

Irregular Plurals in Biology/Zoology

Most English nouns are made plural by adding **-s** or **-es** to the singular form. However there are many exceptions. The following table lists singular and plural forms of scientific words that are exceptions to the general rule.

The definitions given in the glossary are very brief and incomplete. In the table, is an alphabetized list of irregular plural terms used in the biological sciences. Fuller definitions can be found in good biological dictionaries (e.g., Lawrence, Eleanor. 2005. Henderson's Dictionary of Biology, 13th edition. Toronto: Pearson/Prentice Hall) or a relevant textbook.

The vast majority of irregular plurals are derived from Latin, the common scientific language when the discipline of Biology first arose. Like many languages, Latin has genders for nouns. Latin has three genders: masculine, feminine and neuter. Most Latin masculine nouns end in **-us** and are pluralized **-i** (cactus/cacti); most feminine nouns end in **-a** and are pluralized **-ae** (alga/algae); and most neuter nouns end in **-um** and take the plural ending **-a** (agendum/agenda). These three rules will help you understand most of the English exceptions. However, some of the nouns are derived from Greek or other languages, some English nouns have no logical plurals, and some other nouns are uncountable and have no plural form.

Regularizing or anglicizing plurals, by forcing an **-s** or **-es** onto many singular nouns, often causes awkward pronunciations. Adding **-s** or **-es** to already plural nouns is simply wrong. Adding Latin plural endings to non-Latin words is also wrong.

Words Used in More than One Sub-discipline of Biology

As Botany and Zoology evolved quite separately initially, many of the words have different meanings in each sub-discipline. Also some words have the same foreign root but slightly different English spellings.

Table 1 Biological Words

Singular	Correct Plural	Acceptable Plural	Definition and Comments
acetabulum	acetabula	acetabulums	Anatomy: cavity on the side of the hipbone. Zoology: a round cup-shaped sucker found on flatworms and

			mollusks; thoracic cavity of insects in which a leg is inserted.
acinus	acini		tiny thin-walled air sac found in large numbers in each lung
alga	algae		aquatic non-vascular photosynthesizing organism; formerly regarded as plants
alveolus	alveoli		tiny thin-walled air sac found in large numbers in each lung
amnion	amnia	amnions	the inner membranes enclosing the embryo of a bird, reptile, or mammal
ampulla	ampullae	ampullas	a small container
androecium	androecia		male part of flowers
angiosperm	angiospermae	angiosperms	vascular plants with covered seeds
antheridium	antheridia		A reproductive cell containing male gametes in algae and fungi. In liverworts, mosses and ferns, it is multicellular.
antrum	antra		cavity within a bone
aorta	aortae	aortas	large blood vessel leaving the heart
archegonium	archegonia		female organ in primitive plants (mosses, liverworts, ferns, etc.)
areola or areole	areolae	areolas / areoles	Botany: space surrounded by hairs or thorns, small area of leaf mesophyll surrounded by veins. Zoology: circular pigmented area around the nipple of certain mammals, part of eye iris, small pit.
atrium	atria	atriums	open chamber, especially of the heart
bacillus	bacilli		aerobic, rod-shaped, spore-producing bacterium
bacterium (one cell or one species)	bacteria (more than one cell or species)		microscopic organisms without a nucleus
bronchus	bronchi		tube leading from the windpipe to a lung
bursa	bursae	bursas	a fluid-filled sac that reduces friction around joints

