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# GLOSSARY OF TERMS

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RAFAELA CARVAJAL, J. A. VOZZO



- Abiotic:** characterized by the absence of life or living organisms, 35, 80, 87, 181, 183, 207
- Abscission:** normal separation of flowers, fruit, and leaves from plants, 26, 48–49, 94, 139, 149, 161, 311, 391, 424, 540–541, 590, 691, 750, 753, 757
- Acarus:** a mite, especially one of the genus *Acarus*, 535
- Achene:** small dry fruit containing a single seed, not stuck to the pericarp, 16, 51, 233, 397
- Acicular:** needle-shaped, 113, 375, 609
- Acrodrome:** apical point on structure, 285, 395
- Acropetally:** developing upward, toward the apex, 321, 349
- Actinomorphic:** divisible vertically into similar halves by each of a number of planes passing through the axis, 15, 17, 38, 312, 354, 390, 403, 587, 589, 593, 606, 719, 749, 756, 773
- Acuminate:** tapering gradually to a long, thin point; compare with *Acute*, 111, 232, 285, 289, 311, 342, 360, 386, 391, 395, 408, 420, 429, 446, 452, 456, 464, 491, 493, 503, 514, 531, 541, 548, 553, 572, 575, 582–583, 587, 589, 592, 599, 643, 693, 722, 732, 735, 737, 748, 752, 755, 772, 781
- Acute:** applied to tips and bases of structures ending in a point less than right angle; compare with *Acuminate* and *Obtuse*, 111, 232, 264, 278, 289, 342–343, 355, 360, 391–392, 402, 409, 429, 470, 481, 486, 490–491, 493, 497, 541, 558, 575–576, 582, 587, 593, 602, 606, 651, 676, 683, 685, 687, 693, 701, 722, 737, 750, 753, 756
- Adobe:** clay-soil composition, 354, 515, 703, 750, 753, 756
- Adventitious buds:** buds formed along a stem, usually after the stem has been injured
- Aerenchyma:** parenchyma cells associated with an air space or surrounded by open canals, 69, 90, 440
- Air chambers:** open chambers in the thallus of *Marchantia* and other liverworts; located in the upper portion of the thallus, which has a pore at the top for gas exchange, 54, 440
- Alate:** having wings; winged, 264, 266
- Aleta:** misplaced
- Aleurone layer:** layer of high-protein cells surrounding the storage cells of the endosperm
- Aliform:** wing-shaped, 547
- Alternate:** one leaf, bud, or branch per node, 15, 18, 20, 156, 164, 231, 241, 272, 277, 287, 292, 297, 303, 311, 318, 335, 363, 384, 391–392, 405–406, 408, 415, 423, 429, 439, 442, 446, 464, 466, 468, 470, 473, 481, 505, 514, 528, 540, 553, 555, 558–559, 561, 568, 573, 575, 582, 585, 595, 597, 599, 603, 645, 649, 651, 676, 678, 680, 687, 693, 701, 708, 719, 767, 772, 781
- Ament:** when used with temperature, 24 to 30°C, 126–129, 141, 144, 181, 244, 247, 257, 278, 309, 312, 336, 375, 379, 387, 397, 415, 436, 440, 449–450, 487, 518–519, 538, 545, 550, 565, 602, 649, 667, 691, 696, 702, 713–714, 717, 723, 738, 740
- Ament:** spike of unisexual, apetalous flowers having scaly, usually deciduous, bracts; a catkin, 28–29
- Amyloplastic:** containing a large amount of starch, but no chlorophyll; specialized for storage
- Anaerobic:** living in the absence of air or free oxygen, 93, 315, 538, 691
- Anastomosed:** joined, 395
- Anatropous:** inverted at an early stage of growth, so that the micropyle is turned toward the funicle, with the chalaza situated at the opposite end, 33, 69, 278, 312, 354, 391, 403, 424, 491, 494, 516, 541, 577, 587, 593, 603, 667, 749, 753, 756, 773
- Androecium:** the collective stamens of a flower, 15, 18, 20, 23–24, 59, 87, 232, 312, 354, 391, 405, 409, 424, 439, 487, 494, 512, 516, 541, 576–577, 587, 589, 593, 654, 667, 702, 738, 749, 753, 756
- Androgynophore:** a stalk bearing both stamens and pistil above the point of perianth attachment, 424, 541
- Anemochorous:** wind-dispersed pollination, 72, 391, 430, 439, 583, 738, 778
- Angiosperm:** flowering plant; plant with ovules enclosed in an ovary, 29, 36, 48, 62, 198, 230
- Angularous:** pertaining to angles, 514
- Anther:** pollen-bearing part of a stamen, 16, 18, 20, 24, 26, 30, 32, 36–39, 41, 45, 232, 278, 298, 312, 318, 343, 350, 354, 391, 403, 405, 409, 487, 494, 512, 516, 541, 577, 583, 587, 603, 606, 655, 667, 683, 687, 695, 698, 716, 738, 750, 753, 756, 773
- Antheridial head:** umbrella-like structure containing antheridia; grows attached to the upper surface of the thallus of *Marchantia* and other members of the liverwort family
- Antheridium:** male gametangium where the sperm is produced and housed
- Anthesis:** period or act of expansion in flowers, especially the maturing of the stamens, 35–37, 39–40, 43, 350, 390, 424, 494, 515–516, 541, 772
- Anthocyanin:** water-soluble red, blue, or purple pigments, 36
- Anthotaxia:** distribution of the floral parts on the receptacle
- Anticlinal:** perpendicular to the surface; dividing away in opposite directions, 31, 69
- Antihelminthic:** worm preventative, 298
- Antipodes:** three haploid nuclei that are formed during megasporogenesis in plants, all located opposite the micropyle end of an ovule
- Antiraphe:** part of the ovule or seed, located between the chalaza and the micropyle
- Apetalous:** without petals, 15, 29, 405, 409, 512, 654
- Apical:** of, at, or forming the apex, 43, 64, 66, 70, 78–79, 100, 103–104, 360, 363, 408, 562, 583, 606, 619
- Apical buds:** buds that produce stems and are located at the tip of the stem
- Apical meristem:** meristem located at the tip of the stem, 64, 77, 79, 100, 103
- Apiculate:** ending with a short, sharp, abrupt, point, 111, 354, 391, 655, 687
- Apocarpous:** having the carpels separate, 20
- Apogamy:** a type of apomixis involving the suppression of gametophyte formation so that seeds are formed directly from somatic (body) cells of the parent tissue, 68
- Apomixis:** reproduction without fertilization or formation of gametes, 68
- Appressed:** lying flat against, 106, 110, 486, 494
- Arachnoid:** formed of or covered with delicate hairs or fibers, 553
- Archegonium:** multicellular female gametophyte; also, flask-shaped female reproductive organs on the prothallium in higher cryptogams; correspond to a pistil in the flowering plants and contain the egg which becomes the sporophyte, 46–48
- Archеспорial cell:** cell of the nucellus that differentiates and gives rise to the cell that is ultimately destined to undergo meiosis and produce the megaspore mother cell, 35
- Areolas:** small mesophyll areas delimited by minor veins, 113, 667
- Aril:** fleshy or pulpy covering or appendage arising from the base of a seed, 50, 60, 69–71, 74, 77, 81–83, 136, 154–155, 188, 264, 266, 269,

278, 403, 406, 409, 483, 487, 523, 541, 555, 593, 667, 740, 773

**Arillate:** having an aril or arils, 83, 136, 593

**Aristate:** awned, 111, 687

**Attenuate:** tapering gradually to a narrow extremity, 110, 395, 426, 491, 493, 514, 592, 738, 748, 752, 755, 772

**Auricle:** small fingers of tissue at the base of the leaf blade of a grass that extend partially around the stem

**Auriculate:** eared, 103, 110, 370, 427, 603, 714

**Axial:** located in the axis, 66, 139, 452, 658, 660

**Axial parenchyma:** parenchyma cells of the axial system; located in the secondary vascular tissue

**Axial system:** vascular transport system in a stem that runs vertically (up and down) in contrast to the lateral system, which runs right and left, or out to the margin of the stem); carries water and raw minerals up the stem in the xylem and carries glucose in the phloem up and down the stem; composed of fibers for strength, sieve-tube members and companion cells in the phloem, and fibers, vessels, and tracheids in the xylem; fusiform initials produce the axial system

**Axial:** located in the axis, 66, 139, 452, 658, 660

**Axil:** space between any two adjoining organs, such as stem and leaf, 27, 593, 603, 605, 749, 752

**Axillary:** located in an axil, 104, 152, 158, 231–232, 253, 266, 285, 308, 321, 329, 354, 357, 360, 382, 403, 423, 429, 439, 464, 474, 479, 481, 490, 494, 503, 505, 515, 547, 553, 555, 580, 583, 587, 589, 605, 643, 646, 649, 690, 693, 702, 752, 756, 773, 778, 781

**Barbaceous:** poisonous to fish

**Basitonix:** having more growth of branches in the basal part of the stem

**Bast:** phloem, 301

**Berry:** fleshy or pulpy indehiscent fruit with one or more seeds embedded in the fleshy tissue of the pericarp; may be formed from either a superior or an inferior ovary, 13, 59–60, 77–78, 81, 83, 136, 152–155, 157, 159, 233, 297, 335, 354, 408, 564, 649, 651, 740

**Beveled:** inclined at an angle, 293

**Bifid:** cleft, 516, 738

**Bilateral symmetry:** being divided into two equal, mirror-image parts

**Bisexual:** having both sexes present and functional in the same individual, 24, 26, 42, 354, 589, 602, 732, 756

**Blade:** the flattened and expanded part of a leaf or parts of a compound leaf, 74, 103–104, 106, 110–111, 164, 231–232, 289, 297, 311, 329, 353, 360, 382, 391–392, 397, 405, 408, 420, 491, 511–512, 514, 553, 576–577, 587, 592, 599, 603, 616, 629, 633, 640, 667, 687, 695, 698, 703, 732, 778, 781

**Brackish:** somewhat salty, 357, 399, 418, 470, 500, 538, 691

**Bract:** reduced leaf, particularly at base of flower or flower stalk, 27, 29, 36–37, 43, 59, 62, 123, 156, 241, 305, 312, 315, 343, 363, 375, 397, 405, 408, 420, 424, 429, 476, 512, 516, 558, 561, 576, 583, 593, 605–606, 660, 678, 735, 738, 756, 773

