

COMPARATIVE MEDICINE JOURNAL REVIEW 2011

Workshop in Laboratory Animal Medicine
North Carolina State University
May 17, 2012
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JOURNAL REVIEW

- Read all journals
- Take notes for future reference
- Generate questions from each journal
 - Examination questions must have 2 references!!!

Analgesic Effects of Tramadol, Tramadol-Gabapentin, and Buprenorphine in an Incisional Model of Pain in Rats (*Rattus norvegicus*)

Gabriel F. McKenna,¹ Christine P. Johnson,¹ Charles T. Long,¹ Andrew W. Bennett,¹ Kathleen J. Jorgensen,¹ David C. Sorenson,¹ and Stephen A. Wolf¹

Postoperative pain management in laboratory animals often benefits from a limited number of drug classes, such as opioids and nonopioid analgesic/antidromolytic drugs. While we evaluated the effects of various tramadol, tramadol with gabapentin, and buprenorphine (a μ -opioid agonist) in a rat model of incisional pain by measuring thermal hyperalgesia and weight bearing ability in 4 pain regions, we also have observational parameters and compared that to tramadol alone after surgery. Data revealed that saline or with tramadol only showed thermal hyperalgesia on days 2 through 4 and 1 through 3 after surgery, respectively. In contrast, tramadol with gabapentin showed no thermal hyperalgesia on days 2 and 3 after surgery, and only mild thermal hyperalgesia on day 4 after surgery. Tramadol with gabapentin showed no thermal hyperalgesia on days 2 and 3 after surgery, but showed mild thermal hyperalgesia on day 4 after surgery. Saline and tramadol with saline or with tramadol only showed significantly less thermal weight bearing on day 4 after surgery, whereas saline and tramadol with buprenorphine or tramadol with gabapentin showed no significant change in thermal weight bearing after surgery. These data suggest that tramadol alone provides insufficient analgesia in this model of incisional pain, buprenorphine and tramadol with saline, tramadol with gabapentin provide relief of thermal hyperalgesia and analgesic weight bearing.

- Buprenorphine
 - Partial μ -opioid receptor agonist
 - Long plasma half life (8 - 12 h)
 - Federally controlled
 - Difficult to antagonize
 - Decreased GI motility, resp. and cardiac depression, immunomodulation
- Tramadol
 - 1st metabolite (O-desmethyl tramadol) is responsible for pain relief
 - Lack of complete tolerance-induced reversal and withdrawal
 - Non-controlled
 - Fewer respiratory, GI, and immunomodulatory effects vs. other opioids
- Gabapentin
 - Antiepileptic drug
 - Indicated based on being neurostatic pain
 - Non-controlled

Methods:

- Heat hyperalgesia assessed by measuring paw withdrawal latencies to radiant heat (lighted bulb)
- Incapacitation test used to determine hind paw weight distribution

FEBRUARY 2011

- Mouse models- 4 articles
- Rat models- 2 articles
- NHP models- 2 articles
- Multiple species models- 1 article
- Case study

Association between Hair-Induced Oronasal Inflammation and Ulcerative Dermatitis in C57BL/6 Mice

- Periodontitis
 - Sheep, cats, dogs, rice rats

What is the genus and species of the rice rat?

Oryzomys palustris



Association between Hair-Induced Oronasal Inflammation and Ulcerative Dermatitis in C57BL/6 Mice

According to the 2007 AVMA Guidelines on Euthanasia, the optimal flow rate of this agent should displace what chamber volume per minute?

- a) 10% b) 20% c) 30% d) 40%
- b) 20%



Paternal Experience and Stress Responses in California Mice (*Peromyscus californicus*)

- Paternal care of offspring
 - Marmosets (*Callithrix* spp.), cotton-top tamarins (*Saguinus oedipus*), prairie voles (*Microtus ochrogaster*), California mice (*Peromyscus californicus*)

Which of the following has neuroprotective properties during periods of prolonged stress?

- a) Dehydroepiandrosterone
- b) 17- α -hydroxyprogesterone
- c) 11-deoxycorticosterone

a) Dehydroepiandrosterone (DHEA)

What component of fox feces is used to stimulate fear responses in mice?

- a) 1-methyl-4-phenyl-1,2,3,6-tetrahydropyridine
- b) 2,5-dihydro-2,4,5-trimethylthiazoline (TMT)
- c) Methyl 3b-hydroxy-1aH,5aH-tropane

b) 2,5-dihydro-2,4,5-trimethylthiazoline (TMT)



The Effects of Diet Composition on Body Fat and Hepatic Steatosis in an Animal (*Peromyscus californicus*) Model of the Metabolic Syndrome

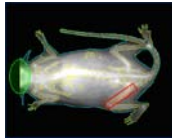


- California mice
 - Paternal care
 - Stress responses
 - Metabolic syndrome



The Effects of Diet Composition on Body Fat and Hepatic Steatosis in an Animal (*Peromyscus californicus*) Model of the Metabolic Syndrome

- Dual-energy X-ray absorptiometry (Dexa scan)



- Can you identify other imaging modalities?
 - MRI, ultrasound biomicroscopy, quantitative computed tomography, microcomputed tomography



Protective Effect of Inositol Hexaphosphate Against UVB Damage in HaCaT Cells and Skin Carcinogenesis in SKH1 Hairless Mice

- HaCaT = human immortalized keratinocyte cells
- CrI:SKH1-*hr*
 - Outbred
 - Euthymic
 - Immunocompetent
 - Research uses:
 - Wound healing
 - Safety & efficacy
 - Dermal
 - UV radiation



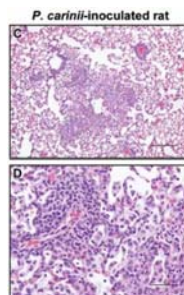
What is the wavelength of UVB irradiation?

