Appendix

Glossary of Common Mycological (and Related) Terms

The categories used in classifying fungi and the names of major groups are given in Chapter 1. Terms that are widely used in biology are not included. In addition, terms that are used only once in the text and explained are not included, nor are terms that can be located within the index. For terms from molecular biology and genetics, the reader is referred to dictionaries such as: Lackie, J.M. (ed.). 2013. The Dictionary of Cell and Molecular Biology, fifth edition. Academic Press, London.

Aeciospore binucleate infective spore produced by a rust fungus
Air spora the mixture of spores found in the air
Anamorph (Greek: *morphe*, shape) the form of a fungus produced in its asexual phase
Anastomosis fusion between hyphae
Antheridium (-a) male gametangium
Apoplast the space outside the plasma membrane
Apothecium (-a) cup-shaped fruit body of some ascomycetes
Appressorium adhesive pad formed by a pathogenic fungus on the surface of its host to aid penetration
Arbuscular mycorrhiza (AM) a mycorrhiza produced by species of Glomeromycota, in which highly branched haustorial structures are formed within host cells
Arthrospore (Greek: *arthron*, joint) spore formed by breakage of a length of mycelium into segments
Ascocarp a structure bearing asci, general term for the fruit body of an ascomycete
Ascogenous hypha the dikaryotic hypha emerging from an ascogonium after fertilisation, which gives rise to the asci in ascomycetes
Ascogonium cell of ascomycete protoperithecium that takes part in fertilisation
Ascoma (-ata) synonym for ascocarp
Ascospore sexual spore of ascomycetes
Ascus (Greek: *askos*, leather bag) the microscopic sac containing ascospores in ascomycetes
Axenic (Greek: *a*, not; *xenos*, stranger) in the absence of contamination, used to describe a pure culture
Ballistospore the actively discharged spore of basidiomycetes
Basidiocarp the fruit body of basidiomycetes
Basidioma (-ata) synonym for basidiocarp
Basidiospore sexual spore of basidiomycetes
Basidium (-a) the terminal cell of a hypha that bears basidiospores
Basidium initial cell that will become a basidium