**Branchlet:** small or secondary branch, 297, 360, 378–380, 390, 420, 452, 576, 589, 693, 781

**Braquist:** branches having short internodes in which the leaves and cones grow close together

**Bristle:** still, hairlike structure, 18

**Bud primordium:** meristem tissue that gives rise to a lateral bud

**Bulbil:** small bulb formed in the axil of a leaf or bract functioning to propagate the plant vegetatively

**Bundle scar:** scar within a leaf scar where the vein system broke as the leaf dropped

**Caducifolio:** dropping off or shedding of leaves at an early stage of development

**Caducous:** having a tendency to fall; dropping off very early, as leaves; deciduous, 297, 555, 558, 561, 683, 685, 687, 735

**Calcareous:** containing calcium carbonate, 264, 266, 321, 335, 386, 415, 436, 449, 464, 466, 476, 528, 550, 564, 567, 615, 636, 649, 651, 740, 770

**Callosa:** polysaccharide present in some cell walls, composed of glucose residues

**Callus:** a small hard protrusion, e.g. on the labelum of some Orchidaceae; a hard point below the lemma, in spikelets of Poaceae; a protective layer of tissue formed over an injury

**Calyptra:** mass of cells that covers the apical meristem of the root

**Calyx:** collective term for all the sepals of a flower, whether separate or united; the outer series of flower parts and the perianth, 15, 17–18, 36, 39, 59, 89, 152–155, 157, 230, 232, 278, 298, 312, 315, 324, 327, 329, 332, 354, 363, 384, 391, 403, 405, 409, 412–413, 418, 424, 429, 433, 439, 444, 452, 490, 494, 508, 512, 516, 541, 576, 583, 587, 589, 593, 603, 606, 654, 666, 702–703, 719, 735, 738, 749, 752–753, 756, 767, 770, 773

**Cambium:** internal layer of living cells between the inner bark and the sapwood where growth takes place, producing secondary xylem and phloem

**Campanulate:** order of angiosperms, 17, 40, 298, 429, 439, 452, 576, 583, 703, 735

**Camptodrome:** bent structure, 395, 503, 548, 555, 558, 562

**Capitular:** having a globular head; collected in a head

**Capsule:** dry dehiscent fruit derived from two or more carpels, 51–52, 54, 56, 58, 78, 83, 123, 136, 151–152, 154–157, 159, 186, 233, 285, 303, 315, 340, 361, 384, 391, 394, 418, 426, 471, 483, 487, 490, 494, 505, 508, 512, 532, 535, 541, 553, 558, 561, 568–570, 585, 587, 664, 726–727, 729–730, 734–735, 738, 762, 765, 775–776, 778

**Carnose:** fleshy, 426, 452

**Carpel:** simple pistil or unit of a compound pistil, 15–16, 20–21, 23, 43, 49, 51, 54, 56, 58–59, 151–157, 232–233, 318, 363, 487, 500–501

**Cartaceous:** furrowed or grooved, 266, 366, 369, 372, 386, 449, 713, 723

**Caruncle:** appendage of a seed, near the hilum (scar), 70–71, 74, 558, 561

**Casparian strip:** band of suberin within the anticlinal walls of endodermal and exodermal cells

**Cauliflorous:** stalk-like, 308

**Cellulose:** long chain of complex carbohydrate compounds, (polysaccharides); chief substance forming the cell wall and woody parts of plants, 70, 174, 481, 585

**Chalaza:** point of an ovule or seed where the integuments are united to the nucellus opposite the micropyle, to which the funiculus is attached, 32, 43, 46, 68–69, 73, 77, 163, 723

**Chalazal:** in direction to the chalaza, 33, 35, 64, 68–70, 73–74, 79, 162–164, 392

**Chamfer:** cut at an angle, 503

**Chartaceous:** papery, 106, 278, 312, 430, 493, 511, 540, 575, 587, 592, 667, 676, 687, 748, 755

**Chlorenchyma:** plant parenchyma cells that contain chloroplast in their cytoplasm, 69, 623

**Chloroplast:** microscopic body within the cell; contains chlorophyll

**Chromoplast:** chloroplast in which other pigments mask the green color

**Ciliate:** fringed with hairs, 109, 773

**Clavate:** club-shaped, gradually thickened upward, 309

**Coleoptile:** in monocots, a sheath that covers the plumule

**Coleorhiza:** in monocots, a sheath that covers the radicle

**Collenchyma:** tissues composed of cells with unevenly thickened primary cell walls that strengthen growing organs, 69–70

**Columella:** The persistent axis of certain capsules, 391

**Commensal:** sharing of nutrients by two organisms

**Comose:** hairy, 386, 722

**Companion cells:** phloem cell connected to a sieve-tube member by numerous plasmodesmata

**Complete flower:** having all the components: pistils, stamens, petals, and sepals, 232

**Compound leaf:** divided into two or more blades (leaflets); palmately compound leaves have three or more leaflets arising from a common point, while pinnately compound leaves have leaflets arranged along a common axis, 106, 231

**Cone:** mass of ovule-bearing or pollen-bearing bracts or scales arranged spirally on a cylindrical or globose axis; common to most conifers, 43, 45–46, 120, 122, 177, 179–182, 239, 241, 290, 292, 305–306, 375, 609, 612–613, 615–616, 618–620, 622–623, 625–626, 628–629, 633, 636–637, 639–640, 645

**Conic:** cone-shaped, 70

**Conifer:** plants with cones and naked ovules; any of an order of trees and shrubs bearing true cones or with arillate seeds, 46, 48, 79, 177–183

**Conspecific:** of the same species, 42

**Coppice:** cut-over area, 212, 501

**Cordate:** heart-shaped in outline; descriptive of an ovate organ (such as a leaf) with two rounded basal lobes, 103, 108, 110, 264, 397, 511, 514, 587

**Coriaceous:** having a stiff leathery texture, 52, 58, 79, 81, 106, 294, 300, 309, 353–354, 360, 391, 397, 403, 408–409, 423, 426, 458, 464, 493, 497, 503, 548, 550, 555, 557–558, 575, 587, 602, 645, 678, 680, 713, 748, 752–753, 772–773, 778