cactus	cacti	cactuses	succulent dicot plants adapted for arid regions greatly modified leaves; members of the family Cactaceae
calyx	calyces		collective term for sepals
caryopsis	caryopses/ caryopsides		a seed-like dry fruit containing a single seed
cava	cavae		the largest vein in vertebrates
cecum	ceca		pouch in which the large intestine begins
cerebellum	cerebella	cerebellums	the part of the brain located directly behind the cerebrum
cerebrum	cerebra	cerebrums	the front part of the brain
cervix	cervices	cervixes	body part that resembles a neck in shape or function
	chiasma/ chiasmata		Anatomy: any crossing over of biological tissue. Genetics: the point at which two chromatids join during fusion and exchange of genetic material.
cilium	cilia		a short thread-like appendage of certain cells
cisterna	cisternae		cavity containing fluid.
clitoris	clitorides	clitorises	female erectile tissue
cloaca	cloacae	cloacas	terminal region of the gut in reptiles, amphibians, birds, and many fish as well as in some invertebrates
coccus	cocci		circular-shaped bacteria
coccus	cocci		circular shaped bacteria
concha	conchae		part of the body shaped like a conch shell
corolla	corollae	corollas	collective term for petals of a flower
corona	coronae	coronas	a crown-like structure
corpus	corpora		body of an organism; a collection (body) of writings
cortex	cortices		tissue in plant stems and roots between epidermis and the central core
cortex	cortices		Anatomy: outer layer of a solid organ or part of the body
crista	cristae		Anatomy: crest or ridge, the border of a bone

			Cell biol.: fold in the inner membrane of a mitochondrion
culm decidua	culmina deciduae	culms	stem or straw of grasses specialized part of the mucous membrane that lines the womb during pregnancy
edema	edemata		abnormal swelling in a plant caused by a buildup of excess water
edema	edemata		Med.: abnormal buildup of serous fluid between tissue cells
endocardium	endocardia		thin membrane lining the heart cavities
endoplasmic reticulum	endoplasmic reticula		Internal membranes of cells; often abbreviated as ER
endothelium	endothelia		layer of cells that lines the inside of certain body cavities
epididymis epithelium	epididymides epithelia	epitheliums	coiled tube that stores sperm a thin layer of tightly packed cells lining internal cavities, covering exposed bodily surfaces
esophagus	esophagi		the passage between the throat and the stomach
fascia	fasciae	fascias	sheet of connective tissue covering parts of the body
fauna	faunae	faunas	collective term for animals in an area
flagellum	flagella	flagellums	a long lash-like appendage of certain cells
flora	florae	floras	collective term for plants in an area
folium	folia		
foramen	foramina	foramens	natural opening through bone or cavity
fornix	fornices		Anatomy: structure or fold in the shape of an arch
fossa	fossae		hollow, pit, or groove in a part of the body
frenulum	frenula		small fold of skin or membrane that limits the movement of an organ

fruit	fruit	fruits (when concerning several kinds or species)	mature ovary containing seeds
fungus	fungi	funguses	group of organisms without chlorophyll that obtain nutrients from organic matter
ganglion	ganglia	ganglions	dense cluster of nerve cells
gastrula	gastrulae		stage in embryonic development
gemma	gemmae		a budlike, asexual structure
genitalium	genitalia	genitals	external components of reproductive organs
genus	genera		a grouping above species level
gingiva	gingivae		gum around the roots of the teeth
glans	glandes		erectile tissue of a penis and the tip of clitoris
glomerulus	glomeruli		cluster of blood vessels, nerve fibers, or other cells; cluster of capillaries in the cortex of a kidney
Golgi body	Golgi bodies		organelles of cells
gymnosperm	gymnospermae	gymnosperms	vascular plants with naked seeds
gynoecium	gynoecia		female part of flowers
gyrus	gyri		rounded ridges on the outer layer of the brain
haustorium	haustoria		"root" of a parasitic plant that penetrates the host
herbarium	herbaria	herbariums	collection of preserved plants and plant-like organisms
hilum or hilus	hila or hili		Botany: scar on a seed of a plant where it was attached to the ovary; nucleus of a starch grain. Zoology: opening or depression where blood vessels and nerves enter or leave an organ.
hypha	hyphae		threadlike part of the vegetative portion of a fungus
ileum	ilea		the third and lowest portion of the small intestine
indusium	indusia		paper-like covering of fern

