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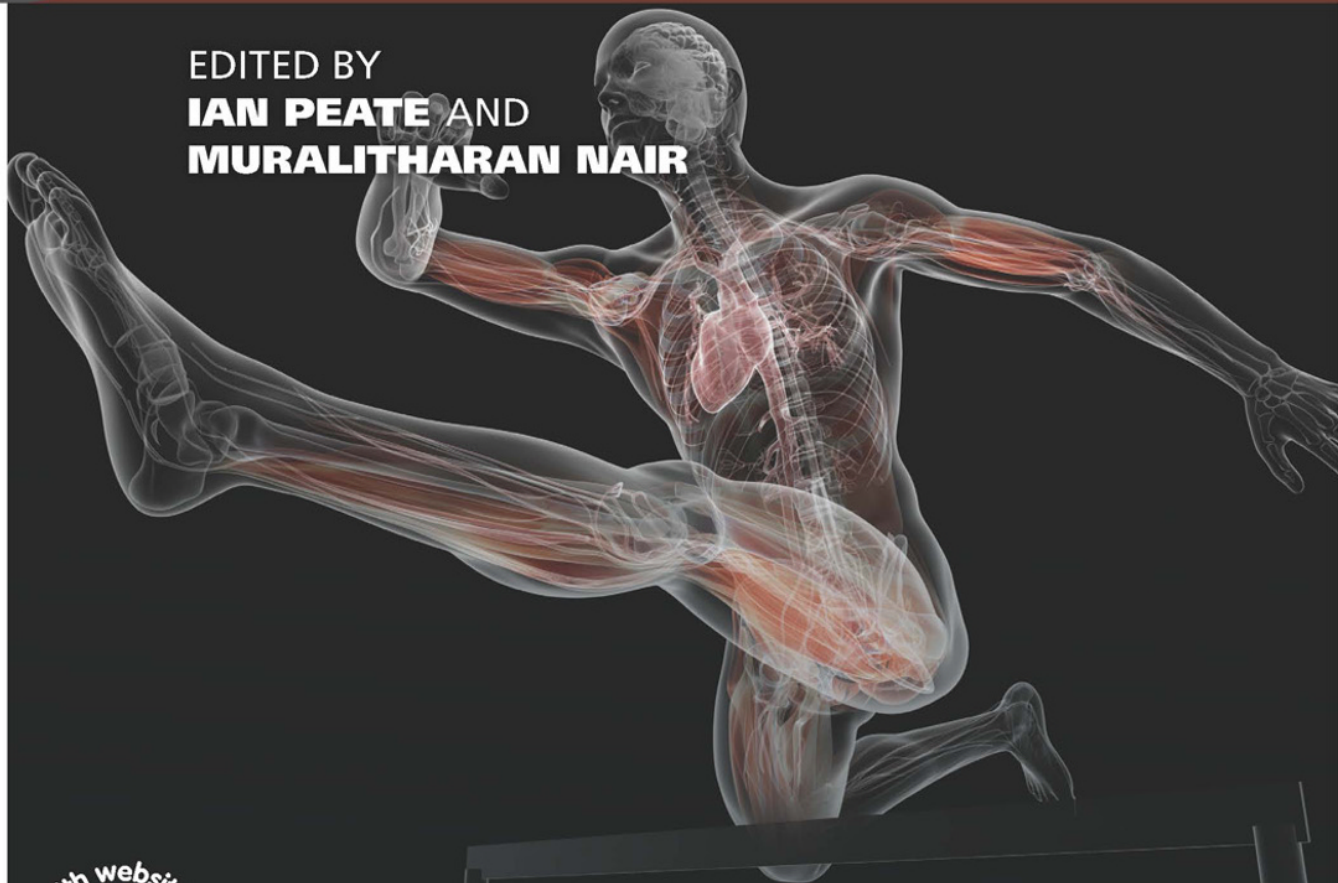
SECOND EDITION