**Corn:** enlarged fleshy base of a stem, bulb-like but solid

**Cornaceous:** belonging to the Cornaceae family, 266, 367, 370, 373, 714



- Corolla:** collective term for all the petals of a flower, whether separate or united; inner series of the perianth, 15, 17–18, 37, 39–40, 48, 151, 157, 230, 232, 278, 298, 301, 312, 315, 354, 391, 403, 412–413, 418, 424, 429, 439, 490, 494, 541, 576–577, 587, 657, 667, 695, 698, 702–703, 735, 738, 756
- Corymb:** flat- or round-topped flower cluster in which the outer pedicels are longer than the inner ones, the outer flowers opening before the center ones, 27–28, 329, 569
- Costa:** rib, 13, 27, 104, 117, 121, 151, 203, 210, 212, 269, 272, 277, 287, 289, 294, 297, 301, 311–312, 338, 340, 344, 348, 353, 355, 360, 382, 390–391, 402, 405–406, 408, 412–413, 420, 423, 429, 436, 439, 446, 450, 452, 458, 461, 474, 476, 479, 481, 486–487, 489, 493, 503, 511, 514–515, 540, 553, 564, 575, 582, 586, 589, 592, 597, 599, 601–602, 640, 643, 654, 660, 662, 666–667, 676, 678, 683, 685, 687–688, 693, 695, 701–703, 716, 719–720, 732, 735, 737–738, 748, 750, 752, 755, 767, 770, 772, 775–776, 778–779, 781
- Cotyledon:** primary or rudimentary leaf of the embryo of seed plants, 47, 64, 66, 70, 73–79, 91, 93–95, 97, 100, 103–104, 106, 110, 113–117, 151, 153, 158, 178, 183, 216, 264, 267, 270, 278, 301, 309, 315, 318, 336, 355, 363, 367, 370, 373, 376, 387, 392, 403, 406, 413, 416, 424, 427, 437, 450, 456, 491, 495, 498, 501, 512, 515–516, 521, 541–542, 550, 559, 565, 577, 579, 587, 590, 593, 602–603, 605, 649, 651, 655, 668, 680, 703, 714, 723, 740, 743, 750, 753, 757, 759, 767–768, 773
- Crassinucelate:** nucellar condition in which the embryo sac originates and develops deep (several cell layers) beneath the nucellar epidermis
- Crassula:** swelling of intercellular material and primary wall in the edges of the punctuated pair in the tracheid
- Crenate:** having margins scalloped with shallow rounded teeth, 109, 541, 773
- Crenatures:** notches or indentations
- Crenelate:** minutely crenate, 109
- Crustaceous:** having a hard covering or crust, 106, 416, 436, 553, 564, 740
- Cryptocotilar germination:** keeping the cotyledons inside the seed; germination can be epigeal or hypogeal
- Cuneate:** wedge-shaped; triangular and tapering to a point at the base, 110, 241, 420, 452, 491, 493, 514, 531, 555, 676, 683, 693, 732, 781
- Cupola:** domelike structure
- Cutaneous:** of, pertaining to, or affecting the skin, 412, 443
- Cuticle:** waxy covering on the surface of stems and leaves that acts as an adaptation to prevent desiccation in terrestrial plants, 42–43, 70, 90, 163
- Cutin:** complex fatty or waxy substance found on the surface of certain seeds or leaves, often making them impermeable to water, 43
- Cyme:** inflorescence in which the primary axis bears a single terminal flower which develops first, 27, 151, 156–157, 233, 418, 479, 490, 503, 690, 705
- Cyme scorpioid:** determinate inflorescence in which the lateral buds on one side are suppressed during growth, resulting in a curved or coiled arrangement
- Cytokinesis:** division of the cytoplasm to form two separate daughter cells immediately after mitosis
- Cytoplasm:** living portion of a cell excluding the nucleus, 31, 140, 144
- Daughter cells:** separate cells resulting from cytokinesis, 64
- D.b.h.:** diameter at breast height; generally accepted standard for measuring trees at 137 cm above the ground, 192, 211, 222, 241, 244, 247, 250, 253, 259, 262, 264, 266, 269, 272, 274, 277, 282, 287, 289, 292, 294, 297, 300, 303, 305, 308, 311, 315, 318, 321, 335, 338, 340, 342, 346, 353–354, 357, 360, 363, 366, 369, 372, 375, 378, 382, 384, 386–387, 390, 397, 399, 402, 405, 408, 411, 415, 418, 420, 423, 426, 429–430, 432–433, 436, 439, 442–443, 446, 449–450, 452, 455, 461, 466, 468, 473, 476, 479, 483, 486, 490, 497, 500, 505, 508, 511, 514, 521, 523, 526, 528, 532, 535, 537, 540, 544, 550, 553, 557–558, 561, 564, 567, 569, 575, 579, 582, 585–586, 589, 592, 595, 597, 599, 601, 609, 612, 615, 618–619, 622, 625, 628, 632, 636, 639, 643, 645–646, 649, 651, 654, 657, 660, 662, 664, 666–667, 670, 673, 676, 678, 680–681, 683, 685, 687–688, 690, 693, 701, 703, 705, 708, 713, 716, 719–720, 722, 729, 732, 735, 737–738, 740, 742, 752, 755, 759, 762, 765, 770, 772, 775, 778, 781
- Deciduous:** detaching or falling off very early; usually in reference to leaves, leaf tips, or perianths; caducous, 111, 150, 212, 231, 234–236, 269, 274, 278, 280, 282, 289, 300, 305, 311–312, 332, 340, 343, 360, 366, 369, 386, 411, 413, 415, 420, 423–424, 433, 439, 442–443, 449, 452, 458, 474, 476, 511, 540–541, 544, 550, 573, 576, 580, 586–587, 593, 595, 597, 599, 605, 613, 622, 636, 643, 651, 657, 664, 673, 676, 701, 716, 722, 734, 737, 740, 742, 745, 752, 773
- Decurrent:** extending down and attached to the stem, forming a ridge or wing, 110, 541, 589, 693, 778
- Decussate:** arranged along the stem in pairs, each pair at right angles to the pair immediately above or below, as leaves, 315, 353–354, 737, 778
- Dehiscence:** opening regularly to let seeds or spores escape through valves, slits, etc., as a capsule or anther, 20, 24, 32, 37, 45, 48–51, 54, 56, 58, 63–64, 66, 74, 94, 133, 278, 290, 315, 349–350, 361, 386, 391, 405, 409, 424, 464, 490, 494, 512, 516, 541, 545, 561, 587, 602–603, 667, 693, 722, 738, 750, 753, 756, 773, 778, 781
- Dehiscent dry fruit:** mature fruit that has dry pericarp that opens to let seeds escape
- Dentate:** toothed; having sharp, spreading, coarse teeth that are perpendicular to the margin, 106, 109, 491
- Denticulate:** finely dentate, 109
- Dichasium:** cyme in which branches appear in regular opposite pairs, 27, 29, 690
- Dicotyledons:** major group of angiosperms (flowering plants) characterized by the embryo having two cotyledons, 15, 43, 66, 68, 74–75, 101, 103, 111–113, 225
- Dioecious:** having male and female organs in separate and distinct individuals; also dioicous, 24, 27, 42–43, 312, 340, 363, 375, 382, 474, 490, 494, 515, 537, 592, 645, 740, 767
- Diploid (2n):** refers to two sets of chromosomes; germ cells have one set and are haploid; somatic cells have two sets of chromosomes and are diploid (except for polyploid plants), 27, 43, 49, 68, 79, 244, 762
- Discoidal:** consisting of a disk only, without rays, 678
- Distal:** Opposite the point of attachment; apical; away from the axis, 424
- Drupe:** fleshy indehiscent fruit having a single seed encased in a hard stony covering; sometimes having more than one encased seed, 49, 59–60, 77–78, 81, 83, 89, 100, 136, 151–153, 155, 157, 233, 294, 321, 343, 357, 420, 476, 503, 537, 576, 662, 705, 708, 710
- Druze:** star-shaped crystal, 678
- Duramen:** internal layers of secondary xylem that have lost their conduction and storage function, 285, 394, 530, 547, 555
- Eared:** having an ear-like process or appendage, usually at the base of an organ; frequently applied to leaves and petals
- Ecophene:** modified by specific adaptive response to environmental factors, 360
- Egg cell:** nonmotile female sex cell (gamete); cell of the embryonic sac (megametophyte), 35, 43, 47–48, 68, 79, 660
- Elaeoplast:** type of plastid containing essential oils or protein and lipid combinations
- Ellipsoid:** three-dimensional body whose plane sections are all either ellipses or circles, 41, 312, 386, 487, 494, 503, 593, 651, 732, 740
- Elliptic:** oblong with the ends equally or almost equally rounded, 75, 103, 108, 231, 264, 269, 285, 289, 312, 318, 324, 329, 335, 342, 353, 360, 369–370, 372, 375, 387, 397, 409, 415, 423–424, 427, 436, 452, 486, 491, 493, 521, 540–541, 550, 553, 564, 567, 575, 582, 592, 595, 603, 643, 676, 683, 685, 687, 695, 701, 713, 740, 755, 767, 773, 781
- Emarginate:** notched at the apex, as a petal or leaf, 111, 397, 408, 426–427, 429, 667, 683
- Embryo:** generative part of the seed that develops from the union of the egg and sperm cells and during germination becomes the young plant, 14, 26–27, 29, 33–35, 43, 46, 48–49, 62–64, 66–68, 70, 73–81, 85, 90–91, 93–94, 100, 103–104, 115–116, 127, 142, 149, 152, 155–156, 160, 162–163, 165, 168–172, 176, 178, 232, 264, 266–267, 269, 278, 305, 312, 318, 335–336, 355, 363, 367, 370, 373, 376, 387, 391–392, 394, 406, 412–413, 416, 424, 427, 430, 437, 444, 450, 456, 479, 491, 495, 498, 512, 516, 521, 523, 541–542, 550, 553, 565, 576–577, 587, 593, 603, 605, 649, 651, 655, 667–668, 678, 703, 714, 723, 740, 750, 753, 756, 773
- Embryo sac:** female gametophyte of angiosperms, formed from the growth and division of the megaspore into a multicellular structure with eight haploid nuclei, 26–27, 29, 33–35, 43, 62, 64, 424, 541
- Embryogenesis:** formation and subsequent development of plumule, radicle, and cotyledons in a plant, 62–64, 66–67, 79, 456
- Endarch xylem:** inner position of the protoxylem

