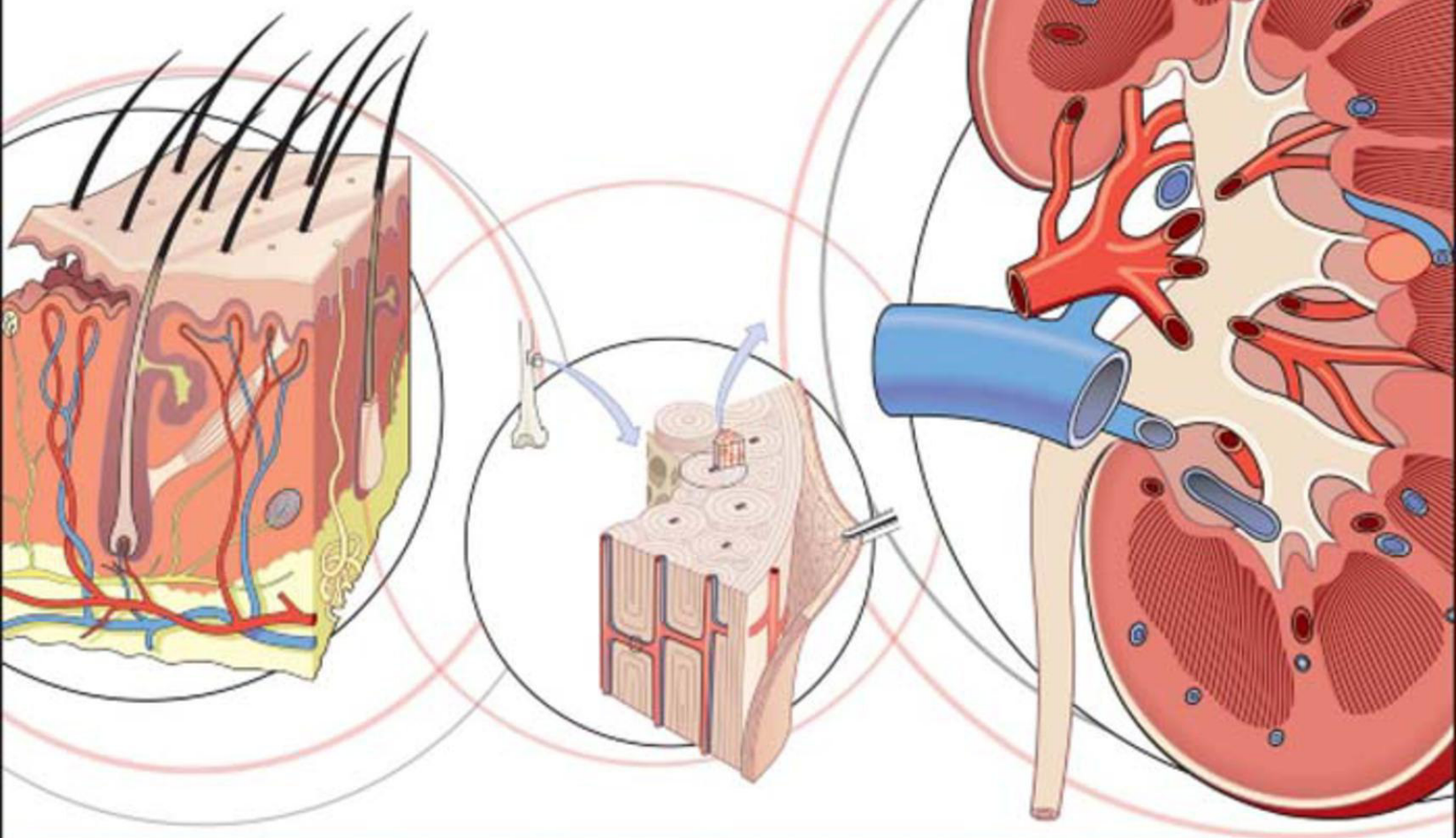


Anne Waugh & Allison Grant

12th Edition

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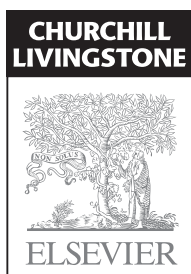
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Preface

Ross and Wilson has been a core text for students of anatomy and physiology for over 50 years. This latest edition continues to be aimed at healthcare professionals including nurses, students of nursing, the allied health professions and complementary therapies, paramedics and ambulance technicians, many of whom have found previous editions invaluable. It retains the straightforward approach to the description of body systems and how they work. The anatomy and physiology of health is supplemented by new sections describing common age-related changes to structure and function, before considering the pathology and pathophysiology of some important disorders and diseases.

The human body is presented system by system. The reader must, however, remember that physiology is an integrated subject and that, although the systems are considered in separate chapters, all function cooperatively to maintain health. The first three chapters provide an overview of the body and describe its main structures.

The later chapters are organised into three further sections, reflecting those areas essential for normal body function: communication; intake of raw materials and elimination of waste; and protection and survival. Much of the material for this edition has been revised and rewritten. Many of the diagrams have been revised and, based on reader feedback, more new coloured electron

micrographs and photographs have been included to provide detailed and enlightening views of many anatomical features.

This edition is accompanied by a companion website (<https://evolve.elsevier.com/Waugh/anatomy/>) with over 100 animations and an extensive range of online self-test activities that reflect the content of each chapter. The material in this textbook is also supported by the new 4th edition of the accompanying study guide, which gives students who prefer paper-based activities the opportunity to test their learning and improve their knowledge.