- a) 320-400 nm
- b) 290-320 nm
- c) ≤ 290 nm

b) 290-320 nm

Pneumocystis carinii Infection Causes Lung Lesions Historically Attributed to Rat Respiratory Virus

- Perivascular lymphocytic cuffing
- Lymphohistiocytic interstitial pneumonia



Diabetes Enhances Dental Caries and Apical Periodontitis in Caries-Susceptible WBN/KobS1c Rats



- Periodontitis
 - WBN/KobS1c rats
 - C57BL/6 mice
- Diabetes Type 1 and Type 2 animal models



Longitudinal Patterns of Viremia and Oral Shedding of Rhesus Rhadinovirus and Retroperitoneal Fibromatosis Herpesviruses in Age-Structured Captive Breeding Populations of Rhesus Macaques (*Macaca mulatta*)

- Rhesus Rhadinovirus
- Retroperitoneal Fibromatosis
 - Gammaherpesviruses
 - Latent
 - Immunosuppression

Retroperitoneal fibromatosis is a gammaherpesvirus that is most frequently associated with:

- a) SRV/D-1 b) SRV/D-2 c) SRV/D-3 d) SRV/D-4
b) SRV/D-2



Use of an Implantable Loop Recorder in the Investigation of Arrhythmias in Adult Captive Chimpanzees (*Pan troglodytes*)

- Ventricular arrhythmias
 - Common in chimpanzees
 - Potentially associated with underlying heart disease and sudden cardiac death

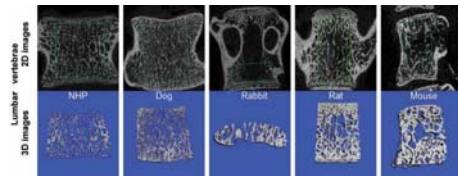
What floor area (ft²) is recommended for a juvenile chimpanzee (9 kg) according to the 8th Edition of the Guide?

- a) 12 b) 15 c) 18 d) 21
b) 15

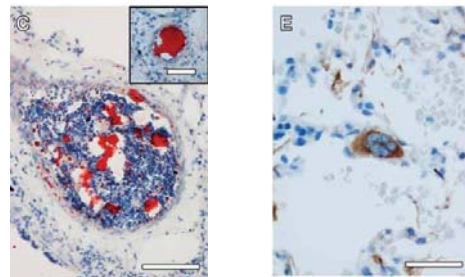


Comparative Bone Anatomy of Commonly Used Laboratory Animals: Implications for Drug Discovery

- Rodents
 - Open growth plates throughout life
 - No Haversian system



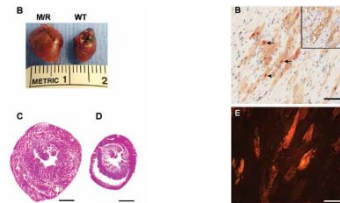
Pulmonary Embolization of Fat and Bone Marrow in *Cynomolgus* Macaques (*Macaca fascicularis*)



APRIL 2011

- Mouse models- 2 articles
- Rat models- 2 articles
- Ferret models- 1 article
- Swine models- 2 articles
- NHP models- 2 articles
- Case study

Capacity for Resolution of Ras-MAPK-Initiated Early Pathogenic Myocardial Hypertrophy Modeled in Mice



Western blots are used to detect which of the following?

- a) DNA b) RNA c) Proteins
c) Proteins

Development of a Mouse Model for Assessing Fatigue during Chemotherapy

- Assessment of neuromuscular impairment
 - Inverted screen test
 - Vertical pole test
 - Wire hang test
- Sleep deprivation protocols
 - Gentle handling or forced locomotion
 - Flower pot
 - Disc



Biometric Evidence of Diet-Induced Obesity in Lew/Crl Rats

- Fisher-to-Lewis renal transplant model
 - Chronic allograft nephropathy
- Obesity-prone rat strains
 - Zucker
 - Zucker Diabetic Fatty Rat
 - Obese Prone CD Rat

Lewis rats are a research model for which of the following conditions?