- Endocarp:** inner layer of a pericarp, 48, 59–60, 70, 77–78, 81–83, 86, 93–95, 100, 103, 116, 153, 168, 278, 298, 312, 354, 391, 399, 403, 406, 420, 430, 490, 494, 515, 558, 576–577, 602, 667, 702, 719, 749, 753, 756
- Endodermis:** thin sheath of cells bounding the stele and separating it from the cortex
- Endosperm:** in angiosperms, an embryonic nutritive tissue formed during double fertilization by the fusion of a sperm with the polar nuclei; in gymnosperms, a food reserve derived from the megagametophyte; the nutritive material in plant seeds which is triploid (3n), resulting from the fusion of three nuclei during double fertilization, 29, 35, 43, 48–49, 62–63, 66, 68, 70, 73–79, 85, 91, 93, 95, 115, 127, 149, 151–157, 264, 266, 269, 278, 355, 363, 367, 370, 373, 387, 392, 399, 403, 427, 437, 450, 497, 512, 516, 521, 542, 565, 576–577, 593, 603, 605, 668, 703, 714, 723, 750, 753, 756, 773, 775
- Endothecium:** tissue layer under the epidermis of the anther, 30–32
- Endothelium:** innermost tegument layer which covers the embryonic sac in some taxa, 541
- Entire:** smooth, without teeth or indentations; applied to margins, edges, 29, 63, 91, 109, 116, 122, 225, 232, 294, 311, 353, 360, 391–392, 402, 405, 408, 423, 439, 446, 473, 486, 493, 512, 514, 523, 567, 575, 582, 587, 592, 602–603, 685, 687, 701, 719, 735, 737, 748, 752, 755, 772, 778, 781
- Entomophilous:** insect related, 36, 48, 355, 390, 403, 490, 494, 512, 583, 593, 702, 738, 749, 756, 773
- Eophyll:** first leaf above the cotyledons, 278, 406, 593, 667, 749, 753, 756
- Epicarp:** outer layer of the pericarp or matured ovary, 48, 406, 440, 558, 702, 743, 746
- Epicotyl:** portion of the embryo or seedling above the cotyledons, 64, 66, 78, 100–104, 106, 114–115, 158, 361, 403, 456, 500, 559, 723
- Epidermis:** outer layer of cells, 30, 70, 162–163, 343, 542, 561
- Epigeal:** growing on or close to the ground, 94–95, 97, 102–103, 114–116, 157–158, 266, 275, 278, 283, 313, 384, 387, 391, 406, 409, 424, 430, 440, 487, 512, 515, 545, 576, 587, 593, 645, 660, 667, 703, 738, 746, 749, 756, 760, 763, 773, 779
- Epigeal germination:** of or relating to the emergence of cotyledons above the surface of the ground, 95, 102, 157–158, 645
- Epigynous:** growing on the summit of the ovary, or apparently so, 23, 354, 749, 752, 756
- Ergastic substance:** nonliving cellular material
- Ester:** chemical compound formed between an acid and alcohol while eliminating water, 343
- Etiolate:** elongated due to lack of chlorophyll
- Etiolation:** elongation, discoloration, and poor plant growth due to the lack of chlorophyll
- Eukaryotic:** having a true nucleus
- Evergreen:** plants with live leaves persisting through one or more winter seasons, 136, 150, 212, 231, 236, 241, 256, 264, 266, 285, 297, 300, 305, 308, 315, 324, 329, 332, 335, 342, 353, 357, 360, 375, 378, 405, 408, 418, 426, 436, 443, 458, 474, 481, 490, 497, 500, 503, 508, 511, 514, 521, 532, 537, 550, 555, 564, 567, 569, 572, 582, 586, 645–646, 649, 662, 676, 683, 685, 701, 705, 713, 722, 732, 742, 748, 781
- Exarch xylem:** outer position of the protoxylem
- Excrecence:** abnormal, disfiguring outgrowth or enlargement
- Exine:** outer wall of angiosperm microspore, 31–32, 36, 40–43, 278, 577, 603, 667, 750
- Exocarp:** outermost layer of the fruit wall (pericarp), 48, 51, 77, 81–83, 298, 312, 354, 363, 391, 403, 406, 424, 430, 446, 515, 541, 577, 602, 662, 749, 753, 756, 773
- Exoderm:** outer layer of one or more layers of thickness in the cortex of some roots
- Exostome:** opening of the outer integument of an ovule that has two integuments, 68–70, 100, 541
- Exothecium:** epidermis of the anther with fibrous strands, such as that of the endothecium
- Falcate:** crescent-shaped, 108
- Faneroctylar germination:** having cotyledons free and conspicuous
- Fascicular cambium:** vascular cambium that arises within vascular bundles
- Fat:** ester of fatty acid and glycerol (or another alcohol) found in plants and animals; in liquid form, called oils, 216, 605
- Ferruginous:** containing or similar to iron; having the color of iron; rust, 110, 259, 403, 408–409, 555, 576, 586, 601, 666–667, 703, 749–750, 773
- Fertilization:** fusion of nuclei of egg and sperm, 24, 26, 32–33, 35, 43, 47–48, 60, 64, 69, 71, 79, 89, 211, 232, 312, 363, 379, 384, 691, 749, 753, 756, 773, 779
- Fiber:** one of the types of sclerenchyma that is long, straight, and thin; often occurring in bundles, 13, 70, 84, 151, 354, 390–391, 423, 446, 494, 515, 540, 585, 587, 595, 602, 605, 607, 664
- Filament:** stalk-like portion of a stamen, supporting the anther, 18, 20, 31, 39, 41, 140, 232, 312, 343, 349, 354, 391–392, 403, 409, 424, 446, 541, 577, 583, 587, 593, 603, 606, 683, 750, 753, 756
- Fimbriate:** margin divided into narrow or filiform segments, often of irregular sizes
- Flagellum:** long cellular appendage specialized for locomotion, unsheathed in an extension of plasma membrane
- Florigen:** universal hormone that supposedly causes plants to change from the vegetative to the reproductive state
- Floury perisperm:** a type of perisperm of some seeds; has the consistency of flour
- Foliaceous:** leaflike, 74, 76, 104, 110, 267, 387, 392, 408, 424, 498, 516, 565, 723, 750, 753, 757
- Foliole:** leaflet
- Follicle:** dry, one-celled fruit with a single placenta and splitting along the opposite edge, 58, 60, 81, 83, 136, 151, 156, 159, 233, 338, 555, 693, 781
- Fresh fruit:** fruit with succulent pericarp
- Funicular:** having the form of or associated with a cord, 33, 69, 71, 73–74, 266, 269, 278, 367, 370, 372, 387, 403, 427, 497, 541, 550, 667, 723, 773
- Funiculus:** basal stalk of an ovule arising from the placenta, as in the angiosperms, 32–33, 50, 69, 259, 278, 391, 403, 406, 409, 424, 440, 516, 521, 541, 603, 667, 749, 753, 756
- Fusifiform ray:** cigar-shaped ray cell
- Galea:** in Orchidaceae, a perianth segment or group of perianth segments shaped like a helmet
- Gamete:** reproductive cell, a cell or nucleus that fuses with another in sexual reproduction, 46
- Gametophyte:** body that bears gametes; produced by the germinating spore, 26–27, 29, 45, 48, 68
- Gamophyllous:** having the bases of opposite leaves fused around the stem, 106
- Generative cell:** one of two haploid nuclei found within pollen grains of flowering plants; enters the pollen tube when it is produced, divides by mitosis, and becomes the male gamete nucleus that fuses with the female egg cell at fertilization, 31, 46
- Geotropism:** growth determined by gravity, 174
- Gibberellin:** any class of compound—found in certain mold fungi—that regulates plant growth
- Glabrescent:** smooth, 303, 486, 553, 572, 592, 693
- Glabrous:** without hairs, bristles, or stalked glands, 106, 174, 272, 277–278, 285, 289, 294, 300–301, 312, 342–343, 346, 353–354, 363, 391, 395, 403, 405–406, 408–409, 420, 423, 429, 439, 446, 452, 464, 470, 481, 486, 490–491, 494, 503, 511–512, 515, 531, 540, 547–548, 558, 561–562, 572, 576–577, 582, 587, 590, 592–593, 602, 643, 676, 687, 693, 703, 732, 735, 737, 742, 750, 753, 756, 767, 781
- Gland:** depression, protuberance, or appendage on the surface of an organ that secretes a usually sticky fluid; any structure resembling such a gland, 16, 18, 36, 110, 285, 316, 342–343, 403, 405, 408, 461, 487, 505, 511, 557, 576, 603, 606–607, 735
- Gland of salt:** hydrotode that excretes water with a high salt and mineral proportion
- Glaucous:** surface with a fine white substance (bloom) that will rub off, 390, 452, 592
- Globose:** globe-shaped, spherical, 282, 335, 354, 391, 426–427, 436, 490, 564, 576–577, 590, 606, 645, 649, 651, 680, 710, 723, 732, 740, 781
- Glomerule:** small, compact cluster, 29
- Glucogenesis:** formation of glucose or glycogen from sources other than carbohydrates
- Glume:** a bract in the inflorescence of some monocots; one of the two bracts at the base of the grass spikelet; also used for Cyperaceae and Restionaceae to refer to the small bracts on the spikelet in which the flower is subtended
- Glutinous:** sticky, gummy, having the quality of glue
- Glyoxysome:** microbodies found in seeds
- Gramineous:** of, pertaining to, or characteristic of grass
- Guard cell:** specialized epidermal plant; cell that forms the boundaries of the stomata
- Gummosis:** any of various viscous substances that are exuded by certain plants and trees, then dry into water-soluble, noncrystalline, brittle solids, 260
- Guttation:** process by which water passes from inside the leaf and is deposited on the outer surface

- Gymnosperm:** plant, such as a conifer or cycad, whose seeds are naked; the ovules not being enclosed in an ovary, 43, 45, 47, 60, 79, 241
- Gymnospermous:** bearing naked seeds, without an ovary
- Gynobase:** enlargement or prolongation of the receptacle bearing the ovary
- Gynoeceium:** whorl or group of carpels in the center or at the top of the flower; all the carpels in a flower, 15, 18, 20–21, 23–24, 36–37, 48, 51, 58–59, 278, 312, 439, 491, 494, 512, 587, 589, 603, 654–655, 667, 702–703, 738, 749, 753, 756, 773
- Halophyte:** plant with the capability to grow in calcareous soil, 234, 315
- Haploid (1n):** one-half the normal diploid complement of chromosomes, 27, 31, 35, 49, 68, 142
- Haulm:** plant stem after removing edible fruit or seed, 723
- Haustorium:** absorbing organ of some parasitic plants through which substances pass from the host to the parasite
- Heteromorphic:** having different forms at different periods of the life cycle, 26, 278, 693
- Heterosis:** increased vigor or other superior qualities arising from the crossbreeding of genetically different plants
- Hilar:** of, relating to, or located near a hilum, 69, 71, 100, 163, 264, 269, 278, 335
- Hilum:** mark or scar on a seed produced by separation from the funicle or placenta, 35, 68–69, 77, 100, 162–164, 264, 266, 269, 278, 285, 321, 336, 355, 367, 370, 372–373, 387, 392, 394, 403, 416, 427, 437, 450, 452, 456, 497, 503, 521, 530, 533, 547, 550, 564–565, 649, 651, 667, 714, 723, 740
- Horny perisperm:** type of perisperm of some seeds; has a hard consistency
- Hydathode:** structure that secretes water; found in the margins of leaves
- Hydrochorous:** water environment, 70, 430
- Hypanthium:** floral tube formed by the fusion of the basal portions of the sepals, petals, and stamens from which the rest of the floral parts emanate, 23, 59, 397, 405, 541, 576–577, 589, 690
- Hypocotyl:** portion of the axis of a plant embryo below the point of attachment of the cotyledons; forms the base of the shoot and the root, 64, 73, 75–79, 93, 95, 97, 100–104, 114–116, 145, 158, 301, 387, 392, 456, 500, 512, 542, 559, 577, 603, 691, 750, 753, 757
- Hypogaeal:** underground; subterranean, 94–95, 97–98, 102–104, 114–117, 157–158, 212, 287, 298, 354, 361, 403, 490, 494, 541, 583, 590, 602, 655, 680, 723, 730, 753
- Hypogaeal germination:** of or relating to the emergence of cotyledons below the surface of the ground, 95, 102–103, 157–158, 490
- Hypogynous:** situated on the receptacle beneath the ovary and free from it and from the calyx; having the petals and stamens so situated, 23, 593, 773
- Hypostase:** condition in which the action of one gene conceals or suppresses the action of another gene that is not an allele but that affects the same organ, part, or state of the body, 33, 354
- Imbricate:** having the edges overlapping in a regular arrangement, as tiles on a roof, in the bracts or sepal of a plant, 18, 43, 312, 391, 405, 408–409, 490, 587, 589, 603, 654
- Imperfect flower:** unisexual flower; flower lacking either male or female parts, 24
- Incomplete flower:** flower lacking at least one of the four basic parts; pistils, sepals, stamens, or petals
- Incumbent:** describing cotyledons lying with the back of one against the radicle, 75
- Indehiscent:** not opening naturally at or after maturity, 49, 51–52, 54, 64, 70, 85, 100, 152–153, 156, 160, 233, 264, 346, 366, 369, 372, 415, 426, 430, 436, 440, 442, 449, 479, 491, 494, 523, 550–551, 557, 583, 643, 654, 702
- Indumentum:** general term for the hairy or scaly covering of plants, 102, 342, 514, 516
- Inferior ovary:** one with the flower-parts growing from above; one that is adnate to the calyx., 52, 59, 232
- Inflorescence:** any complete flower cluster including branches and bracts; clusters separated by leaves are separate inflorescences, 15, 24–25, 27–29, 36, 51, 153, 157, 232–233, 308, 312, 321, 349, 386, 390, 397, 399, 413, 424, 456, 459, 479, 505, 516, 541, 553, 558, 561, 569, 576, 589, 593, 602, 695, 699, 708, 710, 722, 729, 735, 770
- Infundibuliform:** funnel-shaped, 415, 587
- Infusion:** liquid derived from seeping or soaking (leaves, bark, roots, etc.); extraction of soluble properties or ingredients, 308, 343–344, 366, 382, 386, 415, 436, 449, 497, 550, 597, 722
- Integument:** natural covering, as skin, shell, rind, etc.; also tegument, 32–33, 46, 48, 62, 68–70, 73, 79, 354, 541
- Intercalary:** meristem situated between the apex and the base, 103
- Intine:** inner wall of angiosperm microspore, 32, 42
- Intrusive growth:** growth of a cell into another cell
- Involucre:** collection or rosette of bracts subtending a flower cluster, umbel, or the like, 27, 29, 52, 508, 745
- Jaspé (Jasper):** having a mottled, variegated appearance imitating jasper
- Jugate:** yoked, 272
- Kraft:** strong, usually brown paper processed from wood pulp and used for bags and wrapping paper, 568, 640
- Lamina:** blade or expanded portion of a leaf, 140, 342, 395, 461, 503, 531, 547, 555, 558, 562, 606, 676, 687
- Lanceolate:** much longer than wide, widest below the middle, tapering toward the apex, or both apex and base; resembling a lance head, 103, 106, 108, 231, 244, 272, 311, 360, 366–367, 386, 391, 395, 415, 424, 464, 466, 468, 470, 473, 481, 494, 511, 521, 572, 575, 582, 687, 713, 722, 732, 735, 772
- Laticifer:** cell or series of longitudinal cells that contain a specific fluid called latex, 355
- Leaf primordium:** lateral outgrowth from the apical meristem that develops into a leaf
- Leaf scar:** mark left on a twig when a leaf falls, 294, 315, 474, 708
- Leaflet:** single segment (blade) of a compound leaf, 231, 297, 311, 360, 391–392, 408, 429, 446, 493, 695, 735, 737
- Legume:** member of the family Fabaceae with a dry, dehiscent fruit formed from one carpel and having two longitudinal lines of dehiscence, 58–59, 73, 152, 160, 162–164, 233, 272, 301, 366, 369, 372, 409
- Lens:** biconvex-lens shaped, 70, 163–164, 228, 264, 266, 269, 367, 370, 372, 450, 497, 550
- Lenticel:** corky spot on the surface of a twig; sometimes persists on the bark of a branch to admit air into the interior, 503
- Ligneous:** resembling wood; woody, 298, 363, 366, 372, 384, 394, 406, 449, 455, 607
- Lignin:** hard material embedded in the cellulose matrix of vascular plant cell walls; functions as an important adaptation for support in terrestrial species, 70
- Lignotuber:** woody underground stem
- Ligule:** strap-shaped corolla, as in the rayflowers of Asteraceae; a thin, often scarious projection from the summit of the sheath in grasses, 424, 541
- Linear:** narrow and elongated with sides parallel or nearly parallel, 42, 47, 64, 74–75, 79, 93, 103, 106, 108, 231, 241, 278, 327, 369–370, 373, 387, 586, 597, 602, 703, 713, 738
- Littoral:** shoreline environment, 236, 752
- Lobe:** segment of a leaf between indentations that do not extend to the midrib or base of the leaf, 151–152, 156, 232, 301, 324, 327, 329, 332, 354, 382, 391, 397, 403, 429, 436, 439, 444, 481, 490, 494, 516, 550, 558, 561–562, 583, 587, 603, 738, 749, 753, 756, 767
- Locule:** compartment or cavity of an ovary, anther, or fruit, 20–21, 51–52, 56, 151–153, 156–157, 391, 490–491, 494, 516, 541, 577, 587, 667, 738, 773, 778
- Loculicidal:** dehiscing lengthwise, dividing each loculus into two parts, 51, 56, 151, 154, 778
- Loculus:** cell of a carpel in which the seed is located; cell of an anther in which the pollen is located, 51
- Lysosome:** simple wall cell organelle containing enzymes to hydrolyze proteins and other organic macromolecules
- Macrofibril:** package of microfibrils found in the cell wall
- Medium plane:** plane that divides the seed into two equal parts
- Medulla:** tissue located in the center of the stem or root, 364
- Megagametogenesis:** development of the female gametophyte (megagametophyte) from a functional megaspore
- Megagametophyte:** female gametophyte; formed by vegetative growth of the megaspore of a heterosporous plant, 33, 35, 46–47, 79, 93
- Megophyll:** well-developed leaf
- Megasporangium:** female sporangium containing the megasporangia, 32, 46
- Megaspore:** spore in heterosporous plants that gives rise to a female gametophyte and is generally larger than the microspore; the spore usually not shed but remaining on the parent plant and developing in situ, 29, 35, 45–48, 79
- Megasporogenesis:** the development of the megaspore from the archesporial cell., 35
- Megasporophyll:** the leaf bearing the megasporangia, 44–45
- Meiosis:** two-stage division of a diploid nucleus

