

BIOCHEMISTRY WITH A MEDICAL PERSPECTIVE

Online Biochemistry Course, Faculty of Medicine, University of Toronto, Canada

Course Schedule

Fall Semester 03 October to 25 Feb 2012

Week	Section / Online Quiz	Dates (Week Start)	Lectures	Lecturer	Clinical Insights By Dr. Murray	Text Chapter
			Course Introductory Lecture (Mandatory), E - presence Controls Video	Dr. Reithmeier	*One clinical insight will be selected per weekly lecture series*	
1	Proteins and Enzymes	03 Oct 2011	Lecture 1 - Biochemistry and the Unity of Life Lecture 2 - Water, Weak bonds, pH Lecture 3 - Amino Acids	Dr. Reithmeier Dr. Reithmeier Dr. Reithmeier	Water and pH Balance Pathological Conditions Result if Protein Intake Is Inadequate	1 2 3
2		10 Oct 2011	Lecture 4 - Protein 3D Structure: Part 1 Lecture 5 - Protein 3D Structure: Part 2 Lecture 6 - Enzymes: Basic Concepts	Dr. Reithmeier Dr. Reithmeier Dr. Baker	Protein Misfolding and Aggregation Are Associated with Some Neurological Diseases Vitamin C Deficiency Causes Scurvy	4 4 5
3		17 Oct 2011	Lecture 7 - Enzyme Kinetics Lecture 8 - Enzyme Regulation, Allostery Lecture 9 - Enzyme Inhibition	Dr. Baker Dr. Baker Dr. Baker	Medical Uses of Enzymes: Diagnostic Enzymology Variations in Km Can Have Physiological Consequences	6 6 7
Quiz 1 24 Oct 2011						
4		24 Oct 2011	Lecture 10 - Enzyme Mechanisms Lecture 11 - Hemoglobin Lecture 12 - Carbohydrates One	Dr. Baker Dr. Baker Dr. Baker	Penicillin Irreversibly Inactivates a Key Enzyme in Bacterial Cell Wall Synthesis Sickle Cell Anemia CO- The Silent Killer	7 8 9
5		31 Oct 2011	Lecture 13 - Carbohydrates Two Lecture 14 - Lipids: Fatty Acids, Membrane Lipids Lecture 15 - Membrane Structure and Membrane Proteins	Dr. Baker Dr. Reithmeier Dr. Reithmeier	Lactose Intolerance Liposomes	9 10 11
6	Metabolism	07 Nov 2011	Lecture 16 - Membrane Transport Proteins Lecture 17 - Membrane Signaling Proteins Lecture 18 - Metabolism : Basic Concepts	Dr. Reithmeier Dr. Reithmeier Dr. Baker	Digitalis Cholera and Whooping Cough Are Due to Altered G-protein Activity	11 11,12 14
Quiz 2 14 Nov 2011						

Week	Section / Online Quiz	Dates (Week Start)	Lectures	Lecturer	Clinical Insights By Dr. Murray	Text Chapter
7		14 Nov 2011	Lecture 19 - Glycolysis Lecture 20 – Accessing Glycogen Stores Lecture 21 – Pyruvate Dehydrogenase Complex and the Citric Acid Cycle	Dr. Baker Dr. Baker Dr. Baker	Exercise Depends on Various Means of Generating ATP	15 23 17,18
8		21 Nov 2011	Lecture 22 - Oxidative Phosphorylation/The Electron Transport Chain Lecture 23 - Oxidative Phosphorylation/Proton Motive Force Lecture 24 – Rebuilding Glycogen	Dr. Baker Dr. Baker Dr. Baker	Beriberi-A Disease Due to Deficiency Of Thiamine (Vitamin B-1)	19 20 24
9		28 Nov 2011	Lecture 25 - Fat Mobilization Lecture 26 - Fatty Acid Degradation, ATP Production and Gluconeogenesis Lecture 27 - Diabetes and Ketone Bodies	Dr. Baker Dr. Baker Dr. Baker	A Biochemical Understanding Of Glycogen Storage Diseases (GSDs) Is Possible	26 16,26 26
Quiz 3 05 Dec 2011						
10		05 Dec 2011	Lecture 28 - Discovery of Insulin Lecture 29 - Fatty Acid and Triacylglycerol Synthesis Lecture 30 - Cholesterol Synthesis	Dr. Baker Dr. Baker Dr. Baker	Hyperglycemia	12,26 27,28 28
11		12 Dec 2011	Lecture 31 - Lipoproteins Lecture 32 - Biochemistry of Platelets and Eicosanoids Lecture 33 - Phospholipid Synthesis	Dr. Baker Dr. Baker Dr. Baker	Familial Hypercholesterolemia (FH) Tay-Sachs Disease	28 27 28
BREAK (19 Dec 2011 to 01 Jan 2012)						
12		02 Jan 2012	Lecture 34 - Phosphoinositides and Signalling Lecture 35 - Amino Acid Synthesis Lecture 36 - Nucleotide Metabolism	Dr. Baker Dr. Reithmeier Dr. Reithmeier	Inherited Defects Of The Urea Cycle Cause Hyperammonemia	12 29 30
Quiz 4 09 Jan 2012						
13	Nucleic Acids	09 Jan 2012	Lecture 37 - Amino Acid Degradation and The Urea Cycle Lecture 38 - Nucleic Acid Structure One Lecture 39 - Nucleic Acid Structure Two	Dr. Reithmeier Dr. Kelley Dr. Kelley	Loss of Allosteric Control Can Result in Pathological Conditions Cancers Are Caused by Defective Repair of DNA	31 32 32

Week	Section / Online Quiz	Dates (Week Start)	Lectures	Lecturer	Clinical Insights By Dr. Murray	Text Chapter
14		16 Jan 2012	Lecture 40 - DNA Replication Lecture 41 - DNA Repair Lecture 42 – Transcription I	Dr. Kelley Dr. Kelley Dr. Kelley	Some Genetic Diseases Are Caused by The Expansion of Repeats of Three Nucleotides	33 34 35
15		23 Jan 2012	Lecture 43 – Transcription II Lecture 44 – Prokaryotic Regulation Lecture 45 – Eukaryotic Regulation	Dr. Kelley Dr. Kelley Dr. Kelley	Mutations that Affect pre-mRNA and Alternative Splicing Cause Disease	35 36 36
Quiz 5 30 Jan 2012						
16		30 Jan 2012	Lecture 46 - RNA Processing Lecture 47 - Genetic Code Lecture 48 – tRNAs and Amino Acids	Dr. Kelley Dr. Kelley Dr. Kelley	Genetic Defects Causing Cystic Fibrosis	37 38 38
17		06 Feb 2012	Lecture 49 – Translation I Lecture 50 – Translation II Lecture 51 - Protein Secretion	Dr. Kelley Dr. Kelley Dr. Kelley	Some Antibiotics and Some Toxins Act by Inhibiting Protein Synthesis	39 39 39
18		13 Feb 2012	Lecture 52 – Translation Regulation Lecture 53 - Recombinant Technology I Lecture 54 - Recombinant Technology II	Dr. Kelley Dr. Kelley Dr. Kelley	Gene Therapy, Transgenic Animals	39 41 41

Final Examination 2012

Date

25 February 2012

Time

9:30am - 12:30pm

Material Tested

Final exam includes all the lectures