

# FAUNA *of* AUSTRALIA

Volume 4A

## POLYCHAETES & ALLIES

The Southern Synthesis

GLOSSARY

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At night, *Eunice Aphroditois* emerges from its burrow to feed.  
Photo by Roger Steene



Just as systematics underpins other areas of biological endeavour, a glossary underpins the study of the systematics of a particular group. A good glossary will not only standardise the terms we use and therefore assist in the communication between workers, but also for many terms it is a statement about homologies - if two features are considered homologous then this should be reflected by using the same or a similar name. Use of two quite dissimilar terms for the same structure or concept only leads to confusion (for example, auricule and basal lappet, for the paired processes at the base of the antenna in some sigalionids). Conversely, where it is established that two corresponding structures are not homologous, that is, the structure was not present in the common ancestor, then it may be appropriate for them to be given different names to reflect their different origins. This would apply, for example, to the various existing terms used to describe pygidia of different families (caudal plaque, sternal shield, scaphe) and to the superficially similar muscularised regions of the anterior digestive tract in syllids (proventricle) and spionids (gizzard).

The glossary presented here was initially compiled and edited with the view to standardising polychaete contributions to the text for the *Fauna of Australia*. An early version appears on the Annelid Resources Home Page [at time of publication at <http://biodiversity.uno.edu/~worms/annelid.html>]. It has been expanded by additional terms in the present texts for the Polychaeta, Myzostomida, Pogonophora, Sipuncula and Echiura. Included are all terms used singly or in combination that describe attributes of these taxa, and which in general would require reference to specialist literature. Terms listed in standard dictionaries have been omitted, such as various descriptors (distal, dorsal), or terms which are readily interpreted either from their component parts or their context. Exceptions to these limits are terms which are in everyday use but have a specific meaning for these taxa unrelated to their general use. Many of the terms are defined directly from the present text. The several sources listed below were most valuable in resolving definitions.

# A

- abdomen:** in polychaetes, body region posterior to the thorax, sometimes followed by a tail.
- abyssal:** oceanic waters between depths of 4000 m and 6000 m.
- achaetous:** without chaetae.
- acicula, aciculae:** in polychaetes, stout supportive chaeta found internally in projecting parapodial rami.
- acicular chaeta:** stout, projecting chaeta.
- acicular muscle:** see oblique muscle.
- aciculum:** see support rod.
- acoelomate:** pertaining to animals lacking a coelom.
- acrosome:** membrane limited organelle at apex of spermatozoon head, covering the anterior surface of the nucleus; secretes enzymes thought to facilitate sperm entry.
- action potential:** the transient difference in electric potential across the plasma membrane of a nerve or muscle cell on stimulation.
- adelphophagy:** consumption by a developing larva of nurse eggs present in the same egg capsule.
- adenosinetriphosphate, ATP;** a source of metabolic energy, widespread in biological systems; comprises adenine, ribose and three phosphate groups.
- adhesive plaques:** thickened, tanned area of cuticle with a raised margin in pogonophores.
- aileron:** accessory jaw plate in Glyceridae.
- akrotroch (= acrotroch):** circle of cilia anterior to prototroch.
- allantoicase:** enzyme that catalyses hydrolysis of allantoic acid to urea and glyoxylic acid.
- allantoinase:** enzyme that catalyses the hydrolysis of allantoin, an oxidation product of urea.
- ambulacrum, ambulacral groove:** ciliated groove from mouth to tip of each arm pinnule in crinoids; furrow from mouth to tip of each arm in asteroid echinoderms.
- amoebocyte:** a cell which exhibits amoeboid characteristics in form and behaviour.
- amylase:** one of a group of enzymes that catalyses the hydrolysis of glycogen or starches to produce sugars.
- anaerobiasis:** a mode of life in organisms that occupy environments in which oxygen is absent (obligate anaerobiasis) or in low concentration (facultative anaerobiasis).
- anal plaque:** depressed (or sunken) plate-like pygidium of some maldanids and other polychaetes.
- anal vesicles:** primary site of excretion in echiurans, a pair of large tubular, sac-like or dendritic organs, linked to the coelom through numerous ciliated funnels.
- anastomosing:** joining of vessels, ducts, nerves etc to form a network.
- annulated:** ringed or marked with grooves delineating segments.
- annuli (= girdles):** pair of chaetigerous epidermal ridges around trunk of perviate and moniliferan pogonophores.
- anoxia:** a lack of oxygen available for respiration.
- antenna, antennae:** sensory projection arising from the dorsal, lateral or frontal surface of the prostomium in polychaetes.
- antennular auricle:** = auricle.
- antennular membrane:** hood-like membrane between the paleae and the buccal tentacles in Pectinariidae.
- apical tooth:** see primary tooth.
- apical tuft:** ciliary sensory organ at the apex of the trochophore larva.
- Apicomplexa, apicomplexans:** group of parasitic, pathogenic protists, formerly placed in the Sporozoa.
- apodous:** segments without parapodia.
- apomorphy:** an advanced or derived feature; compare plesiomorphy.
- arborescent:** branching like a tree.
- architomy:** see schizotomy.
- arista, aristae:** fine hair-like or bristle-like structure in polychaetes.
- aristate chaeta:** simple chaeta with smooth shaft and a tuft of hairs or a single spine distally in polychaetes.
- article:** demarcated sections of chaetae or cirri separated by joints in polychaetes.
- articulate:** jointed, as in antennae, tentacular cirri, palps and dorsal cirri.
- achaetigerous:** see achaetous.
- atoke:** non-sexual, unmodified state of an individual in some polychaete groups; pertaining to species which undergo epitoky.

**ATP:** see adenosinetriphosphate.

**atrochal larva:** more or less overall ciliated polychaete larva that lacks the ciliary rings of the typical trochophore larva.

**auricule:** paired ear-shaped processes at the base of an antenna (ceratophore) characteristic of some sigalionids.

**Australian region:** comprises continental Australia including Tasmania; offshore islands - Macquarie, Lord Howe Island and Cocos (Keeling) Islands; Australian External Territories - Christmas Island, Heard Island, Norfolk Island and Australian Antarctic Territories; and the Australian Exclusive Economic Zone.

**autapomorphy:** a derived character unique to a particular taxon.

**autosynthesis:** formation of yolk within the oocyte; compare heterosynthesis.

**autotomy:** the deliberate loss of body parts; in polychaetes, fragmentation of individuals into two or more parts which regenerate into new individuals.

**avicular:** beaked; shaped like a bird's head.

**axoneme:** microtubular structure forming core of cilium or flagellum; comprises two single microtubules, surrounded by nine double microtubules.

## B

**bacteriocyte:** cell in which symbiotic bacteria reside.

**basal lappet:** = auricule.

**benthic:** pertaining to the sea floor.

**benthonic:** pertaining to the benthon or community of organisms that inhabit the sea floor.

**biarticulate:** with two joints; pertaining to antennae, tentacular cirri, palps and dorsal cirri.

**bidentate chaeta:** chaeta with two teeth distally.

**bifid:** distally split in two.

**bifurcate chaeta:** simple chaeta with two prongs.

**bilabiate:** with two lips, usually about parapodial lobes.

**bilimbate chaeta:** simple chaeta with two wings; see limbate.

**bioherm:** rock mass formed partially or wholly by deposits of sedimentary marine organisms, such as corals or algae.

**bipectinate:** branching like a feather from a central axis; similar to pinnate, but branches coarser.

**biramous parapodium:** parapodium with two branches, a notopodium and a neuropodium.

**blade:** distal, flattened portion of a compound or simple chaeta.

**blastomere:** cell formed during initial divisions of fertilised egg.

**Bohr effect:** the decreasing affinity of haemoglobin for oxygen as carbon dioxide concentration increases and pH decreases.

**bonellin:** a highly toxic green integumentary pigment in echiurans, comprising a chlorin molecule; determinant of sex in boniellids.

**boss:** small projection or knob-like process in compound and simple chaetae.

**brain:** ganglionic mass situated at least in part in the prostomium in polychaetes.

**branchia, branchiae:** in polychaetes, extension of the body wall with a loop of the vascular system; usually well equipped with capillary blood-vessels; in pogonophores, a tentacle bearing pinnules, forming a respiratory organ.