Fundamentals of

# Anatomy and Physiology

For Nursing and Healthcare Students

EDITED BY  
**IAN PEATE** AND  
**MURALITHARAN NAIR**



**WILEY** Blackwell



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# Fundamentals of Anatomy and Physiology Workbook:

## A Study Guide for Nurses and Healthcare Students

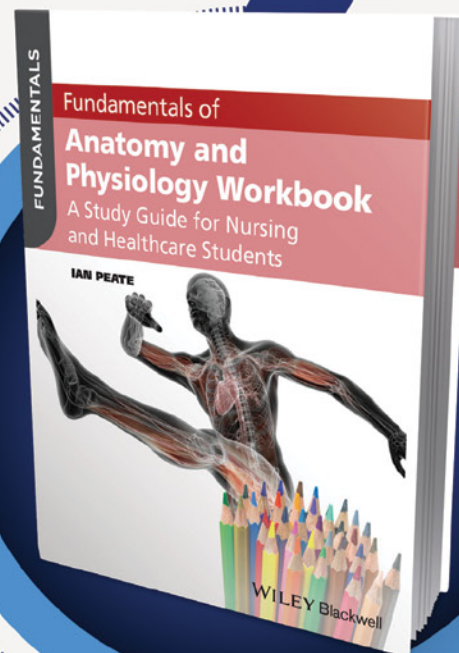
*Ian Peate*

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This new study guide is a companion to the bestselling textbook *Fundamentals of Anatomy and Physiology: For Nursing and Healthcare Students*, and is designed to help and support you with this subject area, by testing and consolidating your knowledge of anatomy and physiology. Jam-packed with tips, hints, activities and exercises, this workbook will guide you through the core areas of anatomy and physiology, and provide you with loads of help with your studies.

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Fundamentals of

# **Anatomy and Physiology**

For Nursing and Healthcare Students

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Fundamentals of

# Anatomy and Physiology

For Nursing and Healthcare Students

Second Edition

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**WILEY** Blackwell

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Anthony began his nursing career at Barnet College of Nursing and Midwifery. After qualification in 1995 he worked as a staff nurse and senior staff nurse in the Respiratory Directorate at the Royal Brompton and Harefield NHS Trust in London. In 2000 he started teaching on post-registration cardio-respiratory courses before moving into full-time nurse education at Thames Valley University in 2002. Anthony has a wide range of nursing interests, including cardio-respiratory nursing, anatomy and physiology, respiratory assessment, nurse education, and the application of bioscience in nursing practice. In 2006 Anthony joined the University of Hertfordshire, where he has taught on both pre- and post-registration nursing courses. He is currently an associate subject lead for adult nursing.

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# Preface

We were delighted when we were asked to write a second edition of the popular *Fundamentals of Anatomy and Physiology for Student Nurses*. The first edition has been a very popular choice not only with student nurses but also with students in other healthcare professions and this has been reflected in the title of this second edition. The second edition of *Fundamentals of Anatomy and Physiology for Nursing and Healthcare Students* retains all of the attributes in the popular first edition as well as a whole range of new features in this book and also through the companion websites.

Those contributing to the text are all dedicated to the provision of high-quality, safe and effective care. The authors are all experienced academics working in higher education, with many years of clinical experience, knowledge and skills, teaching a variety of multidisciplinary student groups at various academic levels. We are confident that after you have gained a sound understanding of anatomy and physiology you will be able to understand better the needs of the people you have the privilege to care for. High-quality, safe and effective care for all is something all of us should strive to provide; however, this will be a challenge if we do not fully appreciate the person in a holistic manner. Those who provide care have to take into consideration the anatomical and physiological elements, but they must also consider the psychosocial aspects of the person and their family, addressing the needs of the whole being, the whole person. This text has been devised in such a way as to encourage learning and understanding. We hope you enjoy reading it, and more importantly that you are hungry to learn more, that you will be tempted to delve deeper as you grow and develop into becoming a provider of healthcare that is world class, safe and effective.

