Autosome: any chromosome other than sex chromosome.

Cell Division: separation of a cell into two daughter cells. In higher eukaryotes, it involves division of the nucleus (mitosis) and of the cytoplasm (cytokinesis); mitosis is often used to refer to both nuclear and cytoplasmic division.

Cell Lineage: A pedigree of cells related through division that enable one to trace a cell's predecessors and progeny.

Chromosome: in eukaryotes, the structural unit of the genetic material consisting of a single, linear double-stranded DNA molecule and associated proteins wrapped into a high order structure. During mitosis, chromosomes condense into compact structures visible in the light microscope. In prokaryotes, a single circular double-stranded DNA molecule constitutes the bulk of the genetic material.

Cytoskeleton: System of protein polymers in the cytoplasm of a eukaryotic cell that provide structural integrity and the capacity for directed movement. The most abundant components are actin filaments, microtubules, and intermediate filaments.

Dauer larva: a developmental stage of *C. elegans* that occurs under starvation conditions in which the larva enters developmental stasis. With food, the dauer larva can reach L4 stage and then become an adult.

Differentiation: process usually involving changes in gene expression by which a precursor cell becomes a distinct specialized cell type.

DNA (deoxyribonucleic acid): long linear polymer, composed of four kinds of deoxyribose nucleotides, that is the carrier of genetic information. In its native state, DNA is a double helix of two antiparallel strands held together by hydrogen bonds between complementary purine and pyramidine bases.

Embryo: the early developmental stage of an organism (*C. elegans* in this case) after fertilization and before hatching.

Embryogenesis: developmental process of an individual from a fertilized egg (zygote) to hatching.

Eukaryotic Organism: also called eukarya, a class of organisms composed of one or more cells containing a membrane-enclosed nucleus and organelles. This class constitutes one of three distinct evolutionary lineages (eubacteria, eukaryotes & archaea) of modern-day organisms. Includes all organisms except viruses and prokaryotes (mostly bacteria).

Fluorescence: fluorescence is the property of certain molecules, or fluorophores, to absorb light at one wavelength and emit a light at a longer wavelength.

Fluorophore: a molecule that can be exited by the absorption of a photon and can decay to the ground state by emitting a longer wavelength fluorescent photon.

Gene: physical and functional unit of heredity which carries information from one generation to the next. In molecular terms, it is the entire DNA sequence – including exons, introns, and noncoding transcription-control regions-necessary for production of a functional protein or RNA.

Genome: total genetic information carried by a cell or organism.

GFP (Green Fluorescent Protein): a naturally occurring fluorescent protein synthesized by the jellyfish *Aequora Victoria*.

Hermaphrodite: hermaphrodite is the form that can make both sperm and oocytes and can self-fertilize. *C. elegans* has both hermaphrodites and males. The male can mate with hermaphrodites to produce cross progeny.

Homology: similarity in the sequence of a protein or nucleic acid or in the structure of an organ that reflects a common evolutionary origin. Molecules or sequences that exhibit homology are referred to as homologs. In contrast, analogy is a similarity in structure or function that does not reflect a common evolutionary origin.

Larva (Larvae): The immature forms of *C. elegans*. After hatching, *C. ele*gans undergo a series of larval stage, called L1 – L4, before becoming adults.

Membrane: permeability barrier surrounding cells or organelles and consists of a phospholipids bilayer, together with associated membrane proteins.

Microtubule: long, cylindrical polymer composed of the protein tubulin. It is one of the three major classes of filaments in the cytoskeleton.

Mitotic spindle: array of microtubules and associated proteins that forms between the opposite poles of a eukaryotic cell during mitosis and serves to move the duplicated chromosomes apart.

Model Organism: organisms used to closely study and elucidate our understanding of basic biological phenomena that might not be easily researched in advanced organisms. In general, they possess characteristics such as small size, short life span and ease of cultivation.

Molt: the process of growing a new cuticle and shedding the old one. This defines the transition from one larval stage to another or to adulthood.

Mutant: a cell microorganism that manifests new characteristics due to a change in its genetic material.

Nematode: nematodes, or roundworms, are generally slender worms, circular in cross section. They are remarkably uniform in structure but vary a lot in size and way of life. Some live as parasites in other animals; some are parasites of plants and some live free in soil, marine mud and decaying organic matter.

Nuclei: the eukaryotic organelle containing DNA together with transcriptional machinery. DNA is organized into chromosomes. Prior to cell division chromosomes are replicated and then condense, at which time the nuclear membrane breaks down.

PAR: proteins required for polarity and partitioning molecules to different regions of a cell, several of which are themselves partitioned, e.g.: PAR-2.

Pharmacological treatments: the applications of subtances, such as drugs, that cause specific effects on celluar processes.

Polarization: the action/process of establishing polarity.

Polarity: presence of functional and/or structural differences in distinct regions of a cell or cellular component along a defined axis.

Progeny: offspring; the immediate descendants of an organism.

Prokaryote: class of organisms, including the eubacteria and archaea, that lack a true membrane-limited nucleus and other organelles.

Proliferation: the increase in the number of cells or offspring.

Pro-nuclei meeting: the developmental stage where pro-nuclei that are migrating from opposite ends of the fertilized zygote meet.

Pro-nucleus: one of two haploid nuclei in a newly fertilized embryo (one maternal and one paternal) (Adapted from The Cell A Molecular Approach. Geoffrey M. Cooper 1997)

Protein: a linear polymer of amino acids linked together in a specific sequence and usually containing more than 50 residues. Proteins form the key structural elements in cells and participate in nearly all cellular activities.

RNA (ribonucleic acid): linear, generally single-stranded polymer, composed of ribose nucleotides, that is synthesized by transcription of DNA or by copying of RNA. The three types of cellular RNA – mRNA, rRNA, and tRNA- play different roles in protein synthesis.

Somatic Cell: any plant or animal cell other than a germ cell or germ-cell precursor.

Specimen: any animal or plant, or any part, product, egg, seed or root of any animal or plant. For example: *C. elegans* embryos can be specimens that one can look at with light microscopy.

Spindle: see mitotic spindle.

Strain: a pure breeding lineage.

Tubulin: a family of globular cytoskeletal proteins that polymerize to form microtubules.

Wild type: normal, nonmutant form of an organism; the form found in nature (in the wild).

Zygote: a fertilized egg; diploid cell resulting from fusion of a male and female gamete.