

Summer Assignments 2017

Course: AP Biology

Assignment Title	AP Biology Summer Assignments: Word Roots Biological Photo Collection
Due Date	2 nd Day of class
Estimated time fore completion	10 – 20 hours
How the assignment will be assessed	The Word roots component will be assessed through a test, while the Biological Photo Collection will be scored using the accompanying rubric. Both assignments will be counted as a separate test grade for 1 st Quarter.
Purpose of assignment	<ul style="list-style-type: none">• Review of foundational material/concepts/skills• Expose students to required material/concepts/skills/texts that cannot be covered during the academic year.

AP Biology Summer Assignment

Welcome to AP Biology! This course is designed to be the equivalent of a two semester introductory biology course usually take in the year of college. In other words, it's a little like drinking from a fire house. It will be a rewarding experience, but as with most things that are, it will also be challenging. Throughout the course, you will become familiar with major recurring ideas that persist throughout all topics and material.

The 4 Big Ideas of AP Biology

Big Idea 1: The process of evolution drives the diversity and unity of life.

Big Idea 2: Biological systems utilize free energy and molecular building blocks to grow, to reproduce, and to maintain dynamic homeostasis.

Big Idea 3: Living systems store, retrieve, transmit, and respond to information essential to life processes.

Big Idea 4: Biological system interact, and these systems and their interactions possess complex properties.

On the pages that follow, you'll find detailed instructions of the two assignments that comprise your summer work for AP Biology. The first assignment is related to learning word roots to help with the vocabulary that you will encounter in AP Biology. The second part deals with collecting, through photography, examples of biological terms or concepts and creating a photo blog of your collection.

You will have a word root test within the first week of AP biology. Your photo collection will be due at the beginning of the 2nd day of AP Biology. Both assignments will be counted as their own test grade for 1st quarter.

Included in this packet are the following documents:

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If you have any questions regarding the summer assignment, email me at caitlynsnelson@ccs.k12.nc.us. This is also the email address you will use to send me your Biological Photo Collection.

Assignment #1: Word Roots

This assignment will help you tremendously with all the terminology you'll be learning in AP Biology and most immediately with the second part of your summer assignment-your biological photo collection. AP Biology can sound like a foreign language at times. Learning the root words that make up this terminology can make the rest of the course significantly easier. **You will have a test on the ODD root words within the first week of class.** Study them however YOU learn best. Make flashcard, add them to a virtual study site like Quizlet, rewrite them, or draw pictures. Do whatever works for you. It is highly recommended that you break up the list you are responsible for and review them throughout the summer. Cramming them in at the last minute will likely be ineffective. The even numbered word roots in the list will be tested on at another point in the year so if you'd like to get ahead, you can work on those too.

Word Roots List

1	a-; an-	no; lacking; none
2	ab-	away from; out from
3	ac-	to; toward
4	-aceus; -aceous	of or pertaining to
5	acr-; acro-	extreme; peak
6	ad-	to; toward
7	adeno-	gland
8	-al	having character of
9	alb-	White
10	allo-	other
11	amph-; amb-	both
12	an-	not; without
13	ana-	up; away
14	andro-	masculine; man
15	ante-	before; ahead of time
16	antero-	front
17	antho-	flower
18	anti-	against
19	ap-	to; toward
20	aqu-	water
21	archaeo-	primitive; ancient
22	arthro-	Joint
23	-ase	referring to enzyme activity
24	-ate	used in forming verbs from nouns
25	-ation	used in forming nouns from verbs

26	auto-	self
27	bene-	well; good
28	bi-	two; twice; double
29	bio-; bi-	life; living
30	-blast	sprout; germ
31	brachi-	having arms
32	branchi-	having fins
33	bronch-	windpipe
34	carb-	coal; carbon
35	cardi-	heart
36	carn-	meat
37	carp-	fruit
38	carpal-	wrist
39	caud-	tail
40	cell-	storeroom; chamber
41	centi-	hundredth
42	centr-	center
43	cephal-	head
44	chem-	referring to chemistry
45	chlor-	green
46	chondr-	cartilage
47	chrom-; -chrome	color
48	-cide	killing
49	circum-	around; about
50	co-	with; together