The companion to this book, *Fundamentals of Applied Pathophysiology: An Essential Guide for Nursing and Healthcare Students* (Nair and Peate, 2013), also in its second edition, will help in your development and understanding. Within your programme of study which is related to the provision of care it is important that you are confident and competent with regards to pathophysiology and anatomy and physiology. It is not enough that you remember all of the facts (and there are many of these) that are linked with anatomy and physiology; you also have to relate these to those you care for. Some of those people may be vulnerable and at risk of harm, and it is your responsibility to ensure that you are knowledgeable and that you understand the complexities of care. This new edition of *Fundamentals of Anatomy and Physiology for Nursing and Healthcare Students* will help you.

It is a requirement of several programmes of study that lead to registration with a professional body that you demonstrate competence in a number of spheres, and this will include anatomy and physiology – for example, see *The Standards for Pre-Registration Nursing Education* (Nursing and Midwifery Council, 2010).

The human body is as beautiful on the inside as it is on the outside; when working in harmony the mind and body is an astonishing mechanism that has the capacity to perform a range of amazing things. Healthcare students practise and study in a number of healthcare settings, in the hospital and the primary-care setting and in the person's own home where they are destined to meet and care for patients with a range of altered anatomical and physiological problems. Employing a fundamental approach with a sound anatomical and physiological understanding will provide healthcare students with an essential basis on which to provide care.

## Anatomy and physiology

Anatomy can be defined simply as the science related to the study of the structure of biological organisms; there are dictionaries that use such a definition. *Fundamentals of Anatomy and Physiology for Nursing and Healthcare Students* focuses on human anatomy, and the definition of anatomy for the purposes of this text is that it is a study of the structure and function of the human body. This allows for reference to function and also structure; in all biological organisms structure and function are closely interconnected. The human body can only operate through interrelated systems.

The term anatomy is Greek in origin and means 'to cut up' or 'to dissect'. The first scientifically based anatomical studies (credited to Vesalius, the 16th-century Flemish anatomist, doctor and artist) were based on observations of cadavers (dead bodies). Contemporary approaches to human anatomy differ, however, as they include other ways of observation; for example, with the aid of a microscope and other complex and technologically advanced imaging tools. Subdivisions are now associated within the broader field of anatomy, with the word anatomy often preceded with an adjective identifying the method of observation; for example, gross anatomy (the study of body parts that are visible to the naked eye, such as the heart or the bones) or microanatomy (where body parts such as cells or tissues are only visible with the use of a microscope).

Living systems can be defined from a number of perspectives:

- At the very smallest level, the chemical level, atoms, molecules and the chemical bonds connecting atoms provide the structure upon which living activity is based.
- The smallest unit of life is the cell. Specialised bodies – organelles – within the cell perform particular cellular functions. Cells may be specialised; for example, bone cells and muscle cells.
- Tissue is a group of cells that are similar and they perform a common function. Muscle tissue, for example, is made up of muscle cells.
- Organs are groups of different types of tissues working together to carry out a specific activity. The stomach, for example, is an organ made up of muscle, nerve and tissues.
- A system is two or more organs that work together to carry out a specific activity. The digestive system, for example, comprises the coordinated activities of a number of organs, including the stomach, intestines, pancreas and liver.
- Another system that possesses the characteristics of living things is an organism; this has the ability to obtain and process energy, the capacity to react to changes in the environment and the ability to reproduce.

As anatomy is associated with the function of a living organism it is almost always inseparable from physiology. Physiology can be described as the science dealing with the study of the function of cells, tissues, organs and organisms. Physiology is concerned with how an organism carries out its many activities, considering how it moves, how it is nourished, how it adapts to changing environments – human and animal, hostile and friendly. It is in essence the study of life.

Physiology is the foundation upon which we build our knowledge of what life is; it can help us to decide how to treat disease as well as help us to adapt and manage changes imposed on our bodies by new and changing surroundings – internal and external. Studying physiology will help you understand disease (pathophysiology) arising from this; physiologists working with others are able to develop new ways for treating diseases.

