Glossary

Abdomen	Region of the insect body plan posterior to the thorax
Acron	Anterior-most division of the body of an arthropod
Actin	Cytoskeletal protein forming contractile filaments
Adenomatous polyposis coli (APC)	Oncogene encoding a negative regulator in the WNT signaling pathway
Agouti	Dominant yellow coat color in mice.
Agrin	Proteoglycan with a role in the formation of the neuromuscular junction during development
Alcoholism FAS	FAS fetal alcohol syndrome, alcohol as a teratogen
Allantois	Sac-like extraembryonic tissue primarily involved in nutrition and excretion
Allele	Gene variant
Amnion	Extraembryonic membrane that fills with amniotic fluid to form the amniotic sac which serves to provide a protective environment for the embryo. It is a feature of the amniotes which includes reptiles, birds and mammals
Amnioserosa	Protective membrane at the dorsal side of the insect embryo
Amniotes	Tetrapod vertebrates comprising reptiles, birds and mammals which lay their eggs on land or retain the fertilized egg within the mother.
amniotic cavity	Cavity in which the amniote embryo develops
Amphibians	Class of ectothermic tetrapod vertebrates
Anamniotes	Amphibians and fish
Androgen	Natural or synthetic compound, usually a steroid hormone, that stimulates or controls the development and maintenance of male characteristics in vertebrates
Animal cap	Tissue in the vertebrate embryo near the animal pole
Animal pole	Hemisphere of the vertebrate embryo that consists of small rapidly dividing cells
Anterior system	Maternal gene network patterning the anterior region of the Drosophila embryo
Anterior visceral endoderm (AVE)	The AVE is an extra-embryonic tissue that contains a signaling center expressing several diffusible factors important in the establishment of the anterior-posterior body axis of the vertebrate embryo
Anterior-posterior axis	In the hand, from digit (anterior) to small finger (posterior). Controlled by posteriorizing Shh signal
Aphid	Plant lice. Small sap-sucking insect
Apical	Surface of a polarized cell that faces the lumen
Apical ectodermal cap (AEC)	Also called wound epidermis. Distal epithelial thickening of limb stump that forms during epimorphosis and triggers outgrowth of regenerating limb
Apical ectodermal ridge (AER)	The AER is a structure that forms from cells at the distal end of the limb bud and acts as a major signaling center to ensure proper development of a limb
Apical ectodermal ridge (AER)	Distal ectodermal thickening of developing limb bud that expresses FGF8 and stimulates limb outgrowth through interaction with underlying progress zone
Archenteron	Primitive gut that forms during gastrulation
Area opaca	Ring of cells at the margin of the early avian embryo
Area pellucida	Cells at the center of the early avian embryo surrounded by the area opaca
Aromatase	Enzyme involved in temperature-dependent sex-determination, mainly in reptiles
Arthritis	Disorder that involves inflammation of the joints
Arthropod	Invertebrate animal having an exoskeleton, a segmented body, and jointed appendages
Autonomous development	Cell fates are predetermined and cells develop independent of their location or environment
Autopod	Distal region of the limb that comprises metacarpals and digits in the arm/foreleg and tarsals and toes in the hind leg, respectively.
Autosome	Any of the numbered chromosomes that is not a sex chromosome
Axis formation	Establishment and patterning of the embryonic body axis by gene networks
Balancer	Special Drosophila chromosome engineered to prevent meiotic recombination
Basal	Surface of a polarized cell that faces the basal lamina
Bergmann glia	Radial glia, found in the forming nervous system
Bicoid	Homeodomain transcription factor in Drosophila essential for the development of anterior structures of the embryo
Bilaminar germ disc	Epiblast and hypoblast forming from the inner cell mass of the blastocyst
Bisphenol A (BPA)	Carbon-based synthetic compound employed for making plastics and exhibiting hormone-like properties
Blastema	Dedifferentiated mesenchymal tissue that underlies the apical ectodermal cap and undergoes proliferation in the regenerating limb during epimorphosis
Blastocoele	Fluid filled central cavity of the blastula that is essential for gastrulation
Blastocyst	Early embryonic stage in vertebrates following the morula and consisting of inner cell mass, trophoblast and a blastocoel cavity
Blastoderm	Early embryonic cell layer found in the blastula
Blastomere	Cell produced by cleavage of the zygote
Blastopore	The blastopore is an opening into the archenteron during embryonic

	stages of an organism
Blastula	Hollow sphere of cells surrounding the blastocoele and produced by cleavage divisions of the zygote
Bone morphogenetic protein (BMP)	Secreted signaling proteins binding to cell surface receptors of the TGFβ-superfamily