**branchial crown:** see tentacular crown.

**branchiole:** see radiole.

**bridle:** (= frenulum) paired thickened cuticular ridges around forepart of perviate pogonophore.

**bristle:** see chaeta.

**brush-tipped chaeta:** see penicillate chaeta.

**buccal cavity:** mouth cavity.

**buccal cirri:** cirri in or around the mouth; sensory function rather than feeding (*cf.* buccal tentacles).

**buccal organ:** anterior part of alimentary canal derived from larval stomodaeum, comprising a complex set of folds, musculature and glands; see pharynx; see also ventral buccal organ.

**buccal papillae:** extensions of the lip of the proboscis in many proboscidean myzostomes.

**buccal tentacles:** elongate, grooved, usually ciliated appendages in or around the mouth; palpal derivatives.

**bulbus:** knob-like structure swollen in appearance.

## C

- caecum, caeca:** blind sac arising from the alimentary canal; applied also to other organ systems, such as nephridia.
- calicinate:** like the calyx of a flower.
- canaliculate:** with a (fine) canal or groove.
- capillary chaeta:** slender, often long, chaeta tapering to a fine point in polychaetes.
- capillary, capillaries:** see capillary chaeta.
- caruncle:** projection from the posterior end of the prostomium carrying nuchal organs in polychaetes.
- cauda:** see pygidium.
- caudad:** towards the tail.
- caudal plaque:** flattened pygidium.
- centriole:** cell organelle at basal end of axoneme of cilium or flagellum; comprises nine triplets of fused microtubules; in myzostome spermatozoa, secondarily at free end of flagellum.
- centromere:** point on chromosome to which spindle attaches during mitosis.
- cephalad:** towards the head.
- cephalic cage:** long, forwardly directed chaetae more or less enclosing the head.
- cephalic keel:** median ridge on the prostomium or head, as in some Maldanidae.
- cephalic peaks:** see prostomial peaks.
- cephalic plaque:** = cephalic plate.
- cephalic plate:** plate-like antero-dorsal surface of the head region in some Maldanidae and Pectinariidae.
- cephalic rim:** flange encircling the head in polychaetes.
- cephalic veil:** see cephalic rim.
- cephalisation:** incorporation of anterior, usually modified cephalised segments, with the head (prostomium/peristomium) in polychaetes.
- cephalon:** see head.
- ceratophore:** basal part of an antenna in polychaetes.
- ceratostyle:** distal part of an antenna in polychaetes.
- chaeta, chaetae:** in polychaetes, a chitinous bristle protruding from a pocket in the body wall; in pogonophores, slender bristle, bearing an oval, serrated head.
- chaetal gland:** (= chaetal sac): in myzostomes and polychaetes, a series of follicles in the parapodium that secrete the support rod, the hook in use, and a varying number of replacement hooks.
- chaetal inversion:** presence, in polychaetes, of uncini on the notopodia rather than the more usual position on the neuropodia.
- chaetiger:** segment bearing chaetae.
- chaetigerous lobe:** that projection or part of the notopodium or neuropodium which bears the chaetae.
- chaetoblast:** cell which forms, together with follicle cell, a chaeta.
- chemoautotroph:** organism able to synthesise organic nutrients from inorganic sources, excluding photosynthesis.
- chevron:** V-shaped chitinated jaw piece at the base of the eversible pharynx in some Goniadidae.
- chlorin:** a saturated porphyrin in which one double bond has been reduced in a single pyrrole ring.
- chlorocruorin:** respiratory blood pigment; changes in colour from green to red with increasing concentration.
- cholinergic:** pertaining to a nerve cell ending that produces or is stimulated by the neurotransmitter acetylcholine.
- chromaphil gland:** see chromatophil gland.
- chromatin:** dark-staining nuclear material comprising DNA and associated bound histones.
- chromatophil gland:** densely staining gland in the ventral pinnule of *Tomopteris*; see also rosette gland.
- chromatophore:** special cell or group of cells carrying pigment.
- ciliated funnels:** see anal vesicles.
- ciliophore:** in polychaetes, distinct area or epidermal patch covered with cilia.
- circular muscle:** muscle layer encircling the body between the epidermis and longitudinal muscle layer.
- circumoesophageal connective:** in polychaetes, tracts of nervous tissue passing down from the brain on either side of the foregut and connecting to the ventral nerve cord.
- circumoral tentacles:** see tentacles.

**cirriform:** slender and cylindrical.

**cirrophore:** basal projection on which a cirrus is mounted.

**cirrostyle:** distal part of a cirrus or tentacle.

**cirrus, cirri:** sensory appendage in polychaetes; usually slender and cylindrical.

**cirrus:** sensory process of body margin in most myzostomatid and some endomyzostomatid species, frequently in pairs; process on medial part of parapodial fold in some Proboscidea.

**clade:** a complete set of taxa with a common ancestor.

**cladistics:** classification of taxa based on lines of evolutionary descent, and, in principle, recognizing only clades.

**cladogenesis:** the divergence within an ancestral species into two or more groups, one or more of which become monophyletic units or species.

**clavate:** club-shaped.

**coelom, coelomate:** body cavity with peritoneal lining; formed in embryonic mesoderm; characteristic of almost all bilateral animals; lined with epithelium termed the peritoneum.

**coelom:** in myzostomes, body cavity formed within, and lined with mesoderm; thought by many to be the lumen of the uterus and associated diverticula, but possibly absent.

**coelomocytes:** amoebocytes present in the coelom, in polychaetes and sipunculans.

**coelomoduct:** a tubule derived from coelomic tissue, connecting the coelom with the external environment; in polychaetes may have a coelomostome; often combined with nephridium and termed nephromixia; nephridium in sipunculans.

**coelomostome:** funnel at the inner end of a coelomoduct.

**cold seep:** emergence of fluid from sedimentary rocks under pressure, such as in regions of continental subduction; may comprise hydrocarbons, such as methane, or water, bearing salts such as sulphides.

**collar:** anterior encircling fold or flap, such as that covering the base of the tentacular crown in Sabellidae and Serpulidae; see also tube.

**collateral intestine:** see siphon in echiurans.

**comb chaeta:** simple chaeta with a comb-like arrangement of teeth on the distal end; present in some Eunicida.

**commensalism:** an association between two species that live together, which benefits individuals of one species without harming those of the other.

**commissure:** a transverse band of neural tissue linking paired ventral nerves or longitudinal nerve tracks; in polychaetes, one of four main tracts of nervous tissue passing through the brain.

**companion chaetae:** in polychaetes, small, simple chaetae, accompanying, or alternating with larger chaetae, usually hooks of some kind.

**compensatory vessel:** see contractile vessel.

**composite chaeta:** see compound chaeta.

**compound chaeta:** chaeta having a terminal portion which articulates with the shaft.

**compressed:** flattened in one plane, usually laterally.

**consecutive hermaphroditism:** change from one sex to another in an individual; may be protandrous, protogynous, or bi-directional.

**contractile vessel:** (= 'polian vessel'; compensatory vessel): in sipunculans, a single, sometimes, double tubular structure extending along the dorsum of the oesophagus, ending blindly; arises from the ring vessel encircling the oesophagus; these, with the tentacular vessels, comprise the circulatory system.

**copragogue:** see faecal groove.

**cordate, cordiform:** heart-shaped.

**crinoids:** echinoderms of the class Crinoidea, termed sea lilies or feather stars.

**cristate:** bearing a ridge or crest.

**crotchet:** see hook.

**crown:** a bilaterally symmetrical branched structure in some polychaetes formed by prostomial palps.

**ctenidium, ctenidia:** in polychaetes, a finger-shaped or flattened structure presumed to have a respiratory function.

**ctenognaths:** polychaetes in which the jaws comprise relatively large basal maxillae and symmetrically arranged rows of numerous anterior denticles in longitudinal series without carriers.

**cuticle:** thin, non-cellular protective layer produced by and overlying the epidermis in many invertebrate groups; in polychaetes, consists mainly of scleroprotein (not chitin).

