

The Laboratory

SWINE

Second Edition



Peter J. A. Bollen
Axel K. Hansen
Aage K. Olsen Alstrup

 CRC Press
Taylor & Francis Group

A Volume in The Laboratory Animal Pocket Reference Series

contents

preface.....	xi
authors.....	xiii
1 important biological features	1
breeds	1
The Landrace.....	3
The Yorkshire, or Large White.....	3
The Duroc.....	3
The Hampshire.....	4
The Piétrain.....	5
Other Breeds	5
Hybrid Breeds.....	5
Miniature Breeds	6
The Vietnamese Potbelly Pig.....	6
The Ossabaw Island Hog.....	6
Nomenclature	6
behavior	8
anatomical and physiological features	9
Integument and Skeleton	9
Digestive System.....	10
Abdominal Organs.....	10
Cardiovascular System	10
Pulmonary System.....	11
Lymphatic and Endocrine System.....	11
normative values	11

2	husbandry.....	15
	housing	15
	environmental conditions	17
	Temperature and Humidity.....	18
	Ventilation	18
	Illumination.....	19
	Noise.....	19
	environmental enrichment	19
	Group Housing	19
	Individual Housing	20
	nutrition.....	21
	Nutrient Requirements.....	21
	Feeding Levels	22
	sanitation.....	24
	Frequency.....	24
	Methods.....	25
	transportation.....	25
	record keeping.....	26
	securing welfare	26
3	management and quality assurance	29
	microbiological monitoring	29
	Infections in Swine and Their Impact on Experiments	29
	Pathological Changes, Clinical Disease, and Mortality...29	
	Immunomodulation.....	30
	Physiological Modulation	30
	Competition between Microorganisms within the Animal.....	30
	Interference with Reproduction.....	31
	Interference with Oncogenesis	31
	Contamination of Biological Products	31
	Impact of the Normal Flora.....	31
	Zoonotic Diseases	32
	Legal Regulations	32
	Precautions to Prevent Infections	34
	Rederivation	35
	Barrier Protection	36
	Health Monitoring	37
	Common Findings in Health Monitoring.....	41

genetic monitoring	41
accreditation	42
AAALAC International	42
ISO 9000	43
4 veterinary care	45
clinical examination of swine	45
microbiological sampling	46
diseases of swine.....	46
therapeutic treatment.....	50
pathological examination.....	51
anesthesia and analgesia	52
Acclimatization	52
Clinical Examination Prior to Anesthesia.....	52
Preoperative Fasting	53
Premedication.....	53
Ear Vein Catheter	56
Induction of Anesthesia	56
Endotracheal Intubation	57
Cricothyrotomy	59
Artificial Ventilation.....	59
Thermal Support	60
Maintenance of Anesthesia	60
Inhalation Anesthesia.....	60
Halothane	60
Isoflurane.....	61
Desflurane	61
Sevoflurane	61
Enflurane.....	61
Nitrous Oxide	61
Injectable Anesthesia	62
Propofol.....	62
Ketamine and Other Dissociatives.....	63
Barbiturates.....	63
Adrenoreceptor (α 2) Agonists	64
Benzodiazepines	64
Alpha-Chloralose.....	64
Medetomidine-Butorphanol-Ketamine (MBK).....	64
Supplementary Analgesia	64
Fluid Infusion	65
Depth of Anesthesia	65

Monitoring during Anesthesia.....	65
Neuromuscular Blocking Agents	66
Postoperative Management.....	67
Clinical Signs of Postoperative Pain	67
Postoperative Analgesics	68
Anesthetic Emergencies	69
Laryngospasm and Edema.....	70
euthanasia	71
5 experimental techniques	73
restraint.....	74
sampling techniques	75
Blood Sampling	75
Urine and Feces	78
Cerebrospinal Fluid	79
Bile and Pancreatic Excretions.....	79
administration of compounds	80
basic surgical procedures	81
Catheterization	82
The Carotid Artery and the Internal Jugular Vein	82
The Carotid Artery	82
The Internal Jugular Vein	83
The External Jugular Vein	83
The Cephalic Vein	83
The Femoral Artery and Vein.....	83
Laparotomy.....	84
Portal Vein Cannulation.....	84
The Hepatic Vein	84
The Pancreatic Duct.....	84
Exteriorization of Catheters	85
Catheter Sizes and Material.....	85
Catheter Maintenance.....	86
safety testing of chemicals and drugs	86
Dermal Toxicology	86
Acute and Chronic Systemic Toxicology	87
necropsy.....	90
Equipment	90
Preservation.....	92
Procedure	92
special issues regarding gene-modified swine	93

6	resources.....	95
	associations	95
	books	99
	journals.....	100
	internet resources	103
	swine and diet, and equipment.....	103
	Miniature Swine Resources	104
	Diet Resources.....	104
	references	107
	index	119