- in which genetic recombination occurs and the number of chromosomes characteristic of the species is halved prior to the production of the sexual gametes, 29, 31, 35, 46–47, 68
- Membranous:** thin and translucent, 106, 153, 312, 318, 363, 375, 427, 430, 437, 497, 555, 558, 577, 667, 716, 775
- Mericarp:** portion of fruit that seemingly matured as a separate fruit, 59
- Meristem:** undifferentiated tissue from which new cells are formed, 64, 79, 91, 100, 103
- Mesarch xylem:** middle position of the protoxylem
- Mesocarp:** fleshy part of the wall of a succulent fruit; the middle layer of the pericarp in a drupe, 48, 51, 77, 81, 83–85, 208, 278, 298, 312, 354, 391, 403, 406, 430, 440, 446, 494, 515, 558, 577, 590, 602, 605, 658, 662, 667, 702, 746, 749, 753, 756
- Mesocotyl:** internode formed between the scutellum node and the coleoptile of the grass embryo or seedling
- Mesomorphic:** soft and with little fibrous tissue, but not succulent
- Mesophyll:** middle and photosynthetic tissue of a leaf, 111, 113, 163–164, 183, 521, 750, 756
- Microbodies:** small organelles containing enzymes, having a specialized role in a specific metabolic pathway
- Microfilaments:** fibrous elements with high protein content that are involved in generating cytoplasmic movement, 140
- Microgametogenesis:** the development of the microgametophyte (pollen grain) from a microspore
- Microphyllous:** having small leaves that are usually hard and narrow
- Micropyle:** integumentary opening of the ovule through which pollen enters prior to fertilization, 32–33, 35, 43, 46–48, 68–69, 71, 77, 100, 162–163, 264, 266, 269, 278, 336, 355, 367, 370, 372–373, 387, 416, 427, 437, 450, 491, 494, 497, 521, 541, 550, 565, 649, 651, 667, 714, 723, 740
- Microspecies:** segregated species of a larger species or species-aggregate, 247
- Microspophyte:** mother cell of the pollen
- Microsporangios:** sporangia in which the spores are formed
- Microsporangium:** sporangium from which the microspores are formed, which in higher plants is the pollen sac, 30–31, 45–46
- Microspore:** smaller of the two types of spores produced by ferns and higher plants, giving rise to the male gametophyte; in Tracheophytes, the microspore is the pollen grain, 31–32, 46
- Microsporocarp:** a body containing the microsporangium
- Microsporogenesis:** development of microspores from the microspore mother cell, 31
- Midrib:** central or main vein of a leaf or leaf-like part, 232, 355, 491, 516, 750, 753, 756, 781
- Mitochondrion:** organelle in eukaryotic cells that serves as the site of cellular respiration
- Mitosis:** normal cell division in which each daughter cell has exactly the same chromosome number as the mother cell, 64, 68–69, 142
- Monocotyledons:** plants with single seed-leaves (cotyledons), 15, 66, 68, 74–75, 100–101, 111, 113
- Monoeious:** having stamens and pistils in separate flowers on the same plant, 24, 27, 43, 241, 335, 386, 390, 505, 530, 558, 561, 729
- Monotypic:** having only one representative, 399, 537, 575, 646–647, 654
- Morphology:** study of the form and structure of an organism, 14, 23–24, 35–36, 62, 70, 80, 89, 94, 102, 195, 225–226, 230, 615, 673, 723, 756
- Mother cells:** special cells in the anther and ovule that give rise to pollen or egg cells, 31, 46, 48
- Mucilage:** any of various gummy secretions or gelatinous substances, 41–42, 69–70, 79, 81, 163, 336, 439
- Mucronate:** having an abruptly projecting point, 111, 264, 548
- Muller body:** multicelled body in which glycogen is accumulated
- Mycorrhiza:** symbiotic association of fungus and root, 102, 118, 151–157
- Naked flower:** having no perianth
- Nectary:** gland that secretes nectar, 272, 278, 491, 606, 667, 738
- Needle:** narrow, usually stiff leaf, as in pines, firs, and hemlocks, 106, 230, 615, 629, 632
- Nervation:** arrangement of veins, as in a leaf; venation, 264, 285, 426, 468, 505, 535, 553, 585
- Node:** the narrow region on a stem where a leaf or leaves are or were attached, 95, 100, 102–103, 107, 231, 477
- Nodose:** having nodules, 420
- Nucellus:** central cellular mass of the body of the ovule, containing the embryo sac; equivalent to the megasporangium, 32, 35, 46, 70
- Nucleolus:** small, generally spherical body found within the nucleus of eukaryotic cells; site of ribosomal RNA synthesis
- Nucleoplasm:** granular substance of the nucleus
- Nut:** dry, hard, indehiscent, one-celled and one-seeded fruit; usually resulting from a compound ovary, 53, 73, 87, 89, 152–156, 233, 335, 375, 400, 745, 767
- Ob-:** prefix signifying an inversion such as obcordate, the opposite of cordate
- Oblong:** elongate in form with sides parallel or nearly parallel, the ends blunted and not tapering; wider than long, 75, 103, 108, 232, 264, 269, 275, 278, 297–298, 301, 308–309, 312, 318, 353–354, 369, 372, 386–387, 391, 406, 408–409, 415, 420, 423, 429–430, 436–437, 439, 442, 452, 476, 486, 491, 494, 497–498, 521, 541, 547, 550, 553, 562, 564, 575, 589, 597, 643, 667, 676, 683, 687, 701–703, 708, 713, 719, 722, 732, 750, 753, 755–756, 775, 778, 781
- Obovate:** ovate with a narrow end at the base; inversely ovate, 103, 108, 231, 241, 280, 342, 353, 369, 372, 375, 426, 487, 514, 558, 564, 583, 592, 602, 651, 667, 676, 683, 685, 687, 713, 723, 737, 740, 748, 752, 755, 772, 775, 778, 781
- Obtuse:** blunt point, the angle of the point greater than 90 degrees, 111, 232, 264, 278, 285, 289, 298, 311, 342, 354–355, 360, 369, 391–392, 405, 426, 429, 486, 491, 493, 497, 503, 514, 531, 541, 555, 561, 565, 575, 582, 587, 589, 602, 676, 683, 687, 693, 701, 719, 735, 737, 748, 756, 778
- Oligosaccharine:** small molecules produced by enzymatic process in the cell wall; thought to affect the growth, morphogenesis, reproduction, and defense mechanisms
- Ontogeny:** development of an individual organism; for example, human embryonic development from a unicellular zygote to an adult, 16, 69, 100
- Oosphere:** egg
- Opposite:** growing in pairs, one on each side of the axis and 180 degrees from each other, 15, 20, 46, 49, 66, 100, 103, 110–111, 116, 213, 230–231, 264, 269, 277, 297, 300, 303, 311, 315, 318, 342, 360, 367, 370, 373, 390–392, 402, 406, 408, 420, 432, 446, 450, 456, 464, 468, 470, 474, 486–487, 491, 497, 531, 535, 542, 547, 550, 603, 643, 666–667, 701, 719, 723, 732, 735, 749, 753, 756, 765, 778, 781
- Orbicular:** circular in outline, 232, 282, 312, 397, 430, 439, 512, 583, 593, 654
- Organelle:** specific part and function of a cell
- Organogenesis:** early period of rapid embryonic development in which the organs take form from the primary germ layers, 64
- Ovary:** part of the pistil containing the ovules; produces seeds and matures into a fruit, 20–21, 23, 48–49, 51–54, 59, 151, 154–157, 231–233, 298, 312, 318, 342–343, 354, 361, 380, 391, 403, 405, 409, 412, 424, 430, 439, 452, 487, 491, 494, 512, 516, 541, 557–558, 561, 576–577, 583, 587, 590, 593, 603, 606, 738, 750, 752–753, 757, 767, 781
- Ovate:** two-dimensional structure having the outline of an egg with the wider half below the middle, 108, 231, 264, 266, 269, 272, 278, 285, 289, 300, 312, 335, 342–343, 354, 366, 397, 403, 415, 420, 424, 430, 436–437, 446, 449, 452, 458, 503, 511, 514, 521, 541, 550, 561, 565, 572, 576, 586–587, 602, 667–668, 693, 698, 703, 722, 735, 773
- Ovoid:** three-dimensional structure having the shape of an egg with the broader half below the middle, 308, 311, 315, 321, 354, 375, 387, 391–392, 394, 403, 409, 430, 432, 468, 505, 516, 541, 564, 576, 590, 593, 605–606, 609, 619, 625, 636, 649, 651, 680, 687, 722, 740
- Ovule:** structure found in higher plants that contains an egg cell and develops into a seed after fertilization, 16, 20–21, 24, 29, 32–35, 37, 43, 45–46, 48–49, 52, 62, 68–69, 73, 151, 153–157, 159, 230, 232, 241, 278, 298, 312, 351, 354, 361, 391, 403, 405, 409, 412–413, 424, 430, 439, 491, 494–495, 512, 516, 541, 577, 583, 587, 593, 603, 667, 703, 738, 749–750, 753, 756–757, 767, 773
- Palmate:** radiately arranged, ribbed, or lobed, as fingers of a hand, 107, 231, 708, 735
- Palmnerved:** having lobes radiating from a common point, 553
- Panicle:** inflorescence in which the lateral branches arising from the peduncle produce flower-bearing branches instead of single flowers, 27, 28, 152, 154, 233, 264, 280, 294, 298, 312, 315, 318, 321, 327, 346, 354, 366, 386, 390, 399, 405, 408, 415, 418, 423, 429, 446, 474, 476, 490, 500, 505, 508, 515–516, 532, 537, 547, 561, 580, 593, 597, 599, 605, 670, 673, 695–696, 698, 710, 713, 722, 726, 734–735, 740, 745, 767, 773, 775, 778, 781
- Papilla(-ae):** A minute nipple-shaped projection, 391

