

CRAMM 2018-2019 Schedule

Date	Lecturer (Mentor)	Subject	Recommended Reading
09/03	No class	Labor Day	
09/10	Pate (No mentor)	Review of Basic Virology <ul style="list-style-type: none"> • Classes of Viruses • Structure (EM) • How to inactivate viruses by class • Inclusion bodies by class • General types of disease caused by each class & notable exceptions by species Herpes subsets	
09/17	Pate & Braxton (No mentor)	Review of Immunology <ul style="list-style-type: none"> • Innate – cellular, complement, cytokines, cell-cell interactions, TLRs / PAMPs / PAMs, bridge between innate & adaptive, key genes that are commonly knocked out that affect innate immune system • Adaptive – cellular, humoral • Hypersensitivity – Type I & II, what is a TB test, what is an allergic reaction • Transplant immunology – different types of transplants, matching transplants, stages of rejection, graft versus host disease 	
09/24	Ihms (No mentor)	Review of Basic Bacteriology <ul style="list-style-type: none"> • Best ways to culture / identify bacteria by class • Classes of bacteria by test • Special stains for bacteria • Special structural characteristics (EM) • General types of disease caused by each class & notable exceptions by species • Antibiotics: MIC, bacteriostatic vs cidal, classic 	

CRAMM 2018-2019 Schedule

		<p>examples of best antibiotic for bacteria</p> <ul style="list-style-type: none"> • Contraindicated antibiotics for certain species or certain model types 	
10/01	Izzi (No mentor)	<p>Review of Anesthesia, Inhalant & Injectable Drugs</p> <ul style="list-style-type: none"> • Stages of anesthesia • Drugs by class & function – inhalants, injectables, NM blocks • DEA classification & controlled drugs regs • Anesthesia equipment 	BB Anesthesia Chpt 2, 3, 25, hand-out on DEA regs & hand-out on neuromuscular blockers
10/08	Hutchinson (No mentor)	<p>Review of Pathophysiology of Pain & Analgesia</p> <ul style="list-style-type: none"> • Pathophysiology – anatomy & physiology • Drugs by class & function • Pain models 	BB Anesthesia Chpts 1, 4, 23
10/15	Lecturer: Diane (Watson)	<p>Mice – Basic Biology</p> <ul style="list-style-type: none"> • Taxonomy of mice • Anatomy • Reproductive biology • Behavior fun facts (see tables) • Housing – Static vs Microisolator vs Other types, and the different classes SPF vs Axenic vs Conventional <p>Anesthesia/Analgesia</p>	BB (3) Chpt 3 sections I & II
10/22	Lecture postponed to 12/06	•	
10/29	No lecture	AALAS	AALAS
11/05	Lecturer: Adam	<p>Mice – Coat color genetics</p> <ul style="list-style-type: none"> • The alleles that are associated with the colors we see • Diseases / pathology associated with the colors 	JAX pgs 20 – 22
11/12	Lecture postponed to 11/19		
11/19	Lecturer: Adam	<p>Mice – Strains</p> <p>What the strains are known for in terms of incidental disease</p>	JAX manual Chpt 4; BB Mouse II Chpt 25

CRAMM 2018-2019 Schedule

	(Brayton)	(neoplastic, ocular, cardiac, etc), associated genetic alleles, how it affects susceptibility to infectious disease, and disease models	
11/26	Lecturer: Adam (Watson / Brayton)	Mice – Disease Management & Notable Diseases <ul style="list-style-type: none"> • Concentrate on common infectious diseases • Highlights of aging pathology • Concentrate on noninfectious diseases covered under strains • For each disease: Cause, What are the telltale symptoms, How is it tested for, How is it eliminated from the colony 	BB (3) chpt 3 section III
12/03	Lecturer: Diane (Watson)	Rats – Basic Biology <ul style="list-style-type: none"> • Taxonomy of mice • Anatomy • Reproductive biology • Behavior fun facts • Anesthesia/Analgesia 	BB(3) Chpt 4 sections I-II
Friday, 12/06	Lecturer: Hawkins (Watson)	Mice – GEMs <ul style="list-style-type: none"> • Spontaneous & Induced • Backward & Forward Genetics • Pronuclear injection • Knock-outs, knock-ins, different ways of inducing them (ie lentiviral integration) • CRISPR Piggyback elements	JAX pgs 45 – 70 (Chpt 3)
12/10	Lecturer: Casey (Brayton)	Rats – Strains <ul style="list-style-type: none"> • Stock vs Strain • What the strains are known for in terms of incidental disease (neoplastic, ocular, cardiac, etc), associated genetic alleles, how it affects susceptibility to infectious disease, and disease models 	BB Rats Chpt 3; concentrate on strains in the Table in BB(3) Chpt 4; Caroline’s hand-out
Weds, 12/12	Lecturer: Casey	Mice –Breeding strategies & Nomenclature <ul style="list-style-type: none"> • Breeding strategies 	JAX pgs 25 – 70 (Chpts 2 & most of 3); bring to class the MGI International Committee