**cutis:** see dermis.



**cutting plate:** distal part of eunicean mandible.

**cysticolous:** inhabiting a cyst formed on or within a host.

**cytophore:** central mass of cytoplasm comprised of cytoplasmic bridges between proliferated opheliid spermatogonia; thought to assist in synchronising the development of the sperm.

**cytoplasm:** the living contents of a cell, excluding the nucleus.

## D

**deciduous:** pertaining to structures easily autotomised, or shed by the animal as a defensive reaction.

**dendrites:** branching cytoplasmic processes of sensory cells.

**dental formula:** in polychaetes, notation showing the distribution of teeth on the crest of a hook or uncinus.

**dentate:** toothed.

**denticle:** a minute tooth.

**denticulate:** finely toothed.

**depressed:** flattened, usually dorso-ventrally.

**dermis:** layer of skin underlying the epidermis; comprises connective tissue and a range of other cell types, such as pigment and nerve cells.

**desmosome:** attachment point (spot desmosome) or line between two animal cells, at which cell membranes are thickened, and the enlarged intercellular space contains connective filaments; see also zonula adhaerens.

**detritus:** particles of organic origin.

**Deuterostomia, deuterostome:** primary grouping of bilateral animals characterised by indeterminate cleavage; typical of echinoderms and chordates.

**diagonal muscle:** obliquely aligned dorso-ventral muscle in the body wall (*cf.* oblique muscle).

**diaphragm:** muscular partition in pogonophore which separates the forepart and the trunk; develops in juvenile from longitudinal muscle layers; important component of hydrostatic skeleton.

**digitiform:** finger-shaped.

**dioecious:** (= gonochorism, gonochoric) pertaining species, in which individuals are either male or female throughout life.

**direct developers:** embryos that develop completely into juveniles without intermediate larval stages.

**diverticulum, diverticula:** blind tube(s) or sac-like extension(s) of the lumen of an organ.

**dorsal blood vessel:** in polychaetes, longitudinal vessel which carries blood forward through the body; situated above the gut.

**dorsal cirrus organ:** sensory organ, with numerous long cilia at the ventral base of the dorsal cirrus in Eunicida.

**dorsal cirrus:** in polychaetes, cirrus normally situated on the upper edge of the notopodium.

**dorso-ventral muscle:** see diagonal muscle.

**echinulate:** prickly.

**ect-aquasperm:** spermatozoa that fertilise eggs external to the body.

**ectoderm:** the outermost layer of germ cells developed during gastrulation.

**elytrigerous segment:** polychaete segment bearing a scale.

**elytron, elytra:** dorsal scales found in the scale-worms; homologous with the dorsal cirrostyles.

**elytrophore:** cirrophore carrying an elytron, as in scale-worms.

**endocytotic, endocytosis:** process of inclusion of material within a cell via vesicles formed by invagination of the cell's plasma membrane.

**endoderm:** the innermost layer of germ cells developed during gastrulation.

**endothelium:** epithelial cells lining the inner wall of the circulatory system.

**entire margin:** smooth edged; lacking papillae, teeth or other projections.

**enteronephridia:** blind ciliated canals opening into the stomach.

**epiboly:** gastrulation process in which presumptive ectoderm grows over and envelops the presumptive endoderm.

**epidermis:** outer layer of the skin, usually one cell thick in invertebrates; derived from ectoderm.

**epigamy:** structural modification of an entire adult individual polychaete into a reproductive state or epitoke (*cf.* schizogamy).

**episphere:** region of trochophore anterior to the prototroch; gives rise to the prostomium in adult.

**epitokes:** an individual polychaete morphologically modified to leave the bottom to reproduce (epitoky); epigamous epitokes result from the transformation of an atoke to the epitoke; schizogamous epitokes arise by modification and separation from the posterior end of the worm.

**erythrocruorins:** a group of iron-porphyrin protein respiratory pigments in the blood of invertebrates; sometimes termed haemoglobins.

**erythrocytes:** nucleated cells in echiuran circulatory system and coelom containing haemoglobin.

**eukaryotes:** organisms in which the cells have a membrane-bound nucleus, chromosomes comprising DNA, and cellular organelles such as mitochondria.

**eversible pharynx:** part of pharynx being capable of being extended by turning the inner part outwards.

**eversible proboscis:** see eversible pharynx.

**eye:** light receptive organ which usually occurs on the prostomium of polychaetes but may occur elsewhere on the body or appendages.

**eyespot:** light sensitive structure in several polychaete groups.

## F

**facial tubercle:** projecting ridge or lobe on the upper lip of certain polychaetes, especially scale-worms.

**faecal groove:** groove, on the posterior region of a tubicolous polychaete, along which the faecal pellets pass before being voided from the tube.

**falcate chaeta:** distally curved, usually blunt chaeta.

**falciform:** hook-shaped.

**falciger:** compound chaeta with a stout, hooked blade or apex, in polychaetes.

**fang:** in polychaetes, a major tooth-like projection of an uncus, hook or maxillary plate.

**fascicle:** a small bundle, of tissue, such as muscle or nerve fibres, or structures, such as chaetae.

**felt:** matted thin chaetae produced by the notopodia in some species of scale-worms.

**fenestrated:** with one or more window-like openings; used to refer to the ladder-like arrangement of transparent compartments in the shaft of some polychaete chaetae.

**fibrocyte:** connecting tissue cell, synonymous with, or derived from a fibroblast.

**filamentous:** shaped like a fine thread.

**filiform:** slender and thread-like.

**fimbriated:** having flattened, leaf-like processes.

**flail chaeta:** abruptly tapering and distally bent simple chaeta of some orbinids.

**flanged chaeta:** see limbate or bilimbate chaetae.

**foliaceous:** thin and leaf-like.

**foot:** see parapodium.

**foregut:** anterior, cuticle-lined part of the alimentary canal including the pharynx and oesophagus; derived from the ectoderm; see also stomodaeum.

**forked chaeta:** see furcate chaeta.

**formalin:** a solution of formaldehyde in water, used for fixing tissues.

**frenulum:** see bridle.

**frontal palps:** anterior, sensory appendages of prostomium in Onuphidae.

**frontal peaks:** see prostomial peaks.

**furcate chaeta:** short (usually), bifurcated simple chaeta.

**fusiform:** cigar- or spindle-shaped.

## G

**gallicolous:** inhabiting galls.

**gametocyte:** product of division of diploid gametogonium to diploid primary gametocyte; primary gametocyte produces through meiotic division a haploid secondary gametocyte (oocytes and spermatocytes).

**gametogenesis:** process of gamete formation from the diploid primordial gametogonia to the haploid ova or spermatozoa.

**gametogonium, gametogonia:** the earliest germ cell(s) in the gametogenic sequence.



**gastrotroch:** paired or unpaired ventral ciliary bands on body of trochophore larva.

**gastrulation:** formation of the embryonic ectoderm, mesoderm and endoderm layers.

**geniculate chaeta:** simple chaeta formed like a bent knee.

**genital hook:** modified notopodial chaeta used in mating in some Capitellidae.

**genital papilla:** projection on which a reproductive duct opens.

**genital pore:** modified nephridial opening.

**genital pouch:** a pocket-like skin fold between neuropodia in some Spionidae.

**giant fibre:** enlarged fibre in the nerve cord capable of very rapid conduction of nerve impulses.

**gill:** see branchia.

**girdle:** see annulus.

**gizzard:** muscular, barrel-shaped part of the foregut behind the pharynx in some Spionidae.

**glabrous:** smooth, glistening.

**glial cells:** comprise tissue surrounding and supporting neuronal cells.

**gonochorism, gonochoric:** (= dioecious) individuals are either male or female throughout life.

**gonoduct:** see coelomoduct; see also nephridia in echiurans and sipunculans.

**guanidine:** an excretory product formed during protein metabolism ( $\text{CH}_5\text{N}_2$ ).

**guard:** paired delicate chitinous sheaths protecting the tip of some chaetae.

**gular membrane:** a muscularised septum between two successive anterior segments in polychaetes; divides the coelom into anterior and posterior parts.