The features from the previous edition have been retained and revised, including learning outcomes, a list of common prefixes, suffixes and roots, and extensive in-text chapter cross-references. The comprehensive glossary has been extended. New sections outlining the implications of normal ageing on the structure and function of body systems have been prepared for this edition. Some biological values, extracted from the text, are presented as an appendix for easy reference. In some cases, slight variations in 'normals' may be found in other texts and used in clinical practice.

Anne Waugh
Allison Grant

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We are indebted to the many readers of the eleventh edition for their feedback and constructive comments, many of which have influenced the current revision.

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Common prefixes, suffixes and roots

Prefix/suffix/root	To do with	Examples in the text
a-/an-	lack of	anuria, agranulocyte, asystole, anaemia
ab-	away from	abduct
ad-	towards	adduct
-aemia	of the blood	anaemia, hypoxaemia, uraemia, hypovolaemia
angio-	vessel	angiotensin, haemangioma
ante-	before, in front of	anterior
anti-	against	antidiuretic, anticoagulant, antigen, antimicrobial
baro-	pressure	baroreceptor
-blast	germ, bud	reticuloblast, osteoblast
brady-	slow	bradycardia
broncho-	bronchus	bronchiole, bronchitis, bronchus
card-	heart	cardiac, myocardium, tachycardia
chole-	bile	cholecystokinin, cholecystitis, cholangitis
circum-	around	circumduction
cyto-/cyte	cell	erythrocyte, cytosol, cytoplasm, cytotoxic
derm-	skin	dermatitis, dermatome, dermis
di-	two	disaccharide, diencephalon
dys-	difficult	dysuria, dyspnoea, dysmenorrhoea, dysplasia
-ema	swelling	oedema, emphysema, lymphoedema
endo-	inner	endocrine, endocytosis, endothelium
enter-	intestine	enterokinase, gastroenteritis
epi-	upon	epimysium, epicardium
erythro-	red	erythrocyte, erythropoietin, erythropoiesis
exo-	outside	exocytosis, exophthalmos
extra-	outside	extracellular, extrapyramidal
-fferent	carry	afferent, efferent
gast-	stomach	gastric, gastrin, gastritis, gastrointestinal
-gen-	origin/production	gene, genome, genetic, antigen, pathogen, allergen
-globin	protein	myoglobin, haemoglobin
haem-	blood	haemostasis, haemorrhage, haemolytic
hetero-	different	heterozygous
homo-	the same, steady	homozygous, homologous

COMMON PREFIXES, SUFFIXES AND ROOTS

Prefix/suffix/root	To do with	Examples in the text
-hydr-	water	dehydration, hydrostatic, hydrocephalus
hepat-	liver	hepatic, hepatitis, hepatomegaly, hepatocyte
hyper-	excess/above	hypertension, hypertrophy, hypercapnia
hypo-	below/under	hypoglycaemia, hypotension, hypovolaemia
intra-	within	intracellular, intracranial, intraocular
-ism	condition	hyperthyroidism, dwarfism, rheumatism
-itis	inflammation	appendicitis, hepatitis, cystitis, gastritis
lact-	milk	lactation, lactic, lacteal
lymph-	lymph tissue	lymphocyte, lymphatic, lymphoedema
lyso-/lysis	breaking down	lysosome, glycolysis, lysozyme
-mega-	large	megaloblast, acromegaly, splenomegaly, hepatomegaly
micro-	small	microbe, microtubules, microvilli
myo-	muscle	myocardium, myoglobin, myopathy, myosin
neo-	new	neoplasm, gluconeogenesis, neonate
nephro-	kidney	nephron, nephrotic, nephroblastoma, nephrosis
neuro-	nerve	neurone, neuralgia, neuropathy
-oid	resembling	myeloid, sesamoid, sigmoid
olig-	small	oliguria
-ology	study of	cardiology, neurology, physiology
-oma	tumour	carcinoma, melanoma, fibroma
-ophth-	eye	xerophthalmia, ophthalmic, exophthalmos
-ory	referring to	secretory, sensory, auditory, gustatory
os-, osteo-	bone	osteocyte, osteoarthritis, osteoporosis
-path-	disease	pathogenesis, neuropathy, nephropathy
-penia	deficiency of	leukopenia, thrombocytopenia
phag(o)-	eating	phagocyte, phagocytic
-plasm	substance	cytoplasm, neoplasm
pneumo-	lung/air	pneumothorax, pneumonia, pneumotoxic
poly-	many	polypeptide, polyuria, polycythaemia
-rrhagia	excessive flow	menorrhagia
-rrhoea	discharge	dysmenorrhoea, diarrhoea, rhinorrhoea
sarco-	muscle	sarcomere, sarcoplasm
-scler	hard	arteriosclerosis, scleroderma
sub-	under	subphrenic, subarachnoid, sublingual
tachy-	excessively fast	tachycardia, tachypnoea
thrombo-	clot	thrombocyte, thrombosis, thrombin, thrombus
-tox-	poison	toxin, cytotoxic, hepatotoxic
tri-	three	tripeptide, trisaccharide, trigeminal
-uria	urine	anuria, polyuria, haematuria, nocturia, oliguria
vas, vaso-	vessel	vasoconstriction, vas deferens, vascular