Bipolar incompatibility requirement for different alleles at each of two genetic loci for sexual compatibility
Biomass the mass of living material
Biotroph (Greek: *bios*, life; *trophe*, food) fungus deriving its nutrients from living cells of a host
Breeding system see mating system
Cephalodia pockets of cyanobacteria in lichens
Chemostat continuous culture system in which the population of cultured cells is held constant by controlling the rate of nutrient supply
Chemotaxis taxis towards or away from the source of a specific chemical
Chemotropism tropism to or from a specific chemical
Chitin (Greek: *chiton*, coat of mail/garment) a structural component of the fungal cell wall, a polymer of *N*-acetylglucosamine
Chlamydospore (Greek: *chlamys*, cloak) thick-walled, usually asexual, resting spore
Clamp connection short, backwardly directed side branch formed at the time of septum formation in basidiomycetes
Cleistothecium (-a) (Greek: *cleistos*, closed) fruit body of ascomycetes in which the asci are entirely surrounded by a wall of hyphae
Colony an assemblage of hyphae that often develops from a single source and grows in a coordinated way. Synonymous with **mycelium**
Conidiophore (Greek: *phoreo*, I bear) a hypha that gives rise to conidia
Conidium (-a) an asexual spore produced on the surface of a mycelium, not within a sporangium
Contamination growth of unwanted microbes in cultures that should contain a single species
Coprophilous (Greek: *copros*, dung; *phileo*, I love) dung inhabiting
Cryptic species closely related species that are genetically distinct but cannot easily be separated morphologically
Cyst a spherical cell, derived from the swimming spores of zoosporic fungi by cell wall formation (encystment)
Dermatophyte (Greek: *derma*, skin; *phyton*, a plant) a fungus infecting the skin
Dikaryon (Greek: *dis*, two; *karyon*, nut) mycelium containing two genetically different types of nuclei. Usually refers to basidiomycetes with two nuclei of different mating type in each hyphal compartment
Dikaryotization formation of a dikaryon by fusion and nuclear migration between monokaryons
Dimorphism the same species exists in two forms that differ in appearance
Dolipore septum a septum with elaborate pore structure found in basidiomycetes
Duplicative transposition duplication of a DNA sequence followed by insertion of one copy at a different site in the genome
Effectors proteins produced by pathogenic and mycorrhizal fungi that modulate plant immunity and enable colonisation of the host plant
Elicitor a substance derived from a plant pathogenic fungus that induces a plant to resist infection
Encystment formation of a tough wall around a zoospore to form a cyst
Endophyte (Greek: *endon*, within; *phyton*, a plant) fungus that inhabits plant tissues without damaging host
ESTs (expressed sequence tags) partial sequence reads from the 5′- or 3′-end of cDNA clones
Facultative possible, but not obligatory
Fermentation form of catabolism not requiring oxygen or other external electron acceptor. Also used more loosely to describe the chemical transformation of any substrate by the growth of a microorganism
Fermenter vessel used for producing a microbial product by fermentation
Filamentous fungus a fungus with hyphae, not unicellular like yeast
Fruit(ing) body the large spore-bearing structure in ascomycetes and basidiomycetes (e.g. mushrooms, truffles)
Gametangium part of a hypha specialised for fusion in sexual reproduction
Gametes haploid reproductive cells that fuse to form a zygote during sexual reproduction
Germ tube the hypha that emerges from a spore
Hartig net network of ectomycorrhizal hyphae between root cortex cells
Haustorium the part of a symbiotic fungus that feeds inside a host cell
Hemibiotroph (literally half biotroph) a pathogen that establishes itself as a biotrophic parasite within host tissue and later switches to a necrotrophic lifestyle
Heterokaryon hyphae or mycelium containing nuclei of two or more genotypes
Heterothallism (Greek: *heteros*, different) requirement for two compatible mating types for the sexual process. Synonymous with self-sterility
Heterozygous having two different alleles at one or more corresponding loci