**gut sinus:** thin-walled open chamber of circulatory system around the gut.

**gynandry:** development of female reproductive system before male system in consecutive hermaphrodites.

## H

**hadal:** oceanic depths exceeding 6000 m.

**haemerythrin:** respiratory pigment in sipunculans; in different taxa may comprise two, three or eight units of polypeptide attached to two Fe ions.

**haemoglobin:** intracellular or extracellular iron-protein respiratory pigment in many invertebrates; binds and transports both oxygen and sulphide in pogonophores; respiratory pigment in erythrocytes in echiuran circulatory system and coelom.

**harpoon chaeta:** stout pointed chaeta with recurved barbs near the tip.

**hastate:** shaped like the blade of a spear.

**head:** in polychaetes, collective term used for a structure formed by the fusion of peristomium, prostomium and, in many instances, one or more cephalised segments.

**hemigomph:** compound chaeta with articulation which re-aligns the tip at close to a right angle to its long axis.

**hermaphroditism:** presence of functional male and female reproductive systems in an individual, at the same time (simultaneous hermaphroditism) or sequentially (consecutive hermaphroditism).

**heterogomph:** compound chaeta with articulation which clearly re-aligns the tip obliquely to the long axis of the shaft.

**heterosynthesis:** exogenous formation of yolk or its precursor which is transported into the oocyte; compare autotynthesis.

**hindgut:** posterior-most region of the alimentary canal, usually short; ectodermally derived.

**hispid:** minutely hairy; furry, often with reference to chaetae.

**histology:** the microscopical study of the structure of normal tissues.

**holdfasts:** swollen, papillate structures on the body wall of *Phascolion* species, inhabitants of discarded mollusc shells; used to clean bacteria and algae off the inside of the shell.

**holoblastic:** early embryonic cleavage pattern in which cell membranes divide cytoplasm, and yolk, completely; in forms with a small volume of yolk.

**homogomph:** compound chaeta with articulation which re-aligns the tip at a right angle to its long axis.

**homologues:** structures of common evolutionary origins, irrespective of functionality, derived from the same structure in the common ancestor.

**homology:** fundamental similarity in different organisms as a result of their common ancestry.

**homoplasy:** correspondence in morphology of different organisms as a result of evolutionary convergence or parallel evolution.

**hood:** in polychaetes, delicate chitinous envelope with a single opening, covering the apex of hooks or other chaetae (see also guards).

**hook:** in polychaetes, stout-shafted, unjointed, distally-curved chaeta with or without teeth near the apex; in myzostomes, replaceable chaetal component of the protrusible hook apparatus in each parapodium; in sipunculans, recurved and closely packed, or irregularly distributed, simple, thorn-like hollow structures on introvert.

**hyaline gland:** gland in the pinnules of certain species of *Tomopteris*; usually translucent, sometimes with a yellow spot in the centre.

**hydrostatic skeleton:** controlled support provided by muscular pressure on body fluids, especially the major venous sinuses; used to modify body or organ shape.

**hydrothermal vent:** site of emerging, often highly sulphidic hot water, after it has circulated through new crustal rocks at spreading ridges in the deep-sea floor.

**hyperionic:** internal ionic concentration higher than ambient concentration.

**hyperosmotic:** internal osmotic concentration higher than ambient concentration.

**hypodermic internal fertilisation:** transfer of sperm in some polychaetes by attachment to the partner's body wall or by their injection into partner through the body wall.

**hypoxia:** physiological or environmental state characterised by a low level of dissolved oxygen.

## I

**ichnogenus:** generic name given to a group of animals characterised by fossilised evidence of their presence, for example, tube, burrow or track; known as trace fossils or ichnofossils.

**imbricated:** overlapping like tiles.

**inquiline:** pertaining to a form of commensal symbiosis in which the host primarily provides shelter for the symbiont, even within its body.

**intermediate cirrus:** in polychaetes, cirriform structure attached to the body wall between the notopodium and neuropodium.

**inter-ramal cirrus:** in polychaetes, a cirriform structure attached to the notopodium, projecting into the space between the notopodium and the neuropodium.

**intersegmental:** between segments.

**intromittent:** structured appropriately for insertion into partner during mating; usually associated with sperm transfer.

**introvert:** in myzostomes, a retractable protrusion derived either from entire anterior end of the body, often bearing several pairs of buccal papillae (Proboscidea), or from the rear of the oral cavity (Pharyngidea) and lacking papillae; the anterior, protrusible part of a sipunculan; can be retracted, by invagination, completely into the body cavity; see also proboscis.

**invagination:** in embryology, the folding in of part of the blastula wall, forming a cavity: see epiboly.

**iso-osmotic:** internal osmotic concentration equal to ambient concentration.

**iteroparity:** breeding in more than one season, often at regular intervals.

## J

**jaw formula:** see maxillary formula.

**jaws:** in polychaetes, hardened feeding or grasping apparatus with opposable units situated in the eversible pharynx.

**jointed chaeta:** see compound chaeta.

## L

**labial palps:** ventral sensory appendages of prostomium in Eunicida.

**labidognaths:** polychaetes in which the larger pieces of the highly differentiated jaws are located in a pocket with the smaller pieces arranged in semi-circles at its anterior end.

**lacuna(e):** space(s) or cavity (cavities), usually with reference to those in tissues.

**lamella, lamellae:** fleshy, flattened or plate-like structure(s).

**lanceolate:** pointed and shaped like a lance.

**lappet:** lobe or flap-like projection.

**lateral caecum:** blind sac arising laterally from the alimentary canal.

**lateral lappet:** lobe or flap-like projection on anterior segments in Terebellidae.

**lateral organs:** in polychaetes, small, rounded inter-ramal elevations with stiff projecting hairs; see also dorsal cirrus organ, stereocilia; in myzostomes, sucker-like or pit-like, usually protrusible, organs on the outer part of the ventral body surface, thought to be mechanosensory or chemosensory structures.

**lateral shield:** glandular area on the lateral venter of thoracic segments in *Polycirrus*; *cf.* ventral pads.

**lecithotrophy:** form of development in which larvae generally do not feed, relying on yolk in egg.

**ligule:** in polychaetes, compressed conical lobe of a parapodium; *cf.* lobe.

**limbate chaeta:** in polychaetes, simple chaeta with a flattened wing projecting from one side along much of its distal half; see also bilimbate.

**lipase:** one of a group of enzymes that catalyses the hydrolysis of lipids or lipoproteins.

**lobe:** in polychaetes, conical process of a parapodium; *cf.* ligule.

**long-handled uncinus:** in polychaetes, uncinus with a long, rod-like basal extension.

**longitudinal muscle:** in polychaetes, muscle layer running parallel to the long axis of the body, between the circular muscle and the peritoneum; usually arranged in two dorso-lateral and two ventro-lateral bands.

**lyre chaeta, lyrate chaeta:** see furcate chaeta.

**lysosomal enzymes, lysozymes:** enzymes important in bacteriolysis; break the glycosidic linkages of mucopolysaccharides and mucopeptides in bacterial cell wall.

## M

**macromere:** one of four large cells formed after the first two divisions of a developing egg; denoted as cells A, B, C and D.

**macrotubercle:** see tubercle.

**madder:** colour of dye from root of the herbaceous climber *Rubia tinctorum*.

**main fang:** see fang, see also primary tooth.

**mammillate:** pertaining to nipple-like process.

**mammiliform:** breast-shaped.

**manchette:** a cylindrical structure in the spermatid comprising microtubules that extend caudally from the posterior margin of the acrosomal cap, and surround the nucleus.

**mandible:** ventral jaw plate in Eunicida.

**manubrium:** in myzostomes, a process arising from the distal tip of the support rod of the parapodium, and which guides the movements of the hook.

**maxilla:** dorsal jaw plate in Eunicida.

**maxillary carrier:** posterior support for the maxillae.

**maxillary formula:** summary of the number and arrangement of maxillary plates and teeth in Eunicida.

**maxillary ring:** distal part of the everted pharynx in Nereididae.

**mechanoreceptor:** organ sensitive to mechanical stimuli, such as pressure or stretching.

**medial:** the mid-line regions of the body.

**median:** in the mid-line.

**mesocoel:** pair of coeloms separated by mesentery in forepart of perviate or moniliferan pogonophore.

**mesoderm:** embryonic germ layer derived from the endoderm in triploblastic phyla following gastrulation.

**mesothelium:** a single layer of cells, often squamous in form, lining a body cavity or similar space not exposed to the exterior.