Just as there are a number of branches of anatomical study, so too are there a number of physiological branches that can be studied; for example, endocrinology, neurology and cardiology.

There are 17 chapters. The text is not intended to be read from cover to cover, but you may find reading chapters one to four first will help you come to terms with some of the more complex concepts; we would encourage you to dip in and out of the book. The chapters use simple and generously sized full-colour artwork in order to assist you in your understanding and appreciation of the complexities associated with the human body from an anatomical and physiological perspective. There are many features contained within each chapter that can help you to build upon and develop your knowledge base; we would encourage you to get the most out of this book.

The text takes the reader from the microscopic to macroscopic level in the study of anatomy and physiology. The contents demonstrate the movement from cells and tissues through to systems. This approach to teaching is a tried-and-tested approach, especially when helping learners understand a topic area that can sometimes be seen as complex.

This book has been written with these key principles in mind, to help inform your practice as well as your academic work. This second edition retains the features that have helped students bring to life the fascinating subject of human anatomy and physiology; there is also a range of new features provided to further enhance the student experience.

Each chapter begins with several questions that are posed to test your current knowledge; this allows you to pre-test. Learning outcomes are provided. These will cover the content within the chapter, but only you can do the learning; these outcomes are what are expected of you after reading and absorbing the information. This is a minimum of what you can learn; do not be constrained by the learning outcomes, they are only provided to guide you. Where appropriate an anatomical map is provided; this is related to the chapter you are reading, allowing you to 'situate or visualise' the anatomy being discussed.

Another feature in most of the chapters that is provided to help you consider people you care for, to help you make clinical links, is the 'Clinical considerations' box. These boxes demonstrate the application to your learning, citing specific care issues that you may come across when working with people in care settings.

A new addition is the feature called 'Medicines management'. In this feature the contributors discuss the administration of medicines, medicine management issues. This addition can help you appreciate the importance of understanding anatomy and physiology with the intention of administering medicines safely and effectively.

In most chapters there is a series of snapshots. This new addition relates the theory to practice, introducing you to the issues being discussed in a practical way.

At the end of the chapter you are provided with a bank of multiple choice questions. Some of the answers to the questions are not found in the text; in this case you are encouraged to seek out the answers and in so doing develop your learning further.

Other features provided will help you measure the learning that has taken place; for example, true or false, label the diagram, find out more, crosswords or word searches. These are meant to be fun, but they also aim to pull together the content of the chapter.

The feature 'Conditions' at the end of the chapter provides you with a list of conditions that are associated with the topics discussed in the chapter. You are encouraged to take some time to write notes about each of the conditions listed; this will help you relate theory to practice. You can make your notes taken from other textbooks or other resources – for example, the people you work with in a care area – or you may make the notes as a result of people you have cared for. It is important, however, that if you are making notes about people you have cared for you must ensure that you adhere to the rules of confidentiality.

At the end of every chapter a glossary of terms is provided. We present this to facilitate the learning of difficult words or phrases; understanding these words and phrases is important to

your success as a healthcare student. When you have mastered the words your medical vocabulary will have grown and you will be in a better position to develop it further.

We have, in this new edition, included a list of prefixes and suffixes as well a table of normal values.

A myriad of features have been compiled to help your learning with two companion websites. The features include an interactive glossary and a series of case studies with the intention of bringing alive the subject matter. The electronic resources associated with this book are designed to help enhance your learning; they are varied and informative and are visually stimulating.

The advantages of these resources are that they can be used in your own place at your own pace. The aim is to encourage further learning and to build upon what you know already. There are also links to other resources via the further reading section at the end of the chapters.

Using the electronic resources alongside the book, as well as the human resources you will meet in practice, will enhance the quality of your learning. The electronic resources available cannot replace the more conventional face-to-face learning with other students, lecturers, registered practitioners and patients; they complement it.