51	cocc-	seed
52	coel-	hollow
53	coll-	glue
54	com-	with; together
55	con-	with; together
56	contra-	against
57	corp-	body
58	cotyl-	cup
59	counter-	against
60	crypt-	hidden; covered
61	-cule; -culus	added to nouns to form diminutive
62	cuti-	skin
63	cyan-	blue
64	-cycle; cycli-	ring; circle
65	cyst-	bladder; pouch
66	cyt-; -cyte	cell; receptacle
67	deca-	ten
68	deci-	tenth
69	demi-	half
70	dendr-	tree
71	dent-	tooth
72	derm-	skin
73	di-	two; double
74	dia-	through; across
75	digit	finger; toe
76	dis-	apart; out
77	dorm-	sleep
78	dors-	back
79	du-; duo	two
80	-duct	lead
81	dynam-	power
82	dys-	ill; bad
83	ec-	out of; outside
84	echin-	spiny; prickly
85	eco-	house
86	ect-	outside; without
87	en-	in; into
88	-en	made of
89	encephal-	brain
90	end-; ent-	within; in
91	enter-	intestines
92	-eous	nature of, like
93	epi-	on; above
94	erythro-	Red

95	eu-	well; good; true
96	extra-	beyond; outside
97	ex-	out of
98	-fer	bear; carry; produce
99	fibr-	fiber; thread
100	-fid; fis-	divided into; split
101	-flect; -flex	bend
102	flor-	flower
103	foli-	leaf
104	gastro-	stomach
105	-gen; -gine	producer; former
106	-gene; gene-	origin
107	-gest	carry; produce
108	glob-	ball; round
109	-gon	angle; corner
110	-gony	offspring; generation
111	-graphy; -graph	writing; record
112	grav-	heavy
113	gymno-	naked
114	gyn-	female
115	gyr-	ring; circle; spiral
116	haem-; hem-	blood
117	hepat-	liver
118	herb-	grass
119	hetero-	different; other
120	hex-	six
121	hist-	tissue
122	holo-	entire; whole
123	homo-	same; alike
124	hydr-	water
125	hypo-	beneath; under; less
126	hyper-	above; beyond; over
127	hypno-	sleep
128	-ic	Added to nouns to form adjectives
129	ichthy-	fish
130	im-	not
131	in-	to; toward; into
132	in-	not
133	-ine	of or pertaining to
134	infro-	below; beneath
135	inter-	between
136	intra-	within; inside
137	-ion	go; come
138	-ism	a state or condition

139	iso-	equal; some
140	-itis	inflammation; disease
141	kilo-	thousand
142	lat-	side; flank
143	-less	without
144	leuc-	white; bright; light
145	lign-	wood
146	lin-	line
147	lip-	fat
148	lith-; -lite	stone; petrifying
149	-logy	study
150	-lysis; -lyte	dissolve; decompose
151	macr-	large
152	mal-	bad; evil
153	mamm-	breast
154	marg-	border; edge
155	med-	middle
156	meg-	great; million
157	mela-; melan-	black; dark
158	mes-	middle; half; intermediate
159	met-; meta-	between; along; after
160	-meter; -metry	way of measuring
161	micro-	small
162	milli-	thousandth
163	mis-	wrong; incorrect
164	mono-	one; single
165	mort-	death
166	mov-; -mot	move
167	morph-	shape; form
168	multi-	many
169	moll-	soft
170	myc-	fungal
171	myo-	muscle
172	neo-	new; recent
173	nephro-	kidney
174	neur-; nerv-	nerve; tendon
175	noct-; nox-	night
176	-nomy; -nome	distribute; arrange law
177	non-	not
178	not-	back
179	nuc-	center
180	ob-	against
181	ocul-	eye
182	oct-	eight
183	-oid	like in form or shape
184	olf-	smell
185	omni-	all