**metacercaria:** endoparasitic fluke larva, derived from cercaria, and precursor of adult fluke.

**metacoel:** pair of coeloms separated by mesentery and trophosome in trunk of perviate or moniliferan pogonophore.

**metamerism, metamerites:** segmentation of the body into a series of similar units, termed metamerites.

**metanephridia:** in sipunculans, the primary excretory organs, gonoducts and possibly with osmoregulatory function, opening via the nephridiopore to the exterior and through the narrow nephrostome to the coelomic cavity; in myzostomes, term used often, probably erroneously, for ciliated ducts connecting the uterus to the anterior part of the intestine, rarely to the exterior; role in excretion or gamete release is doubtful, but they may expel waste material from the uterus; see also nephridium.

**metastomium:** in polychaetes, rarely used term covering the segmented body between the prostomium/peristomium and the pygidium, but including neither.

**metatroch:** transverse ring of cilia on trochophore, lying posterior to the mouth.

**metatrochophore:** ciliated larval stage of an annelid after segmental proliferation has begun but prior to development of functional parapodia; see also trochophore.

**methanotrophs:** bacteria able to utilise methane as a source of energy and carbon; present in alimentary tract of pogonophores.

**micromere:** small cell resulting from unequal division of cells comprising blastocyst; larger macromeres provide space for the yolk.

**microtubercle:** see tubercle.

**microvilli:** minute, very slender (>0.01 mm diameter) extensions of surface of epithelial cells; in myzostomes on integumental cells, where they penetrate the cuticle.

**midgut:** in polychaetes, central part of the alimentary canal comprising the stomach, when present, and the intestine; in echiurans, long and contorted, comprising presiphonal, siphonal and post-siphonal sections, marked by junctions with the siphon.

**mitochondrion, mitochondria:** small cytoplasmic organelle(s) of various shapes in eukaryote cells; site of the citric acid cycle and oxidative phosphorylation, by which adenosinetriphosphate is formed; probably derived from endosymbiotic bacteria.

**mitraria larva:** larva of oweniid polychaete; swim by ciliary action of an umbrella-like structure.

**moniliform:** beaded or beadlike.

**monophyly, monophyletic:** pertaining to a group of taxa comprising a common ancestor and all its descendants.

**morula:** syncytial mass of spermatozoa in polychaetes.

**mouth:** anterior opening of the alimentary canal; in polychaetes usually anterior opening of fully everted pharynx.

**mucopolysaccharide:** one of a group of polysaccharides comprising repeating disaccharide units and an amino sugar and uronic acid; now termed glycosaminoglycan.

**mucro:** a sharp point or tip on an abruptly tapering structure.

**mucronate:** sharply pointed.

**multiarticulate:** with three or more joints.

**multidigitate:** with many finger-like lobes or projections.

**mutualism:** symbiotic association between two members of different species which benefits both organisms.

**myo-epithelium:** epidermal layer which includes contractile epithelial cells.

## N

**nascent:** the state of an atom or molecule, often highly reactive, as it breaks free of chemical bonding.

**natatory:** swimming.

**nectochaete:** developmental stage of an annelid following metatrochophore (up to 20 or so chaetigers); ciliation is reduced and parapodia function in locomotion.

**nematoform:** worm-like.

**nephridial papilla:** projection on which the excretory organ opens.

**nephridiopore:** in polychaetes and sipunculans, the external opening of a metanephridium; see also nephridium.

**nephridium, nephridia:** in polychaetes, excretory organ(s) opening to the exterior via a duct and a nephridiopore; fluid enters the internal end of the more primitive protonephridium through selenocytes; fluid enters the internal end of metanephridium through an open, ciliated funnel termed a nephrostome; in myzostomes, excretory organ comprising ciliated terminal cells, an intracellular tubule and an exit pore; in sipunculans, functions as gonoduct and may store excretory products; in echiurans, functions as a gonoduct, storing eggs or sperm, opening to the exterior through nephridiopore, and internally through a nephrostome, the mouth of which forms nephrostomal lips.

**nephromixia:** combinations in polychaetes of coelomoduct and nephridium termed protonephromixium, metanephromixium and mixonephridium; in protonephromixium, mesodermal components are fused with a protonephridial canal; in a metanephromixium, the mesodermal funnel has become joined with an open nephrostome; in a mixonephridium the coelomic end of the nephridium is completely fused with the funnel of a coelomoduct.

**nephrostomal lips:** tissue surrounding the lips of the nephrostome in echiurans.

**nephrostome:** the opening of a metanephridium to the coelomic cavity; see also nephridium.

**nerve cord:** ventral, segmentally ganglionated nerve trunk passing along the length of the body.

**neurochaeta:** in polychaetes, chaeta of a neuropodium.

**neurocirrus:** see ventral cirrus.

**neurofibrils:** fine proteinaceous longitudinal fibres forming a network within the nerve cell body, axons and dendrites.

**neuropodium, neuropodia:** in polychaetes, ventral branch or ramus of a parapodium.

**neuroseta:** see neurochaeta.

**neurotroch:** longitudinal ventral band of cilia in trochophore.

**notochaeta:** chaeta of a notopodium.

**notocirrus:** see dorsal cirrus.

**notopodium:** in polychaetes, dorsal branch or ramus of a parapodium.

**notoseta:** see notochaeta.

**nototroch:** regularly scattered dorsal ciliary bands on body of trochophore larva.

**nuchal cirrus:** see nuchal papilla.

**nuchal epaulettes:** see nuchal organs.

**nuchal organs:** in polychaetes, paired chemosensory structures situated postero-laterally on the prostomium, developed variously as pits, grooves, epaulettes, or elongated ridges; in sipunculans, a two- to four-lobed cushion of ciliated columnar epithelium on the oral disc, resembling the nuchal organ of annelids, and presumed to be chemoreceptive.

**nuchal papilla:** papilla found on the posterior margin of the prostomium of some Phyllodocidae and Spionidae.

**nuchal:** pertaining to the neck.

**nucleoplasm:** the contents of the nuclear envelope within a cell.

**nurse cells:** cells associated with, and providing nutrients to oocytes or spermatocytes during development.

## O

**oblique muscle:** muscle attached to the aciculae and chaetae; *cf.* diagonal muscle.

**obturatorium:** thick, funnel-shaped structure in pogonophores with closely adhering, equal right and left halves; seals the aperture of the tube after withdrawal of the animal.

**occipital collar:** in polychaetes, a prominent fold immediately overlapping the posterior part of the prostomium.

**occipital fold:** see occipital collar.

**occipital lappet:** see occipital collar.

**occipital papilla:** see nuchal papilla.

**occipital:** in polychaetes, pertaining to the postero-dorsal part of the prostomium.

**ocellus, ocelli:** small eye spot(s).

**octopine:** one of the opines, a group of amino acids rarely found in nature; formed during anaerobic synthesis of ATP in *Sipunculus nudus*.

**ocular peduncle:** see ommatophore.

**oesophageal caecum:** in polychaetes, blind sac arising from the oesophagus.

**oesophagus:** posterior part of the foregut connecting the pharynx to the intestine; includes the gizzard or proventricle, and caeca when present.

**ommatidium:** functional optic unit of the compound eyes on the tentacular crown of some sabellidans.

**ommatophore:** projecting structure supporting the eyes, especially in scale-worms.

**oocyte:** female reproductive cell; diploid primary oocyte forms, through meiosis during oogenesis, a haploid secondary oocyte which divides to form an ovum.

**oogenesis:** formation and development of female gametes from diploid oogonia to mature, haploid ova.

**oogonia:** diploid precursor of primary oocytes, derived by mitosis during oogenesis.

**operculum, opercula:** in polychaetes, plug at the anterior end of some tube-dwellers which blocks the tube opening when the worm retracts.

**opisthosoma:** short hind region of the pogonophoran body, divided by septa into many chaetigerous segments; used for burrowing into the sediment by perviate pogonophores.

