Fall 2020 (Tentative)

IBMS 5000: Fundamentals of Biomedical Sciences

Course Director: Bill Clarke, Ph.D.

Updated: 08/25/2020

Week 1: Genetic Basis of Human Disease Team Leader: Robin Leach					
Date	**Day**	**Time**	**Location**	**Lecturer**	**Topic**
8/24/2020	Mon	8:00 - 9:00 am	Zoom	Robin Leach	Independent Learning Discussion
8/24/2020	Mon	9:15 - 10:15 am	Zoom	Renee Yew	Genes, gene function and heredity
8/24/2020	Mon	10:30 - 11:30 am	Zoom	Renee Yew	Replication of the Genome
8/25/2020	Tue	8:30 - 9:30 am	Zoom	Kexin Xu	Epigenetics
8/25/2020	Tue	9:45 - 10:45 am	Zoom	Robin Leach	Human Genetics & Precision Medicine
8/26/2020	Wed	9:30 - 10:30 am	Zoom	Teresa Johnson-Pais	Brief Methods Discussion over online learning material
8/27/2020	Thu	8:30 - 10:45 am	Zoom	Robin Leach	Small Groups
8/28/2020	Fri	8:30 - 10:45 am	Zoom	Teresa Johnson-Pais Kexin Xu Robin Leach Dean Bacich	Small Groups
Week 2: To Grow or Not to Grow Team Leader: Alex Bishop					
Date	**Day**	**Time**	**Location**	**Lecturer**	**Topic**
8/31/2020	Mon	8:00 - 9:00 am	Zoom	Alex Bishop	Independent Learning Discussion
8/31/2020	Mon	9:15 - 10:15 am	Zoom	Kexin Xu	Transcription Regulation
8/31/2020	Mon	10:30 - 11:30 am	Zoom	Myron Ignatius	Signal Transduction
9/1/2020	Tue	8:30 - 9:30 am	Zoom	Susan Mooberry	Cell growth, death and senescence
9/1/2020	Tue	9:45 - 10:45 am	Zoom	Alex Bishop	Damage Response and DNA repair
9/2/2020	Wed	3:00 - 4:00 pm	Zoom	Renee Yew	Cell Cycle and Checkpoint Control
9/2/2020	Wed	4:15 - 5:15 pm	Zoom	Renew Yew	Vectorology
9/3/2020	Thu	8:30 - 10:45 am	Zoom	Alex Bishop	Small Groups
9/4/2020	Fri	8:30 - 10:45 am	Zoom	Renee Yew Weixing Zhao Gangadhara Sareddy Manjeet Rao	Small Groups
Week 3: Manipulation of the mouse genome: animal models of human disease Team Leader: Qitao Ran					
Date	**Day**	**Time**	**Location**	**Lecturer**	**Topic**
9/7/2020	**Mon**		**Holiday**		**No Class - Labor Day**
9/8/2020	Tue	8:00 - 8:45 am	Zoom	Qitao Ran, Paul Hasty	Independent Learning Discussion
9/8/2020	Tue	8:55 - 9:55 am	Zoom	Qitao Ran	Transgenic Mouse Models
9/8/2020	Tue	10:00 - 11:00 am	Zoom	Paul Hasty	Gene Targeting & Embryonic Stem Cells
9/9/2020	Wed	8:30 - 9:30 am	Zoom	Hye Young Lee	CRISPR
9/9/2020	Wed	9:45 - 10:45 am	Zoom	Bess Frost	Genetic Manipulations in Files
9/10/2020	Thu	8:30 - 10:45 am	Zoom	Qitao Ran	Small Groups
9/11/2020	Fri	8:30 - 10:45 am	Zoom	Qitao Ran Paul Hasty Pei Wang Lizhen Chen	Small Groups
Week 4: Regulation of Cell Function Team Leader: William Clarke					
Date	**Day**	**Time**	**Location**	**Lecturer**	**Topic**
9/14/2020	Mon	8:00 - 9:00 am	Zoom	William Clarke	Independent Learning Discussion
9/14/2020	Mon	9:15 - 10:15 am	Zoom	William Clarke	G protein coupled receptors, signaling pathways and regulation (desensitization)
9/14/2020	Mon	10:30 - 11:30 am	Zoom	William Clarke	Receptor tyrosine kinases
9/15/2020	Tue	8:30 - 9:30 am	Zoom	Dan Lodge	Ligand-gated ion channels
9/15/2020	Tue	9:45 - 10:45 am	Zoom	David Morilak	Nuclear receptors - regulation of gene transcription
9/16/2020	Wed	8:30 - 9:30 am	Zoom	William Clarke	Ligand-receptor interactions-1
9/16/2020	Wed	9:45 - 10:45 am	Zoom	William Clarke	Ligand-receptor interactions-2
9/17/2020	Thu				**EXAM 1**
9/18/2020	Fri				**EXAM 1**