Bottle cells	Ring of cells in the amphibian embryo changing their shape by apical constriction and forming a blastopore
Brain derived neurotrophic factor (BDNF)	Neurotrophic factor of the neurotrophin family, that also includes NGF
Bride of sevenless	Drosophila transmembrane protein acting as ligand to the sevenless receptor during photoreceptor specification in the developing eye imaginal disc
Cadherin	Homophilic Ca^{2+}-dependent cell-to-cell adhesion protein
Capacitation	Biochemical change undergone by sperm in the female reproductive tract that enables it to penetrate and fertilize an egg
Caudal	Homeodomain transcription factor important for the development of posterior structures in the Drosophila embryo
Cdx2	Homeodomain transcription factor important for the development of trophoblast cells in the mammalian embryo
Cell adhesion molecules (CAMs)	Group of proteins of the Ig-superfamily that play an important role in cell-to-cell or cell-to-extracellular matrix adhesion
Cellularization	Process of transforming the syncytial blastoderm into the cellular blastoderm in early Drosophila embryo by introducing cell membranes between syncytial blastoderm nuclei
Cerberus	Signaling protein that acts as an antagonist to nodal, BMP and WNT signaling molecules in the anterior region of the vertebrate embryo during gastrulation and is important for anterior-posterior patterning
Cholinergic differentiation factor (CDF)	Differentiation factor in the nervous system
Chordamesoderm	Also known as axial mesoderm, is a type of mesoderm that lies along the central axis of the embryo under the neural tube
Chordin	Signaling protein that acts as a BMP antagonist and is involved in anterior-posterior patterning of the vertebrate embryo
Chorion	Outermost membrane around the embryo in amniotes
Chromatin	Complex of macromolecules found in cells, consisting of DNA, RNA and protein
Cis-regulatory region	Gene regulatory region on the same chromosome as the gene's protein coding region
Cleavage	Cell division in the early embryo increasing cell number without increasing mass
Cleavage (divisions)	Early cell divisions in a fertlized egg
Cloning	Process of generating a population of genetically identical individuals that occurs in nature when organisms reproduce asexually
Clubfoot	Congenital deformity in which one foot or both are rotated internally at the ankle
Compaction	Close apposition of blastomeres as a consequence of the establishment of apical-basal polarity
Compaction	A process at the 8 cell stage of mammamlian cleavage when cells adopt a compacted form due to the expression of cadherins
Compensatory regeneration	Mechanism of regeneration, in which cells divide and maintain their function
Concertina	Drosophila gene required for cell shape changes during gastrulation encoding an α –subunit of a heterotrimeric G-protein
Convergent extension	Process by which the tissue of an embryo is restructured to converge (narrow) along one axis and extend (elongate) along a perpendicular axis by cellular movement
Cortical reaction	Process during fertilization initiated by the release of cortical granules from the egg which prevents polyspermy
Cortical rotation	Microtubule-based transport of gene products breaking symmetry in the early amphibian embryo
Cre Lox	Chromosomal recombination system. Cre recombinase enzyme recombines a pair of short target sequences, the Lox sequences
Cubitus interruptus (Ci)	Zink finger transcription factor mediating activation of the hedgehog signaling pathway and ortholog of mammalian Gli genes
Cumulus layer	Extracellular coat outside the zona pellucida
Cuticle	Drosophila larval skin
Cytokinesis	Separation of the cytoplasm at the end of cell division to form two daughter cells
Cytotrophoblast	Extraembryonic tissue in mammals derived from the inner layer of the trophoblast
DCC	"Deleted in colorectal cancer", a cell bound protein interacting with netrins
Decapentaplegic	Secreted signaling protein and Drosophila ortholog of mammalian BMP4
definitive endoderm	Embryonic cells that develop into the lining of the intestine and other gut-associated structures
Delamination	Splitting or migration of one cell sheet into two cell sheets
Delta	Transmembrane protein and ligand of the Notch receptor
Dickkopf	Secreted protein with two cysteine rich regions involved in anterior-posterior patterning of the vertebrate embryo through its inhibition of the WNT signaling pathway
Diencephalon	One of five secondary brain vesicles
Diethylstilbestrol (DES)	Synthetic form of the female hormone estrogen
Differentiation	The process by which a less specialized cell type becomes a more specialized cell type
Differentiation factor	Factor that may affect the fate of for instance newly formed neurons and glial cells
Dishevelled	Cytoplasmic signal transducing

	protein in the WNT signaling pathway