Homogenic incompatibility incompatible for mating within a species due to identical mating type alleles
Heterogenic compatibility requirement for different alleles at mating type loci for mating to occur
Homokaryon a mycelium or hypha with nuclei of only one genotype
Homothallism (Greek: *homo*, the same) no requirement for a second mating type for the sexual process. Synonymous with self-fertility
Homozygous a diploid having the same alleles at a locus
Horizontal resistance a form of disease resistance in plants that gives some protection from attack by all strains of a fungal pathogen. Contrast with vertical resistance
Horizontal transmission spread from one organism to another, but not from parent to offspring
Host organism in a parasitic symbiosis that supports the growth of the parasite. Term can also apply to partners in commensal and mutualistic symbioses.
Hydrophobin (Greek: *hydro*, water; *phobos*, fear) fungal protein that can render the hyphal surface unwettable
Hymenium (Greek: *hymenaeos*, wedding) tissue layer of a fruit body on which sexually produced spores are borne
Hypha (Greek: *hypha*, thread) the tubular cell growing at one end which is the developmental unit of the mycelium
Isolate (noun, from verb, to isolate) a strain of a fungus isolated from nature and, often, grown in pure culture
Karyogamy (Greek: *karyon*, nut; *gamos*, wedding) fusion of nuclei preceding the production of sexually-produced spores
Macrofungi fungi that produce large fruit bodies, mostly basidiomycetes and some ascomycetes
Mating system a genetic system that determines whether or not individuals of the same species can mate
Mating type the factor determining whether a strain will or will not be able to mate with another strain
Medium a preparation used for culture of fungi or other microbes. Contains nutrients dissolved in water, and used either in liquid form or gelled with agar
Meiospore spore produced following meiosis
Metapopulation a group of spatially separate populations of the same species
Mildew a plant disease with prominent surface growth of the fungus. Powdery mildews are produced by Erysiphales (Ascomycota), and downy mildews are caused by Peronosporales (oomycetes).
Mitospore a spore produced by mitosis
Monokaryon (Greek: *karyon*, a nut; *monos*, alone) hypha or mycelium with nuclei of a single genotype
Mutualism an interaction that confers a selective advantage on both participants
Mycelial strand or cord linear aggregate of hyphae formed behind an advancing margin in which the hyphae are separated as a fan
Mycelium (Greek: *mykes*, fungus) the mass of hyphae, not in the form of large structures such as mushrooms, of which the fungi are mainly composed. Synonymous with **colony**
Mycorrhiza (pl., strictly mycorrhizae, now usually mycorrhizas) symbiosis between plant root and fungal mycelium
Mycoparasitism parasitism of one fungus by another
Necrotroph (Greek: *necros*, death; *trophe*, food) fungus that kills the cells of a living host and subsequently utilises their remains for food
Obligate the opposite of facultative, a condition in which the fungus has no alternative state
Oidium (-a) a type of asexual spore. The term is used most often spores produced on monokaryons of basidiomycetes that bring about dikaryotization of other monokaryons of the same species
Oospore sexual spore produced by oomycetes
Parasexuality sequence of nuclear fusion and irregular division accompanied by genetic recombination found to occur in some otherwise asexual fungi
Pathotype classification of a pathogen distinguished from other members of the same species by its ability to cause disease in particular host species
Pellets multihyphal structures formed when some fungi are grown in fermenters
Perithecium (-a) small bottle-shaped fruit body of some ascomycetes, from the neck of which one ascus discharges at a time
Petri dish shallow transparent dish with lid for the culture and observation of fungi and other microbes. Interchangeable with culture plate
Phylloplane (Greek: *phyllon*, leaf) microhabitat close to the surface of a leaf occupied by a distinctive population of fungi and other microorganisms
Phylotype group of organisms, described at any level of classification, characterised by a particular level of genetic similarity (typically 97% homology)
Phytoalexin (Greek: *phyton*, plant; *alexo*, defence) substance produced by damaged plants that inhibits fungal growth