**oral cavity:** mouth cavity.

**oral ring:** proximal part of the everted pharynx in Nereididae.

**organogenesis:** the formation and development of organs.

**osmoconformers:** organisms in which the osmotic concentration of the internal fluids varies in accordance with the external environment.

**ossicle:** small calcified plate in the exoskeleton of an echinoderm.

**otocysts:** see statocysts.

**oviduct:** tube conducting eggs or oocytes to exterior; in myzostomes, usually applied to posterior portion of uterus dorsal to intestine, alternatively to entire branched lumen of female reproductive system.

**oviparous:** pertaining to deposition of eggs which develop completely and hatch externally.

**ovoid:** shaped like a bird's egg.

**oxyconformer:** an organism in which the rate of oxygen consumption decreases as ambient oxygen tension decreases.

## P

**palea, paleae:** in polychaetes, broad, usually flattened chaetae, often with a metallic sheen.

**palmate:** resembling the fronds of a palm .

**palp, palpi:** one of a set of paired, elongate or cushion-like structures arising from the sides of the head; anteroventral and sensory in many 'errant' polychaetes; placed postero-dorsally and used in feeding in spioniform polychaetes.

**palpode:** in polychaetes, tapering anterior projection of the prostomium.

**palpophore:** in polychaetes, basal part of a jointed palp.

**palpostyle:** in polychaetes, distal part of a jointed palp.

**Panthalassa:** the oceanic region surrounding the former supercontinent Pangea.

**papillose:** bearing numerous small, rounded to conical projections.

**paragnath formula:** summary of number and arrangement of denticles on the pharynx in Nereididae.

**paragnath:** sclerotinised denticle on the pharynx in Nereididae.

**paraphyly, paraphyletic:** pertaining to a group of taxa comprising a common ancestor but not all of its descendants; see polyphyly and monophyly.

**parapodial trunk:** in polychaetes, proximal, undivided part of an elongate parapodium.

**parapodium, parapodia:** in polychaetes, one of the two fleshy lateral projections from a body segment, usually bearing chaetae and sometimes greatly reduced; in myzostomes, nearly always five pairs of unarticulated, unbranched appendages with a hook apparatus used for attachment to the substratum and for locomotion.

**paratomy:** see schizotomy.

**parenchyma:** mesodermal tissue surrounding, and filling spaces between organs, muscles and other tissues.

**pectinate:** comb-like; with series of projections arranged like the teeth of a comb.

**pectinate chaeta:** see comb chaeta.

**pedicel:** a short stalk.

**pelagospaera larva:** pelagic larval form unique to some sipunculans, derived from trochophore, in which the ciliated metatroch is used for swimming and the prototroch is absent or very reduced.

**penicillate chaeta:** in polychaetes, simple chaeta with a brush-like tip.

**peribulbar nerve ring:** in some pharyngidean myzostomes, encircles the muscle bulb within the proboscis and incorporates the cerebral ganglia.

**peristalsis:** rhythmic, directional wave of muscular contraction in a vessel or tube.

**peristome:** see peristomium.

**peristomial cirri:** in polychaetes, paired, elongated cirri on the peristomium.

**peristomium:** in polychaetes, presegmental region of the body surrounding the mouth.

**peritoneum:** serous membrane lining the coelomic cavity.

**pharynx:** in polychaetes, anterior muscular part of the foregut, including the eversible proboscis.

**phosphagen:** creatine phosphate.

**pilose:** covered with very short hairs giving a velvety appearance.

**pinnate:** in polychaetes, feather-like; two rows of pinnules branching from a central axis (*cf.* bipinnate; bipectinate).

**pinnules:** in polychaetes, small side branches, in a feather-shaped process, such as the radiole in Sabellidae and Serpulidae; in pogonophores, an epidermal cell bearing a projection above the surface on the tentacle; in crinoid echinoderms, jointed appendages along each side of the arm.

**pinocytosis:** the process of uptake by cells of particles, large molecules and fluid droplets.

**piriform:** see pyriform.

**planariform:** resembling a flat worm, Tricladida, in form.

**planktotrophic:** larval development in which eggs with little yolk hatch as small, free-swimming trochophores which feed on algae in the water column.

**planula:** a free-swimming, radially symmetrical coelenterate larva.

**platelet:** syncytial mass of spermatozoa in polychaetes.

**plesiomorphy:** primitive retained character; compare apomorphy.

**plume:** numerous pinnulate tentacles arranged on concentric lamellae in vestimentiferan pogonophore.

**plumose:** resembling down; hairy.



**podocytes:** specialised cells which select waste products filtered from the circulatory system and excrete them via the open ducts of the metanephridia.

**polar lobe:** anucleate cell part budding from blastomeres prior to the first three embryonic cell divisions.

**polyphyly:** pertaining to a group comprising two or more taxa derived from distinct lineages.

**polytelic:** pertaining to individuals or species in which adults survive to spawn during two or more breeding seasons.

**polytomy, polytomous:** incompletely resolved node on tree of relationships, where several branches originate together.

**polytypic:** pertaining to a genus with more than one species, a family with more than one genus, etc.

**postchaetal:** posterior to the chaetae; used in relation to parapodial lobes or ligules.

**postsetal:** see postchaetal.

**post-siphonal:** see midgut in echiurans.

**post-trochal:** posterior to the prototroch of the trochophore larva.

**prebulbar nerve ring:** in proboscidean myzostomes, lies anterior to the muscle bulb at the tip of the proboscis, and does not incorporate cerebral ganglia.

**prechaetal:** anterior to the chaetae, used in relation to parapodial lobes or ligules.

**presetal:** see prechaetal.

**presiphonal:** see midgut in echiurans.

**retrochal:** anterior to the prototroch of the trochophore larva.

**primary tooth:** larger distal tooth of an unequally bidentate chaeta.

**prionognaths:** polychaetes in which the generally similar jaw-pieces are located in two rows on longitudinal ridges.

**proboscis, proboscides:** in polychaetes, eversible, non-muscular part of the buccal organ (strictly); often used interchangeably with pharynx; in echiurans, a muscular, highly extendable preoral lobe extending from the antero-dorsal surface of the trunk near the mouth, with a role in food-gathering, sensory, respiratory, locomotory and fossorial functions; but cannot be withdrawn into the body cavity like the introvert of sipunculans; see also proboscis.

**proboscis coelom:** ventral and lateral series of small cavities in the echiuran proboscis.

**prostomial keel:** see cephalic keel.

**prostomial peaks:** antero-lateral projections, often chitinated, of the prostomium in some scale-worms.

**prostomium, prostomia:** in polychaetes, anteriormost, presegmental and retrochal region of the body, sometimes bearing eyes and antennae; may not be externally recognisable.

**protandry, protandrous:** sequence of sexual stages, from a functional male stage to a hermaphroditic and/or a functional female stage in consecutive hermaphrodites.

**protocoel:** coelom in cephalic lobe of perviate or moniliferan pogonophore.

**protogyny, protogynous:** sequence from a functional female stage to a hermaphroditic and/or a functional male stage in consecutive hermaphrodites.

**protonephridia:** see nephridium.

**Protostomia, protostomes:** primary grouping in bilateral animals characterised by determinate cleavage, in which the fate of cells is pre-determined; found in platyhelminthes, annelids, molluscs and arthropods.

**prototroch:** primary, anterior-most transverse ring of locomotory cilia on the body of the trochophore larva, lying anterior to the mouth; in myzostomes, cilia form a ring of tufts.

**prototrochophore:** see trochophore.

**proventricle, proventriculus:** muscularised region of the anterior digestive tract occurring posterior to the pharynx; with muscle fibres arranged radially; characteristic of the Syllidae.

**proximal:** part of a structure nearer to the base or main body.

**psammophilic:** pertaining to sand-dwelling organisms.

**pseudocompound, pseudojointed:** in polychaetes, pertaining to compound chaeta in which the articulation is incomplete.

**pseudocopulation:** a form of sperm transfer in some polychaete groups involving spermatophores, spermatozeugmata, or free spermatozoa.

**pseudofaeces:** sediment particles transported upwards from feeding depths by a polychaete worm and ejected from the tube; texturally indistinguishable from faeces.