We have enjoyed writing this second edition and we sincerely hope you enjoy reading it. We wish you much success with your studies, whether they are in the classroom or in the many care areas that you might find yourself working.

## References

- Nair, M. and Peate, I. (2013) *Fundamentals of Applied Pathophysiology: An Essential Guide for Nursing and Healthcare Students*, 2nd edn. Oxford: John Wiley & Sons, Ltd.
- Nursing and Midwifery Council (2010) Standards for Pre-Registration Nursing Education. <http://standards.nmc-uk.org/PublishedDocuments/Standards%20for%20pre-registration%20nursing%20education%2016082010.pdf> (accessed 7 November 2015).

# Prefixes, suffixes

**Prefix:** A prefix is positioned at the beginning of a word to modify or change its meaning. Pre means 'before'. Prefixes may also indicate a location, number, or time.

**Suffix:** The ending part of a word that changes the meaning of the word.

Prefix or suffix	Meaning	Example(s)
<b>a-, an-</b>	not, without	analgesic, apathy
<b>ab-</b>	from; away from	abduction
<b>abdomin(o)-</b>	of or relating to the abdomen	abdomen
<b>acous(io)-</b>	of or relating to hearing	acoumeter, acoustician
<b>acr(o)-</b>	extremity, topmost	acrocrany, acromegaly, acroosteolysis, acroposthia
<b>ad-</b>	at, increase, on, toward	adduction
<b>aden(o)-, aden(i)-</b>	of or relating to a gland	adenocarcinoma, adenology, adenotome, adenotyphus
<b>adip(o)-</b>	of or relating to fat or fatty tissue	adipocyte
<b>adren(o)-</b>	of or relating to adrenal glands	adrenal artery
<b>-aemia</b>	blood condition	anaemia
<b>aer(o)-</b>	air, gas	aerosinusitis
<b>-aesthesi(o)-</b>	sensation	anaesthesia
<b>alb-</b>	denoting a white or pale colour	albino
<b>-alge(si)-</b>	pain	analgesic
<b>-algia, -alg(i)o-</b>	pain	myalgia
<b>all(o-)</b>	denoting something as different, or as an addition	alloantigen, allopathy
<b>ambi-</b>	denoting something as positioned on both sides	ambidextrous
<b>amni-</b>	pertaining to the membranous foetal sac (amnion)	amniocentesis
<b>ana-</b>	back, again, up	anaplasia
<b>andr(o)-</b>	pertaining to a man	android, andrology
<b>angi(o)-</b>	blood vessel	angiogram

Prefix or suffix	Meaning	Example(s)
<b>ankyl(o)-, ancylo-</b>	denoting something as crooked or bent	ankylosis
<b>ante-</b>	describing something as positioned in front of another thing	antepartum
<b>anti-</b>	describing something as 'against' or 'opposed to' another	antibody, antipsychotic
<b>arteri(o)-</b>	of or pertaining to an artery	arteriole, arterial
<b>arthr(o)-</b>	of or pertaining to the joints, limbs	arthritis
<b>articul(o)-</b>	joint	articulation
<b>-ase</b>	enzyme	lactase
<b>-asthenia</b>	weakness	myasthenia gravis
<b>ather(o)-</b>	fatty deposit, soft gruel-like deposit	atherosclerosis
<b>atri(o)-</b>	an atrium (especially heart atrium)	atrioventricular
<b>aur(i)-</b>	of or pertaining to the ear	aural
<b>aut(o)-</b>	self	autoimmune
<b>axill-</b>	of or pertaining to the armpit (uncommon as a prefix)	axilla
<b>bi-</b>	twice, double	binary
<b>bio-</b>	life	biology
<b>blephar(o)-</b>	of or pertaining to the eyelid	blepharoplast
<b>brachi(o)-</b>	of or relating to the arm	brachium of inferior colliculus
<b>brady-</b>	'slow'	bradycardia
<b>bronch(i)-</b>	bronchus	bronchiolitis obliterans
<b>bucc(o)-</b>	of or pertaining to the cheek	buccolabial
<b>burs(o)-</b>	bursa (fluid sac between the bones)	bursitis
<b>carcin(o)-</b>	cancer	carcinoma
<b>cardi(o)-</b>	of or pertaining to the heart	cardiology
<b>carp(o)-</b>	of or pertaining to the wrist	carpopedal
<b>-cele</b>	pouching, hernia	hydrocele, varicocele
<b>-centesis</b>	surgical puncture for aspiration	amniocentesis
<b>cephal(o)-</b>	of or pertaining to the head (as a whole)	cephalalgia
<b>cerebell(o)-</b>	of or pertaining to the cerebellum	cerebellum
<b>cerebr(o)-</b>	of or pertaining to the brain	cerebrology
<b>chem(o)-</b>	chemistry, drug	chemotherapy