- a) Prostatic adenocarcinoma
 - b) Hypertension
 - c) Obesity
 - d) Multiple sclerosis
- d) Multiple sclerosis**



Effects of Short-Term Fasting in Male Sprague–Dawley Rats



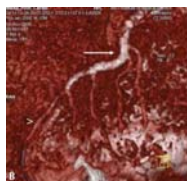
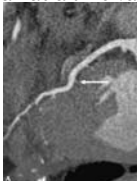
Spermatogenesis in Ferret Testis Xenografts: A New Model

- Xenograft, Allograft, Autograft
- Ferret reproductive data
 - Monoestrus
 - Induced ovulators
 - 42 day gestation
 - Altricial pups
 - Ability to hear @ 32 days
 - Opening of eyes @ 34 days



Long-Term Evaluation of a Selective Retrograde Coronary Venous Perfusion Model in Pigs (*Sus Scrofa Domestica*)

- Blood supply from coronary artery is right-side dominant
 - No preexisting collateral circulation
- Left azygous vein drains the intercostal vessels into the coronary sinus
- Aorta has a true vaso vasorum



A Model of Hemorrhagic Shock and Acute Lung Injury in Landrace–Large White Swine



Association of Brain-Type Natriuretic Protein and Cardiac Troponin I with Incipient Cardiovascular Disease in Chimpanzees (*Pan troglodytes*)

- Potential biomarkers for incipient cardiovascular disease
- Postmortem examination and histopathology



Risk Factors for Dystocia in Pigtailed Macaques (*Macaca nemestrina*)

- Dystocia → 3 P's
 - Power (insufficient contractions or expulsive effort)
 - Passenger (inappropriate fetal presentation, position, development)
 - Passage (pelvic abnormalities)

Are pigtailed macaques seasonal or non-seasonal breeders?

Non-seasonal



Risk Factors for Dystocia in Pigtailed Macaques (*Macaca nemestrina*)

- Risk of dystocia
 - Proportion of viable births
 - Proportion of cesarean sections
 - Gestational age, total previous births, infant's birth weight

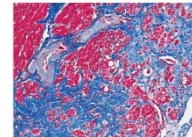
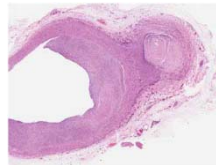
Which of the following is a model for dystocia?



Answer: Squirrel Monkey

Intracardiac Thrombosis and Aortic Dissecting Aneurysms in Mustached Tamarins (*Saguinus mystax*) with Cardiomyopathy

- Aortic dissecting aneurysm
- Stains
 - Mallory phosphotungstic-acid-hematoxylin stain
 - Fibrin
 - Masson's trichrome stain
 - Fibrous connective tissue



JUNE 2011

- Mouse models- 4 articles
- Feline models- 1 articles
- Swine models- 1 article
- NHP models- 2 articles
- Case study

Lack of Effect of Murine Norovirus Infection on a Mouse Model of Bacteria-Induced Colon Cancer

- Murine Norovirus
 - Non-enveloped
 - Orofecal
 - Tropism for dendritic cells & macrophages

Noroviruses belong to what family?

- a) Coronaviridae
 - b) Caliciviridae
 - c) Picornaviridae
 - d) Paramyxoviridae
- b) Caliciviridae**

Spontaneous Nonthymic Tumors in SCID Mice

- Severe combined immunodeficiency (SCID) mice
 - Lack functional B & T cells
 - High incidence of T-cell thymic lymphomas

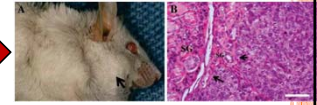
Matching (mice)

- | | |
|---------------------|------------------|
| 1. Motheaten___ | a) Chromosome 14 |
| 2. Rag 1 & Rag 2___ | b) Chromosome 11 |
| 3. Nude___ | c) Chromosome 6 |
| 4. Hairless___ | d) Chromosome 13 |
| 5. Beige___ | e) Chromosome 2 |

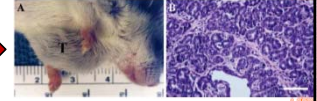


Spontaneous Nonthymic Tumors in SCID Mice

Myeloepithelioma (salivary gland)
- Strains A & BALB/c



Mammary gland adenocarcinoma



Rhabdomyosarcoma
- BALB/c or related inbred strains



An Alternative In Vivo Method to Refine the Mouse Bioassay for Botulinum Toxin Detection

- Mouse Bioassay (MBA)
 - Only approved BoNT detection procedure in the U.S.

- Toe-spread research model



Which of the following readily inactivates botulinum toxin?

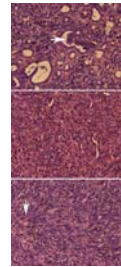
- a) NaOCL b) NaOH c) Ozone

Answer- a, b, c

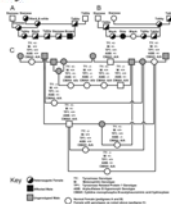


Heterogeneity of the Tumorigenic Phenotype Expressed by Madin-Darby Canine Kidney Cells

- Madin-Darby Canine Kidney Cells
 - American Type Culture Collection (ATCC)



Removal of Potentially Confounding Phenotypes from a Siamese-Derived Feline Glaucoma Breeding Colony



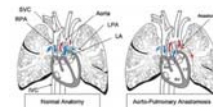
According to the AWA, it is acceptable to transport kittens in the same enclosure with an adult cat (other than the dam) at what age?