**pseudopod:** cytoplasmic extension used for locomotion and feeding in amoebae and amoebocytes.

**pygidial:** pertaining to the anal region or pygidium.

**pygidial cirrus:** = anal cirrus; cirrus projecting from the pygidium in polychaetes.

**pygidium:** in polychaetes, post-segmental terminal part of the body surrounding the anus.

**pyriform glands:** multicellular epidermal glands which secrete chitin and mucopolysaccharides to form the pogonophoran tube.

**pyriform:** with a broad bulbous base and tapered tip; pear- or onion-shaped.

## R

**radiole, radii:** primary branch in the tentacular crown in Sabellidae and Serpulidae.

**radiolar crown:** see tentacular crown.

**ramose:** branched.

**ramus, rami:** branch, in relation to the dorsal or ventral branch of a parapodium.

**raptorial:** feeding mode involving snatching, seizing or tearing apart.

**receptaculum seminis:** seminal receptacle; female organ which receives and stores spermatozoa.

**rectum:** see hindgut.

**redox discontinuity:** the boundary between an oxygenated (oxidising) environment and an anoxic (reducing) environment.

**reniform:** kidney-shaped.

**reticulate:** pattern or structure forming a network or mesh.

**retort organ:** club-shaped gland opening into the buccal cavity in Typhloscolecidae.

**rhabdomere:** photoreceptive element of a compound eye.

**ring sinus:** see ring vessel.

**ring vessel:** in echiurans, a vessel joining the posterior end of the dorsal vessel to the neurointestinal vessel forming a ring; probably functions as a 'heart' or a reservoir of fluid; see also see tentacles or contractile vessel in sipunculans.

**ringent chaeta:** simple, subdistally expanded chaeta with a narrow slit which is internally crenulated or serrated; in Euphrosinidae.

**rosette gland:** yellowish star-shaped glands in the pinnules of some species of *Tomopteris*; see also chromatophil gland.

**rosette:** syncytial mass of spermatozoa in polychaetes.

**rostrum:** in polychaetes, enlarged first tooth or fang of a chaeta, usually a hook or uncinus.

**rugose:** roughened, lumpy.

## S

**sabre, sabre-like:** in polychaetes, chaeta with a broad curved blade.

**scale:** see elytron.

**scaphe:** flattened caudal end in Pectinariidae; see also pygidium, sternal shield.

**schizocoelous:** pertains to coelomates, in which the body cavity is derived from the splitting of mesodermal blocks.

**schizogamous epitoke:** see epitoke.

**schizogamy:** in polychaetes, structural modification of the adult involving the budding off of sexual individuals; see also stolons, epigamy.

**schizotomy:** in polychaetes, asexual reproduction involving two forms of subdivision of the body and regeneration of the missing parts; in paratomy, a recognisable complete individual forms and then separates from the 'parent' stock; in architomy, the body breaks or fragments without any prior cephalisation.

**scleroprotein:** one of a group of proteins incorporated into skeletal, connective or epidermal structure.

**sclerotinised:** pertaining to the hardening of the exoskeleton with the quinone-tanned protein sclerotin.

**secondary tooth:** in polychaetes, smaller, proximal tooth of an unequally bidentate chaeta.

**segment:** one of the serially repeated units comprising the trunk; often separated internally by septa.

**segmental organ:** organs occurring in segmental arrangement; used specifically with reference to nephridia and nephridial ducts.

**semelparity:** death following a single reproductive season.

**seminal vesicle:** storage organ for sperm in myzostomes.

**sensory buds:** epithelial sensory/secretory structures on antennae and cirri.

**septum, septa:** structural partition(s) or division(s) between two visceral regions, within a haemocoel, or separating two cavities or tissue masses; in myzostomes, formed by the dorso-ventral muscles; in pogonophores, division between segments of the opisthosoma in pogonophores.

**sesquiramous parapodium:** see sub-biramous parapodium.

**sessile:** pertaining to organisms attached to or situated directly on the substratum; without a stalk.

**sestonophages:** consumers of microplankton and organic particles in aquatic systems.

**seta, setae:** see chaeta, chaetae.

**setae:** in polychaetes, myzostomes and pogonophores, see chaeta, chaetae; in echiurans, hook-like structures that emerge through the ventral wall posterior to the mouth and elsewhere on the trunk, the latter assisting in burrowing and locomotion.

**setal:** see chaetal.

**setiger:** see chaetiger.

**setigerous lobe:** see chaetigerous lobe.

**setigerous:** pertaining to setae.

**shaft:** proximal part of a compound or simple chaeta; or proximal part of a eunicean mandible.

**sheath pocket:** a diverticulum of the hook sheath in myzostomes.

**sheath:** in polychaetes, hyaline envelope covering a capillary chaeta.

**short-handled uncinus:** in polychaetes, uncinus without a long basal extension.

**sickle chaeta:** simple chaeta with a sickle-shaped blade in some Spirorbinae.

**simple chaeta:** see unjointed chaeta.

**simultaneous hermaphroditism:** presence of functional male and female reproductive systems in an individual at the same time.

**singlet oxygen:** excited state of molecular oxygen  $^1\text{O}_2$ , formed by many chemical and photochemical processes; especially reactive form.

**siphon:** in echiurans, conspicuous narrow tube close to the ventral wall of part of the gut; communicates at both its extremities with the lumen of the gut; of unknown function.

**siphonal:** see midgut in echiurans.

**Skolithos:** ichnogenus typified by simple verticle or subvertical burrows, termed piperock, formed in shallow, high-energy marine sedimentary environments; probably represents colonies of burrowing suspension-feeders, such as sabellariid polychaetes.

**slime glands:** used by urechid echiurans to produce a slime net to trap fine particles.

**slime net:** see slime glands.

**solenocytes:** in polychaetes, terminal cells at the internal end of a protonephridium; responsible for filtering waste products from the coelomic fluid.

**spatulate, spathulate:** in polychaetes, simple chaeta with a broadly expanded distal margin; like a spatula; spoon-shaped.

**spermathecae:** seminal receptacles.

**spermatid:** haploid, immature precursor of spermatozoon; derived from secondary spermatocyte.

**spermatogenesis:** process of sperm formation from diploid primordial spermatogonia to haploid spermatozoa.

**spermatogonia:** the earliest germ cells in the spermatogenic sequence.

**spermatophores:** in polychaetes and myzostomes, bundles of spermatozoa, all enclosed by a sheath or capsule isolating them from the surrounding environment; see also spermatozeugmata.

**spermatozeugmata:** in polychaetes, bundles of spermatozoa which are not surrounded by an external covering; may resemble bundles of late spermatids; see also spermatophores.

**spermocyst:** in myzostomes, comprises one to three clumps of spermatozoa, at same stage of development, in vacuoles within a cyst cell.

**spindle muscle:** in sipunculans, a highly muscular, thread-like muscle, inserted anteriorly near the anus or from the rectum; supports the coils of the intestine and adjusts them to length of the worm by extension or contraction.

**spine:** in polychaetes, a thick acicular or spear-shaped chaeta; may be straight or slightly curved.

**spiniger, spinigerous chaeta:** compound chaeta tapering distally to a fine point.

**spinning gland:** gland secreting tube-forming material (threads) present in parapodia of certain scale-worms.

**spinous pocket:** enlarged, pocket-like serration along the margin of the chaetae of some scale-worms.

**spinule:** a small spine.

**spinulose:** bearing small spines.

**spiral cleavage:** cleavage pattern of early embryonic cells, such that the position of the upper, smaller one of two divided cells is slightly offset from the lower one, forming a spiral pattern.

**squamous epithelium:** epidermal layer of flattened, scale-like cells.

**statocysts:** paired epithelial organs at the base of the tentacular crown in sabellids that function in equilibrium and orientation.

**stem cells:** undifferentiated adult or embryonic cell capable of unlimited division and of giving rise to one or more cell types.

**stereocilia:** inter-ramal sensory cilia; see also dorsal cirrus organ.

**sternal shield:** modification of the last segments forming a ventral plate in Sternaspidae; see also pygidium, scaphe.

