Building a Scientific Vocabulary

Activity

Biology 112/111

Building a Scientific Vocabulary

Scientists give names to discoveries, concepts, theories, and inventions using classical Latin and Greek roots, prefixes, and suffixes.

root -> origin or source

prefix -> word element beginning various words (e.g. "un-" in "unhappy")

suffix -> word element at the end of a word (e.g. "-ly" in "quickly")

A simple science root word can provide clues to numerous other words, greatly reducing the amount of memorization necessary to master new vocabulary.

Biology has a larger vocabulary than any other branch of science, but fortunately nearly all biological terms contain roots, prefixes, and suffixes with predictable meanings.

ACTIVITY

Below are some roots, prefixes and suffixes found in biological vocabulary. Copy the lists into your notebook and try to provide a meaning for each. Write your meaning beside the root, prefix or suffix in your notebook. Help each other.

Example: anti -> against, opposite

alb	-cide	intra	osteo	semi
ambul	circ	-ion	ov	sphere
ante	crani	-ist	para	therm
arbor	exo	kilo	ped/pod	tox
-arium	eco	lact	photo	trans
arth	-ectomy	macro	pneu	troph
auto	endo	micro	poly	ven
bio	hemi	mono	port	viv
cap	herb	mort	post	vor
cardi	hetero	mut	pseudo	zoo
cephal	hom	neo	psych	
chlor	hyper	nom	pulmo	
chrom	hypo	-ology	sci	

Autobiography Poem (Ages 11 and Up)
Group Size: Any Size
Time Line: 30 minutes
Equipment Needed: Paper, pencil or pen, the 10 lines of information that will need to be included
Space Required: classroom
Activity Description:
On the first day of school tell your students that their first assignment will be to write a poem. You will hear moans and groans at this point, especially since you might have a math class. Tell them it will be the easiest poem they have ever w because it will be about them.
1. The first line is their first name,
2. The second line is three words that describe themselves,
3. The third line is three things they like,
4. The fourth line is three things they do not like,
5. The fifth line is three movies they have seen (could do books they have read, but movies usually get a better respons
6. The sixth line is things they are looking forward to…,
7. The seventh line is three things they like about school,
8. The eighth line is two goals they have,
9. The nine line is a place they would like to visit, and
10. The tenth line is their last name. You could adjust any of these lines to suit your classes.

Unit 1 - The Cell

(Chapters 1, 7, 8 and 9)

Chapter 1 - The Science of Biology (Page 2)

Section 1-2 - How Scientists Work (Page 8)

Designing an Experiment

Make an Observation

Ask a Question

Form a Hypothesis

Set Up A Controlled Experiment

Record Observations

Analyze the Results

Draw a Conclusion

7 steps
=

Matching Exercise

A hypothesis is a proposed scientific explanation for a set of observations. It must be stated in a way that enables it to be tested.

Factors in an experiment that can change are called variables. (equipment, type of material, amount of material, temperature, light)

A controlled experiment has only one variable that changes. All others are kept unchanged (controlled).

manipulated variable - the variable that is deliberately changed

responding variable - the variable that is observed and that may change in response to the manipulated variable

observations - information obtained using the five senses

Scientists keep written records of their observations, or data. Sometimes drawings are included.

Evaluate the hypothesis. Is it supported or refuted/rejected?

Living Things Suddenly Appearing

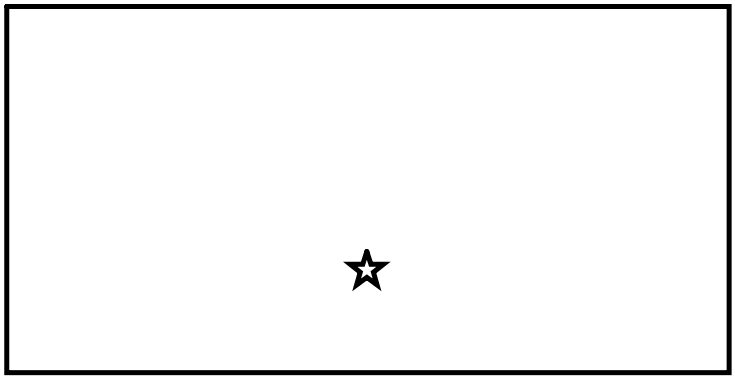
Recipe for Mice

1. Place wheat husks in a jar.
2. Add sweaty underwear to the jar.
3. Leave husks and underwear in the jar for twenty-one days.

Recipe for Bees
Page 8

P2 S8

1. Kill a bull during the first thaw of winter.
2. Build a shed.
3. Place the dead bull on branches and herbs inside the shed.
4. Wait for summer. The decaying body of the bull will produce bees.



How do new living things, or organisms, come into being? ✓

Hypothesis: Life can arise from non-living matter.

spontaneous generation or abiogenesis

abiogenesis
opposite life become

Francesco Redi

Born: February 18, 1626
Place: Arezzo, Italy

Points of Interest:
1. Redi's father was the personal physician of the Grand Duke of Tuscany.
2. Redi became a physician.
3. Undertook a number of experiments to improve medical and surgical procedures.
4. Composed many literary works.
5. Attempted to disprove the theory of abiogenesis.