- a) 14 weeks b) 15 weeks c) 16 weeks d) 17 weeks



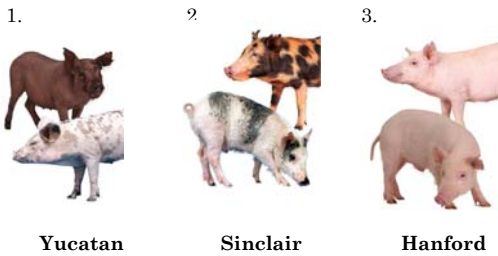
Hemodynamic and Histologic Characterization of a Swine (*Sus scrofa domestica*) Model of Chronic Pulmonary Arterial Hypertension

- Experimental models of PAH
 - Small animals (rats and mice)
 - Hypoxia, monocrotaline, genetic modifications, surgical shunts
 - Large animals (pigs, sheep, dogs, macaques, calves, and apes)
 - Aortopulmonary shunt model*, hypoxia, monocrotaline, and infectious agents



Hemodynamic and Histologic Characterization of a Swine (*Sus scrofa domestica*) Model of Chronic Pulmonary Arterial Hypertension

Minipig identification:



Psychogenic Alopecia in Rhesus Macaques Presenting as Focally Extensive Alopecia of the Distal Limb

- Alopecia
 - Inflammatory, allergic, genetic, nutritional, infectious, idiopathic

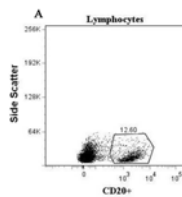


Which of the following stains was used to quantify perivascular inflammation (mast cells)?

- a) Hematoxylin solution
- b) Methyl violet
- c) Rose bengal
- d) Toluidine blue

Alterations in Peripheral Blood B-cell Populations in SHIV89.6P-infected Macaques (*Macaca fascicularis*)

- SHIV
 - Follicular hyperplasia
 - Germinal center abnormalities



Colonization with Nontuberculous Mycobacteria Is Associated with Positive Tuberculin Skin Test Reactions in the Common Marmoset (*Callithrix jacchus*)

- Old World primates (Mycobacterium tuberculosis complex)
 - *M. bovis*, *M. africanum*, *M. canetti*, and *M. microti*
- New World primates (Nontuberculous Mycobacteria)
 - *M. avium* complex, *M. kansasii*, *M. goodii*
- Tuberculin skin test
 - Mammalian Old Tuberculin
 - 24, 48, 72 hrs.
 - Grades 1 – 5

Colonization with Nontuberculous Mycobacteria Is Associated with Positive Tuberculin Skin Test Reactions in the Common Marmoset (*Callithrix jacchus*)

- False-negative results
 - Latent infection, anergy, defective cellular immunity
- False-positive results
 - Sensitized to nontuberculous mycobacterial (NTM) species, trauma, exposure to Freund complete adjuvant, Bacillus-Calmette-Guerin vaccine
- Acid-fast stains
 - Ziehl-Neelsen
 - Fite-Faraco



Colonization with Nontuberculous Mycobacteria Is Associated with Positive Tuberculin Skin Test Reactions in the Common Marmoset (*Callithrix jacchus*)



Mycobacterium kansasii was diagnosed as the cause of the following lesions.

Please provide the correct classification for this organism.

- a) Runyon group I
 - b) Runyon group II
 - c) Runyon group III
 - d) Runyon group IV
- a) Runyon group I

AUGUST 2011

- Overviews- 2 articles
- Fish model- 1 article
- Mouse models- 5 articles
- Rat models- 2 articles

The Use of Animal Models for Stroke Research: A Review

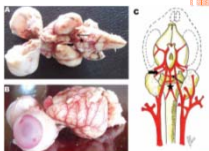
- Animal models
 - Induced
 - Experimental
 - Diabetes mellitus
 - Spontaneous
 - Natural occurrence
 - Negative
 - Disease inhibiting growth and animals unable to react
 - Gonococcal infection in rabbits
 - Orphan
 - Natural occurrence in nonhuman spp. but not described in humans
- Stroke research animal models
 - Mice & rats (most common)
 - Rabbits, dogs, swine, nonhuman primates

The Use of Animal Models for Stroke Research: A Review

- Ischemia induction
 - Middle cerebral artery occlusion (most common surgical method)
 - Embolism
 - Perforating artery occlusion
 - Endothelin 1 injection
 - Spontaneous

Which vessel is depicted by the symbol ★ in the photographs of the rabbit encephalon?

- a) Superior cerebellar artery
- b) Lower anterior cerebellar artery
- c) Basilar artery
- d) Internal carotid artery
- c) Basilar artery**



Environmental Enrichment of Laboratory Rodents: The Answer Depends on the Question

According to the 8th edition of the Guide, how often should the IACUC, researchers, and veterinarians review enrichment programs?

- a) Semi-annually b) Annually
- c) Regular Basis d) Every 3 years
- c) Regular Basis**



Transmission, Diagnosis, and Recommendations for Control of *Pseudoloma neurophilia* Infections in Laboratory Zebrafish (*Danio rerio*) Facilities

- *Pseudoloma neurophilia*
 - Obligate intracellular parasite
- Transmission
 - Cannibalization
 - Spawning
- Clinical signs
 - Nonspecific
 - Emaciation & spinal curvature
 - Normal appearance



Microsporidian spores are stained red in histologic sections with which of the following stains?