Prefix or suffix	Meaning	Example(s)
<b>chol(e)-</b>	of or pertaining to bile	cholecystitis
<b>cholecyst(o)-</b>	of or pertaining to the gallbladder	cholecystectomy
<b>chondr(i)o-</b>	cartilage, gristle, granule, granular	chondrocalcinosis
<b>chrom(ato)-</b>	colour	haemochromatosis
<b>-cidal, -cide</b>	killing, destroying	bacteriocidal
<b>cili-</b>	of or pertaining to the cilia, the eyelashes	ciliary
<b>circum-</b>	denoting something as 'around' another	circumcision
<b>col(o)-, colono-</b>	colon	colonoscopy
<b>colp(o)-</b>	of or pertaining to the vagina	colposcopy
<b>contra-</b>	against	contraindicate
<b>coron(o)-</b>	crown	coronary
<b>cost(o)-</b>	of or pertaining to the ribs	costochondral
<b>crani(o)-</b>	belonging or relating to the cranium	craniology
<b>-crine, -crin(o)-</b>	to secrete	endocrine
<b>cry(o)-</b>	cold	cryoablation
<b>cutane-</b>	skin	subcutaneous
<b>cyan(o)-</b>	denotes a blue colour	cyanosis
<b>cyst(o)-, cyst(i)-</b>	of or pertaining to the urinary bladder	cystotomy
<b>cyt(o)-</b>	cell	cytokine
<b>-cyte</b>	cell	leukocyte
<b>-dactyl(o)-</b>	of or pertaining to a finger, toe	dactylology, polydactyly
<b>dent-</b>	of or pertaining to teeth	dentist
<b>dermat(o)-, derm(o)-</b>	of or pertaining to the skin	dermatology
<b>-desis</b>	binding	arthrodesis
<b>dextr(o)-</b>	right, on the right side	dextrocardia
<b>di-</b>	two	diplopia
<b>dia-</b>	through, during, across	dialysis
<b>dif-</b>	apart, separation	different
<b>digit-</b>	of or pertaining to the finger (rare as a root)	digit
<b>-dipsia</b>	suffix meaning '(condition of) thirst'	polydipsia, hydroadipsia, oligodipsia
<b>dors(o)-, dors(i)-</b>	of or pertaining to the back	dorsal, dorsocephalad

