

FRESHMAN BIOLOGY



Bio-Word Dissections

Pneumonoultramicroscopicsilicovolcanoconiosis. Yes, this is an actual word. What does it mean? Biology can be filled with arcane and esoteric words that sometimes seem incomprehensible. By "dissecting" these words into discrete units, even the most complex terms can be understood. To demonstrate this concept, let's begin by dissecting the word above.

To perform our bio-word dissection, we'll need to proceed carefully. First, we come to the prefix (*pneu-*), or (*pneumo-*) which means lung. Next, is *ultra*, meaning extreme, and *microscopic*, meaning small. Now we come to (*silico-*), which refers to silicon, and (*volcano-*) which refers to the mineral particles that make up a volcano. Then we have (*coni-*), a derivative of the Greek word *konis* meaning dust. Finally, we have the suffix (*-osis*) which means affected with. Now let's rebuild what we have dissected:

Considering the prefix (*pneumo-*) and the suffix (*-osis*), we can determine that the lungs are affected with something. But what? Breaking down the rest of the terms we get extremely small (*ultramicroscopic*) silicon (*silico-*) and volcanic (*volcano-*) dust (*coni-*) particles. Thus, pneumonoultramicroscopicsilicovolcanoconiosis is a disease of the lungs resulting from the inhalation of very fine silicate or quartz dust. That wasn't so difficult, now was it?

Now that we've honed our dissection skills, let's try some frequently used biology terms. For instance:

Arthritis

(*Arth-*) refers to joints and (*-itis*) means inflammation. Arthritis is the inflammation of a joint(s).

Erythrocyte

(*Erythro-*) means red and (*-cyte*) means cell. Erythrocytes are red blood cells.

Okay, let's move on to more difficult words. For instance:

Electroencephalogram

Dissecting, we have (*electro-*), pertaining to electricity, (*encephal-*) meaning brain, and (*-gram*) meaning record. Together we have an electric brain record or EEG. Thus, we have a record of brain wave activity using electrical contacts.

Schizophrenia

Refers to an individual with a split personality. (*Schis-*) means split and (*phren-*) means mind.

Thermoacidophiles

These are ancient bacteria that live in extremely hot and acidic environments. (*Therm-*) means heat, next you have (*-acid*), and finally (*phil-*) means love. Together we have heat and acid lovers. Bio-Word Dissections

Biology Prefixes, Suffixes and Roots

A

Prefix	Meaning	Example
a-	Without	Asexual (without sex)
ab-	From, away	Absent (sent away)
aero-	Needing air/oxygen	Aerobic
ambi-	Around, both	Ambidextrous (both hands)
amphi-	Both	amphibian
amyl	Starch	Amylase
ante-	Before	Antediluvian (before the flood)
anti-	Against	Antiwar (against war)
andr-	Man	Androgen
angio-	Vessel	angiosperm
arch-	First, chief	Archetype (chief type, first type)
auto-	Self	Autobiography (biography by oneself)

Suffix	Meaning	Example
-able, -ble	Able, capable	Acceptable (able to be accepted)
-acious, -cious	Characterized by, having the quality of	Gracious (having the quality of grace)
-age	Sum, total	Mileage (total miles)
-al	Of, like, suitable for	Theatrical (suitable for theater)
-ance, -ancy	Act or state of	Disturbance (act of disturbing)
-ant, -ent	One who	Defendant (one who defends)
-ary, -ar	Having the nature of, concerning	Military (concerning war)

Roots	Meaning	Example
ac	Sharp	Acid
acr	Bitter	Acrid
act, ag	Do, act, drive	Action, react, agitate
acu	Sharp, keen	Acute
agr	Field	Agriculture
ali	Other	Alias, alien
alt	High	Altitude,
alter, altr	Other, change	Alternative
am, amic	Love, friend	Amiable
anim	Mind, life, spirit	Animal
annu,eni	Year	Annual
anthrop	Man	Misanthropy
apt, ept	Fit	Adapt
aqu	Water	Aquatic
arth	Joint	Arthritis
aud, audit, aur	Hear	Auditorium
aut	Self	Autism

B

Prefix	Meaning	Example
bene, ben-	Good, well	Benefactor
bi-	Two	Bicycle
brachia-	Forelimb; armlike	Brachiate
Roots	Meaning	Example
bibli-	Book	Bibliophile
bio-	Life	Amphibious
Suffix	Meaning	Example
-blast	Bud or germ	osteoblast