186	oo-	Egg
187	opthal-	eye
188	-osis	state or condition of
189	oste-	bone
190	-ous	full of; abounding in
191	ov-	egg
192	oxy-	sharp; acid; oxygen
193	paleo-	old; ancient
194	palm-	broad; flat
195	pan-	all
196	par-	beside; near; equal
197	path-; -pathy	disease; suffering
198	-ped	foot
199	pent-	five
200	per-	through
201	permea-	pass; go
202	phag-	eat
203	pheno-	show
204	phil-	living; fond of
205	phon-; -phone	sound
206	-phore	bearer
207	photo-	light
208	-phyte; phyt-	plant
209	-pod	foot
210	poly-	many; several
211	por-	opening
212	port-	carry
213	post-	after; behind
214	pre-	before; ahead of time
215	pro-	forward; favoring
216	proto-	first; primary
217	pseud-	false; deceptive
218	pulmo-	lung
219	quadr-	four; four-fold
220	quin-	five
221	radi-	ray; energy in rays
222	re-	again; back
223	ren-	kidney
224	rhiz-	root
225	rubr-	red
226	saccharo-	sugar
227	sapr-	rotten
228	scler-	hard
229	sci-	know
230	scope	look; observe
231	semi-	half; partly
232	sept-	partition; seven

233	sex-	six
234	solv-	loosen; free
235	sperm-	seed
236	spher-	ball
237	-spire	breathe
238	spore	seed
239	stat-	standing; placed
240	stom-; -stome	mouth
241	strat-	layer
242	stereo-	solid; three dimensions
243	strict-	drawn tight
244	styl-	pillar
245	sub-	under; below
246	super-	over; above; on top
247	sym-; syn-	together
248	-taxis	movement

249	tele-	far off, at a distance
250	tetr-	four
251	thall	young shoot
252	therm-	heat
253	-tom	cut, slice
254	toxic	poison
255	trans-	across
256	tri-	three
257	troph-	one who feeds; well fed
258	ultra-	beyond
259	ur-	urine
260	ventr-	belly
261	vit-; viv-	life
262	xanthin-	yellow
263	zo-; -zoa	animal
264	zyg-	yolk

Assignment #2: Biological Photo Collection

For this assignment, you will “collect” 50 photographic examples of biological terms/concepts and create an electronic collection. Select any of the items from the Biological Collection List to include in your collection. This will introduce you not only to the language of biology, but also emphasize that biology is something that’s DONE not just memorized. Your biological Photo Collection must be emailed to me at caitlynsnelson@ccs.k12.nc.us as a Word document **before** the beginning of the period on the **second day of the semester. DO NOT wait until the last minute to email me an attachment of your collection. Sometimes technology doesn’t work the way it should; late assignments will NOT be accepted. No excuses.** If access to needed technology is an issue, be sure to email me in advance to make arrangements on how to complete your assignment (do not wait until the last minute to figure this out as your assignment will require quite a bit of time to complete).

Directions for the Biological Photo Collection:

1. “Collect” an item by taking a picture of it. **Define**, *in your own words*, the biological term/concept. Also, within a couple of statements, **explain** how the picture represents the term or concept. Use the Biological Collection List on page 9 to select terms/concepts for your collection.
2. Create a cover page. This should be the first page in your collection. It should include your name, the date, and AP Biology 2017.
3. Create a table of contents. On this page you should include a picture of you holding your object that will be included in each photo. (Be sure I can see your face AND the item in the same picture) You should also include the page number and the biological term/concept that is used on the pages in your collection.
4. Each page of your collection should include the following: Page number, term/concept being used, your photo representing the term/concept, definition, and explanation.
5. Be creative. If you choose an item that is internal to a plant or animal, like phloem, you could submit a photograph of the whole organism or a close up of one part, and then explain on the blog what phloem is and specifically where phloem is in the specimen.
6. Use original photos ONLY. You cannot use an image from any publication or from the internet. You must take the photo yourself. The best way to prove that the photo is your work is to have something in your picture that represents you (must be appropriate). This could be a key chain, pen, bracelet, small toy, etc. Place a picture of you with your proof object on the table of contents page of your collection.
7. You should only use natural items. Take a walk in your neighborhood, go to the zoo, go for a hike in the woods, etc. Humans are natural items and may be used, but only for a maximum of three entries.
8. This is an individual project. While brainstorming, discussing, and even going on collecting adventures together is welcome, your items and photos are to be unique. With over 90 concept choices, probability says there is a very slim chance that any two students will have the same items chosen from their list. Therefore, if you and another student have very similar portfolios, you will both receive a zero for the assignment.