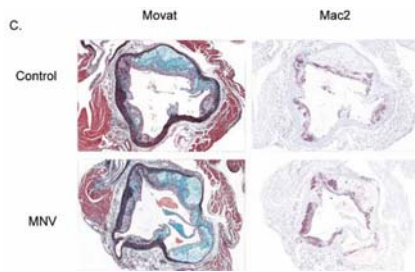
- a) Hematoxylin & Eosin b) Fungi-Fluor
- c) GMS d) Luna
- d) Luna**

Murine Norovirus Increases Atherosclerotic Lesion Size and Macrophages in *Ldlr*^{-/-} Mice

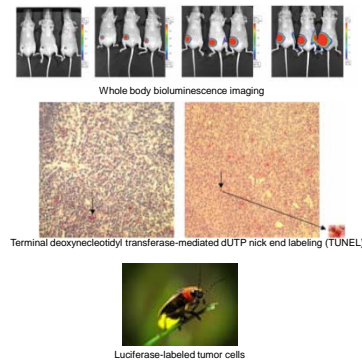
- MNV
 - Single-stranded RNA
 - *Caliciviridae*
 - Infects dendritic cells and macrophages
- Atherosclerosis
 - Mice are naturally resistant
 - Mouse model = *Ldlr*^{-/-}
- Intraperitoneal glucose tolerance test (IPGTT)
- Intraperitoneal insulin tolerance test (IPITT)



Murine Norovirus Increases Atherosclerotic Lesion Size and Macrophages in *Ldlr*^{-/-} Mice

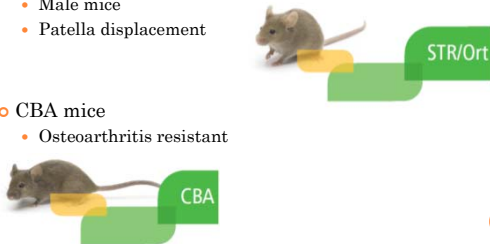


Effect of Magnetic Fields on Tumor Growth and Viability

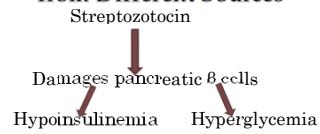


STR/ort Mice, a Model for Spontaneous Osteoarthritis, Exhibit Elevated Levels of Both Local and Systemic Inflammatory Markers

- STR/ort mice
 - Model for osteoarthritis (spontaneous)
 - Male mice
 - Patella displacement
- CBA mice
 - Osteoarthritis resistant



The Streptozotocin-Induced Diabetic Nude Mouse Model: Differences between Animals from Different Sources



- Adverse effects
 - Hepatotoxicity
 - Nephrotoxicity

Which of the following is not a diabetic research model?

- a) ZDF-*Lepr*^{fa}/CrJ
- b) SHHF/MccGmiCrJ-*Lepr*^{cp}/CrJ
- c) CD:SD-Tg(ins2-IAPP)Soe1
- d) NBL/CrCrJ

Effects of Zinc Gluconate and 2 Other Divalent Cationic Compounds on Olfactory Function in Mice

- Buried food-pellet test
 - Utilized to gauge olfaction
- Anosmia
 - Loss of smell



Prior Parity Positively Regulates Learning and Memory in Young and Middle-Aged Rats

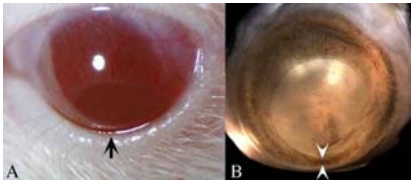
- Wistar rats
- Morris water maze
 - Spatial memory

Which of the following cytological descriptions correctly describes proestrus in the rat?

- a) epithelial, round nucleated
- b) epithelial keratinized
- c) polymorphonuclear cells
- d) Leukocytes and pavement cells

Inferior Ectopic Pupil and Typical Ocular Coloboma in RCS Rats

- RCS (Royal College of Surgeons) rats
 - Inbred
 - Model for Inherited retinal degeneration and ocular coloboma



OCTOBER 2011

- Mouse model- 1 articles
- Rat models- 2 articles
- Rabbit models- 2 articles
- Feline model- 1 article
- Swine models- 2 articles
- NHP models- 2 articles

Poliomyelitis in MuLV-Infected ICR-SCID Mice after Injection of Basement Membrane Matrix Contaminated with Lactate Dehydrogenase-Elevating Virus

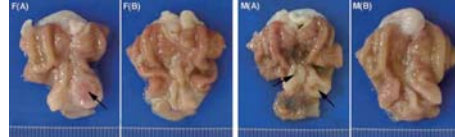
- Lactate Dehydrogenase-Elevating Virus (LDV)
 - Enveloped RNA virus
 - Arteriviridae
 - Contaminant of transplantable tumors
 - Life-long viremia
- LDV-associated poliomyelitis (requirements)
 - Immunosuppression
 - 2 viruses (LDV & MuLV)
 - Replication permissive allele

Immunosuppressed AKR and C58 mice are homozygous for which allele making them prone to LDV-induced poliomyelitis?

