Author(s): Abraham L Kierszenbaum M.D. Ph.D., Laura Tres M.D. Ph.D.

Histology and Cell Biology: An Introduction to Pathology
5th Edition

Pages: 824
Publication date: May 27, 2020
Publisher: Elsevier
Language: English

ISBN-10: 032367321X

Linking basic science to clinical application throughout, Histology and Cell Biology: An Introduction to Pathology, 5th Edition, helps students build a stronger clinical knowledge base in the challenging area of pathologic abnormalities. This award-winning text presents key concepts in an understandable, easy-to-understand manner, with full-color illustrations, diagrams, photomicrographs, and pathology photos fully integrated on every page. Student-friendly features such as highlighted clinical terms, Clinical Conditions boxes, Essential Concepts boxes, concept mapping animations, and more help readers quickly grasp complex information.

- Features new content on cancer immunotherapy, satellite cells and muscle repair, vasculogenesis and angiogenesis in relation to cancer treatment, and mitochondria replacement therapies.
- Presents new material on ciliogenesis, microtubule assembly and disassembly, chromatin structure and condensation, and X chromosome inactivation, which directly impact therapy for ciliopathies, infertility, cancer, and Alzheimer’s disease.
- Provides thoroughly updated information on gestational trophoblastic diseases, molecular aspects of breast cancer, and basic immunology, including new illustrations on the structure of the T-cell receptor, CD4+ cells subtypes and functions, and the structure of the human spleen.
- Uses a new, light green background throughout the text to identify essential concepts of histology – a feature requested by both students and instructors to quickly locate which concepts are most important for beginning learners or when time is limited. These essential concepts are followed by more detailed information on cell biology and pathology.
- Contains new Primers in most chapters that provide a practical, self-contained integration of histology, cell biology, and pathology – perfect for clarifying the relationship between basic and clinical sciences.
- Identifies clinical terms throughout the text and lists all clinical boxes in the table of contents for quick reference.
- Helps students understand the links between chapter concepts with concept mapping animations on
Student Consult™ – an outstanding supplement to in-class instruction.

- Student Consult™ eBook version included with purchase. This enhanced eBook experience allows you to search all of the text, figures, and references from the book on a variety of devices.
Chapter 6 | BLOOD AND HEMATOPOIESIS

Bone disorders, 191
Concept Mapping | Metabolic and hereditary bone disorders, 192
Joints, 192
Rheumatoid arthritis, 192

MORPHOLOGIA

Chapter 7 | MUSCLE TISSUE

Skeletal muscle, 238
Skeletal muscle cell or fiber, 238
The sarcosome, 240
Components of the sarcosome, 241
Sarcosome changes during muscle contraction, 243
Creatine phosphate, 244
Neuromuscular junction: Motor end plate, 244
Disorders of neuromuscular synaptic transmission, 244

Chapter 8 | NERVOUS TISSUE

Development of the nervous system, 262
Box 8-A | Ectoderm germ cell layer, 263
Cell types: Neurons, 263
Box 8-B | Brain development, 264
Types of neurons, 264
Designation of neurons and axons, 264
Synaptic terminals and synapses, 265
Axonal transport, 265
Box 8-C | Neuronal tube defects, 265
Box 8-D | Neuronal migration, 265
Box 8-E | Cerebral cortex, 267
Glia cells, 270
Astrocytes, 271
Box 8-F | Neurotransmitters: Mechanisms of action, 271
Oligodendrocytes, 272
Myelinization, 272
Myelin, 274
Box 8-G | Charcot-Marie-Tooth disease, 275
Unguylated nerve fibers, 275
Demyelinating diseases, 277
Neurodegenerative diseases, 254
Box 8-H | Amyloid deposits, 281
Microglia, 281
Function of microglia, 281
Box 8-I | Microglia, 282
Ependyma, 283
Choroid plexus, 283
Cerebrospinal fluid, 283
Brain permeability barriers, 285
Peripheral nervous system, 287
Structure of a peripheral nerve, 287
Segmental demyelination and axonal degeneration, 287
Autonomic nervous system, 291
Enteric nervous system, 291
Sympathetic and parasympathetic nervous divisions, 291
Box 8-J | Neurotransmitters, 291
Box 8-K | Schwannomas, 291
Autonomic (sympathetic) ganglia, 293
Sensory (spinal) ganglia, 293
Neurohistochemistry, 293
Box 8-L | Neurotransmitters: Classification, 295

Chapter 9 | SENSORY ORGANS: VISION AND HEARING

Eye, 300
Development of the eye, 300
Outer tunic: Sclera and cornea, 301
Cornea, 301
Box 9-A | Development of the cornea, 301
Middle tunic: Uvea, 302
Box 9-B | Cornea transplantation, 302
Chapter 11 | IMMUNE-LYMPHATIC SYSTEM
Organization and types of skin, 390
Epidemiology, 390
Differentiation of keratinocytes, 391
Melanocytes, 392
Melanin production by melanocytes, 394
Box 11-1-A: Composed of melanocytes, 394
Box 11-1-B: Disorders of keratinization, 397
Box 11-1-C: Differentiation of melanocytes, 398
Langerhans cells (keratinocytes), 399
 Merkel cells, 400
Dermis, 400
Box 11-2-Loss of epidermis, 400
Wound healing, 401
Concept Mapping | Wound healing, 401
Psoriasis, 402
Tumors of the dermis, 404
Box 11-4: Tumors of the epidermis, 404
Epithelial antimicrobial proteins, 405
Skin: Blood and lymphatic supply, 405
Sensory receptors of the skin, 406
Box 11-5: Vascular disorders of the skin, 407
Hypodermis (subcutaneous fat), 409
Development of the hair follicle, 409
Structure of the hair follicle, 409
Lgr5 stem cell pathways, 410
Glands of the skin: Sebaceous glands, 412
Sweat glands, 414
Cystic: Fissures, 415
Fingernails, 415