**stolon:** in polychaetes, secondary individual formed by budding, usually from the posterior end, or elsewhere on the body.

**stolonisation:** form of asexual reproduction involving the formation of stolons.

**stomach:** glandular and/or muscular region of the midgut of most 'sedentary' polychaetes.

**stomodaeum:** anterior part of the embryonic alimentary canal formed as an invagination of the ectoderm; see also foregut.

**striae:** fine parallel marks or lines.

**striated:** with striae.

**stylet:** a small pointed tooth-like structure.

**stylode:** in polychaetes, finger-like projection associated with a parapodium, usually small and distinctly longer than wide.

**sub-biramous parapodium:** in polychaetes, parapodium with a well-developed neuropodium and reduced notopodium.

**suboesophageal ganglion:** in polychaetes, nerve centre at the junction of the circumoesophageal connectives and the ventral nerve cord.

**subterminal:** close to the apex of a structure.

**subulate:** awl-shaped.

**subuluncinus:** chaeta with a stout shaft tapering to a slender tip; intermediate between a capillary and an uncinus; see also aristate.

**support rod:** (= aciculum); in myzostomes, provides support for the parapodium and guides the hook.

**symbiont:** participant in a mutualistic, commensal or parasitic relationship.

**symplesiomorphy:** primitive retained character shared by two or more taxa; compare synapomorphy.

**synapomorphy:** derived character shared by two or more taxa.

**synapse:** junction between two nerve cells or a nerve cell with another cell type such as muscle.

**syncytium:** a non-cellular, multinucleate mass of protoplasm.

**syngamy, syngametic:** fusion of morphologically similar cells.

## T

**telocentric:** with reference to a chromosome with a terminal centromere.

**telotroch:** girdle of locomotory cilia situated posteriorly on a trochophore larva.

**tentacles:** elongate structures encircling the mouth in asteromyzostomatid myzostomes, used to anchor the animal to the integument of its host sea star; few to numerous, elongate, vascularised structures extending from cephalic lobe, and primary site of oxygen uptake in pogonophores; in sipunculans, finger-, thread- or fold-like structures either surrounding or associated with the mouth, used for food-gathering and respiration, each with three tentacular vessels, linked to ring vessel encircling the oesophagus; see also palp with reference to feeding palps, and buccal tentacle.

**tentacular cirri:** in polychaetes, dorsal and/or ventral cirri of parapodia of cephalised segments; often more elongate than those of more posterior parapodia; confused in the literature with peristomial cirri.

**tentacular crown:** array of elongated appendages on the head in Sabellidae and Serpulidae; used for feeding and respiration.

**tentacular formula:** notation indicating the arrangement of the tentacular cirri and chaetae; originally used for Phyllodocidae and Alciopidae, now also extended to other families.

**tentacular palps:** in polychaetes, paired or multiple food-gathering appendages; most are grooved and/or have a longitudinal row of cilia; see also buccal cirri and buccal tentacles.

**tentacules:** dendritic or finely branched tentacular system in the sipunculan *Themiste*.

**tentaculophore:** in polychaetes, basal projection on which a tentacle is mounted.

**terminal organ:** small rounded, knob-like secretory organ in pelagosphaera larva of some sipunculans and in some adults of *Sipunculus*; thought to assist the larva in selecting a suitable settlement site, to aid adhesion and trap detritus and bacteria for food.

**terminal tooth:** see primary tooth.

**tessellated:** pertaining to a surface with a network of grooves like a tiled wall.

**thoracic membrane:** thin fold extending from the dorsal part of the collar to the ventral side of the posterior thorax in most Serpulidae.

**thorax:** anterior region of the trunk in some polychaetes.

**tonofilaments:** keratin filament linking two epidermal cells via a spot desmosome.

**torus, tori:** in polychaetes, welt or ridge-like parapodial ramus, often with hooks or uncini.

**trabeculae:** struts of tissue forming a supportive or bracing framework within a space.

**trepan:** anteriorly toothed, slightly sclerotinised part of the eversible pharynx of some polychaetes, especially Syllidae.

**trichogenic cells:** in polychaetes, cells which secrete fine hair-like threads.

**triploblastic:** the organisation of bilateral animals, which develop from three embryonic germ layers – ectoderm, mesoderm and endoderm.

**troch:** ring or band of cilia on the embryonic or larval stage, used in locomotion.

**trochophore:** early, ciliated, free-swimming, planktonic larval stage before segment proliferation begins; in annelids, molluscs, sipunculans, echiurans and bryozoans; in myzostomes, transforms from the initial spherical protrochophore through a trochophore to a pear-shaped metatrochophore.

**trophosome:** midgut of a pogonophore, and site of symbiotic chemosynthetic bacteria which provide a source of energy for carbon fixation.

**truncate:** pertaining to a structure that ends abruptly, without tapering.

**trunk:** in polychaetes, the segmented region of the body between the peristomium and pygidium.

**trypsin:** a digestive enzyme that catalyses the breakdown of proteins by hydrolysis of peptide linkages.

**tube feet:** short, external extensions of the echinoderm water-vascular system, coelomic in origin; generally used for locomotion, but for feeding in crinoids.

**tube:** unbranched, chitin-protein structure secreted and inhabited by pogonophore; hair-like or fibrous in nature, clear, coloured uniformly or patterned; simple or segmented anteriorly, forming a series of collars.

**tubercle:** knob-like protruberance; often referring to a large (macrotubercle) or small (microtubercle) projection on the elytron of some Polynoidae.

## U

**unciniger:** in polychaetes, segment carrying uncini.

**uncinigerous:** bearing uncini.

**uncinus, uncini:** in polychaetes, deeply embedded chaeta of which only its expanded multidentate head protrudes from the body wall; usually arranged in rows transverse to the long axis of the animal; see also long-handled uncinus.

**unidentate:** distally entire; often pertaining to chaetae.

**uniramous parapodium:** in polychaetes, parapodium in which one ramus, most frequently the notopodium, is absent.

**urease:** enzyme that catalyses the breakdown of urea to ammonia and carbon dioxide.

**uricase:** enzyme that catalyses the oxidation of uric acid to allantoin.

**urite:** projection from the pygidium.

**urn cells:** in sipunculans, fixed cells on coelomic wall and free-swimming cells in coelomic fluid that remove cell debris, foreign particles and bacteria.

## V

**vasa deferentia:** ducts carrying spermatozoa from the testes; in myzostomes, male gonoducts carrying spermiocysts to other from vasa efferentia to seminal vesicles or penial ducts.

**vasa efferentia:** in myzostomes, male genital ducts carrying spermiocysts from testis to vasa deferentia.

**vegetal pole:** at one end of longitudinal axis of cleavage in the fertilised egg; linked with formation of digestive and associated organs.

**venter, ventrum:** the lower body surface.

**ventral blood vessel:** in polychaetes, longitudinal vessel which carries blood posteriorly through the body; situated beneath the gut.

**ventral buccal organ:** in polychaetes, variable, often complex set of folds, musculature and glands present on the ventral side of many polychaetes; see pharynx.

**ventral cirrus:** in polychaetes, cirrus normally situated on the lower edge of the neuropodium.

**ventral groove:** longitudinal mid-ventral furrow.

**ventral muscle bulb:** see pharynx.

**ventral pads:** glandular areas on the lateral venter of thoracic segments in some Eunicida, where they replace ventral cirri; compare lateral shields.

**ventral shield:** glandular segmentally arranged pad on the ventral thorax in some Terebellidae and Sabellidae.

**vermiform:** worm-like in form.

**vestmentum:** body region in vestimentiferan pogonophores, on which lateral flaps enfold the anterior part of the body behind the plume.

**villus, villi:** series of small, digitate tubules arising from the contractile vessel of some sipunculans.

**vitellogenesis:** formation of egg yolk.

## W

**winged capillary chaeta:** see limbate or bilimbate chaetae.

## Z

**zonula adhaerens:** region of contact with adjacent cells which is continuous around the cell; also termed belt desmosome.

**zygote:** product of fused haploid spermatozoa and ovum, forming a diploid cell.

**zymogen granules:** vesicles in glandular cells containing precursors of enzymes.



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