- a) *Dc78n* b) *Jc7n* c) *Ma4n* d) *Tw24n* e) *Fv1^{n/n}*

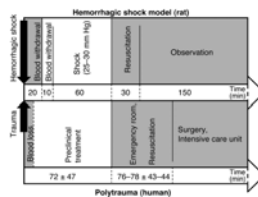
Sex-Associated Difference in Estrogen Receptor β Expression in N-Methyl-N'-Nitro-N-Nitrosoguanidine-Induced Gastric Cancers in Rats

- N-methyl-N'-nitro-N-Nitrosoguanidine (MNNG)
 - Gastric cancer in rats, hamsters, and dogs



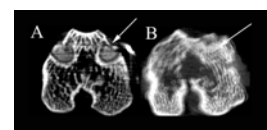
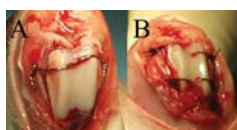
A New Model of Severe Hemorrhagic Shock in Rats

- Hemorrhagic shock
 - Fixed-volume
 - Withdrawing blood based on body weight
 - Fixed-pressure*
 - Withdrawing blood until the desired blood pressure
 - Male Wistar rats
 - Well controlled MAP



Rabbit Trochlear Model of Osteochondral Allograft Transplantation

- Osteochondral allograft animal models
 - Rabbits, dogs, sheep, goats, rats, baboons
- New Zealand White and Dutch Belted rabbits



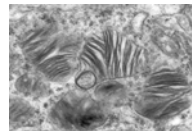
Incidence of Spontaneous Ocular Lesions in Laboratory Rabbits

- Slit-lamp biomicroscopy



Renal Failure Associated with Mucopolysaccharidosis Type I in a Cat from a MPS I Research Colony

- Mucopolysaccharidosis
 - Lysosomal storage disease
 - Animal models
 - Dogs, cats, mice
- Zebra bodies
 - Lysosome containing broad transversely-stacked myeloid membranes



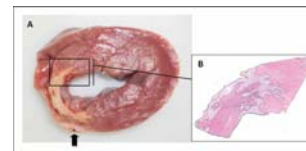
Renal Failure Associated with Mucopolysaccharidosis Type I in a Cat from a MPS I Research Colony

- Lysosomal storage disease animal models
 - Mice (gene knockout technology)
 - Dogs
 - Cairn and West Highland white terriers
 - Globoid cell leukodystrophy (Krabbe's disease)
 - Siamese cats
 - Rats, Guinea pigs, quail, sheep, emu, goats, cattle, and horses



Surgical Porcine Myocardial Infarction Model through Permanent Coronary Occlusion

- Myocardial infarction in swine
 - Open-chest (surgical)*
 - Precise control of site of occlusion
 - Visual assessment
 - Closed-chest (percutaneous catheterization)
 - Limited knowledge of exact location, length and duration of arterial occlusion



Horner Syndrome After Carotid Sheath Surgery in a Pig: Anatomic Study of Cervical Sympathetic Chain

- Horner syndrome
 - Ipsilateral eyelid ptosis
 - Pupil miosis
 - Facial anhidrosis

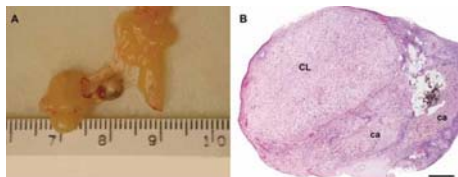


Morphometric Variables Related to Metabolic Profile in Captive Chimpanzees (*Pan troglodytes*)

- Obesity determination
 - Body fat estimation (morphometric techniques)
 - Waist circumference



Endocrine Profile of an Ovariectomized Cynomolgus Monkey (*Macaca fascicularis*) with a Supernumerary Ovary



DECEMBER 2011

- Mouse models- 4 articles
- Rat models- 1 article
- Nonhuman primate models- 5 articles

Phylogenetic Analysis of *Myobia musculi* (Schranck, 1781) by Using the 18S Small Ribosomal Subunit Sequence

- *Myobia musculi*
 - Nonburrowing
 - Head, neck, shoulder region
 - 23 day life cycle
 - Single tarsal claw on the 2nd pair of legs

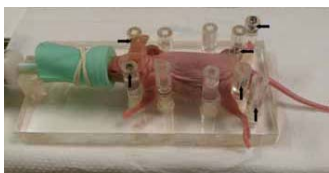
Myobia musculi belong to what suborder?