CRAMM 2018-2019 Schedule

	(Watson)	<ul style="list-style-type: none"> • Congenic, coisogenic, inbred, etc • Nomenclature 	on Standardized Genetic Nomenclature for Mice – Guidelines for Mouse and Rat Strains; Guidelines for Genes; also quick guides.
12/17	Lecturer: Casey (Brayton)	Rats – Disease Management & Notable Diseases <ul style="list-style-type: none"> • Concentrate on common infectious diseases • Highlights of aging pathology • Concentrate on noninfectious diseases covered under strains • For each disease: Cause, What are the telltale symptoms, How is it tested for, How is it eliminated from the colony 	BB(3) Chpt 4 section III, Charles Clifford’s two POLA lectures
12/24	No class	Holiday	
12/31	No class	New Years	
01/07	Lecturer: Adam (Pate)	Immunodeficient & Gnotobiotic Rodent Models <ul style="list-style-type: none"> • Immunodeficient Mouse strains, what genetic defect contributes to each strain, what are they deficient in, and what aspects of the immune system does that affect • Definitions of different mouse health status Gnotobiotic facility equipment and management	<ul style="list-style-type: none"> • BB Mouse IV Chpt 13; BB(3) Chpt 3 Section II and 26; JAX immunodeficient mouse comparison table
01/14	Pate (No mentor)	Mice & Rats –Other Models <ul style="list-style-type: none"> • Review of models: Spontaneous vs. Inducible • Classic Inducible: surgical, chemical, irradiation, genetically modified • Specific Disease Models: Autoimmune, diabetes, obesity, hypertension, neoplasia & neurologic dz • Behavior Equipment & Tests 	<ul style="list-style-type: none"> • Crawley’s What’s Wrong with My Mouse? Chpts 4 – 12 • BB Rats Chpt 23 & 18 (Scan 18, concentrate on 23) Caroline’s Behavior Testing handout
01/21	No Class	MLK Day	

CRAMM 2018-2019 Schedule

01/28	Lecturer: Izzi & Pate (no mentor)	Cat and Dog Models <ul style="list-style-type: none"> Breeds & the models they serve as Genetic mutations & what they model	
02/04	Lecturer: Rachel (Izzi)	NHPs – Comparative Taxonomy & Biology of Platyrrhines & Prosimians <ul style="list-style-type: none"> Pictures with names & research uses, touch on CITES as well Squirrel monkeys Owl monkeys Tamarins & Marmosets Lesser bush baby & mouse lemur Brachiators = Howlers, Spider monkeys, etc 	BB (3) Chpt 17 Sections I-III
02/11	Lecturer: Jacqueline (Adams)	NHPs – Comparative Taxonomy & Biology of Catarrhines <ul style="list-style-type: none"> Overview of Taxonomy, highlight anatomical differences, touch on brachiators and categories of regs, touch on CITES Pictures with names & research uses, & CITES status Macaques, highlighting rhesus, pigtail, cyno, but also barbary, nigra, lion-tailed Baboons Chimpanzees / Bonobos / Orangutans Vervets = African Greens Patas Sooty mangabey 	BB (3) Chpt 17 Sections I-III
02/18	Lecturer: Hutchinson (No mentor)	NHPs – Breeding Management & Behavior <ul style="list-style-type: none"> Seasonality & menstruation, sexual dimorphism, weird breeding behavior & sex skins, all the #s with reproduction Family structure, social hierarchy, rearing style effect on baby monkey welfare 	BB (3) Chpt 17 Section IV

CRAMM 2018-2019 Schedule

		<ul style="list-style-type: none"> • Types of behavior tests for NHPs • Pregnancy diagnosis 	
02/25	<p>Lecturer: Diane</p> <p>(Beck)</p>	<p>NHPs – Viral Diseases and Models of Viral Disease</p> <ul style="list-style-type: none"> • Naturally occurring and models • Herpes, different categories, which species are “natural hosts” which become ill, Herpes B diagnostic & prevention • SIV, general disease progression, species affected and how, all retroviruses, type of disease induced by them, diseases of immunosuppressed macaques • Measles • Poxviruses • Hemorrhagic fevers • Caliciviruses • LCMV • Hepatitis A-E, including how one is in a different family <p>Touch on the ABSL level for each</p>	
03/04	<p>Lecturer:</p> <p>Jessica</p> <p>(Hutchinson / Beck)</p>	<p>NHPs – Noninfectious Diseases and Models</p> <p>Noninfectious:</p> <ul style="list-style-type: none"> • Diabetes – which species are models, for which type, management & monitoring • Retroperitoneal fibromatosis • Parkinson’s models • Multiple sclerosis • Huntington’s disease • Atherosclerosis – OWMs & NWMs, lesion prevalence & distribution, cholesterol • Amyloid (GI & other organs, which organs in which species) • Polycystic kidney, reproduction, prolapse, endometriosis • Complications of pregnancy 	BB (3) Chpt 17 Section V & VI