C

Prefix	Meaning	Example
chloro-	Green	Chlorophyll
circum-	Around	Circumference
contr-, counter-	Against	Contradict
crani-	Having to do with the skin	craniometer
cut-	Having to do with the skin	cuticle
cyto-	Cell	cytoplasm
Suffix	Meaning	Example
-cy	Act, state, or position of	Presidency
Roots	Meaning	Example
capit	Head	Capital, decapitate
calor	Heat	calorie
carn	Flesh	Carnivore
cardio	Having to do with the heart	Cardiogram
cent	Hundred	Percentage
cephal	Head	Cephalopod
chrom	Color	Monochrome
chron	Time	Anachronism
cogn	Know	Recognize
corp	Body	Corpse
cred	Trust, believe	Credit
cycl	Wheel, circle	Bicycle
cyst	Pouch	Ovarian cyst

D

Prefix	Meaning	Example
dactyl-	Finger; toe, digit	Dactylogram
de-	Away from, down	Depart
demi-	Half	Demitasse
di-	Twice, double	Dioxide
dia-	Across, through	Diameter
dis-	Not, away from	Disassociate
dys-	Bad, poor	Dysfunctional

Suffix	Meaning	Example
-dom	State, rank, that which belongs to	Kingdom
Roots	Meaning	Example
dent-	Tooth	Dentist
derm	Skin	Dermatologist
dorm	Sleep	Dormant
duc, duct	Lead	Aqueduct
dyn	Force, power	Dynamic

E

Prefix	Meaning	Example
endo-	Inside, inner	Endometrium
equi-	Equal	Equivalent
epi-	above	epithelial
extra-, exo-	Outside, beyond	Extraterrestrial
Suffix	Meaning	Example
-ectomy	Remove, excise	tonsillectomy
-emia	Blood	Leukemia
-ence	Act, state, quality of	Dependence
-er, -or	One who, that which	Practitioner
-escent	Becoming	Adolescent
Roots	Meaning	Example
ego	I	Egotistic
electro	Pertaining to electricity	Electromagnetism

F

Prefix	Meaning	Example
fore-	In front of, previous	Forecast
Suffix	Meaning	Example
-fy	To make	Pacify
Roots	Meaning	Example
fac, fact	Do, make	Facility
form	Shape	Reform

G

Prefix	Meaning	Example
gastro-	Stomach	gastrointestinal
geo-	Earth	Geography
glyco-	Sugar, sweet	glycolysis
gono-	Seed, structure, sexual	Gonorrhea
gyn-	Having to do with women	Gynecology
Suffix	Meaning	Example
-genic	Producing, generating	carcinogenic
-gram	Write, record	Cardiogram
Roots	Meaning	Example

gam	Marry	Polygamy
gen	Birth, kind, race	Generation
greg	Flock, crowd	Gregarious

H

Prefix	Meaning	Example
haplo-	Single	Haploid
hetero-	Different	Heterosexual
histo-	Tissue	Histine
holo-	Whole	Holism
homo-	Same, like	Homosexual
hyper-	Too much	Hyperactive
hypo-	Too little	Hypothermia
Suffix	Meaning	Example
-hood	State, condition	Childhood
Roots	Meaning	Example
hem	Blood	Hemorrhage
hydr	Water	Dehydration

I

Prefix	Meaning	Example
infra-	Below, beneath	infrasonic
inter-	Between, among	Internal
intra-, intro-	Within, inside	Introduction
iso-	Equal	Isogamy
Suffix	Meaning	Example
-ic, -ac	Of, like	Demonic
-il, -ile	Having to do with, like, suitable for	Civil
-ion	Act or condition of	Union
-ious	Having, characterized by	Anxious
-ish	Like, somewhat	Foolish
-ism	Belief or practice	Feminism
-ist	One who does, makes or is concerned with	Racist
-it is	Inflammation	Arthritis
-ity, -ty, -y	Character of state of being	Civility
-ive	Of, relating, tending to	Creative

K

Prefix	Meaning	Example
kilo-	Thousand	Kilometer
Suffix	Meaning	Example
-kinesis	Movement, motion	cytokinesis
Roots	Meaning	Example

karyo	Nucleus, nut	Prokaryote
L		
Prefix	Meaning	Example
lact-	Milk	Lactose
leuk-	White	Leukemia
Suffix	Meaning	Example
-logue, -loquy	Speech or writing	Monologue
-logy	Study of	Geology
-lysis	To break	hydrolysis
Roots	Meaning	Example
labor	Work	Laboratory
lipo	Pertaining to fat	Liposuction
loc	Place	Locale