Distal visceral endoderm	Extraembryonic tissue derived from the hypoblast (primitive endoderm) and precursor to the anterior visceral endoderm (AVE)
Dorsal	Drosophila Rel-family transcription factor involved in dorsal-ventral patterning
Dorsal-ventral axis	Obvious in hand and foot, where the dorsal side carries hair and nails, while the ventral side has tendons and pads. Controlled by Wnt7a (dorsal) and BMP (ventral) signals
DRhoGEF2	Guanine-nucleotide exchange factor for the Rho-family of small GTPases required for cell shape changes during gastrulation in Drosophila
Dynein	Minus end-directed microtubule motor protein
Echinoderm	Phylum of marine animals
Ectoderm	One of the three primary germlayers giving rise to epidermis and nervous system
Ectopic	Occurring in an abnormal position or in an unusual manner or form
Ectopic expression	expression of a gene in an abnormal place in an organism
Ectoplacental cone	A diploid derivative of the early postimplantation trophoblast
Ectrodactyly	Also called split hand or cleft hand. Congenital deficiency or absence of one or more central digits of the hand or foot
Embryogenesis	process by which the embryo forms and develops
Embryonic induction	the capacity of some cells to direct the developmental fate of other cells
Embryonic shield	Early organizer in the zebrafish embryo equivalent to Spemann's organizer in amphibians and Hensen's node in birds
Endoblast	Another name for hypoblast
Endocardium	Inner lining of the heart that is continuous with blood vessels and forms the heart valves
Endocrine	Secretions that are distributed in the body by way of the bloodstream, e.g. hormones
Endoderm	Innermost of the three primary germlayers giving rise to the epithelial lining of several organ systems such as the intestine, the respiratory tract and endocrine organs
Endometrium	The inner mucous membrane of the mammalian uterus
engrailed	Homeodomain transcription factor and segment polarity gene in Drosophila
Enhancer	Region of DNA that can regulate gene transcription
Eph(s)	Ephrin tyrosine kinase receptor(s)
Ephrin	Ligand for Eph, with a role in axon guidance
Epiblast	Tissue derived from the inner cell mass of the blastocyst that differentiates into the primary germlayers ectoderm, mesoderm and endoderm
Epiboly	Movement of epithelial sheets by cell migration
Epidermis	Epithelium that covers the body
Epimorphosis	Mechanism of regeneration, in which adult structures dedifferentiate, grow and re-specify into new structures
Epithelium	Sheet of polarized cells
ES cells	Embryonic stem (ES) cells are pluripotent stem cells derived from the inner cell mass of a blastocyst
Eukaryote	Any organism whose cells contain a nucleus and other organelles enclosed within membranes
Exocoelomic cavity	Membranous sac attached to an embryo, formed by cells of the hypoblast, formerly known as yolk sac
Extracellular matrix (ECM)	Extracellular molecules secreted by cells, with roles *e.g.* in cellular support and communication
Eye field	Eye forming area on the anterior neural plate
Fate map	A map of an embryo showing areas that are destined to develop into specific adult tissues and organs
Floor plate	Structure along the ventral midline of the neural tube that serves as an organizer to ventralize tissues in the embryo
Folded gastrulation	Secreted protein involved in gastrulation in Drosophila
Follicle cells	Somatic cells forming an epithelium that surrounds germline cells during oogenesis
Follistatin	Inhibitor of members of the TGF-β superfamily
Fringe	Glycosyltransferase that glycosylates EGF repeats in the extracellular domain of the Notch receptor
Frizzled	Transmembrane receptor in the WNT signaling pathway
Frzb	Secreted inhibitor of signaling proteins of the WNT family
Gametogenesis	Process by which diploid or haploid precursor cells undergo cell division and differentiation to form mature haploid gametes
Gap genes	Class of Drosophila segmentation genes
Gastrula	Trilaminar embryo resulting from gastrulation
Gastrulation	Shape changing phase in early embryogenesis during which the single-layered blastula is reorganized into the trilaminar gastrula consisting of the germlayers ectoderm, mesoderm and endoderm
Gata6	Transcription factor
Gene targeting	Genetic technique that uses homologous recombination to change an endogenous gene
Genetic interaction	phenomenon that consists of the effect of one gene being dependent on the presence or absence of one or more 'modifier genes'
Germarium	Anterior-most region of the ovariole containing germline stem cells
Germlayers	Ectoderm, mesoderm and endoderm
Germline	cells that in the usual processes of reproduction pass on their genetic material to the progeny
Gli	Zinc-finger transcription factor that mediates effects of the hedgehog signaling pathway
Glial cell line derived neurotrophic factor (GDNF)	Neurotrophic factor and differentiation factor in the

	nervous system
Glial growth factor (GGF)	Differentiation factor in the nervous system
