

Contents

Introduction	1
Microscopy	2
The Preparation of Tissues	5
The Examination and Interpretation of Sections	10
Stains	10
Histochemistry	11

PART I GENERAL HISTOLOGICAL PRINCIPLES AND PRIMARY TISSUES

CHAPTER 1

<i>The Cell</i>	17
Components of the Body	17
Protoplasm	17
Metabolism	18
Components of the Cell	19
Cell Cycle	57
Chromosomes	57
Cell Division	60
Cell Differentiation	66
Protein Secretion and Transcription of DNA	68
The Four Primary Tissues	70

CHAPTER 2

<i>Epithelium</i>	73
Membranes	73
Simple Epithelia	75
Pseudostratified Epithelia	75
Stratified Epithelia	77
Endothelium, Mesothelium	78
Cell Adhesion in Epithelial Membranes	79
Specializations of the Cell Surface in Epithelia	84
Gland Epithelium	89

CHAPTER 3

<i>Connective Tissue Proper</i>	97
Tissue Fluid	97
Intercellular Substances	99
Basal Laminae	107
Connective Tissue Cells	108
Types of Connective Tissue Proper	116
The Macrophage (Reticuloendothelial) System	123

CHAPTER 4

<i>Specialized Connective Tissue: Cartilage and Bone</i>	125
Cartilage	125
Bone	131
The Joints	147

CHAPTER 5	
<i>Specialized Connective Tissue: Blood</i>	150
Erythrocytes	150
Leukocytes	152
Blood Platelets	157
Plasma	159
Lymph	159
Life Span and Disposal of Blood Cells	159
Hemopoiesis	160
Interrelationships Between Cells of Blood and Connective Tissues: Developmental Potentialities	170
CHAPTER 6	
<i>Muscle</i>	172
Striated Muscle	172
Cardiac Muscle	186
Smooth Muscle	192
CHAPTER 7	
<i>Nervous Tissue</i>	199
The Reflex Arc	199
The Neuron	202
Synapses	207
Neuroglia	212
Types of Neurons	215
Ganglia	217
Nerve Fibers	221
Peripheral Nerves	225
Membranes and Vessels of the Central Nervous System	228
Choroid Plexus and Cerebrospinal Fluid	230
Cytoarchitecture of the Central Nervous System	230
Differentiation and Proliferation	235
Degeneration and Regeneration	235
Neurovascular Bundle	235
Special Stains	235

PART II HISTOLOGY OF THE ORGAN SYSTEMS

CHAPTER 8	
<i>The Circulatory System</i>	239
The Blood Vascular System	239
The Lymph Vascular System	260
Development of the Circulatory System	262
CHAPTER 9	
<i>Lymphoid Organs</i>	263
The Lymph Nodes	264
The Tonsils	271
The Thymus	273
The Spleen	277
CHAPTER 10	
<i>The Skin and Its Appendages (The Integument)</i>	291
The Skin	291
The Nails	299
The Hair	301
Glands of the Skin	307
Blood Vessels, Lymphatics, and Nerves of the Skin	309

CHAPTER 11	
<i>The Digestive System</i>	312
General Organization	312
Section I The Oral Cavity	312
The Lip and Cheek	312
The Tongue	313
Taste Buds	315
Teeth	317
The Major Salivary Glands	326
Section II The Tubular Digestive Tract	331
Layers of Digestive Tract	331
The Esophagus	333
The Stomach	334
The Small Intestine	343
The Large Intestine	352
Section III The Major Digestive Glands	357
The Pancreas	357
The Liver	365
The Gallbladder	379
CHAPTER 12	
<i>The Respiratory System</i>	382
The Nose	382
Paranasal Air Sinuses	386
The Nasopharynx	386
The Larynx	386
The Trachea	388
The Lungs	390
Developmental Origin of the Respiratory System	407
Function of the Respiratory System	407
CHAPTER 13	
<i>The Urinary System</i>	409
The Kidney	409
The Nephron	413
Excretory Passages	431
CHAPTER 14	
<i>The Endocrine System</i>	436
The Hypophysis (Pituitary Gland)	436
The Thyroid Gland	446
The Parathyroid Glands	449
The Suprarenal Glands	451
The Paraganglia (Chromaffin System)	458
The Pineal Body	459
CHAPTER 15	
<i>The Female Reproductive System</i>	462
The Ovary	462
The Fallopian Tubes	470
The Uterus	472
The Vagina	483
The External Genitalia	485
The Mammary Gland	486
Embryology of the Male and Female Reproductive Systems	489

CHAPTER 16

The Male Reproductive System 492

 The Testis 492

 The Male Genital Ducts..... 506

 The Auxiliary Genital Glands..... 511

 The Penis..... 514

CHAPTER 17

Organs of Special Sense 518

 Sensory Receptors 518

 The Eye..... 522

 The Ear..... 553

Index 565