- Parenchyma cell:** relatively unspecialized plant cell type that performs most of the metabolism, synthesizes and stores organic products, and develops into more differentiated cell types
- Pari-:** prefix meaning equal
- Parthenocarp:** production of fruit without seeds, as in bananas and some grapes, 48
- Parthenogenesis:** type of reproduction in which females produce offspring from unfertilized eggs, 68
- Pedicel:** stalk of a single flower, 15, 27, 29, 40, 49, 53, 232–233, 312, 343, 363, 397, 400, 409, 424, 456, 464, 471, 540–541, 561, 589, 593, 602, 606, 743, 745, 762
- Peduncle:** main flower stalk of the inflorescence supporting either a cluster of flowers or the only flower of a single-flowered inflorescence, 27, 29, 59, 232–233, 301, 315, 408–409, 424, 447, 464, 481, 487, 516, 540, 558, 561, 589, 607, 612–613, 618–619, 622, 625, 628, 636, 639, 645, 660, 666, 683, 687, 749
- Pellucid:** translucent, 781
- Peltate:** having the stalk of a leaf attached to the lower surface of the blade somewhere within the margin, rather than on the margin, 108, 110, 289, 382, 516
- Pendulous:** drooping or hanging loosely, 154, 289–290, 391, 394, 516, 580
- Pentamerous:** grouped in fives, 15, 278, 312, 390–391, 409, 576, 602, 657, 666, 702, 749, 752, 756
- Perennial:** plant that lives for more than 2 years, 43, 196–197, 222, 379, 461, 501, 606
- Perfect:** flowers having both functional stamens and pistils, 15, 24, 42, 113, 223, 230, 315, 348, 537, 576, 745, 752
- Perianth:** calyx and corolla collectively, or the calyx alone if the corolla is absent, 15–18, 23, 27, 36–37, 41, 48, 59, 80, 83, 87, 89, 100, 153, 156, 382, 397, 424, 541, 576–577, 589, 593, 606, 678, 770, 773
- Pericarp:** walls of a ripe ovule or fruit, 48–49, 51–54, 59–60, 64, 78, 81, 83, 85–87, 93–95, 100, 104, 264, 269, 278, 287, 294, 309, 354, 363, 366, 369, 372, 391–392, 420, 424, 426, 430, 440, 444, 449, 476, 487, 490, 494, 497, 512, 537, 541, 576, 583, 593, 605, 655, 667, 678, 680, 691, 698, 702, 722, 750, 757
- Periclinal:** parallel to the surface, 31, 69
- Perigynium:** inflated sac that encloses the ovary in *Carex*
- Perigynous:** adnate to the perianth; therefore around the ovary and not at its base, 23, 153
- Periodicity:** the tendency to occur regularly, 43, 500
- Perisperm:** food reserve tissue found in the seeds of certain plants; derived from a diploid nucleus, e.g. coffee, beets, spinach; unlike endosperm, formed outside the embryo sac, 49, 68, 73–75, 78, 149, 155, 278, 355, 403, 593, 603, 668, 703, 750, 753, 756, 773
- Peroxisomes:** microbodies containing large amounts of catalase enzyme used to remove often harmful metabolic byproducts
- Persistent:** remaining attached past the expected time for dropping, 35, 79, 89, 156, 195, 197, 201, 259, 294, 301, 312, 315, 375, 412–413, 429, 618–619, 667, 690, 732, 738
- Petal:** one of the parts of the corolla, the inner set of the perianth; may be separate or united to another petal, 15–18, 20, 39, 89, 151–157, 232, 312, 318, 324, 327, 329, 332, 338, 342, 354, 360, 391, 412, 420, 424, 429, 439, 461, 487, 490, 494, 508, 532, 541, 555, 557, 580, 583, 587, 595, 603, 606, 646, 678, 690, 695, 698, 713, 759, 767
- Petaloid:** sepal having color and texture similar to that of the petal, 452, 654
- Petiole:** attaching stalk of a leaf; sometimes absent, 101, 103, 106–107, 115–116, 229, 231, 244, 254, 272, 278, 285, 311, 315, 324, 327, 329, 343, 363, 382, 390, 395, 397, 403, 405, 432, 452, 456, 461, 468, 486, 491, 500–501, 503, 505–506, 511–512, 514, 531, 535, 541, 547, 555, 558, 562, 572, 575, 577, 582, 585, 587, 603, 667, 680, 687, 693, 695, 698, 703, 708, 723, 732, 737, 750, 753, 757, 759, 767, 773, 778, 781
- Pheloderm:** tissue similar to the cortical parenchyma produced centripetally by the phellogen (cork cambium) as part of the periderm
- Phellogen:** sheet-like meristem that produces cork
- Phellum:** protecting tissue on the outer surface, derived from a cork cambium or phellogen
- Phloem:** part of the vascular bundle consisting of sieve tubes, companion cells, parenchyma, and fibers and forming the food-conducting tissue of the plant; the photosynthate-conducting tissue of plants, 49, 102, 423, 540, 667
- Photoperiodism:** response (e.g., flowering, germination) of organisms to the relative length of the daily periods of light and darkness
- Phyllode:** expanded petiole resembling and having the function of a leaf, 106, 251
- Phylotaxy:** arrangement of leaf order
- Pilose:** covered with hair, especially soft hair, 106, 297, 391, 397, 767
- Pinnate:** having lobes or blades of a leaf arranged along the sides of a common axis; also applies to major lateral veins of a leaf, 106, 113, 115, 231, 278, 355, 360, 390, 408, 490, 493, 511, 516, 521, 541, 576, 597, 599, 667, 695, 698, 713, 772, 778
- Pinnule:** foliole of second or third order, 403
- Piscicidal:** poisonous to fish, 282, 512
- Pistil:** female, ovule-bearing organ of a flower, composed of stigma(s) and ovary, usually with a style or styles between; consists of a single carpel or two or more fused carpels, 230–233, 380, 452, 487, 606, 698
- Pit:** hard endocarp that encloses the seed of a drupe, 363, 533, 580
- Placenta:** ovule-bearing surface in the ovary and seed-bearing surface in the fruit, 20, 33, 59, 344, 603
- Placentation:** method of attachment of the seeds within the ovary, 20–22, 278, 391, 409, 424, 512, 541, 603, 667, 702, 749, 753, 756, 773
- Plagiotropic:** attracted to one side, 748, 750, 752–753, 755, 757
- Plasmalemma:** membrane that surrounds the cytoplasm, 35, 43
- Plasmodesma:** cytoplasmic channels lined with a plasma membrane connecting the protoplasts of adjacent cells across the cell wall
- Plasmolysis:** disruption of the protoplasm due to a lack of water in the osmosis process
- Plastid:** any of various cytoplasmic organelles of photosynthetic cells that serve in many cases as centers of special metabolic activities, e.g., chloroplasts, 139, 146
- Plumule:** shoot of the embryo, 64, 66, 77, 95, 100, 103, 114–117, 158, 163, 264, 267, 270, 278, 336, 354–355, 361, 367, 370, 373, 376, 387, 403, 406, 416, 424, 427, 437, 450, 456, 490–491, 494–495, 498, 501, 512, 541–542, 550, 559, 565, 577, 602–603, 649, 652, 668, 703, 714, 723, 740
- Pneumatophor:** specialized roots for aeration
- Pod:** any dry, dehiscent fruit, 53–54, 58–59, 81, 120, 123, 136, 152, 154–156, 159, 233, 244, 247, 250, 253, 256, 274–275, 278, 280, 282–283, 324, 327, 329, 332, 346, 349, 351, 403, 405, 409, 430, 433, 440, 442, 446, 452, 459, 461, 518, 523, 545, 547, 551, 579–580, 583, 593, 597, 599, 602, 643, 654–655, 657–658, 667–668, 670–671, 673–674, 701–703, 716, 719, 738, 742–743
- Polar nuclei:** two nuclei formed at each pole of the angiosperm embryo sac; they will fuse with a male nucleus to form a primary endosperm nucleus, 35, 43
- Polarity:** structural and/or physiological difference established in the plant, embryo, organ, tissue, cell, 64, 66
- Pollarded:** cut back nearly to the trunk to produce a dense mass of branches, 274
- Pollen:** male spore-like structures produced by anthers in flowers and by male cones, 18, 20, 23–24, 26–27, 29–33, 35–43, 45–48, 144, 230, 232, 278, 330, 343, 405, 424, 470, 491, 512, 516, 541, 577, 603, 606, 625, 667, 691, 750, 753, 756
- Pollen grain:** small structure of higher plants that contains haploid male gamete nuclei and is surrounded by a double wall, the exina and intina; transported from the male stamen to the female stigma in a process called pollination, 23, 26–27, 29–32, 36, 39–41, 43, 46–47, 232, 405, 516, 603, 750
- Pollen sac:** locus in the anther that contains the pollen grains, 18, 32, 45–47, 232
- Pollen tube:** microscopic tube that grows down the stigma from the pollen grain; through it the sperm cells are deposited into the embryo sac, 23, 26, 29, 31–33, 42–43, 46–48, 232
- Pollination:** process by which pollen is transferred from the anther where it is produced, to the stigma of a flower, 23–24, 26, 32–33, 35–36, 38–43, 46–49, 159, 202, 208–209, 232, 346, 349–350, 355, 379, 390, 400, 403, 412–413, 424, 494, 508, 512, 541, 576, 590, 593, 606, 616, 633, 702, 726, 738, 749, 756, 773
- Pollinium:** mass of pollen grains
- Polymorphic:** having, assuming, or passing through many or various forms or stages; polymorphous, 160, 508
- Polysome:** ribosome associated with protein syntheses
- Pome:** fruit in which the floral cup forms a thick outer fleshy layer and has a papery inner pericarp layer (endocarp) forming a multiseeded core (e.g., apple, pear), 59, 159
- Poricidal:** anther opening by pores, 56, 516
- Prick:** transplant into a container that provides

