GS12 1442
PRINCIPLES OF EXPERIMENTAL MOUSE PATHOLOGY
SUMMER SEMESTER, 2020 (May 29-August 7)
CLASSES ON FRIDAYS 9-11 AM

DATE	SUBJECT	INSTRUCTOR	LECTURE
5/29	Introduction Rodent biology	**Benavides** (40 min) Discussion (10 min) Break (10 min)	Introduction to Course Rodent biology, mouse anatomy, biology and physiology
	Rodent Genetics	**Benavides** (50 min) Break (10 min)	Basic concepts of Rodent Genetics
6/5	Animal Study Design Intro	**Bedford** (50 min) Discussion (10 min)	Formulating the hypothesis Choosing an experimental system
	Mouse Genetics	**Benavides** (50 min) Discussion (10 min)	Basic concepts of Mouse Genetics
6/12	Genetic Models of Human Disease	**Benavides** (50 min) Break (10 min) **Benavides** (50 min) Discussion (10 min)	Spontaneous Mutations Transgenic mice and inducible systems Targeted Mutagenesis (KOs, KIs) Conditional mutant alleles (Cre/loxP and Flp/FRT systems) Gene editing using ZFN, TALEN, and CRISPR/Cas9
6/19	Genetic Background considerations	**Benavides** (45 min) Break (10 min) **Benavides** (45 min) Discussion (20 min)	Standardized genetic nomenclature Genetic drift and substrains Influence of genetic background Modifier genes and passenger mutations
6/26	Histology	**Sebastian** (40 min) Discussion (20 min)	Basic concepts of histopathology
	Mouse develop Biology	**Sebastian** (50 min) Break (10 min)	Basic concepts of mouse developmental biology
7/3	EXAM #1		

7/10	Mouse Models of toxicology	**Sebastian** (50 min) Break (10 min)	Toxicology studies
	Spontaneous lesions on inbred strains	**Sebastian** (50 min) Discussion (10 min)	Mouse Phenotyping Background lesions in C57BL/6 mice Background lesions in FVB/N mice Background lesions in 129 mice
7/17	Post Mortem Morphologic Characterization	**Jimi L Young** (40 min) Break (10 min) **Jimi L Young** (40 min) Discussion (30 min)	Necropsy Light Microscopy Histology IHC, IF, and ISH
7/24	Imaging & Digital Pathology	**Perez** (50 min) Break (10 min) **Perez** (60 min)	Digital pathology and In vivo imaging systems Demo for students in Science Park
7/31	Mouse Models of Human Disease	**Benavides** (50 min) Break (10 min) **Benavides** (50 min) Discussion (10 min)	Mouse models of cancer Databases (e.g., Mouse Genome Informatics; Sanger Mouse Genome Project; Mouse Phenome Database) Environment, housing, and management IACUC requirements
8/7	EXAM #2		