- a) Mesostigmata b) Prostigmata
- c) Astigmata d) Metastigmata
- b) Prostigmata**

Markers for Predicting Death as an Outcome for Mice Used in Infectious Disease Research

- Hypothermia
 - Most valuable characteristic for predicting death
- Weight loss
- Measure of the product of temperature and body weight

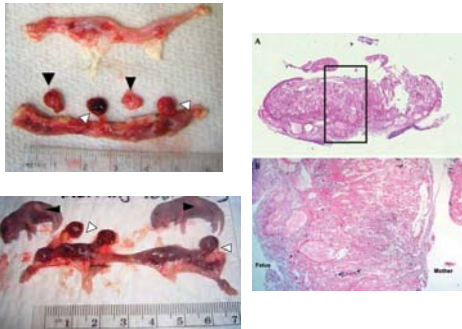
Facilitating Multimodal Preclinical Imaging Studies in Mice by Using an Immobilization Bed



Retained Fetal Membranes in C57BL/6NCrl Mice: Description of Clinical Case Presentations and Related Epidemiologic Findings

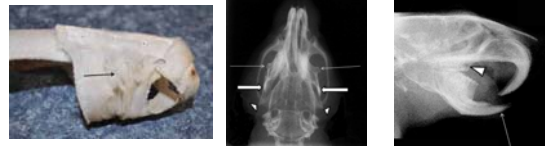
- Retained fetal membranes (RFM)
 - Failure to expel fetal membranes within 12 – 24 hr. post parturition
 - Common in cows, ewes, horses, and pigs
 - Rare in cats, toy-breed dogs, guinea pigs, and mice
 - Diagnosis
 - Physical exam, CBC, radiography, ultrasonography, exploratory laparotomy
 - Treatment
 - Oxytocin or prostaglandin injections, antimicrobials
 - Surgical removal of the uterus or ovariectomy

Retained Fetal Membranes in C57BL/6NCrl Mice: Description of Clinical Case Presentations and Related Epidemiologic Findings



Bilateral Traumatic Temporomandibular Joint Luxation in a Rat

- TMJ luxation
 - Cats, dogs, horses, guinea pigs



Which of the following is the correct dental formula for the rat?

- a) 2(I 1/1, C 0/0, PM 0/0, M 3/3)
- b) 2(I 1/1, C 0/0, PM 1/1, M 3/3)
- c) 2(I 2/1, C 0/0, PM 3/2, M 3/3)
- a) 2(I 1/1, C 0/0, PM 0/0, M 3/3)

Obesity in Rhesus and Cynomolgus Macaques: A Comparative Review of the Condition and Its Implications for Research

- Obesity animal models:
 - Dogs, pigs, hamsters, rats, mice, NHP's
- Obesity onset:
 - High fat diets
 - Surgical force feeding
 - Genetic modification
- Obesity detection
 - Morphometric measurements
 - Crown-rum length
 - Weight
 - Abdominal subcutaneous fat
 - Skin fold thickness

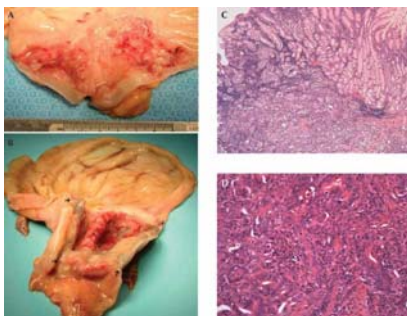
Spontaneous Gastric Carcinomas in Sooty Mangabeys (*Cercocebus atys*)

- Sooty mangabey (*Cercocebus atys*)
 - West Africa
 - Research uses:
 - AIDS pathogenesis
 - Reproductive biology
 - Behavior



- 8 cases of spontaneous gastric carcinomas

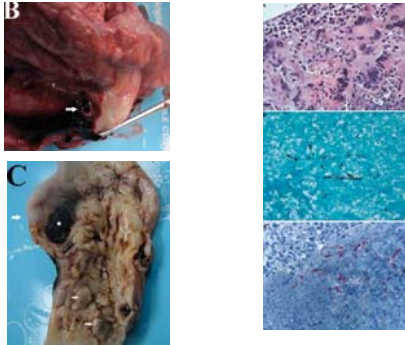
Spontaneous Gastric Carcinomas in Sooty Mangabeys (*Cercocebus atys*)



Ruptured Mycotic Aortic Aneurysm in a Sooty Mangabey (*Cercocebus atys*)

- Mycotic aneurysm
 - Infected aneurysm regardless of the etiology
- Aneurysm classification
 - "True"- involve all layers of the arterial wall
 - "False"- form outside of the arterial wall due to a leak in an artery (hematoma)

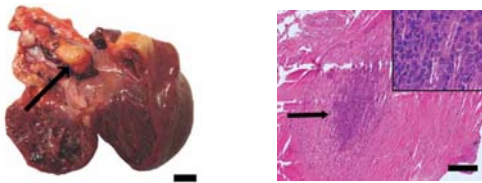
Ruptured Mycotic Aortic Aneurysm in a Sooty Mangabey (*Cercocebus atys*)



Facial Paralysis and Lymphocytic Facial Neuritis in a Rhesus Macaque (*Macaca mulatta*) Positive for Simian Retrovirus Type D2

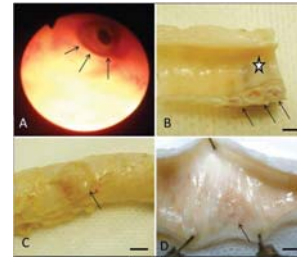
- Simian retrovirus type D (SRVD)
 - Single stranded RNA virus (Retroviridae)
 - Isolated from monkeys of the genus (*Macaca*)
 - Clinical signs
 - Asymptomatic
 - Nonspecific- diarrhea, weight loss, splenomegaly
 - Immunosuppression and neoplasia (fibrosarcoma and retroperitoneal fibromatosis)
 - Clinical pathologic findings
 - Anemia, neutropenia, lymphopenia, thrombocytopenia

Facial Paralysis and Lymphocytic Facial Neuritis in a Rhesus Macaque (*Macaca mulatta*) Positive for Simian Retrovirus Type D2



Tracheal Stenosis and Adenocarcinoma in an Olive Baboon (*Papio cynocephalus anubis*)

- Repeated endotracheal intubation
 - 67 intubations between March 2005-February 2010



QUESTIONS???