M		
Prefix	Meaning	Example
macro-	Large	Macroorganism
mal-	Bad, wrong, poor	Malpractice
meso-	Middle	Mesoamerica
mis-	Badly, wrongly	Miscalculate
micro	Small	Microorganism
mono-	Single, one	Mononucleosis
multi-	Consisting of many parts	Multiform
myc-	Fungi	mycorrhizae
Suffix	Meaning	Example
-ment	Act or state of	Abandonment
-meter	Measurement	Kilometer
-mony	A resulting thing, condition or state	Patrimony
Root	Meaning	Example
magn	Large, great	Magnificent
man	Hand	Manufacture
morph	Form, shape	morphology

N		
Prefix	Meaning	Example
necr-	Pertaining to death	Necrosis
nemat-	Thread, thread-like	nematocytes
neo-	New	Neocytes

O		
Prefix	Meaning	Example
ocul-	Eye	Oculist
olig-	Few, little	Oligotrophic
oo-	Egg, ovum	Oogenesis
orb-	Circle, sphere	Orbit

Suffix	Meaning	Example
-osis	Affected by, condition	Necrosis
-ory	Having the quality of, a place or thing for	Laboratory
-ous, -ose	Full of, having	Odorous
Root	Meaning	Example
osteo	Having to do with bone	osteoblast

P	Prefix	Meaning	Example
	pan-	All	Panorama
	peri-	Around, near	Periscope
	photo-	Pertaining to light	photosynthesis
	poly-	Many	Polygamy
	post-	After	Posterior
	pre-	Before, earlier than	Prejudice
	pro-	In favor of	Proactive

Root	Meaning	Example
Pater, part	Father	Paternity
Ped, pod	Food	Pedal, Cephlopod
Phil	Love	Anglophile
Phon	Sound	Anglophone
Phren	Head	Schizophrenia
Phyll	Leaf	Chlorophyll
Pneu	Lung	Pneumonia
Port	Carry	Transport
Prim	First	Primal
Psych	Mind	Psychology
Pyr	Fire	Pyromaniac

Suffix	Meaning	Example
-pathy	Disease	Psychopathic
-phase	Stage	Anaphase
-phage	Eater	bacteriophage
-plasm	Liquid matrix	cytoplasm

R	Prefix	Meaning	Example
	Re-	Back, again	Rethink
	Retro-	Backward	Retrospective

Suffix	Meaning	Example
-rrhagia	Excessive flow	Hemorrhagia
-rrhea	Discharge	Diarrhea

Root	Meaning	Example
Rupt	Break	Erupt

S

Prefix	Meaning	Example
Se-	Apart, away	Seclude
Semi-	Part	Semiconscious
Septa-	Membrane dividing two areas	Septum
Sub-	Under, beneath	Subvert
Super-	Above, greater	Superior
Suffix	Meaning	Example
-ship	Skill, state of being	Scholarship
-some	Full of, like	Irksome
Root	Meaning	Example
Saccharide	Sugar	Polysaccharide
Schis	Split	Schizophrenia
Scope	Watch, view	Microscope
Sect	Cut	Dissection
Sign	Mark	Assign
Som	Body	Somatic
Somn	Sleep	Insomnia
Spec	Look	Spectacle
Sperm	Seed, male reproductive cell	spermatogenesis
Spir	Breath	Respiration
Stab, stat	Stand	Unstable
Stasis	Stationary condition	Homeostasis
Synthesis	To build or make	photosynthesis

T

Prefix	Meaning	Example
Tele-	Far	Telephone
Tox-	Poison	Toxicity
Trans-	Across	Transport
Suffix	Meaning	Example
-tomy	Act of cutting; incision	lobotomy
-tude	State or quality of	Certitude
Root	Meaning	Example
Techn	Skill, art	Technology
Tempor	Time	Temporary
Term	End	Terminate
Therm	Heat	Thermometer
Troph	Nourishment	Autotroph

U, V, W, Y

Prefix	Meaning	Example
Un-	Not	Unsung
Uni-	One	unicellular
Vas-	Vessel	Vasodilation

Xeno-	Strange, foreign	Xenophobia	
Xero-	Dry	xeroderma	
Zoo-	Animal	Zoologist	
Zyg-	Union	Zygote	
Suffix	Meaning		Example
-ward	In the direction of	Homeward	
-y	Full of, like, somewhat	Risky	
Root	Meaning		Example
Ultra	Extreme		
Uni	One	Union	
Ver	True	Veracity	
Vid, vis	See	Vision	

* R. Piland & M. Lazzarotto (2001).

