UNIVERSITI TEKNOLOGI MARA

BMS546: CELL SIGNALING AND INTERACTIONS

Course Name (English)	CELL SIGNALING AND INTERACTIONS APPROVED
Course Code	BMS546
MQF Credit	3
Course Description	This course introduces students to those conserved features that underlie many different extra- and intracellular signalling systems. Starting with an overview of cell signalling and highlighting its importance in many biological systems, the key components of extracellular and intracellular signalling mechanisms will be explored. How these components come together to create signalling pathways, which are so crucial to the survival of many living organism will also be discussed.
Transferable Skills	An ability to conduct experiments, as well as to analyze and interpret data. An ability to identify and suggest solutions to problems of related area.
Teaching Methodologies	Lectures, Lab Work, Case Study, Discussion
CLO	CLO1 Recall concepts relating to the general view of cell interactions and their importance. CLO2 Describe the basic principles and mechanisms underlying inter and intracellular interactions, and the components involved. CLO3 Illustrate and discuss steps, regulation and application of cell signalling and cell transduction including disorders associated with malfunction of signalling and transduction pathways. CLO4 Conduct experiments and analyze with a sound interpretation of the experimental results.
Pre-Requisite Courses	No course recommendations

Topics
1. 1.0 An overview of cell biology and cell interactions 1.1) 1.1 Type of interactions 1.2) 1.2 The importance of interaction in cells
2. 2.0 Intercellular Interaction 2.1) 2.1 The extracellular matrix 2.2) 2.2 Principal Mechanisms of Intercellular Interaction 2.3) 2.2.1 Intercellular messengers 2.4) 2.2.2 Gap junctions 2.5) 2.2.3 Surface proteins 2.6) 2.2.4 Electrical signal 2.7) 2.3 Steps in signaling 2.8) 2.3.1 Formation of signal in a signal producing cell 2.9) 2.3.2 Transport of the signal to the target cell 2.10) 2.3.3 Registration of the signal in the target cell 2.11) 2.4 Regulation of Intercellular Signaling
3. 3.0 Signaling Molecules and Their Receptors 3.1) 3.1 Type of Hormone Messengers 3.2) 3.1.1 Endocrine, Paracrine and Autocrine 3.3) 3.2 Roles of Receptors 3.4) 3.3 Type of Receptors 3.5) 3.3.1 G Protein–Coupled Receptors and Their Effectors 3.6) 3.3.2 Receptor Tyrosine Kinases and Ras 3.7) 3.4 Disorders associated with receptors

4. 4.0 Intracellular Signaling 4.1) 4.1 Reception of External Signals 4.2) 4.2 Activation and Deactivation of Signaling Proteins
5. 5.0 Mechanism of signal transduction 5.1) n/a
6. 6.0 Convergence and crosstalk among different signaling pathway 6.1) n/a

Assessment Breakdown	%
Continuous Assessment	60.00%
Final Assessment	40.00%

Details of Continuous Assessment

Assessment Type	Assessment Description	% of Total Mark	CLO
Assignment	n/a	10%	CLO2 , CLO3
Case Study	n/a	10%	CLO2 , CLO3
Lab Exercise	n/a	10%	CLO4
Practical	n/a	10%	CLO4
Test	test 1	10%	CLO1 , CLO2
Test	test 2	10%	CLO2 , CLO3

Reading List

Recommended Text

- **Dennis, E. A. and Bradshaw, R. A. 2011, *Transduction Mechanism in Cellular Signalling*, Academic Press**
- **Hancock, J. 2010, *Cell Signalling*, 3rd Ed., Oxford University Press, USA**

Article/Paper List: This Course does not have any article/paper resources

Other References: This Course does not have any other resources