- more room for growth
- Primary cell wall:** cell wall layer deposited while a cell is growing; typically extensible
- Primordium:** organs in their earliest stages of development, as a leaf primordia or meristem
- Procambium:** meristem that develops into the vascular tissue
- Proembryo:** young embryo in its early stages of development, 64, 68
- Propagule:** propagative part, as a bud or shoot, 80, 212, 538, 691
- Proteoplastid:** plastid that stores protein
- Prothecium:** fleshy tissue with few cells, formed from the rudimentary embryo in the orchidaceous seeds
- Protoderm:** develops into the dermal tissue system
- Protofila:** first leaf-pair in the plant, after the cotyledons
- Protoplast:** organized, living portion of cell
- Pseudocarp:** fruit that develops not only from the ripened ovary, or ovaries, but from non-ovarian tissue as well
- Puberulent:** minutely pubescent, 41, 106, 391, 397, 424, 452, 486–487, 540, 589, 676, 683, 687, 781
- Pubescent:** covered with fine, short hairs, 87, 106, 174, 289, 300, 327, 343, 390–391, 403, 405, 409, 423, 446, 490–491, 494, 572, 576, 582–583, 587, 592–593, 603, 605–607, 658, 666–667, 687, 703, 735, 748–749, 753, 755–756, 767, 775
- Pulvinule:** pulvinus at the base of a petiole
- Pulvinus:** swelling at the base of the petiole; related to leaf movement, 106, 278, 667, 703
- Punctate:** spotted with colored or translucent dots or depressions, usually due to glands, 72, 397, 406, 781
- Puntiform:** rod-like, 264, 269, 336, 367, 372, 450, 550, 649, 652, 723
- Pyrene:** hard or stony endocarp; nutlet, 415, 437
- Pyriform:** pear-shaped, 479, 577, 587, 649
- Raceme:** type of inflorescence in which the single-flowered pedicels are arranged along the sides of a flower-shoot axis, 27–29, 153–154, 156–157, 253, 266, 282, 324, 327, 332, 349, 369, 372, 405, 423, 433, 436, 439, 442, 444, 456, 459, 461, 470, 490, 497, 518, 530, 532, 540, 550–551, 583, 593, 602, 643, 646, 662, 670, 673, 693, 708, 710, 713, 716, 742, 749, 756, 767, 770
- Rachis:** main axis of a spike or of a pinnately compound leaf, excluding the petiole, 106, 278, 397, 403, 424, 446, 452, 486, 491, 512, 531, 540, 547, 576, 582, 589, 599, 602–603, 667, 676, 683, 685, 687, 693, 695, 698, 703, 749, 781
- Radial symmetry:** when cut through the center along any plane, produces similar halves, 15
- Radicle:** portion of the embryo below the cotyledons that will form the roots, more properly called the caudicle, 75–79, 90–91, 93–94, 100–101, 104, 115–116, 149, 158, 163, 168, 170, 172, 174, 176, 178, 259, 264, 267, 270, 278, 301, 315, 336, 355, 361, 363, 367, 370, 373, 376, 387, 392, 397, 403, 406, 413, 416, 424, 427, 437, 450, 456, 481, 491, 494–495, 498, 512, 516, 521, 538, 542, 550, 565, 593, 602–603, 649, 652, 657, 667–668, 691, 696, 703, 714, 723, 740, 749, 753, 756, 759, 773
- Raphe:** ridge connecting the hilum with the chalazas, 32, 69, 71, 558, 561
- Receptacle:** portion of the axis of a flower stalk on which the flower is borne, 15–16, 20, 27, 59–60, 80, 83, 87, 232, 590, 660, 667, 703, 756
- Reflexed:** abruptly turned or bent toward the base, 342, 439, 580, 619, 636, 668
- Refracted:** bent sharply backward
- Regular flower:** flower that is radially symmetrical: petals and sepals are of similar size and shape
- Reniform:** kidney shaped, 103, 110, 397, 440, 550, 750, 753, 757
- Reticulate:** having the veins or nerves disposed like the threads of a net, 41, 70–71, 75, 113, 264, 311, 397, 405, 429, 497, 558
- Retorse:** directed backward and downward
- Revolute:** rolled under at the margin, i.e. toward the underside, 109, 429, 555, 589, 687, 781
- Rhizome:** underground stem usually growing horizontally
- Rhizosphere:** soil surrounding the root, 102
- Ribosomes:** protein synthesis structures, 64
- RNA:** ribose nucleic acid (ribonucleic acid), 49, 91
- Rugose:** rough and wrinkled; applied to leaves on which the reticulate venation is very prominent underneath, 41, 369, 386, 406, 409, 415, 486, 592, 652, 680
- Sagittate:** shaped like an arrowhead, 108, 110
- Samara:** indehiscent, winged fruit in which the seedcoat is loose inside the pericarp (e.g., maple, ash), 51, 53, 89, 152, 379, 430, 474, 749, 756, 770
- Samaroid:** having the shape of the samara, 53, 152, 375, 386, 583, 722
- Sarcotesta:** fleshy testa, 69, 83, 85–86, 97, 154, 491, 494–495
- Scabrous:** rough or harsh to the touch due to minute stiff hairs or other projections, 41
- Scale:** applied to many kinds of small, thin, flat, appressed, usually dry leaves or bracts, often vestigial; sometimes epidermal outgrowths, if disclike or flattened, 45, 62, 123, 134, 184, 241, 392, 567, 603, 612, 616, 622, 640, 660
- Scape:** long stem that finishes in a flower or inflorescence, 29
- Scion:** part of plant inserted into a stalk for grafting
- Sclereids:** type of sclerenchymatic cells, variable in shape but typically not long, with thick and lignified secondary walls, 70
- Sclerenchyma:** tissues composed of cells with thick, secondary cell walls that are usually lignified, 69–70, 79, 605
- Scutellum:** shield-shaped organ of the embryo of grass; often viewed as a highly modified cotyledon in monocotyledons
- Seedcoat:** outer protective layer of a seed that develops from the integument of the ovule; testa, 32, 47, 54, 62–63, 68–70, 73–75, 77–79, 81–82, 86–87, 91, 93–95, 97, 100, 103–104, 114–116, 149, 158–160, 162, 164–166, 169, 172, 178–179, 182, 250, 266, 269, 312, 318, 335, 350, 354, 361, 366–367, 369, 372, 375, 386, 391, 416, 426, 430, 437, 449, 452, 459, 494, 497, 515, 521, 541, 545, 564, 576, 583, 590, 593, 595, 602, 646, 649, 651, 667, 705, 713, 722, 749–750, 753, 756–757, 773
- Seminal rudiment:** ovoid structure formed above the placenta or carpellary leaf; composed of the nucellus and one or two teguments surrounding it
- Senescence:** aging, a progression of irreversible change in a living organism, eventually leading to death, 48–49, 193, 200, 207–208
- Sepal:** one of the parts of a calyx or outer set of flower parts; may be separate or united to another sepal, 15–17, 151–157, 232, 312, 338, 342–343, 354, 363, 380, 405, 409, 424, 487, 532, 541, 561, 580, 603, 606, 678, 690, 695, 698, 749, 753, 756, 773
- Septate:** divided by a septum or septa, 278, 366, 369, 372, 403, 602, 702, 719, 767
- Septum:** dividing wall or membrane in a plant, 50, 366, 369, 372, 424, 516, 541
- Sericeous:** covered with silky down, 110, 420, 494
- Serotinous:** late in occurring, developing, and flowering, 616, 618
- Serrate:** having sharp, sawlike teeth pointed upward or forward, 109, 289, 311, 511, 693
- Serrulate:** finely or minutely serrate, 109, 474, 735
- Sessile:** lacking any kind of stalk, 27, 29, 103, 106, 110, 231, 280, 308, 363, 395, 402, 486, 516, 568, 587, 593, 602, 645, 651, 654, 701, 719, 773
- Sessile leaf:** leaf that has no petiole, 106
- Setiform:** bristle-like, 278
- Sheath:** tubular structure surrounding an organ or part, such as the basal part of a leaf; the circle of scales around the base of pine needles, 110, 145, 298, 309, 695, 698
- Shrub:** woody plant less than tree size, frequently with several branches at or near the base, 157–158, 184, 197, 222, 228, 247, 324, 346, 348, 397, 561, 569, 579, 595, 646, 657
- Sieve:** transverse partition with holes, 568
- Sieve element:** conducting elements involving sieve cell and sieve tube member
- Silique:** dry, dehiscent, elongated fruit formed from a superior ovary of two carpels, with two parietal placentas, and divided into two loci by a false septum between the placentas; occurs in plants of the family Cruciferae
- Simple fruit:** fruit developed from a single ovary, 51, 233
- Sincarpic flower:** flower with its carpels fused
- Simus:** cleft or recess between two lobes of an expanded organ such as a leaf, 762
- Sode:** supporting structure
- Spadix:** spike with a thickened, fleshy axis, usually enveloped by a conspicuous or colored bract called a spathe., 27–29
- Spathe:** large bract at the base of a spadix, which it encloses (at least initially) as a sheath, 27, 29
- Spatulate:** shaped like a spatula; somewhat widened toward a rounded end, 74–76, 79, 104, 108, 308, 376, 426, 565, 583, 714
- Spike:** type of inflorescence in which stalkless flowers are attached along the sides of an elongated common axis, 27–29, 156, 233, 250, 568, 676
- Spoil:** material excavated; usually in mining or dredging
- Sporophyll:** specialized leaves for housing spores
- Sporophyte:** diploid plant producing meiospores after meiosis; occurs within alternating genera

