

# Lab 2a The scientific method, oxidation, and skin

Name \_\_\_\_\_

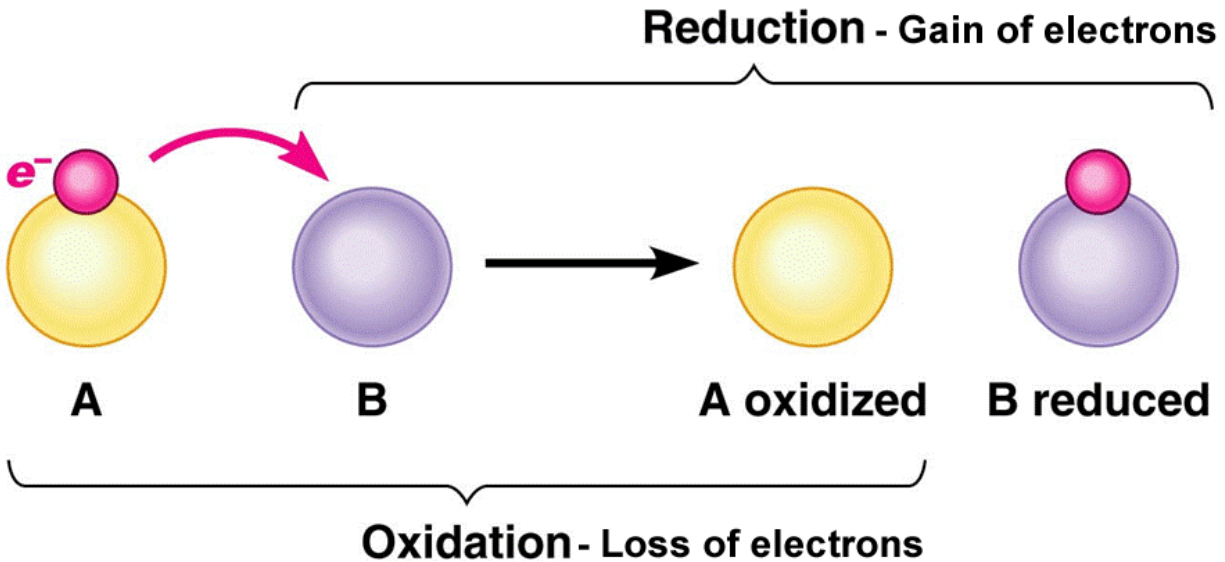
Seat number \_\_\_\_

## Objectives:

- A. Brief background on oxidation
- B. Oxidation experiment
- C. Skin model
- D. Human scalp
- E. Questions

### A. Brief background on oxidation

A freshly cut apple turns brown, a bicycle fender becomes rusty and a copper penny suddenly turns green. What do all of these events have in common? They are all examples of a process called **oxidation**. Oddly enough, oxidation does *not* have to involve oxygen. *Oxidation is the loss of electrons from an atom.*



In the body excess oxidation can form destructive forces called free radicals that can damage DNA. Antioxidants, such as Vitamin C, can slow down the formation of free radicals. Antioxidants suppress the release of electrons.

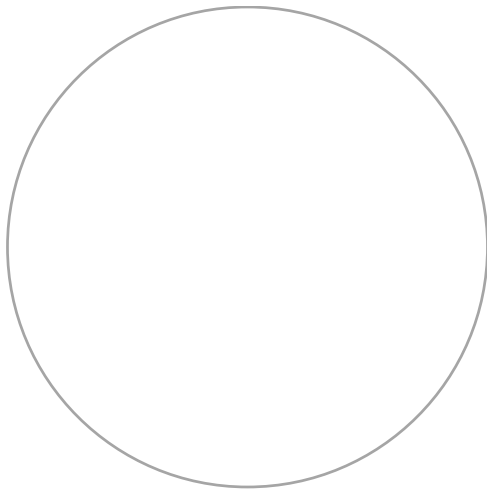
When the oil in our skin, **sebum**, oxidizes, it forms a dark mass an **open comedo** or blackhead. A **closed comedo** or pimple is usually white because it is not open to the surface of the body.

## Lab 2a The scientific method, oxidation, and skin

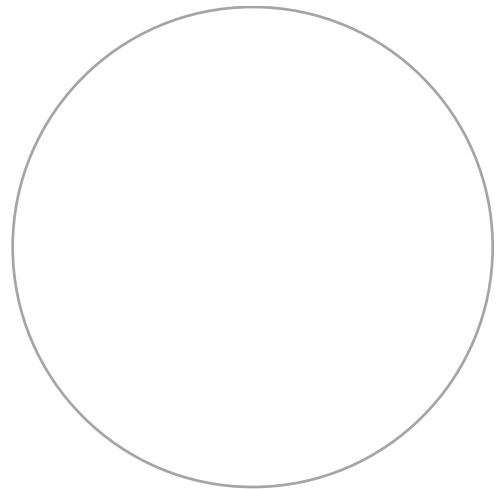
### B. Oxidation Experiment

(You may work with a partner)

- 1) Peel and cut 2 large, *thin* slices of the fresh material.
- 2) Place one thin slice in an open container to serve as the **control group**. Add water with the dropper to soak the top of the slice.
- 3) Place the second slice in an open container to serve as the **experimental group**. Use a dropper to soak the top of the other slice with the antioxidant.
- 4) *Draw* the slices, within minutes after you cut them. Measure their length in centimeters (cm) and set them aside to allow for oxidation.