9. You can only use a biological term/concept once. No term/concept should be repeated in your collection.
10. Be careful and respectful! Never touch plants and animals you are unfamiliar with. Don't kill or hurt any organisms. Don't remove an organisms from the natural environment.

Rubric for Biological Photo Collection			
Points	Biological Photo Collection Entry (per photo)	Points	Table of Contents
1	Original photo used for entry	3	Collection emailed to teacher
1	Biological term/concept identified	2	Picture of you w/proof
1	Biological term/concept defined in own words	10	Each biological term/concept listed in order that it appears in collection
2	Biological term/concept and photo relationship fully explain	10	Collection is easy to follow and neatly presented
* Points in this selection are awarded in an all or none format. If the guideline is not <u>fully</u> met, no points will be awarded.			

Biological Collection List

1. Adaptation of an animal
2. Adaptation of a plant
3. Altruistic behavior
4. Amniotic egg
5. Analogous structures
6. Animal that has a segmented body
7. Anther and filament of stamen
8. Archaeobacterial
9. Asexual reproduction
10. ATP
11. Autotroph
12. Auxin producing area of a plant
13. Basidiomycete
14. Batesian mimicry
15. Bilateral symmetry
16. Biological magnification
17. C3 Plant
18. C4 Plant
19. CAM Plant
20. Calvin Cycle
21. Cambium
22. Cellular Respiration
23. Coevolution
24. Commensalism
25. Connective tissue
26. Cuticle layer of a plant
27. Detritivore
28. Dominant vs. recessive phenotype
29. Ectotherm
30. Endosperm
31. Endotherm
32. Enzyme
33. Epithelial tissue
34. Ethylene
35. Eubacteria
36. Eukaryote
37. Exoskeleton
38. Fermentation
39. Flower ovary
40. Frond
41. Gametophyte
42. Genetic variation within a population
43. Genetically modified organism
44. Gibberellins
45. Glycogen
46. Gymnosperm cone-male or female
47. Gymnosperm leaf
48. Hermaphrodite
49. Heterotrophy
50. Homeostasis
51. Homologous structures
52. Hydrophilic
53. Hydrophobic
54. Introduced species
55. Keystone species
56. Krebs cycle
57. K-strategist
58. Lichen
59. Lipid used for energy storage
60. Littoral zone organism
61. Long-day plant
62. Meristem
63. Modified leaf of a plant
64. Modified root of a plant
65. Modified stem of a plant
66. Mullerian mimicry
67. Mutualism
68. Mycelium
69. Mycorrhizae
70. Niche
71. Parasitism
72. Parenchyma cells
73. Phloem
74. Pollen
75. Pollinator
76. Population
77. Predation
78. Prokaryote
79. R-strategist
80. Radial symmetry (animal)
81. Redox reaction
82. Rhizome
83. Seed dispersal (animal, wind, water)
84. Spore
85. Sporophyte
86. Stigma and style of carpel
87. Succession
88. Taxis
89. Territorial behavior
90. Tropism
91. Unicellular organism
92. Vestigial structures
93. Xylem

Example Entries for Photo Collection

Notice the toy giraffe in the pictures below. This is the student's proof object and is used to demonstrate that the photographs in the entries are indeed their original. **Make sure you have your proof object in each of your photos.**

4. Detritivore



This is a picture of an earthworm. The earthworm represents a detritivore. A detritivore, also called a decomposer, is an organism that consumes non-living organic materials (corpses, fallen plant material, and wastes) to obtain its energy and nutrients. They can

10. Modified Leaf



This is a picture of pine needles. Pine needles are an example of a *modified leaf* of a plant. A modified leaf is one that has adapted to perform another function, other than photosynthesis and transpiration. A pine needle's shape functions to retain moisture, which is helpful in dry and windy areas.