CRAMM 2018-2019 Schedule

		<ul style="list-style-type: none"> • Neoplastic • Dental, including gingival hyperplasia of baboons, NOMA • Scurvy, Vitamin C • Vitamin deficiencies & toxicities • Autoimmune disease • Bone disease – rickets, osteomalacia, MBD • Headcaps, cranial implants 	
03/11	<p>Lecturer:</p> <p>Jessica</p> <p>(Adams / Beck)</p>	<p>NHPs – Bacterial, Fungal & Parasitic Diseases and Mode</p> <ul style="list-style-type: none"> • TB, diagnostics, touch on other models of TB, other types of TB • Streptococcus • Nocardia • Bordatella • Klebsiella • Moraxella • The diarrhea bugs: Salmonella, Shigella, Yersinia • Campylobactor • Helicobacter • Fungal: Pneumocystis, which fungal organisms hit different sections of the body • Parasitic: Malaria See NHP parasite chpt for outline 	<p>BB (3) Chpt 17 Section V & VI</p> <ul style="list-style-type: none"> • BB (NHP): Chpt 8, Chpt 10
03/18	<p>Lecturer:</p> <p>Casey</p> <p>(Hutchinson & Adams)</p>	<p>Facility Design</p>	<p>BB(3) Chpt 36</p>
03/25	<p>Lecturer:</p> <p>Casey</p> <p>(Izzi)</p>	<p>Swine – Biology highlights, Strains/Breeds/GES & Models</p> <ul style="list-style-type: none"> • Key highlights of anatomy & physiology & immunology • The strains, breeds & GES and what they are best used to model • Induced and surgical models in swine 	<p>BB(3) Chpt 16 Sections I & II, Swindle Book Introductions to Chapters; Sinclair websites</p>

CRAMM 2018-2019 Schedule

04/01	Lecturer: Rachel (Adams)	Ruminants, Birds & Other Ag Animal Models <ul style="list-style-type: none"> • Model-relevant breeds and what they are used for: Sheep, goats, cattle, chickens, turkeys, pigeons, zebrafinch, quail, starlings 	BB(3) Chpt 15 Sections IB-D, Chpt 22 Section IB & Chpt 23 Section III
04/08	Lecturer: Izzi (No mentor)	<ul style="list-style-type: none"> • Nutrition 	<ul style="list-style-type: none"> • JAX pg: 217-227 Barnard, D.E., Lewis, S.M., Teter, B.B., Thigpen, J.E., 2009. Open- and closed -formula laboratory animal diets and their importance to research. J. Am. Assoc. Lab. Anim. Sci. 48 (6), 709–713.
04/15	Lecturer: Alicia (Simpson & Adams)	Zebrafish - Biology, Models & Notable Diseases <ul style="list-style-type: none"> • Water quality & Husbandry • Key facility & water management components • Zebrafish anatomy & reproduction • What zebrafish are known for • Classic diseases: what causes them, common name, symptoms, pathology 	BB(3) Chpt 20; ILAR Zebrafish Edition (2011)
04/22	Lecturer: Caroline (Simpson & Hutchinson)	Xenopus – Biology, Models & Notable Diseases <ul style="list-style-type: none"> • Differences in water management & husbandry from fish • Enrichment & identification • Differential comparison between xenopus laevis & tropicalis species • What are xenopus used for • Classic diseases: what causes them, common name, symptoms, pathology 	BB(3) Chpt 18
04/29	Lecturer: Rachel (Pate)	Rabbits – Basic biology & Models <ul style="list-style-type: none"> • Anatomy • Reproductive parameters • Models – TB, cerebral inflammation, atherosclerosis 	BB(3) Chpt 10 Sections I-II