			sporangia
infundibulum	infundibula		funnel-shaped opening, passage, or structure in vertebrates
iris	irides	irises	structure within the vertebrate eye
labellum labium	labelli labia	labiums	lip of an orchid flower lip-shaped structure. Botany: the lower lip of the corolla of a labiate flower. Zoology: hindmost mouthpart of an insect.; inner margin of the opening of a snail shell; any of the folds that surround mammalian female genitalia.
lacuna	lacunae	lacunas	small pit or cavity in bone or cartilage
lamella lamina	lamellae laminae	laminas	layered structures thin layer of cell, scales or plates. Botany: blade of leaf. Zoology: layer of cells in brain; in hooved mammals, layers of sensitive tissue inside the hard exterior of the hoof.
larva	larvae	larvas	a stage of an insect or other arthropod after leaving the egg
larynx	larynges	larynxes	cartilaginous part of the respiratory tract
leaf	leaves		flattened or needle-like plant structure; primary site of photosynthesis
lemma loculus	lemmae loculi		the outermost bract of grasses cavity or opening in the ovary of a flower
lumen	lumina	lumens	space inside any tubular structure in a body
lumen	lumina	lumens	empty space, e.g. a cavity within a plant cell wall
macula	maculae		small pigmented spot on the skin , small yellowish spot in the middle of the retina of an eye
maxilla	maxillae	maxillas	upper jawbone in vertebrates, mouthpart of some arthropods

meatus	meatus		a body opening
mediastinum	mediastina		Mammals: in the chest between the lungs; contains the heart and trachea
medulla	medullae		the innermost area of a part or organ of an animal or plant
medusa	medusae		jellyfish form
meninx	meninges		membranes that surround and protect the brain and the spinal cord
mitochondrion	mitochondria		cellular organelles outside a nucleus
monochasium	monochasia		branched flowerhead with one branch each
mucosa	mucosae		wall of tubular structure containing mucous-secreting cells
mycelium	mycelia		a collection of hyphae of a fungus
myocardium	myocardia		thick muscular wall of the heart
neuologium	neuroglia		supporting tissue and fibers that nourishes nerve cells in the central nervous system
nucleolus	nucleoli		region of the nucleus where RNA is made
nucleus	nuclei		DNA of cells enclosed by a membrane
ochrea	ochreae		sheath around base of grass internode
octopus or octopod	Octopuses or octopods	octopi	marine mollusk with eight tentacles. Octopus is derived from Greek, so is technically more accurate. <i>Octopuses</i> is acceptable for several members of the genus <i>Octopus</i>
oogonium	oogonia		reproductive cell containing an egg in algae and fungi
operculum	opercula	operculums	lid or covering, of a pitcher plant or a moss capsule; closure of a snail's shell, fish's gill covering
os	ora		a mouth or mouth-like opening of an organism

os	ossa		a bone
ovule	ovules		In an ovary, a structure containing an egg. On fertilization, ovule matures into a seed. Not ovuli
ovum	ova	ovums	female reproductive cell; an egg
palea	paleae		inner bract of a grass flower
papilla	papillae		small nipple-shaped protuberance
pappus	pappi		hair or bristle at apex of a floret, e.g. on dandelion "seeds"
patella	patellae	patellas	kneecap
pelvis	pelvis		basin- or cup-shaped anatomical cavity or the bones that comprise it
penis	penes	penises	male organ that transfers sperm to female
pericardium	pericardia	pericardiums	fibrous membrane surrounding the heart
peritoneum	peritonea	peritoneums	smooth transparent membrane that lines the abdomen
pharynx	pharynges		the throat
phylum	phyla	phylums	a large group of organisms; often capitalized
pilus	pili		bacterial appendage for adhesion
pilus	pili		bacterial appendage for adhesion
pinna	pinnae		a primary division of a leaf or frond
pinna	pinnae	pinnas	feather, wing, or other similarly shaped body part or appendage
placenta	placentae	placentas	tissue bearing ovules in plants
placenta	placentae	placentas	vascular organ that develops inside the uterus of most pregnant mammals
pleura	pleurae	pleuras	thin transparent membrane covering the lungs
pollinium	pollinia		a sticky pollen-bearing structure
protozoon;	protozoa;		single-celled organism that can move and feed on organic compounds
protozoan	protozoans		