Week 5: Lost (and Found) in Translation Team Leader: Dmitri Ivanov					
Date	**Day**	**Time**	**Location**	**Lecturer**	**Topic**
9/21/2020	Mon	8:00 - 9:00 am	Zoom	Dmitri Ivanov	Independent Learning Discussion
9/21/2020	Mon	9:15 - 10:15 am	Zoom	Shaun Olsen	Protein: Ligand Binding, Induced Fit and Allostery
9/21/2020	Mon	10:30 - 11:30 am	Zoom	Dmitri Ivanov	Mechanisms of Protein Translation
9/22/2020	Tue	8:30 - 9:30 am	Zoom	Yuzuru Shiio	Post-translational modifications
9/22/2020	Tue	9:45 - 10:45 am	Zoom	Dmitri Ivanov	Protein Purification/Analysis and Protein Structure Determination Methods
9/23/2020	Wed	8:30 - 9:30 am	Zoom	Weixing Zhao	How proteins repair DNA
9/24/2020	Thu	8:30 - 10:45 am	Zoom	Dmitri Ivanov	Small Groups
9/25/2020	Fri	8:30 - 10:45 am	Zoom	Yuzuru Shiio Weixing Zhao Dmitri Ivanov Shaun Olsen	Small Groups

Week 6: Losing proteostasis: Alzheimer's and other diseases Team Leader: Veronica Galvan Hart					
Date	**Day**	**Time**	**Location**	**Lecturer**	**Topic**
9/28/2018	Mon	8:30 - 9:30 am	Zoom	David Libich	Protein Folding and stability: The chaperone system
9/28/2018	Mon	9:30 - 10:30 am	Zoom	David Libich / Veronica Galvan	In-class dicussion of Independent Learning Assignment
9/29/2020	Tue	8:00 - 9:00 am	Zoom	Ramaswamy Sharma	Protein degradation: Autophagy
9/29/2020	Tue	9:00 - 10:00 am	Zoom	Ramaswamy Sharma	Protein degradation: The ubiquitin/proteasome system
9/29/2020	Tue	10:15 - 11:15 am	Zoom	Qitao Ran	Protein folding
9/30/2020	Wed	8:30 - 9:30 am	Zoom	Karl Rodriguez	Functional assessment of phenotypes in animal models of proteinopathies
9/30/2020	Wed	9:45 - 10:45 am	Zoom	Galvan, Van Skike, Libich	Practical demonstrations - Virtual Demos
10/1/2020	Thu	8:30 - 10:45 am	Zoom	Karl Rodriguez Qitao Ran	Small Groups
10/2/2020	Fri	8:30 - 10:45 am	Zoom	David Libich Ramaswamy Sharma Qitao Ran Karl Rodriguez	Small Groups

Week 7: Energy Homeostasis & Obesity Team Leader: Lily Dong					
Date	**Day**	**Time**	**Location**	**Lecturer**	**Topic**
10/5/2020	Mon	8:00 - 9:00 am	Zoom	Lily Dong	Independent Learning Discussion
10/5/2020	Mon	9:15 - 10:15 am	Zoom	Lily Dong	Energy balance and the problems with Obesity
10/5/2020	Mon	10:30 - 11:30 am	Zoom	James Nelson	Insulin signaling and insulin resistance
10/6/2020	Tue	8:30 - 9:30 am	Zoom	James Lechleiter	ER, ER Stress and th eimpact on obesity development
10/6/2020	Tue	9:45 - 10:45 am	Zoom	Yidong Bai	Mitochondrial biology and obese-associated mitochandrial dysfunction
10/7/2020	Wed	8:30 - 9:30 am	Zoom	Mengwei Zang	Fatty liver and its impact for insulin resistance development
10/7/2020	Wed	9:45 - 10:45 am	Zoom	Feng Liu	Adipose tissue: Regulation and Function
10/8/2020	Thu	8:30 - 9:30 am	Zoom	Lily Dong	Skeletal muscle-regulated glucose homeostasis and lipid homeostasis
10/8/2020	Thu	9:45 - 10:45 am	Zoom	Elizabeth Leadbetter	Obesity-related chronic inflammation
10/9/2020	Fri	8:30 - 9:30 am	Zoom	Teppei Fujikawa	Central nervous system control of food intake and body weight
10/9/2020	Fri	9:45 - 10:45 am	Zoom	Lily Dong	Gut microbiota and organ communication