Prefix or suffix	Meaning	Example(s)
<b>duodeno-</b>	duodenum	duodenal atresia
<b>dynam(o)-</b>	force, energy, power	hand strength dynamometer
<b>-dynia</b>	pain	vulvodynia
<b>dys-</b>	bad, difficult, defective, abnormal	dysphagia, dysphasia
<b>ec-</b>	out, away	ectopia, ectopic pregnancy
<b>-ectasia, -ectasis</b>	expansion, dilation	bronchiectasis, telangiectasia
<b>ect(o)-</b>	outer, outside	ectoblast, ectoderm
<b>-ectomy</b>	denotes a surgical operation or removal of a body part; resection, excision	mastectomy
<b>-emesis</b>	vomiting condition	haematemesis
<b>encephal(o)-</b>	of or pertaining to the brain; also see <b>cerebr(o)-</b>	encephalogram
<b>endo-</b>	denotes something as 'inside' or 'within'	endocrinology, endospore
<b>enter(o)-</b>	of or pertaining to the intestine	gastroenterology
<b>eosin(o)-</b>	red	eosinophil granulocyte
<b>epi-</b>	on, upon	epicardium, epidermis, epidural, episclera, epistaxis
<b>erythr(o)-</b>	denotes a red colour	erythrocyte
<b>ex-</b>	out of, away from	excision, exophthalmos
<b>exo-</b>	denotes something as 'outside' another	exoskeleton
<b>extra-</b>	outside	extradural haematoma
<b>faci(o)-</b>	of or pertaining to the face	facioplegic
<b>fibr(o)</b>	fibre	fibroblast
<b>fore-</b>	before or ahead	forehead
<b>fossa</b>	a hollow or depressed area; trench or channel	fossa ovalis
<b>front-</b>	of or pertaining to the forehead	frontonasal
<b>galact(o)-</b>	milk	galactorrhoea
<b>gastr(o)-</b>	of or pertaining to the stomach	gastric bypass
<b>-genic</b>	formative, pertaining to producing	cardiogenic shock
<b>gingiv-</b>	of or pertaining to the gums	gingivitis
<b>glauc(o)-</b>	denoting a grey or bluish-grey colour	glaucoma
<b>gloss(o)-, glott(o)-</b>	of or pertaining to the tongue	glossology
<b>gluco-</b>	sweet	glucocorticoid



Prefix or suffix	Meaning	Example(s)
<b>glyc(o)-</b>	sugar	glycolysis
<b>-gnosis</b>	knowledge	diagnosis, prognosis
<b>gon(o)-</b>	seed, semen; also, reproductive	gonorrhoea
<b>-gram, -gramme</b>	record or picture	angiogram
<b>-graph</b>	instrument used to record data or picture	electrocardiograph
<b>-graphy</b>	process of recording	angiography
<b>gyn(aec)o-</b>	woman	gynaecomastia
<b>haemangi(o)-</b>	blood vessels	haemangioma
<b>haemat(o)-, haem-</b>	of or pertaining to blood	haematology
<b>halluc-</b>	to wander in mind	hallucinosi
<b>hemi-</b>	one-half	cerebral hemisphere
<b>hepat- (hepatic-)</b>	of or pertaining to the liver	hepatology
<b>heter(o)-</b>	denotes something as 'the other' (of two), as an addition, or different	heterogeneous
<b>hist(o)-, histio-</b>	tissue	histology
<b>home(o)-</b>	similar	homeopathy
<b>hom(o)-</b>	denotes something as 'the same' as another or common	homosexuality
<b>hydr(o)-</b>	water	hydrophobe
<b>hyper-</b>	denotes something as 'extreme' or 'beyond normal'	hypertension
<b>hyp(o)-</b>	denotes something as 'below normal'	hypovolaemia
<b>hyster(o)-</b>	of or pertaining to the womb, the uterus	hysterectomy, hysteria
<b>iatr(o)-</b>	of or pertaining to medicine, or a physician	iatrogenic
<b>-iatry</b>	denotes a field in medicine of a certain body component	podiatry, psychiatry
<b>-ics</b>	organised knowledge, treatment	obstetrics
<b>ileo-</b>	ileum	ileocaecal valve
<b>infra-</b>	below	infrahyoid muscles
<b>inter-</b>	between, among	interarticular ligament
<b>intra-</b>	within	intramural
<b>ipsi-</b>	same	ipsilateral hemiparesis
<b>ischio-</b>	of or pertaining to the ischium, the hip joint	ischioanal fossa