CRAMM 2018-2019 Schedule

		<ul style="list-style-type: none"> Anesthesia, analgesia, antibiotics Transitional species 	
05/06	Lecturer: Caroline (Hutchinson)	Guinea Pigs – Basic Biology & Models <ul style="list-style-type: none"> Anatomy Reproductive parameters Models Anesthesia, analgesia, antibiotics 	BB(3) Chpt 6 Sections I-II
05/13	Lecturer: Caroline (Pate / Beck)	Rabbits & Guinea Pigs – Disease Highlights <ul style="list-style-type: none"> For each disease: Cause, What are the telltale symptoms, How is it tested for, How is it eliminated from the colony 	BB(3) Chpt 6 Section III & Chpt 10 Section III
05/20	Lecturer: Alicia (Izzi)	Hamsters – Biology, Models & Diseases <ul style="list-style-type: none"> Anatomy Reproductive parameters Models – which species are best for which models Anesthesia, analgesia, antibiotics Emphasize that both secondary & tertiary are important Diseases, which ones each get, including aging changes, cancer, classic infectious diseases (LCMV) 	BB(3) Chpt 5
05/27	No Lecture	Memorial Day	No Lecture
06/03	Lecturer: Jacqueline (Izzi)	Other Rodents I: Degu, Deer Mice, Rice rats, Dormice, Kangaroo Rat, Cotton Rat, Pocket Gopher, Ground Squirrels, Pack Rats, Nile Grass Rat, Woodchuck <ul style="list-style-type: none"> Common names, latin names, pictures, what they are used for, anatomic features, physiologic features, husbandry & housing, pertinent experimental features 	BB (3) Chpts 7 Sects I, II, IV, V, VI, VIII, IX, XVI, XI, XVI; & Chpt 8.

CRAMM 2018-2019 Schedule

06/10	Lecturer: Jessica (Hutchinson)	Other Rodents II: Naked Mole Rat, Gerbils, White-Tailed Rat, Fat-Tailed Jird, Sand Rat, Cane mice; Prairie Dogs, Grasshopper Mice, Voles, Multimammate Rats Common names, latin names, pictures, what they are used for, anatomic features, physiologic features, husbandry & housing, pertinent experimental features	<ul style="list-style-type: none"> • BB (3) Chpt 7 Sects III, VII, X, XII, XIII, XIV, XV & XVII
06/17	Lecturer: Jacqueline (Hutchinson)	Odd LAM Species: Normative Biology & Model Use of Bats, Armadillos, Amblyoma Mexicana, Horseshoe crabs, Axotyl, Sea Urchins, etc	<ul style="list-style-type: none"> • Textbook: “Bats in Captivity Biol & Medical Aspects” No single source for other spp. Refer to: <ul style="list-style-type: none"> • Goodroe Bat PPT (2015) Garrett Misc 3° Spp PPT (2015)
06/24	Lecturer: Izzi & Pate (No mentor)	Ferrets & Chinchillas – Biology, Models & Diseases <ul style="list-style-type: none"> • Anatomy • Reproductive parameters • Models • Anesthesia, analgesia, antibiotics • Overview of most common infectious & noninfectious diseases 	BB(3) Chpt 9 & 14
07/21	Good luck!	ACLAM Exam for Casey & Adam	Everything 😊

References (available in References in JHBox):

BB (3) = Laboratory Animal Medicine, Third Edition (American College of Laboratory Animal Medicine) 3rd Edition by Lynn C. Anderson (Editor), Glen Otto (Editor), Kathleen R. Pritchett-Corning (Editor), Mark T. Whary (Editor), James G. Fox (Editor)

BB Anesthesia = Anesthesia and Analgesia in Laboratory Animals, Second Edition (American College of Laboratory Animal Medicine) 2nd Edition by Richard Fish (Editor), Peggy J. Danneman (Editor), Marilyn Brown (Editor), Alicia Karas (Editor)

BB NHP = Nonhuman Primates in Biomedical Research, Volumes 1-2, Second Edition by Christian R. Abeo (Editor), Keith Mansfield (Editor), Suzette D. Tardif (Editor), Timothy Morris (Editor)

BB Mouse = The Mouse in Biomedical Research, Volumes 1-4, Second Edition by James G. Fox (Editor), Stephen Barthold (Editor), Muriel Davisson (Editor), Christian E. Newcomer (Editor), Fred W. Quimby (Editor), Abigail Smith (Editor)

CRAMM 2018-2019 Schedule

BB Rat = The Laboratory Rat, Second Edition (American College of Laboratory Animal Medicine) 2nd Edition by Mark A. Suckow (Editor), Steven H. Weisbroth (Editor), Craig L. Franklin (Editor)

JAX = The Jackson Laboratory Handbook on Genetically Standardized Mice, 6th ed, by Kevin Flurkey (Scientific Editor), Joanne M. Curren (Editor), Edward H. Leiter (Associate Editor), Barbara Witham (Associate Editor)

Bonus Lectures – To Request or Propose Additional Lectures, contact the potential lecturer or Kelly:

Animal Model Basics: Pate

Surgery and BME for Laboratory Animal Veterinarians: Izzi

Interactive Nomenclature Session (International Committee on Standardized Genetic Nomenclature for Mice) and Mouse Coat Color Quiz

Statistics for Boards: Hutchinson or Pate closer to boards date

Research laboratory techniques and equipment for boards: Pate closer to boards date

Neurobehavioral testing: Hutchinson

Platelet Function & Coagulation testing: Pate

Overview of Grant Mechanisms & Grant Review: Pate closer to boards date