Week 8: Energy Homeostasis & Obesity Team Leader: Lily Dong					
Date	**Day**	**Time**	**Room**	**Lecturer**	**Topic**
10/12/2020	Mon	8:30 - 10:45 am	Zoom	Lily Dong	Small Groups
10/13/2020	Tue	8:30 - 10:45 am	Zoom	Elizabeth Leadbetter Mengwei Zang Jim Lechleiter Jim Nelson	Small Groups
10/14/2020	Wed				**NO CLASS**
10/15/2020	Thu				**EXAM 2**
10/16/2020	Fri				**EXAM 2**

Week 9: Aging Team Team Leader: James Nelson (In Progress)					
Date	**Day**	**Time**	**Location**	**Lecturer**	**Topic**
10/19/2020	Mon	8:00 - 9:00 am	Zoom	James Nelson, Sara Espinoza	Independent Learning Discussion
10/19/2020	Mon	9:15 - 10:15 am	Zoom	Sara Espinoza	Overview of Aging and Frailty
10/19/2020	Mon	10:30 - 11:30 am	Zoom	Andrew Pickering	Molecular Mechanisms of Aging
10/20/2020	Tue	8:30 - 9:30 am	Zoom	Peter Hornsby	Aging, Cancer and Cell Senescence
10/20/2020	Tue	9:45 - 10:45 am	Zoom	Adam Salmon	Metabolism and Aging
10/21/2020	Wed	8:30 - 9:30 am	Zoom	James Nelson	CR and other interventions that retard aging
10/21/2020	Wed	9:45 - 10:45 am	Zoom	Z. Dave Sharp	mTOR signaling and Aging
10/22/2020	Thu	8:30 - 10:45 am	Zoom	James Nelson	Small Groups
10/23/2020	Fri	8:30 - 10:45 am	Zoom	Lizhen Chen Monica Serra Karl Rodriguez Z Dave Sharp	Small Groups
Week 10: SARS-CoV-2/COVID-19 Team Leader: Zhenming (Jack) Xu (In Progress)					
Date	**Day**	**Time**	**Location**	**Lecturer**	**Topic**
10/26/2020	Mon	8:00 - 9:00 am	Zoom	Yan Xiang	Intro to Viruses
10/26/2020	Mon	9:15 - 10:15 am	Zoom	Jack Xu	Independent Learning Dicussion
10/26/2020	Mon	10:30- 11:30 am	Zoom	Barbara Taylor	HIV Biology
10/27/2020	Tue	8:30 - 9:30 am	Zoom	Guangming Zhong	HIV Vaccine
10/27/2020	Tue	9:45 - 10:45 noon	Zoom	Jack Xu	Immunodeficiency
10/28/2020	Wed	8:30 - 9:30 am	Zoom	Sunil Ahuja	HIV and clinical disease
10/28/2020	Wed	9:45 - 10:45	Zoom	Ricardo Carrion	Emerging viral infections
10/29/2020	Thu	8:30 - 10:45 am	Zoom	Jack Xu	Small Groups
10/30/2020	Fri	8:30 - 10:45 am	Zoom	Ann Griffith Evelien Bunnik Jack Xu Xiao-Dong Li	Small Groups
Week 11: Vaccines Team Leader: Guangming Zhong (In Progress)					
Date	**Day**	Time	**Location**	**Lecturer**	**Topic**
11/2/2020	Mon	8:00 - 9:00 am	Zoom	Guangming Zhong	Intro: Past achievements and current challenges -- Key concepts
11/2/2020	Mon	9:15 - 10:15 am	Zoom	Guangming Zhong	Independent Learning: Microbe-Host Interactions, PRRs for detecting microbial PAMPs, Adjuvants to enhance vaccine efficacy
11/2/2020	Mon	10:30 - 11:30 am	Zoom	Ann Griffith	T cell immunity and identification of T cell antigens as vaccine
11/3/2020	Tue	8:30 - 9:30 am	Zoom	Evelien Bunnick	Humoral immunity and identification of B cell antigens as vaccine
11/3/2020	Tue	9:45 - 10:45	Zoom	Guangming Zhong (for Nu Zhang)	Trm, ILCs and Non-classical immunity on vaccine efficacy
11/4/2020	Wed	8:30 - 9:30	Zoom	Tony Infante	Antibody power I: Medical application-Ig infusion, CAR-T, PDL1 blocking
11/4/2020	Wed	9:45 - 10:45	Zoom	Paolo Casali	Antibody power II: Diagnoses and Research Immunoassays
11/5/2020	Thu	8:30 - 10:45 am	Zoom	Guangming Zhong	Small Groups
11/6/2020	Fri	8:30 - 10:45 am	Zoom	Ann Griffith Evelien Bunnik Paolo Casali Guangming Zhong	Small Groups
Week 12: Imaging Team LeaderS: Jim Lechleiter/ Geoff Clarke (In Progess)					
Date	**Day**	**Time**	**Location**	**Lecturer**	**Topic**
11/9/2020	Mon	8:30 - 9:30 am	Zoom	James Lechleiter, Geoffery Clarke	Independent Learning Discussion
11/9/2020	Mon	9:45 - 10:45 am	Zoom	James Lechleiter	Visualizing Cells with Optical Microscope (Contrast, Fluorescence and 3D-Imaging)
11/9/2020	Mon	10:30 - 11:30 am	Zoom	James Lechleiter	Specilized Techniques in Optical Microscopy (Calcium, FRET and Super Revolution)
11/10/2020	Tue	8:30 - 9:30 am	Zoom	Geoffrey Clarke	Molecular Imaging I (CT, SPECT and PET)
11/10/2020	Tue	9:45 - 10:45	Zoom	Geoffrey Clarke	Molecular Imaging II (MRI and Ultrasound)
11/11/2020	Wed	9:45 - 10:45 am	Zoom	Lechleiter/Clarke	Imaging Core Tours and Demostrations
11/11/2020	Wed	8:30 - 10:45 am	Zoom		
11/12/2020	Thu				**EXAM 3**
11/13/2020	Fri				**EXAM 3**