Glycosaminoglycans (GAGs)	long unbranched polysaccharides consisting of repeating disaccharide units
Goosecoid	Homeodomain transcription factor expressed in the Spemann organizer
Growth cone	Foremost tip of a growing axon
GTPase	Large family of enzymes that can hydrolyze GTP involved in a broad spectrum of cellular processes
Gurken	Drosophila tramsmembrane protein that serves as ligand to the EGF receptor
Hedgehog	Secreted signaling protein that activates the hedgehog signaling pathway
Helix-loop-helix motif	DNA-binding domain characteristic for a specific class of transcription factors
Hensen's node	Early organizer in the chicken embryo equivalent to Spemann's organizer in amphibians and the node in mammals
Heparan Sulfate Proteoglycans (HSPGs)	Proteoglycan core protein with covalently attached linear heparin sulfate polysaccharide chains
Hermaphrodite	Biological system with an intersex condition which contains both ovarian and testicular tissue
Heterozygous	A diploid organism containing two different alleles of a gene
Hippo pathway	Signaling pathway controlling organ size in many organisms
Homeodomain	DNA binding protein domain found in many transcription factors
Homeotic complex	Region in the genome of many organisms in which homeotic genes are located
Homeotic genes	**G**enes encoding transcription factors which regulate the development of anatomical structures in various organisms such as insects, mammals, and plants
Homozygous	A diploid organism containing two identical alleles of a gene
Hox genes	Homeotic genes
Huckebein	Zinc finger transcription factor that acts as a terminal gap gene in Drosophila segmentation
Hyperdiploidy	Having more than the diploid number of chromosomes
Hypoblast	Tissue that forms from the inner cell mass of an embryo, lies under the epiblast and gives rise to extraembryonic endoderm
Hypodiploidy	Having fewer than the diploid number of chromosomes
Ig-superfamily	The immunoglobulin superfamily harbors a range of proteins which are important in *e.g.* cell recognition, cell adhesion and cell binding
Imaginal disc	Imaginal discs are epithelial structures whose cells are tissue-specific progenitors allocated in embryogenesis that remain quiescent during embryonic and larval life. During Drosophila metamorphosis, most larval cells die and imaginal discs differentiate to form pupal and adult tissues
Immunohistochemistry	Process of detectingantigens (e.g., proteins) in cells of a tissue section by exploiting the principle of antibodies binding specifically to antigens in biological tissues
In situ hybridization	a method that uses a labeled complementary DNA or RNA strand to localize a specific DNA or RNA sequence in a portion or section of tissue
Ingression	Inward migration of individual cells from an outer layer
Inner cell mass	The mass of cells inside the primordial embryo that will eventually give rise to the definitive structures of the fetus
Instar	Developmental stage during the larval phase of insects
Insulin like growth factor (IGF)	Growth factor required *e.g.* for anterior neural tube formation with brain and sensory placodes
Integrins	Transmembrane receptors important for cell-to-cell and cell-to-extracellular matrix interactions
Intermediate zone	Part of the growing neural tube that is situated between the ventricular zone and the marginal zone, and which contains mostly migrating neurons and glial cells or their precursors
Invagination	Infolding of a region of cells by apical constriction
Invertebrate	Organism that develops no vertebral column derived from the notochord
Involution	Inward movement of an expanding cell layer by cell migration
iPSC	Induced pluripotent stem cells (iPSCs) are a type of pluripotent stem cell that can be generated directly from adult cells
Jagged	Transmembrane protein and ligand of the Notch receptor. Ortholog of Drosophila Serrate
Juxtacrine	A type of interaction that requires close proximity
Kinesin	Plus end-directed microtubule motor protein
Knockout	Engineered loss of function mutation of a gene
Koller's sickle	Local thickening of cells at the posterior edge of the upper layer of the area pellucida in the chicken that has inductive properties
Laminin	Extracellular matrix protein
Lefty	Divergent members of the TGFβ superfamily of proteins that acts as extracellular antagonist of nodal signaling
lethal	Capable of causing death
Leucine zipper	Structural protein motif that mediates dimerization and occurs in a class of transcription factors
LIM family proteins	Proteins containing a LIM domain, which is a protein structural motif mediating protein-protein interaction. Specific members may specify motor neurons
Limb bud	Early stage of developing limb before cell type differentiation takes place. Contains apical ectodermal ridge and progress zone
