Foundations of Biomedical Research 2021
Week 7: Cell Biology – From the membrane to the nucleus and back again – Hyun-Eui Kim and Xiaodong Cheng

Time	Monday October 11	Tuesday October 12	Wednesday October 13	Thursday October 14	Friday October 15
8:30	Lecture 1: Cell membrane biology (XC)	Lecture 3: Membrane trafficking: endocytosis (GD)	Biostats/ bioinformatics Exercise	Lecture 6: Protein homeostasis and the unfolded protein response in the ER (HK)	Lecture 7: Antigen presentation: MHC protein trafficking regulation of the immune response (GL)
9:15	Breakout: "Alternative Approaches" introduction and discussion (XC)	Breakout: Discussion on membrane trafficking (GD)	Break	Breakout: Discussion on Mitochondria-ER interaction (HK, VN)	Breakout: Antibodies, TCRs and CARs In the clinic (GL)
10:00	Break	Break	Lecture 5: The mitochondria (VN)	Break	Break
10:15	Lecture 2: Membrane trafficking: general principal (GD)	Lecture 4: Membrane potential and regulation of transport across the membrane (OP)		Lecture 7: Nuclear pores and import / export (JF)	Lecture 9: Antibody structure and uses in cell biology and drug discovery (XG)

XC: Xiaodong Cheng
VN: Vihang Narkar
GL: Greg Lizee
GD: Guangwei Du
OP: Oleh Pochynyuk
XG: Xin Ge
JF: Jeff Frost
HK: Hyun-Eui Kim

Learning Objectives

Week 7: Cell Biology

Students will understand the structure and purpose of basic components of eukaryotic cells, including;

- Membrane structure and function
- Membrane trafficking and endocytosis
- Transport across the membrane.
- Organelle structure, function, and interaction: Nucleus, ER and Mitochondria
- Antibody production and antigen presentation in immune response and their application on patient treatment and drug discovery