Week 13: Asthma Team Leader: Peter Dube (In Progress)					
Date	**Day**	Time	**Location**	**Lecturer**	**Topic**
11/16/2020	Mon	8:00 - 9:00	Zoom	Peter Dube	Independent learning Discussion
11/16/2020	Mon	9:15 - 10:15	Zoom	Peter Dube	T-cells and asthma, experimental modeling of asthma
11/16/2020	Mon	10:30 - 11:30	Zoom	Robert Brenner	Airway smooth muscle signaling
11/17/2020	Tue	8:30 - 9:30	Zoom	Edward Brooks	Overview of clinical asthma
11/17/2020	Tue	9:45 - 10:45	Zoom	Jesus Guajardo	Overview of the respiratory system
11/18/2020	Wed	8:45 - 9:30	Zoom	Peter Dube	Open Discussion (mandatory)
11/18/2020	Wed	9:45 - 10:45	Zoom		
11/19/2020	Thu	8:30 - 10:45	Zoom		Small Groups
11/20/2020	Fri	8:30 - 10:45	Zoom		Large Group Discussion
Week 14: Epilepsy Team Leader: Jason Pugh (In Progress)					
Date	**Day**	**Time**	**Location**	**Lecturer**	**Topic**
11/30/2020	Mon	8:00 - 9:00	Zoom	Jason Pugh	Independent Learning Discussion
11/30/2020	Mon	9:15 - 10:15	Zoom	Robert Brenner	Introductory concepts of brain function
11/30/2020	Mon	10:30 - 11:45	Zoom	Mark Shapiro	Intrinsic excitability
12/1/2020	Tue	8:30 - 9:30	Zoom	Jason Pugh	Synaptic transmission
12/1/2020	Tue	9:45 - 10:45	Zoom	Martin Paukert	Concepts of Neural Circuitry
12/2/2020	Wed	8:45 - 9:30	Zoom	Ben Eaton	Genetics of Epilepsy
12/2/2020	Wed	9:45 - 10:45	Zoom	Jeff Boychuk	Translational Concepts in Epilepsy
12/3/2020	Thu	8:30 - 10:45	Zoom	Ben Eaton/Jason Pugh	Small Groups
12/4/2020	Fri	8:30 - 10:45	Zoom	Liz Gould Robert Brenner Tabby Kreko-Pierce Chase Carver	Small Groups
No Lectures (Thanksgiving Week - 11/25/2019 through 11/29/2019)					
Week 15: Mood Disorders Team Leader: Dan Lodge (In Progress)					
Date	**Day**	**Time**	**Location**	**Lecturer**	**Topic**
12/7/2020	Mon	8:00 - 8:20	Zoom	Dan Lodge	Intro into mood disorders
12/7/2020	Mon	8:20 - 10:15	Zoom	David Morilak	Neural Basis of Emotion
12/7/2020	Mon	10:30 -11:30	Zoom	Lyn Daws	Biogenic Amine transporters
12/8/2020	Tue	8:30 - 9:30	Zoom	Alan Frazer	Indepdent Learning Discussion: Pharmacological treatment
12/8/2020	Tue	9:45 - 10:45	Zoom	Jason O'Connor	Pathophysiology
12/9/2020	Wed	8:30 - 9:30	Zoom	Gek Sia	Neurogenesis
12/9/2020	Wed	9:45 - 10:45	Zoom	Flavia Carreno	Animal Models
12/10/2020	Thu	8:30 - 10:45	Zoom	Dan Lodge	Small Groups
12/11/2020	Fri	8:30 - 10:45	Zoom	Dan Lodge Flavia Carreno Jason O'Connor Gek Sia	Small Groups