Marginal zone	Area at the outer edge (circumference) of a structure: In the emerging nervous system this is the zone outside the intermediate zone, and which has axons from the newly formed

	neurons
Maternal (genes)	Genes whose gene product is contributed to the zygote followed transcription in the mother
Mesencephalon	One of three primary brain vesicles as well as one of five secondary brain vesicles
Mesenchyme	Tissue characterized by loosely associated cells that lack polarity
Mesoderm	Medial layer of the three primary germlayers giving rise to the somites, various organs and blood system
Metamorphosis	Process by which an animal develops after hatching, involving a large change in the animal's body structure
Metencephalon	One of five secondary brain vesicles
Microtubules	Dynamic tubular polymers of tubulin serving as cellular transport system
Modifier screen	In a genetic modifier screen an animal with a pre-existing phenotype is mutated and mutations that modify (increase of diminish) the phenotype are selected
Morphallaxis	Mechanism of regeneration, in which existing structures re-pattern but show little or no new growth
Morphogen	Signaling molecule that acts directly on cells to produce specific cellular responses depending on its local concentration
Morphogenesis	Process that causes an organism to develop its shape
Morphogenetic furrow	Morphological depression that traverses the epithelium in eye imaginal discs in a wave-like manner and in which cell differentiation occurs
Morula	Early embryonic stage following the blastula consisting of a solid ball of cells
Müllerian duct	Structure that forms the uterine tubes, uterus, cervix, and the upper one-third of the vagina
Mutagenesis	Process by which the genetic information of an organism is changed in a stable manner, resulting in a mutation
Mutation	Permanent change of the nucleotide sequence in the genome of an organism
Myelencephalon	One of five secondary brain vesicles
Myocardium	Cardiac mesoderm that gives rise to the heart muscle
Nanog	Homeodomain transcription factor involved in keeping cells in an undifferentiated state
Nanos	Drosophila maternal effect gene encoding a translational repressor protein involved in posterior patterning of the embryo
Nerve growth factor (NGF)	Neurotrophic factor in the nervous system
Netrin(s)	Family of mostly secreted proteins involved in axon guidance
Neural cell adhesion molecule (NCAM)	Glycoprotein on the cell surface, often on neurons, with a role in cell-to-cell binding
Neural crest	A region of the neural plate, that gives rise to the peripheral nervous system and to various

	other cell types
Neural fold(s)	Folds on the neural plate, in between which the neural groove (the early stage of the forming neural tube) is formed
Neural groove	An early stage of the neural tube in formation
Neural plate	Early embryonic tissue that gives rise to the nervous system
Neural tube	Early embryonic structure that acts as a precursor of the nervous system
Neurectoderm	Part of the ectoderm that becomes the nervous system
Neuropilins	Co-receptors for semaphorins in axon guidance
Neuropore(s)	The not yet closed ends of the neural tube
Neurula	Embryo at the stage in which the nervous system first develops in vertebrates
Neurulation	Development of the nervous system in vertebrates, in particular the actual formation of the neural tube, including its closure; occurs as either so called primary or secondary neurulation
Nodal	Secreted signaling protein of the TGFβ superfamily important in early patterning of vertebrate embryos
Node	Early organizer in the mammalian embryo equivalent to Spemann's organizer in amphibians and Hensen's node in birds
Noggin	Secreted signaling protein acting as antagonist of members of the TGFβ superfamily
Non-disjunction	Failure of homologous chromosomes to separate properly during cell division
Notch	Transmembrane receptor of the Notch signaling pathway
Notochord	Rod-shaped structure derived from the mesoderm that induces formation of the neural plate
Nurse cells	Large polyploid cells in the Drosophila germline that synthesize and transfer RNA, proteins and organelles to the oocyte
Oct4	POU domain transcription factor involved in keeping cells in an undifferentiated state
Ontogeny	Origination and development of an organism
Oocyte	Female germ cell
Optic cup	Early eye structure, seen after the optic vesicle
Optic vesicle	Budding early eye structure
Organizer	Embryonic structure that produces secreted signaling molecules that govern development of adjacent tissues
Ortholog	Gene inferred to be descended from the same ancestral sequence separated by a speciation event
Oskar	Drosophila maternal effect gene that defines the posterior pole of the embryo
Ovariole	One of the tubes of which the ovaries of most insects are composed
Ovastacin	Enzyme cleaving the ZP2 protein
Ovulation	Release of the egg from the ovaries
