

contents

1 IMPORTANT BIOLOGICAL FEATURES	1
Introduction	1
Breeds	2
Behavior	6
Individual Behavior	6
Social Behavior and Communication	7
Aggression and Reproductive Behavior	8
Anatomic and Physiologic Features	9
External Anatomy	9
Dentition	10
Skeletal System	10
Hemolymphatic System	12
Gastrointestinal System	14
Respiratory System	15
Urogenital System	15
Miscellaneous Unique Physiologic Features and Normative Values	19
Hematology	19
Cardiovascular and Respiratory Function	22
Miscellaneous Physiologic and Anatomic Features	23
Reproduction	23
2 HUSBANDRY	27
Housing	28
Environmental Conditions	35
Environmental Enrichment	37
Nutrition	39
Sanitation	41
Transportation	45
Record Keeping	46

3 MANAGEMENT 49

Regulatory Agencies and Compliance	49
The U.S. Department of Agriculture	49
The National Institutes of Health/Public Health Service	50
The U.S. Food and Drug Administration and the Environmental Protection Agency	50
Association for Assessment and Accreditation of Laboratory Animal Care International	50
Institutional Animal Care and Use Committee	51
Occupational Health and Zoonotic Diseases	53
Animal Health Monitoring Program	55

4 VETERINARY CARE 57

Basic Veterinary Supplies	57
Physical Examination of the Guinea Pig	58
Quarantine	59
Clinical Signs of Illness in Guinea Pigs	60
Common Clinical Problems	60
Vitamin C Deficiency	61
<i>Bordetella bronchiseptica</i>	62
<i>Streptococcus pneumoniae</i>	64
Cervical Lymphadenitis	65
Antibiotic Toxicity	66
Pregnancy Toxemia	67
Salmonellosis	67
Alopecia	69
Malocclusion	73
Protozoal Diseases	74
Viral Diseases	75
Pododermatitis	77
Conjunctivitis	78
General Treatment of Disease	78
Disease Prevention through Sanitation	80
Anesthesia and Analgesia	80
Principles of General Anesthesia	81
Characteristics of Commonly Used Injectable Anesthetics	81
Principles of Gas Anesthesia	84
Characteristics of Commonly Used Gas Anesthetics	86
Principles of Local Anesthesia	87

Sedation and Tranquilization of Guinea Pigs	88
Analgesia	88
Perianesthetic Management	89
Aseptic Surgery	92
Postsurgical Management	93
Euthanasia	94

5 EXPERIMENTAL METHODOLOGY 97

Restraint	97
Manual Restraint	97
Restraint Devices	99
Sampling Techniques	99
Blood Collection	99
Urine Collection	109
Milk Collection	110
Compound Administration Techniques	110
Intravascular	110
Intramuscular	113
Subcutaneous	114
Intraperitoneal	115
Intradermal	116
Oral	118
Intracerebroventricular	120
Aural — Middle Ear	120
Adjuvants	121
Safety Testing Procedures	121
Magnusson Maximization Test	122
Buehler Closed-Patch Sensitization Test	123
Guinea Pig Antigenicity (Anaphylaxis) Test	125
Sereny Test	125
Necropsy	125

6 RESOURCES 129

Organizations	129
Publications	132
Books	132
Periodicals	132
Electronic Resources	133
Animal Sources	134
Feed	135