Died: March 1, 1698
Place: Pisa, Italy

http://dictionary.reference.com/browse/Redi?jss=1

Redi's Experiment on Abiogenesis

(Page 9)

Observations: Flies land on meat that is left uncovered. Later, maggots appear on the meat.

Question: where did the maggots come from?

Hypothesis: Maggots come from the flies.

Controlled Variables: meat, jars, location, time, ...

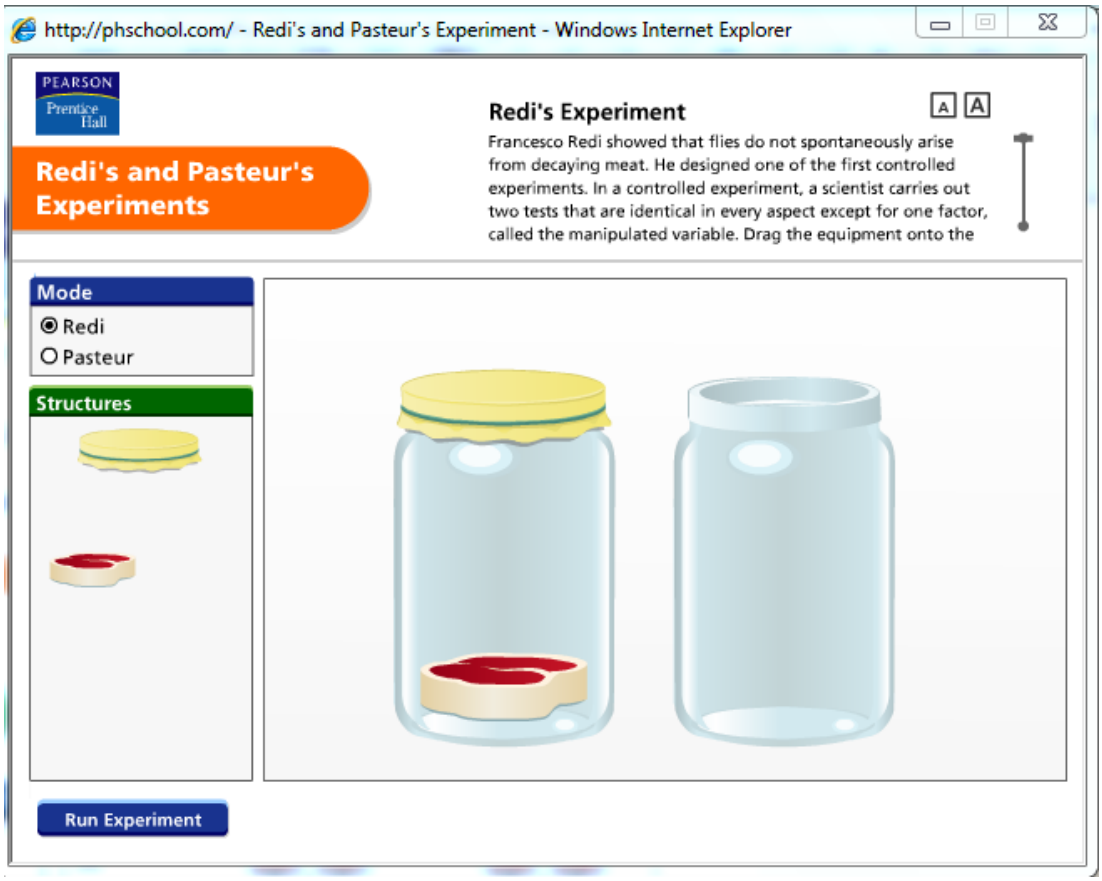
Manipulated Variable: cover

Responding Variable: maggots

Conclusion: Flies laid eggs and maggots developed from the eggs.

* reject/refute abiogenesis

Active Art - Page 9



Redi's Experiment on Abiogenesis

(Page 9)

Observations: Flies land on meat that is left uncovered. Later, maggots appear on the meat.

Question: Where do the maggots come from?

Hypothesis: Flies produce maggots.

Controlled Variables: jars, type of meat, location, temperature, time

Manipulated Variable: gauze covering

Responding Variable: whether maggots appear

Conclusion: Maggots only form when flies come in contact with meat.

The spontaneous generation of maggots did not occur.

Repeating Investigations

A key assumption in science is that experimental results can be reproduced. Scientists expect to test one another's investigations.

John Needham - Page 11

Lazzaro Spallanzani - Page 11

Louis Pasteur - Page 12

John Needham

He hypothesized that spontaneous generation could occur under certain conditions. He heated a sealed bottle of gravy . Needham assumed that heating the gravy killed al animalcules(bacteria) in the gravy

He found that the contents of the bottle was swarming with activity after several days.

His results supported spontanous generation

Attachments

Two_Types_of_Cells__Prokaryotic_and_Eukaryotic.asf

Bacteria.asf