Chapter 11 | INTESTINAL SYSTEM
Essential Concepts | Intestinal System, 417

MORPHOLOGIA • 2021 • Том 15 • № 1
Chapter 16 | LOWER DIGESTIVE SEGMENT
Small intestine, 544
The peritoneum, 544
Intestinal wall, 544
Microcirculation of the small intestine, 545
Innervation and motility of the small intestine, 546
Histologic differences between the duodenum, jejunum and ileum, 547
Villi and crypts of Lieberkühn, 547
Enterocytes: Absorptive cells, 547
 Trafficking of peptides and sugars, 549
 Trafficking of lipids and cholesterol, 551
 Gut cells, 553
 Enterocarcinoid cells, 553
 Tuft cells, 553
 Intestinal stem cells (ISCs), 553
 Protection of the small intestine, 554
 Intestinal tight junction barrier, 554
 Peyer's patches, 555
 Follicle-associated epithelium (FAE), 556
 Box 16-1 | Development of Peyer's patches, 558
 Polymeric IgA, 559
 Paneth cells, 560
 Intestinal antimicrobial proteins (AMPs), 561
 Box 16-2 | IgG5- intestinal stem cells are regulated by FoxL1+ telocytes located in the lamina propria, 561
 Inflammatory bowel disease, 562
 Malabsorption syndromes, 563
 Large intestine, 563
 The appendix, 566
 The rectum, 566
 Hirschsprung's disease, 568
 Colorectal tumorigenesis, 568
 Primer 16-A | APC (adenomatous polyposis coli) and cancer of the colon, 569
 Box 16-C | Lynch syndrome, 570

Chapter 17 | DIGESTIVE GLANDS
Structure of a salivary gland, 576
 Box 17-A | Classification of exocrine glands, 576
 Saliva, 576
 Parotid gland, 576
 Submandibular (submaxillary) gland, 577
 Sublingual gland, 577
 Box 17-B | Parotid gland: Mumps, rabies, autoimmunity and tumor, 579
 Exocrine pancreas, 579
 Pancreatic tumor, 582
 Functions of the pancreatic acinus, 585
 Pancreatitis and cystic fibrosis, 586
 Liver, 587
 Organization of the hepatic lobule, 587
 Concepts of the hepatic lobule, 589
 Hepatocyte, 590
 Perisinusoidal cells, 594
 B cells (thymus), 594
 Perisinusoidal cells and chronic liver disease, 594
 Box 17-C | Liver non-overload disorders, 594
 Alcoholism and fatty liver (alcoholic steatohepatitis), 596
 Chronic hepatitis and cirrhosis, 596
 Box 17-D | Liver regeneration, 596
 Primer 17-A | Metabolism of bilirubin, 598

Chapter 18 | NEUROENDOCRINE SYSTEM
Hypophysis, 608
Embryologic origin of the hypophysis, 608
Hypothalamohypophyseal portal circulation, 608
Histology of the pars distalis (anterior lobe), 611
Hormones secreted by acidophils: Growth hormone and prolactin, 612
Growth hormone, 612
Gigantism (in children) and acromegaly (in adults), 613
Prolactin, 613
Hyperprolactinemia, 615
Hormones secreted by basophils: Gonadotropins, TSH and ACTH, 615
Gonadotropins: Follicle-stimulating hormone and luteinizing hormone, 615
Infertility, 616
Thyroid-stimulating hormone (thyrotropin), 616
Hypothyroidism, 617
Adrenocorticotropic hormone, 617
Cushing's disease, 618
Neurohypophysis, 618
Histology of the neurohypophysis, 618
Function of VRFADH and oxytocin, 619
Hypothalamic diabetes insipidus, 620
Pineal gland, 622
Development of the pineal gland, 622
Histology of the pineal gland, 625
Pinealocytes secrete melatonin, 625
Light is a regulator of circadian rhythms, 625
Prenatal, 627

Chapter 19 | ENDOCRINE SYSTEM
Thyroid gland, 632
Development of the thyroid gland, 632
Histologic organization of the thyroid gland, 632
Function of the thyroid gland, 632
Graves' disease and hypothyroidism, 636
Box 19-A | Pathology of the thyroid gland, 636
Calcium regulation, 638
Parathyroid glands, 639
Development of the parathyroid glands, 639
Histology of the parathyroid glands, 639
Signal transduction mediated by CaSR, 639
Functions of the parathyroid hormone, 639
Dysfunction of the parathyroid glands, 641
CaSR and Gp11 mutations, 641
Box 19-B | Rickets and osteomalacia, 641
C cells (thyroid follicle), 641
Vitamin D (calcitriol), 643
Adrenal (suprarenal) glands, 644
Development of the adrenal gland, 644
Functions of the fetal adrenal cortex, 644
Histology of the adrenal cortex, 644
Zona glomerulosa, 648