- tions, 24, 26–27, 29, 33, 47, 49, 62, 90, 94
- Squamiform:** scale-like, 106, 111, 117, 424, 541–542
- Stamen:** male sporophyll within the flower; in angiosperms, the floral organ that bears pollen, 16, 18–20, 29, 48, 59, 232, 298, 324, 380, 452, 587, 750, 753, 756
- Staminode:** stamen in which the microsporangium of the anther remains reduced and sterile, 738
- Starch:** water-insoluble polysaccharide found as common carbohydrate storage, 31, 49, 73, 91, 127, 139, 335, 462, 577, 605, 696, 776
- Stellate:** star-shaped; applicable where several similar parts spread out from a common center, as with clustered hairs, 285, 587, 683, 734–735, 773
- Stigma:** pollen-receptive part of a pistil, often enlarged, usually at the tip of the style, 20, 23–24, 26–27, 32, 37, 43, 232, 298, 312, 318, 350, 354, 391, 403, 405, 409, 430, 439, 452, 494, 516, 576, 583, 587, 590, 593, 603, 606, 655, 738, 750, 753, 756
- Stipe:** stalk of a pistil; not the pedicel; stalk under elevated glands, 403, 452, 487, 491, 494, 687
- Stipitate:** having a stipe or borne on a stipe, 39, 298, 405–406, 409, 430, 439, 583
- Stipule:** one of a pair of lateral appendages at the base of a leaf petiole, 110, 315, 586
- Stolon:** large, indeterminate, underground stem that is capable of giving rise to a new plant
- Stoma:** small pore in leaf epidermis; used for gas exchange
- Stone:** drupe, 229, 233, 321, 340, 366, 476, 521, 745
- Stool:** cluster of shoots or stems springing up from a base or root, 641
- Stratification:** moist, cold storage, 139, 142, 153, 168–169, 179, 182, 242, 464, 471, 473, 568, 616, 629, 633
- Strobile:** cone-like structure, 43, 45, 62
- Strophile:** appendage at the hilum of certain seeds
- Style:** usually attenuated portion of the pistil connecting the stigma and ovary, 20, 23, 26–27, 32, 39, 43, 59, 136, 156, 224, 232, 285, 298, 308, 312, 321, 343, 354, 380, 387, 391, 403, 409, 424, 429–430, 439, 452, 487, 490–491, 493–494, 516, 541, 576, 583, 587, 590, 593, 603, 606, 612, 622, 636, 639, 655, 698, 723, 729, 732, 738, 749–750, 753, 756
- Sub-:** prefix signifying almost, less than completely, somewhat, under
- Subbasal:** related to, situated at, or forming the base, 264, 266, 367, 370, 372–373, 437, 565, 649, 651, 714
- Suberin:** complex of fatty substances present in the wall of cork tissue that waterproofs it and makes it resistant to decay, 70, 163
- Suberize:** convert to corky tissue, 102
- Substrate:** base on which an organism lives, 14, 36, 169, 174, 207, 259, 262, 287, 292, 303, 336, 361, 382, 384, 394, 464, 466, 468, 471, 473, 481, 490, 508, 515, 526, 528, 530, 562, 587, 602, 662, 678, 711, 770, 773, 776, 782
- Subterete:** positioned underneath, 514
- Superior ovary:** ovary with the flower-parts growing from below it, 51, 151, 232, 767
- Suspensor:** group or chain of cells produced from the zygote that pushes the developing proembryo toward the center of the ovule and its nutrient supply, 64, 67–68, 79
- Sward:** grassy surface of land; turf, 256–257
- Syndodial:** an axis made up of multiple bases, 595, 737, 748, 752, 755
- Syncarpous:** having the carpels of the gynoecium united in a compound ovary, 20–21, 308
- Synergid nuclei:** two of the eight cells of the embryo sac, usually remaining nonfunctional
- Synpetalous:** without petals, 278
- Synsepalous:** without sepals, 278, 390
- Tapetum:** layer of nutritive cells that lines the pollen sac, 31, 46, 48
- Tegmen:** part of the seminal cover, derived from the tegument, 33, 68, 70, 73, 77–78, 114–115, 354, 391, 427, 494, 516, 541, 576–577, 590, 593, 602, 722–723, 750, 753, 756, 773
- Tegument:** covering; integument, 363
- Tepal:** perianth member or segment; term used for perianth parts undifferentiated into distinct sepals and petals
- Terete:** circular in cross section, 289, 390, 403, 415, 491, 516, 582, 649, 651, 693
- Terminal bud:** apex of the leaf is at the tip end opposite the petiole, 231, 456, 490, 493, 538, 606
- Testa:** outer covering of the seed; the seedcoat, 33, 68–71, 77–78, 81, 83, 114–115, 156, 164, 181–182, 275, 278, 282, 301, 309, 321, 354, 363, 391, 403, 406, 432, 456, 512, 516, 530, 553, 559, 576–577, 590, 593, 651, 655, 667, 703, 719, 722–723, 750, 753, 756, 773, 775
- Tetramerous:** relating to groups of four, 15, 354, 516
- Thorn:** hard, sharp-pointed stem, 106, 110, 235–236, 303, 394, 452, 456, 458, 461, 657–658
- Tomentose:** densely covered with soft, fine, matted, wooly, relatively short hairs, 110, 342–343, 391, 420, 494, 553, 666–667, 685, 693, 703
- Tonoplast:** membrane surrounding the vacuole
- Torose:** cylindrical with alternate swellings and contractions
- Torulose:** somewhat torose, 597
- Tracheary element (xylem):** conducting cell of the xylem, characterized by an elongated shape and lignified secondary cell wall; involves tracheids and vessel members
- Transmedium plane:** plane perpendicular to the medium plane
- Transpiration:** passage of water through the stomas or cuticle
- Transverse plane:** plane perpendicular to the medium and transmedium planes
- Trichome:** hair, bristle, scale, or other such outgrowth of the epidermis, 110, 756
- Truncate:** having an apex or base that is almost or quite straight across, if cut off, 111, 355, 397, 408–409, 493–494, 512, 587, 603, 750, 753, 756
- Tuber:** underground stem in which carbohydrates are stored
- Tuff:** cluster of short-stalked flowers, leaves, etc., growing from a common point
- Turbinate:** top-shaped; a solid having a tapering base and a broad, rounded apex, 74, 439
- Umbel:** inflorescence on which a number of flower stalks or pedicels, nearly equal in length, spread from a common center, 27–29, 233, 436, 464, 470, 589, 703, 708, 770
- Ungulate:** having a small hook, 17, 342
- Vacuole:** a small cavity, 69, 139
- Valvate:** opening by valves, as certain capsules and anthers; meeting without overlapping, as the parts of certain buds, 18, 278, 403, 409, 490, 494, 603, 666–667, 702–703
- Valve:** one of the segments into which a capsule dehisces; flap or lid-like part of certain anthers, 32, 50, 95, 104, 115, 155, 163, 269, 285, 361, 366, 372, 379, 386, 391, 394, 403, 406, 464, 468, 490, 494, 521, 580, 587, 593, 595, 602, 667, 702, 722, 753
- Vestigial:** of or pertaining to a degenerate or imperfectly developed organ or structure having little or no utility, but which in an earlier stage of the individual or in preceding organisms performed a useful function, 17, 95, 103, 115, 361, 391, 516, 603, 749, 756, 773
- Villous:** densely covered with soft, fine, unmattd, relatively long hairs, 516, 583, 585, 765
- Viscid:** sticky
- Whorl:** three or more structures (leaves, stems, etc.) in a circle, not spiraled, 18, 20, 27, 29, 79, 151, 156, 232, 378, 424, 512, 589, 749, 753, 756
- Wing:** membrane; or thin, dry expansion or appendage of a seed or fruit, 46, 72, 79, 89, 123, 152–153, 161, 241, 298, 303, 324, 375, 386–387, 391, 412, 424, 430, 439, 444, 452, 474, 553, 558, 580, 583, 609, 613, 618–619, 622, 625, 636, 646, 670, 673, 716, 722–723, 735, 738, 749, 756, 767, 776
- Xylem:** vascular tissue; wood, 102, 164
- Zygomorphic:** having bilateral symmetry, 15–16, 20, 38, 424, 429, 446, 456, 541, 738, 775, 778
- Zygote:** fertilized egg, 29, 43, 45, 47–48, 64, 79



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