pubis	pubes		joined pair of bones comprising the lower front of the hipbone
pudendum	pudenda		human external genital organs
pupa	pupae		insect stage between larva and adult
rachilla	rachillae		axis of a grass inflorescence
ramus	rami		branches of a forked structure
rectum	recta	rectums	the lower part of the large intestine
rectus	recti		any straight muscle
reticulum	reticula		the second stomach
rhizome	rhizomata	rhizomes	compartment in ruminants
rumen	rumina	rumens	a root-like fleshy stem
scrotum	scrota	scrotums	the first stomach compartment in ruminants
septum	septa		external pouch of skin and muscle containing the testes in mammals.
serosa	serosae		membrane dividing something into two or more cavities
serum	sera	serums	serous membrane
sorus	sori		clear fluid of blood without cells
spadix	spadices		a collection of sporangia in ferns
species	species		Botany: a fleshy spike of flowers. Zoology: part of the developing mouth region of some cnidarians; amalgamation of the tentacles of certain cephalopods.
sperm	sperm	sperms (when concerning several kinds or species)	"specie" has been used by some as a singular form of species
sporangium	sporangia		male reproductive cells/structures; component of semen
sternum	sterna	sternums	a sac-like structure containing spores in plants
stoma	stomata	stomas	the breastbone; chitinous ventral plate of an arthropod
			small opening. Botany: a pore of a leaf or stem. Zoology: part

			of alimentary canal of nematodes; opening made surgically.
strobilia	strobiliae		proglottids of a tape worm, polyp form that gives rise to jellyfish medusae
strobilus	strobili		a collection of sporophylls into a cone as in club-moss or gymnosperms
stroma	stromata		Cell biology: fluid-filled interior of a chloroplast containing enzymes. Mycology: fungal cells and host cells on which a spore-bearing structure may form. Zoology: vascular tissue in which ovarian follicles are embedded.
sulcus	sulci		a shallow groove or depression on the surface of the brain
taxon	taxa	taxons	a category in a classification
testa	testae		the outer part of a seed
testis	testes		male reproductive gland; synonym of testicle
thallus	thalli	thalluses	a plant body without a true root, stem, or leaves
thorax	thoraces	thoraxes	part of body between the neck and abdomen, containing the heart and lungs
tibia	tibiae	tibias	a bone of the lower hind leg; the shin bone
torus	tori		receptacle or enlarged tip of a stem on which flowers are borne.
trachea	tracheae	tracheas	Botany: type of water-conducting plant tissue. Zoology: tube of insects and related air-breathing arthropods through which air is drawn into the body
tunica	tunicae		Botany: dry covering around a bulb or corm. Zoology: layer of tissue that covers or lines a body part or organ
ulna	ulnae	ulnas	one of two bones in the fore

urethra	urethrae	urethras	leg/arm tube in vertebrates that carries urine from the bladder out of the body
uvula	uvulae	uvulas	V-shaped extension of the soft palate
vertebra	vertebrae	vertebras	bones of the spinal column / backbone
vibrissa	vibrissae		mammals: hair or whisker that vibrates when touched; birds: a bristle or hair-like feather, near the beak, especially of insect-eating birds
villus	villi		intestinal structure
virus	viri		non-cellular parasite of cells
viscerum	viscera	viruses	the internal organs of an animal, especially of the abdomen; singular form not usually used
vulva	vulvae	vulvas	external female genitalia

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