What is the genus and species of the rice rat?
Oryzomys palustris

According to the 2007 AVMA Guidelines on Euthanasia, the optimal flow rate of this agent should displace what chamber volume per minute?

- a) 10% b) 20% c) 30% d) 40%
- b) 20%

Which of the following has neuroprotective properties during periods of prolonged stress?

- a) Dehydroepiandrosterone b) 17- α -hydroxyprogesterone
- c) 11-deoxycorticosterone
- a) Dehydroepiandrosterone (DHEA)

What component of fox feces is used to stimulate fear responses in mice?

- a) 1-methyl-4-phenyl-1,2,3,6-tetrahydropyridine
- b) 2,5-dihydro-2,4,5-trimethylthiazoline (TMT)
- c) Methyl 3 β -hydroxy-1 α H,5 α H-tropane
- 2,5-dihydro-2,4,5-trimethylthiazoline (TMT)

What is the wavelength of UVB irradiation?

- a) 320-400 nm b) 290-320 nm c) \leq 290 nm
- b) 290-320 nm

Retroperitoneal fibromatosis is a gammaherpesvirus that is most frequently associated with:

- a) SRV/D-1 b) SRV/D-2 c) SRV/D-3 d) SRV/D-4
b) SRV/D-2

What floor area (ft²) is recommended for a juvenile Chimpanzee (9 kg) according to the 8th Edition of the Guide?

- a) 12 b) 15 c) 18 d) 21
b) 15

Western blots are used to detect which of the following?

- a) DNA b) RNA c) Proteins
c) Proteins

Lewis rats are a research model for which of the following conditions?

- a) Prostatic adenocarcinoma b) Hypertension
c) Obesity d) Multiple sclerosis

Multiple sclerosis

Are pigtailed macaques seasonal or non-seasonal breeders?

Non-seasonal

Which of the following is a model for dystocia?

Answer: Squirrel Monkey

Noroviruses belong to what family?

- a) Coronaviridae b) Calciviridae
c) Picornaviridae d) Paramyxoviridae
b) Calciviridae

Matching (mice)

- | | |
|------------------|---------------|
| 1. Motheaten | Chromosome 6 |
| 2. Rag 1 & Rag 2 | Chromosome 2 |
| 3. Nude | Chromosome 11 |
| 4. Hairless | Chromosome 14 |
| 5. Beige | Chromosome 13 |

Which of the following readily inactivates botulinum toxin?

- a) NaOCl b) NaOH c) Ozone

Answer- a, b, c

According to the AWA, it is acceptable to transport kittens in the same enclosure with an adult cat (other than the dam) at what age?

- a) 14 weeks b) 15 weeks c) 16 weeks d) 17 weeks
d) 17 weeks

Which of the following stains was used to quantify perivascular inflammation (mast cells)?

- a) Hematoxylin solution b) Methyl violet
c) Rose bengal d) Toluidine blue
d) Toluidine blue

Please provide the correct classification for this organism.

- a) Runyon group I b) Runyon group II
c) Runyon group III d) Runyon group IV
a) Runyon group I

Which vessel is depicted by the symbol "★" in the photographs of the rabbit encephalon?

- a) Superior cerebellar artery
b) Lower anterior cerebellar artery
c) Basilar artery
d) Internal carotid artery
c) Basilar artery

According to the 8th edition of the Guide, how often should the IACUC, researchers, and veterinarians review enrichment programs?

- a) Semi-annually b) Annually
c) Regular Basis d) Every 3 years
c) Regular Basis

Microsporidian spores are stained red in histologic sections with which of the following stains?

- a) Hematoxylin & Eosin b) Fungi-Fluor
c) GMS d) Luna
d) Luna

Which of the following is not a diabetic research model?

- a) ZDF-*Lep^{ob}/Cr1* b) SHHF/MccGmiCr1-*Lep^{ob}/Cr1*
c) CD-SD-Tg(Ins2-IAPP)Soel d) NBL/CrCr1
d) NBL/CrCr1

Which of the following cytological descriptions correctly describes proestrus in the rat?

- a) epithelial, round nucleated b) epithelial keratinized c) polymorphonuclear cells d) Leukocytes and pavement cells
epithelial, round nucleated

Immunosuppressed AKR and C58 mice are homozygous for which allele making them prone to LDV-induced poliomyelitis?

- a) *Dc78n* b) *Jc7n* c) *Madn* d) *Tu24n* e) *Fv1^{int}*
e) *Fv1^{int}*

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c) 2(I 2/1, C 0/0, PM 3/2, M 3/3)
a) 2(I 1/1, C 0/0, PM 0/0, M 3/3)