Phytoanticipin low-molecular-weight antimicrobial compound produced constitutively by plants
Pileus (Latin: *pileus*, felt hat) the cap of a mushroom
Plasmodium (-a) mass of protoplasm formed by slime moulds
Plasmogamy (Greek: *plasma*, a thing moulded/formed; *gamos*, a wedding) the fusion of cytoplasm from two different hyphae that precedes nuclear fusion during the sexual cycle. In basidiomycetes, plasmogamy and nuclear fusion can be separated by a long time interval.
Ploidy the number of sets of chromosomes in the nucleus of a cell
Primary homothallism homothallism where there is no evidence of a heterothallic ancestor
Primary production the synthesis of organic compounds from carbon dioxide
Primordium the earliest visible stage in the development of a structure
Protoperithecium (-a) the structure produced by ascomycetes that is the site of fertilisation and subsequent fruit body development
Protoplast spherical blob of protoplasm produced by the removal of the fungal cell wall
Pycniospore small spore (gamete) produced by rust fungi whose function is to dikaryotize the mycelium by fusing with receptive hyphae
Quorum sensing a type of decision-making process used by groups of cells to coordinate gene expression and behaviour
Race an informal taxonomic rank, below the level of a species but higher than strain.
Radial growth growth from a centre. The radial growth rate of a colony is the rate at which the hyphal margin advances
Resource unit restricted fungi fungi that are only able to spread to new sources of food via spores
Resting spore a spore with prolonged survival as its main role, or a spore that is in a state of dormancy
Rhizoid a branched hypha that functions like a root in anchoring mycelium growing on a surface
Rhizomorph multihyphal fungal structure (organ) with a root-like apex
Rhizosphere microhabitat close to the surface of a root occupied by a distinctive population of fungi and other microorganisms
Rust fungus basidiomycete in the sub-phylum Pucciniomycotina that causes plant disease and produces reddish urediniospores
Saprotrophic (Greek: *sapros*, rotten; *trophe*, food) using remains of dead organisms as food
Secondary homothallism homothallism, or self-fertility, which has developed from an earlier heterothallic condition
Sclerotium (-a) mass of hyphae with protective rind and containing food reserves
Smut fungus basidiomycete in the sub-phylum Ustilaginomycotina that cause plant disease. Many species produce masses of black spores in infected plant tissues
Somatic (in)compatibility the (in)ability of a fungal thallus to fuse with another of the same species and to then operate as an individual
Somatogamy the sexual fusion of structures which are morphologically no different from other vegetative structures
Soredium (-a) powdery propagule of lichens composed of hyphae wrapped around photobiont cells
Sp., spp. Abbreviations, sing. and pl., for species, used with a generic name. For example, *Agaricus* sp. means a species of *Agaricus*, and *Agaricus* spp. means various species of *Agaricus*.
Speciation the evolutionary process by which new species arise
Spermatium (-a) non-motile male gamete characteristic of rust fungi (syn. Pycniospore)
Spermatization fusion of spermatia with a receptive hypha in pustule or spermagonium of a rust fungus
Spitzenkörper the organelle at the hyphal tip that plays a central role in hyphal growth
Sporangiophore a stalk that bears a sporangium
Sporangiospore asexual spore produced in a sporangium
Sporangium (-a) sac containing sporangiospores
Sporophore a structure that bears spores. This term is used for mushrooms and other sexual fruit bodies, and also for small structures that bear asexual spores
Sporulation the process of forming spores
Sterigma (-ata) microscopic projection from the end of a basidium that bears a basidiospore
Stipe the stem of a mushroom or toadstool
Strain a genetic variety of a fungus, either an isolate from nature or arising by mutation or recombination in the laboratory
Stroma (-ata) mass of hyphae on which spores or fruit bodies are borne

Substratum (-a) the physical surface on or within which mycelium grows and feeds
Symbiosis an intimate relationship between two organisms. It can be mutualistic, parasitic or commensalistic
Teleomorph (Greek: *teleos*, finished; *morphe*, form) the form of a fungus when it produces sexual spores
Teliospore spore formed by rusts and smuts
Tetrapolar incompatibility requirement for different alleles at each of two genetic loci for sexual compatibility. See Bipolar incompatibility
Thallus the body of the fungus, usually applied to a mycelium or lichen
Translocation transport of nutrients within mycelium by processes other than those of growth
Trichogyne receptive hypha involved in ascomycete fertilisation
Trophic of or having to do with nutrition
Tropism (Greek: *tropos*, turn) the bending of a hypha or fruit body towards or away from a stimulus
Urediniospore (Latin: *uredo*, blight upon plants) dikaryotic spore of rust fungi, synonymous with uredospore
Vegetative mycelium mycelium involved in feeding rather than reproduction
Vegetative incompatibility inability of different mycelia of the same species to fuse successfully and function as a single colony
Vertical resistance a form of resistance by plants to fungal attack that gives resistance against some strains of a pathogen but not against others. Contrast with horizontal resistance
Vertical transmission transmission directly from parent to offspring
Virulence factor a feature of a pathogen enabling colonisation of the host and evasion of the host's defense response
Water activity, Water potential measures of water availability
Yeast depending on context, can mean baker's and brewer's yeast (*Saccharomyces cerevisiae*) or any unicellular fungus multiplying by budding, or, in a few instances, fission
Zoosporangium (-a) sac in which zoospores develop, and from which they are released
Zoospore (Greek: zoos, living) spore which swims in water using one or two flagella
Zygophore a specialised hyphal branch that gives rise to a gametangium in zygomycetes
Zygospore (Greek: *zygon*, yoke) spore formed by fusion of two gametangia in zygomycetes