provided to give students an appreciation of the complexity and state-of-the-art of current research. Through interactive lectures, topics including signal transduction, cell adhesions, cell differentiation, cell cycle control, checkpoints, apoptosis, aging, and cancer are covered. Moreover, timely special topics in biomedical sciences are included to increase the awareness of current trends in scientific research and application.

**5. Intended Learning Outcomes**

**Course goals:** This course provides students with the knowledge of topics in the molecular basis of cellular regulation.

On successful completion of this course, students are expected to be able to:

1. Explain the fundamental principles, general approaches and complexities in the discoveries made in the field of cellular regulation.
2. Communicate effectively in writing the principles and details of the field of cellular regulation.
3. Evaluate the principles and applications of methodology and experimental design in cellular regulation and apply them to other similar areas of study.

## 6. Assessment Scheme

Students are assessed by written open-book examinations at mid-term and at the end of the course. Both short questions of analytical nature and long essay questions are included in the examination. Emphasis is placed on the genuine comprehension of the subject, organization, presentation, critical analysis, and be able to apply the principles learned to solve related problems. Effective written skills, organization, and critical analysis are expected from the students.

<u>Assessment</u>	<u>Assessing Course ILOs</u>
mid-term exam	1-3
final exam	1-3

## 7. Student Learning Resources

Lecture notes will be provided.

## 8. Teaching and Learning Activities

This course is primarily delivered through interactive lectures. Students are expected to read course materials, references, and ask questions in lectures. Through interactive discussion with the lecturers and each other, the students are able to understand the experimental approaches, methodologies, themes, and state-of-the-art development of topics in cellular regulation. Students are expected to think critically and ask questions on various aspects of the lectures. An essay-based written open-book examination at the end of the course further encourages the students to understand the principles of the subject and to apply them to solve related problems.

## 9. Course Schedule

### **Pingbo Huang:**

Feb 3	Overview of the molecular biology of cellular regulation
Feb 6	Signaling Transduction
Feb 10	Signaling Transduction
Feb 13	Signaling Transduction
Feb 17	Signaling Transduction
Feb 20	Signaling Transduction
Feb 24	Cell adhesions

Feb 27 Cell adhesions  
Mar 3 Cell adhesions  
Mar 6 Cell differentiation  
Mar 10 Cell differentiation  
Mar 13 Cell differentiation  
Mar 17 **Mid-term exam**

**Randy Y.C. Poon:**

Mar 20 Cell cycle control  
Mar 24 Cell cycle control  
Mar 27 Cell cycle control  
Mar 31 Cell cycle control  
Apr 3 Maintenance of genome stability  
Apr 7 **Public holiday**  
Apr 10 **Public holiday**  
Apr 14 Maintenance of genome stability  
Apr 17 Maintenance of genome stability  
Apr 21 Apoptosis  
Apr 24 Apoptosis  
Apr 28 Apoptosis  
May 1 **Public holiday**  
May 5 Telomere in normal replication, senescence, and cancer  
May 8 Telomere in normal replication, senescence, and cancer

NB: Since the topics are highly integrated, all the estimated time and order are approximations.