Control Group



Experimental Group

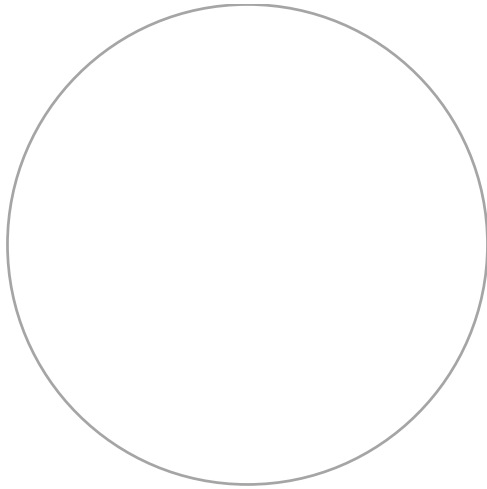
- 5) Write a hypothesis based on what you have read about antioxidants. Predict what you think will happen with the control and experimental groups.
  - a) \_\_\_\_\_
- 6) Wait for 20 to 30 minutes; then continue onto the next page

*While you wait, why not do parts C and D?*

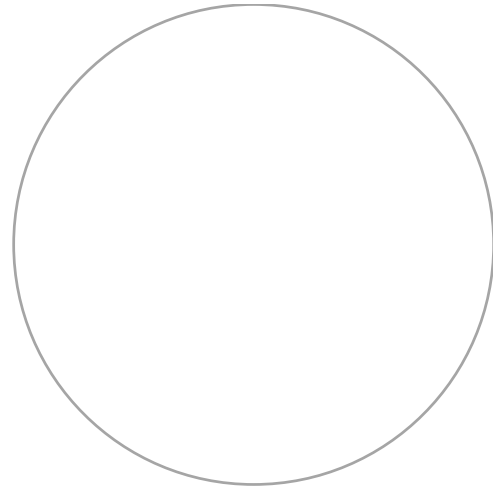
## Lab 2a The scientific method, oxidation, and skin

- 7) After 20-30 minutes, ask someone in your lab to estimate the percent that your specimen in each plate has darkened. Do not tell them which one is the experimental plate to avoid bias. For help, see the sidebar.
- 8) Draw your specimens again.

0-5 %	looks freshly cut
6-10 %	some darkening
11-20%	moderate darkening
>20%	very dark

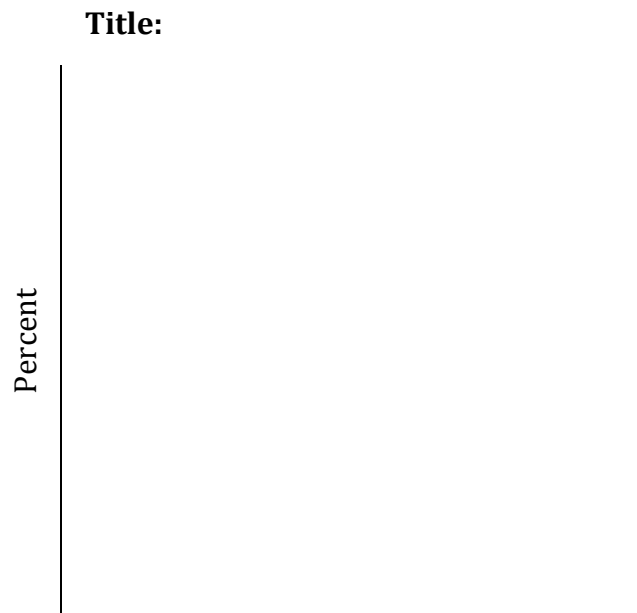


Control Group



Experimental Group

- 9) Graph your results on the following page.
- Label the Y-axis percent of darkened fruit. Divide this vertical axis between 0 and 20 % evenly.
  - Label the X-axis with 2 words; experimental and control.
  - Write a **descriptive title** for your graph across the top of the graph.
  - Graph your data with bars, dots with lines or another method of your choice.
- 10) Clean and dry the plates.



## Lab 2a The scientific method, oxidation, and skin

### C. Skin Model

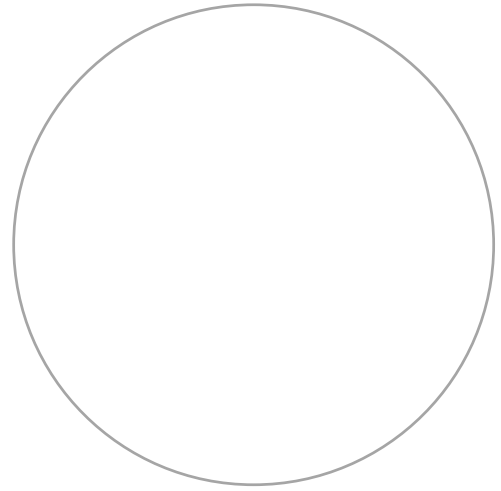
Locate the hair shaft, hair root, hair follicle and sebaceous gland.

### D. Human Scalp

- 1) Examine a sebaceous gland in human scalp on scanning power and record magnification.
- 2) Draw and label the following
  - a) Hair root (sometimes there is a hair root there and sometimes it has fallen out and the space where it was looks empty)
  - b) Hair follicle (cells around the hair root)
  - c) Sebaceous gland (contains sebum) (see next page)



Sebaceous Glands 40×



\_\_\_\_\_ ×

*Remember to put the labels outside, and never in, the circles*

## Lab 2a The scientific method, oxidation, and skin

### E. Questions

- 1) Oxidation is the loss of \_\_\_\_\_
- 2) Substances that suppress oxidation are called \_\_\_\_\_
- 3) Sebum is found in this gland \_\_\_\_\_
- 4) Two groups in a typical scientific experiment are called the \_\_\_\_\_ and the \_\_\_\_\_
- 5) Did you accept or reject your hypothesis? \_\_\_\_\_
- 6) Biologically speaking, why does your hair get oily (think about what you read and labeled in the lab to come up with the answer)?