Prefix or suffix	Meaning	Example(s)
<b>-ismus</b>	spasm, contraction	hemiballismus
<b>iso-</b>	denoting something as being 'equal'	isotonic
<b>-ist</b>	one who specialises in	pathologist
<b>-itis</b>	inflammation	tonsillitis
<b>-ium</b>	structure, tissue	pericardium
<b>juxta- (iuxta-)</b>	near to, alongside or next to	juxtaglomerular apparatus
<b>karyo-</b>	nucleus	eukaryote
<b>kerat(o)-</b>	cornea (eye or skin)	keratoscope
<b>kin(e)-, kin(o)-, kinesi(o)-</b>	movement	kinesthaesia
<b>kyph(o)-</b>	humped	kyphoscoliosis
<b>labi(o)-</b>	of or pertaining to the lip	labiodental
<b>lacrim(o)-</b>	tear	lacrimal canaliculi
<b>lact(i)-, lact(o)</b>	milk	lactation
<b>lapar(o)-</b>	of or pertaining to the abdomen wall, flank	laparotomy
<b>laryng(o)-</b>	of or pertaining to the larynx, the lower throat cavity where the voice box is	larynx
<b>latero-</b>	lateral	lateral pectoral nerve
<b>-leptosis, -lepsy</b>	attack, seizure	epilepsy, narcolepsy
<b>lept(o)-</b>	light, slender	leptomeningeal
<b>leuc(o)-, leuk(o)-</b>	denoting a white colour	leukocyte
<b>lingu(a)-, lingu(o)-</b>	of or pertaining to the tongue	linguistics
<b>lip(o)-</b>	fat	liposuction
<b>lith(o)-</b>	stone, calculus	lithotripsy
<b>-logist</b>	denotes someone who studies a certain field	oncologist, pathologist
<b>log(o)-</b>	speech	logopaedics
<b>-logy</b>	denotes the academic study or practice of a certain field	haematology, urology
<b>lymph(o)-</b>	lymph	lymphoedema
<b>lys(o)-, -lytic</b>	dissolution	lysosome
<b>-lysis</b>	destruction, separation	paralysis

Prefix or suffix	Meaning	Example(s)
<b>macr(o)-</b>	large, long	macrophage
<b>-malacia</b>	softening	osteomalacia
<b>mammill(o)-</b>	of or pertaining to the nipple	mammillitis
<b>mamm(o)-</b>	of or pertaining to the breast	mammogram
<b>manu-</b>	of or pertaining to the hand	manufacture
<b>mast(o)-</b>	of or pertaining to the breast	mastectomy
<b>meg(a)-, megal(o)-, -megaly</b>	enlargement, million	splenomegaly, megameter
<b>melan(o)-</b>	black colour	melanin
<b>mening(o)-</b>	membrane	meningitis
<b>meta-</b>	after, behind	metacarpus
<b>-meter</b>	instrument used to measure or count	sphygmomanometer
<b>metr(o)-</b>	pertaining to conditions of the uterus	metrorrhagia
<b>-metry</b>	process of measuring	optometry
<b>micro-</b>	denoting something as small, or relating to smallness	microscope
<b>milli-</b>	thousandth	millilitre
<b>mon(o)-</b>	single	infectious mononucleosis
<b>morph(o)-</b>	form, shape	morphology
<b>muscul(o)-</b>	muscle	musculoskeletal system
<b>my(o)-</b>	of or relating to muscle	myoblast
<b>myc(o)-</b>	fungus	onychomycosis
<b>myel(o)-</b>	of or relating to bone marrow or spinal cord	myeloblast
<b>myri-</b>	ten thousand	myriad
<b>myring(o)-</b>	eardrum	myringotomy
<b>narc(o)-</b>	numb, sleep	narcolepsy
<b>nas(o)-</b>	of or pertaining to the nose	nasal
<b>necr(o)-</b>	death	necrosis, necrotising fasciitis
<b>neo-</b>	new	neoplasm
<b>nephr(o)-</b>	of or pertaining to the kidney	nephrology
<b>neur(i)-, neur(o)-</b>	of or pertaining to nerves and the nervous system	neurofibromatosis