Pairrule genes	Class of zygotic segmentation genes in Drosophila expressed in

	seven stripes
PAR proteins	PAR (Partitioning defective) proteins form asymmetrically expressed protein complexes that play fundamental roles in cell polarization
Paracrine	form of cell-cell interaction in which a cell produces a signal to induce changes in nearby cells at a distance
Parasegment	Molecular subdivision of the Drosophila embryo closely related to, but out of register with morphological segments
Paraxial mesoderm	Also known as presomitic or somitic mesoderm is the area of mesoderm that flanks the neural tube and gives rise to the somites
Parthenogenesis	Form of asexual reproduction in which growth and development of the embryo occurs without fertilization by sperm
Patched	Transmembrane protein and receptor for the hedgehog signaling protein acting as a repressor. Hedgehog binding relieves Patched-mediated repression of the pathway
Pattern formation	generation of complex organizations of cell fates in space and time
Pax6	Transcription factor particularly important for eye formation
Perivitelline space	Fluid-filled space between the cell membrane of the oocyte and the vitelline membrane
Pharyngeal endoderm	Anterior endodermal structure
Phenotype	Composite of an organism's observable characteristics
Phylogeny	Evolutionary relationships among groups of organisms
Phylotypic stage	A point in embryogenesis where all members in the compared group look essentially the same
Pipe	Drosophila sulfotransferase protein involved in dorsal-ventral patterning
Pitx2	Paired-like homeodomain transcription factor involved in left-right asymmetric development in vertebrates
Placenta	Extraembryonic organ that connects the developing embryo to the uterine wall to allow nutrient uptake, waste elimination and gas exchange
Placode	Thickened area of the embryonic head ectoderm, that will be the site of the development of a particular sense organ
Planar cell polarity	Cell polarity within the plane of an epithelial sheet
Plexins	Receptors for semaphorins in axonal guidance
Pluripotent	Capable of differentiating into one of many cell types
Polar body	Degenerating product of the unequal meiotic cell division of an oocyte
Polarity	Subdivision into molecularly or morphologically distinguishable poles
Pole cells	Drosophila germline precursor cells
Polychlorinated biphenyl (PCB)	Synthetic organic chemical compound for plastic production exhibiting estrogen-like properties
Polycomb group	Family of proteins that can remodel chromatin such that epigenetic silencing of genes occurs
Polydactyly	Congenital anomaly in which the hand and foot have supernumerary fingers and toes
Polysialic acid (PSA)	Strongly negatively charged carbohydrate modification that can alter the binding properties of neural cell adhesion molecules
Polyspermy	Fertilization by more than one sperm
Positional information	Intructions that are interpreted by cells to determine their differentiation in respect of their position relative to other parts of the organism
Posterior marginal zone	Region of the chicken embryo in which the primitive streak originates and which corresponds to the posterior end of the developing embryo
Posterior system	Network of maternal effect genes in Drosophila important for the development of posterior structures
POU proteins	Family of homeodomain transcription factors. Some members may specify sensory neurons
Prechordal plate	Thickened portion of the endoderm that is in contact with ectoderm immediately rostral to the cephalic tip of the notochord most likely origin of the rostral cranial mesoderm
Primary heart field	Part of cardiogenic mesoderm that forms the linear heart tube and contributes to the inflow tract of the heart (sinus venosus, left ventricle, atria)
Primary hypoblast	Extraembryonic tissue that forms from cells that move from the epiblast into the subgerminal space and coalesce into an epithelial sheet
Primitive endoderm	Extraembryonic tissue derived from the inner cell mass also known as hypoblast
Primitive groove	Shallow depression in the surface of the primitive streak
Primitive streak	Elongated structure that establishes bilateral symmetry and is the site of gastrulation and germlayer formation in vertebrate embryos
Progress zone (PZ)	About 200 micrometer thick mesenchyme of the limb bud that expresses FGF10 and stimulates limb outgrowth through interaction with the overlying apical ectodermal ridge
Prokaryotes	Single-celled organism that lacks a membrane-bound nucleus, mitochondria or other membrane-bound organelles
Proliferation	Growth of a cell population by cell division
Prosencephalon	One of three primary brain vesicles
Proteasome	Cytoplasmic protein complex involved in the degradation of damaged or unwanted proteins by proteolysis
Proximal-distal axis	In arm, from shoulder (proximal) to fingertips (distal). Controlled by proximalizing retinoic acid and distalizing FGF and Wnt signals

