

TABLE OF CONTENTS

Atlas of Canine and Feline Urinalysis

Introduction 1

Section 1: Sample Collection and Handling 2

Collection of Urine Samples 2

Free Catch Urine Collection 2

Transurethral Catheterization 3

Cystocentesis 6

Urine Sample Handling 7

Culture 7

Section II: Urine: Physical Characteristics 10

Volume 10

Color 10

Clarity/Turbidity 11

Odor 11

Urine Specific Gravity 11

Section III Urine Chemistry 13

Urine pH 13

Protein 14

Glucose 19

Ketones 20

Blood 22

Bilirubin 24

Section IV Urine Sediment 26

Preparation for Microscopic Examination 26

Casts 27

Hyaline Casts 27

Cellular Casts 28

Granular Casts 30

Waxy Casts 31

Fatty Casts 32

Hemoglobin Casts 32

Mixed Casts 33

Pseudo Casts 33

Crystals 34

Crystals associated with urolith formation 34

Struvite/Triple Phosphate Crystals 34

Calcium oxalate dihydrate 35

Calcium oxalate monohydrate 36

Calcium Phosphate 37

Urate/Ammonium Biurate 37

Uric Acid 38

Cystine 39

Xanthine 39

Amorphous (Phosphate, Urate, Silicates) 40

Crystals not typically associated with urolith formation 41

Tyrosine and leucine 41

Bilirubin 42

Melamine 42

Drug Induced 43

Sulfonamides 43

Ampicillin 44

Radiopaque Contrast Agents 44

Cholesterol 45

Cells 45

Transitional Epithelial Cells 45

Squamous Epithelial Cells 46

Renal Tubular Epithelial Cells 47

Leukocytes 48

Erythrocytes 49

Atypical (Neoplastic) Cells 50

Organisms 51

Bacteria 52

Fungal Hyphae 53

Yeast 54

Dioctophyma renale Ova 54

Capillaria (Pearsonema) plica and Capillaria felis cati Ova 55

Microfilaria 56

Miscellaneous Findings and Artifacts 56

Pollen 56

Fungal spores 57

Mucus 58

Lipid Droplets 58

Sperm 59

Air Bubbles 59

Starch Granules (Glove Powder) 60

Fiber 60.