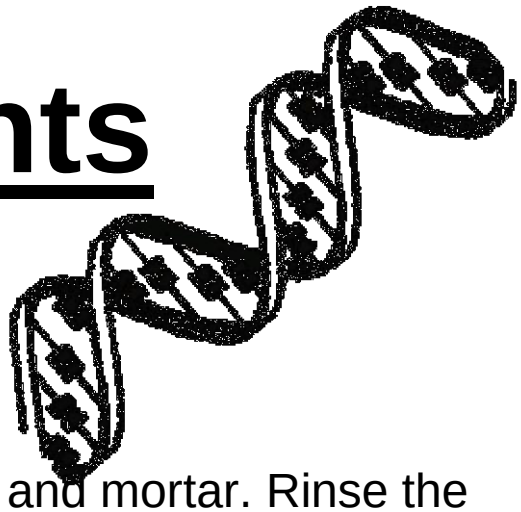
Common Scents



Procedure:

1. Always wear safety goggles.
2. Rinse and thoroughly dry the pestle and mortar. Rinse the pipette a few times by squeezing water from the rinse beaker to the waste beaker.
3. Place three cloves into the mortar.
4. Add a **small** squirt of alcohol to the cloves in the mortar.
5. Grind the cloves in the alcohol with the pestle. Continue this until the alcohol turns brown.
6. Using the pipette, squeeze 2 drops of the brown alcohol solution from the mortar to a piece of paper. Allow the alcohol to dry.
7. Smell the paper.
   What does it smell like? You have just extracted clove oil!
8. Choose an extract sample from the rack. Leave the test tube in the rack. Remove the stopper and pipette. Squirt two drops of the extract onto a new piece of paper. Allow the alcohol to dry, and smell the paper.
9. When you are finished, scrape the clove grounds into the waste beaker and wipe clean with a paper towel.

Why does the paper smell like cloves?

What other things have unique smells?

A Closer Look:

In this experiment, you used alcohol to extract an essential oil from cloves. This works because the essential oil is soluble in alcohol, while other parts of the clove are not. Solubility is the measure of how well one thing mixes with another; for example, cooking oil is not soluble in water. You may have noticed that the colored parts of plants (their pigments) are also soluble in alcohol, which is why the test tubes contain brilliantly colored liquid.

Essential oils have many uses. Some essential oils have medicinal properties. Clove oil has a chemical structure similar to another plant oil, taxol, which is a known anti-cancer agent. In addition, plants produce scented oils for warding off insects, fungus, and bacteria. Humans can use these oils for the same purposes. The most well known application of essential oils is in perfume manufacture. Expensive perfumes may contain hundreds of essential and synthesized oils, some in trace amounts.