Pulmonary circulation	Blood circulation between the heart and the lungs
Radial glia	Glial cells that stretch from lumen to surface of the developing neural tube
Receptor tyrosine kinase (RTK)	Cell surface receptor for many growth factors and cytokines that is activated by ligand-mediated dimerization and subsequent tyrosine phosphorylation of the cytoplasmic domains of the receptor by intrinsic tyrosine kinase activity
Regeneration	Process of renewal, restoration, and growth of damaged tissues
Regeneration	Ability of adult organisms to replace tissue, organs or appendages
Regulative development	A type of embryonic development in which the fertilized egg undergoes indeterminate cleavage, producing blastomeres that have similar developmental potencies and are each capable of giving rise to a single embryo. Determination of particular organs and parts of the embryo occurs during later stages of development and is influenced by inductors and intercellular interaction
Retinoic acid	Metabolite of vitamin A that serves as a signaling molecule during early development of vertebrates helping to establish positional information along the anterior-posterior axis
RhoGAP	Family of regulatory proteins whose members can bind to activated G-proteins and stimulate their GTPase activity, with the result of terminating the signaling event
Rhombencephalon	One of three primary brain vesicles
Rhomboid	Member of a gene family of intramembrane serine proteases involved in EGF receptor signaling
Robo	Single-pass transmembrane receptor. Part of the Slit/Robo complex in axon guidance
Roof plate	Structure along the dorsal midline of the neural tube that serves as an organizer to dorsalize tissues in the embryo
Rostral	Anterior
Rostral migratory stream	Migratory route in the brain for neuronal precursors originating in the subventricular zone and destined for the olfactory bulb
Rubella	Virus causing german measles ("röda hund")
Schwann cell	Glial cell in the peripheral nervous system
Secondary heart field	Also called anterior heart field. Part of cardiogenic mesoderm that forms the pharyngeal mesoderm and contributes to the outflow tract of the heart (right ventricle, conus and truncus arteriosus)
Secondary hypoblast	Extraembryonic tissue that forms by proliferation of posterior cells forming a cell sheet that expands into the subgerminal space of the chicken embryo
Segment	Repetitive morphological unit in an organisms body plan
Segment polarity genes	Group of genes involved in defining anterior-posterior polarity within each parasegment of the Drosophila embryo
Semaphorins	Ligand for neuropilins and plexins in axon guidance
Seminiferous tubules	Site within the testes, where sperm mature and where meiosis occurs
Sensory placode	See placode
Serrate	Transmembrane protein and ligand of the Notch receptor. Ortholog of vertebrate Jagged
Sevenless	Receptor tyrosine kinase involved in photoreceptor specification in the Drosophila eye imaginal disc
Siamois	Zygotic homeobox gene with strong dorsalising activity, expressed in the dorsal-vegetal organiser known as the Nieuwkoop centre in the Xenopus embryo. Closely related to and redundant with twin
Slit	Ligand of the Robo receptor. Part of the Slit/Robo complex in axon guidance
Smad	Intracellular protein that transduces extracellular signals from TGFβ receptors to the nucleus where it acts as transcriptional activator
Smoothened	Transducing cell surface receptor of the hedgehog signaling pathway. Inhibited by Patched in the absence of hedgehog
Snail	Zinc finger transcriptional repressor involved in mesoderm specification
Somatic	Cells of the body that, in contrast to germline cells, cannot pass on their genetic material to the progeny
Somites	Bilaterally paired blocks of paraxial mesoderm that form along the head to tail axis of the developing embryo in segmented animals
Sonic hedgehog (Shh)	Secreted signaling protein in *e.g.* the developing brain
Spätzle	Serine protease involved in establishment of the dorsal-ventral axis in the Drosophila egg chamber
Splanchnic mesoderm	Lateral plate mesoderm located in the periphery of the embryo
Serendipity (Sry)	Sex-determining gene on Y chromosome
Stem cell	Undifferentiated and long-lived adult cell that undergoes self-renewal and gives rise to one or more cell lineages
Stylopod	Proximal region of the limb comprising humerus in the arm/foreleg and femur in the hind leg, respectively
Subgerminal space	Fluid-filled space formed between the blastodisc and the yolk in the chicken embryo
Subgranular zone (SGZ)	Hippocampal region where neurogenesis occurs in the adult
Subventricular zone (SVZ)	Brain region on the walls of the lateral ventricles which generates new neurons in the adult
Surrogate mother	A female who carries the embryo of another female to birth
Syncytiotrophoblast	Extraembryonic tissue in mammals derived from the outer layer of the trophoblast
Syncytium	Multinucleated cell
Systemic circulation	Blood circulation between the heart and the body
Tailless	Zinc finger transcription factor

	that acts as a terminal gap gene in Drosophila segmentation
Tcf/Lef	Group of transcription factors binding DNA through a high mobility group (HMG) domain involved in WNT signaling where they recruit the co-activator β-catenin to enhancers
Telencephalon	One of five secondary brain vesicles
Telson	Posterior-most division of the body of an arthropod
Teratogen	A substance that can disturb the development of an embryo
Terminal system	Network of zygotic and maternal effect genes in Drosophila important for the development of structures at the anterior and posterior ends of the embryo
TGFβ	Secreted protein family that controls proliferation and differentiation in most cells
TGFβ receptor	Superfamily of cell surface receptors with serine/threonine kinase activity
Thalidomide	Sedative drug "Contergan" causing limb defects
Thorax	Part of animal and human anatomy between neck and abdomen
Toll	Cell surface receptor of the Toll signaling pathway regulating dorsal-ventral polarity in Drosophila and innate immunity in many organisms including humans
Torpedo	Drosophila EGF receptor encoding an RTK
Torso	Drosophila RTK involved in patterning of the anterior and posterior ends of the embryo
Torso-like	Protein secreted into the perivitelline space by follicle cells only at the poles. Torso-like cleaves the pro-peptide Trunk which appears to be the ligand for the RTK Torso
Transcriptional activation/repression	Increase or decrease in transcription of a gene mediated by transcriptional activators or repressors that bind gene regulatory regions (enhancers) of individual genes
Trisomy	Situation in which there are 3 copies of a particular chromosome, instead of 2
Trithorax group	Family of proteins that can remodel chromatin such that epigenetic activation of genes occurs
Trophoblast	cells forming the outer layer of the blastocyst, which provide nutrients to theembryo and develops into a large part of the placenta
Trunk	Ligand for the torso receptor tyrosine kinase
Twin	Zygotic homeobox gene with strong dorsalising activity, expressed in the dorsal-vegetal organiser known as the Nieuwkoop centre in the Xenopus embryo. Closely related to and redundant with siamois
Twist	Basic helix-loop-helix transcription factor and mesodermal determinant in Drosophila. Expressed in mesoderm derived tissues in many organisms
unc5	Cell bound interactor for netrins
Vegetal pole	Hemisphere of the vertebrate embryo that contains large yolky cells that divide very slowly
VegT	T-Box transcription factor whose RNA is maternally localized to the vegetal cortex of the egg during oogenesis in Xenopus. Involved in mesodermal patterning
Ventricular zone	Part of the emerging nervous system closest to the lumen of the neural tube, and where the proliferation of neurons and glial cells takes place
Vg-1	TGFβ-family member maternally localized to the vegetal cortex of the egg during oogenesis in Xenopus. Involved in mesodermal patterning
Visceral	Referring to internal organs
Visceral endoderm	Develops in the mammalian embryo from the hypoblast and is an extraembryonic tissue that envelops the epiblast before gastrulation
Vitelline layer	Zona pellucida-equivalent in sea urchin
Vitelline membrane	Membrane directly adjacent to the outer surface of the plasma membrane of an egg/embryo
Wild type	The phenotype of the typical form of a species as it occurs in nature
WNT	Secreted protein family that controls proliferation and differentiation in many cells
Wolffian duct	Structure that forms the male urogenital structures that include the epididymis, vas deferens, and seminal vesicles
Yolk sac	Membranous sac attached to an embryo, formed by cells of the hypoblast and important in early blood supply to the embryo
Zerknüllt	Homeodomain transcription factor in Drosophila activated by the Dorsal protein in the dorsal region of the embryo
Zeugopod	Middle region of the limb that comprises ulna and radius in the arm/foreleg and tibia and fibula in the hind leg, respectively
Zink finger	Protein structural motif characterized by the coordination of zinc ions to stabilize the protein fold. Zinc finger proteins are often active as transcription factors
Zona pellucida	Glycoprotein layer surrounding the plasma membrane of mammalian oocytes
Zone of polarizing activity	Area of mesenchyme that contains an organizer patterning the developing limb bud
Zone of polarizing activity (ZPA)	Signalling center on the posterior pole of the limb bud that expresses Shh
Zygote	Initial cell formed when two gametes are formed
β-catenin	Cytoskeletal protein and signal transducer in the WNT signaling pathway. Forms a transcriptional activator in a heterodimer with factors of the TCF family