

# Smelly Molecules

This activity is designed by ScienceGrrl Glasgow to look at molecules in plants and how changes in their structure can affect their properties. Participants test their skills at identifying which essential oil is from which plant then look at the structures of the molecules that give rise to the smells.

## The experiment

### You will need

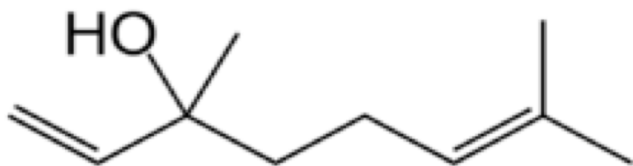
- Peppermint essential oil
- Citronella essential oil
- Sweet orange essential oil
- Lavender essential oil
- Tissue
- Petri dishes/sealable jars
- Labels

### Non-essential extension

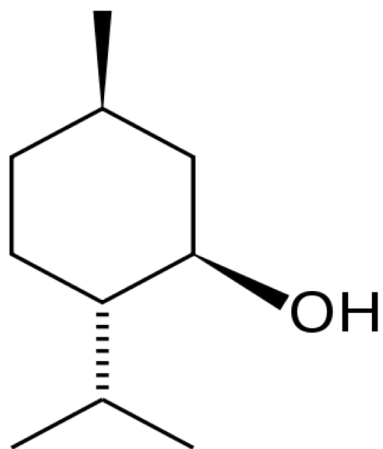
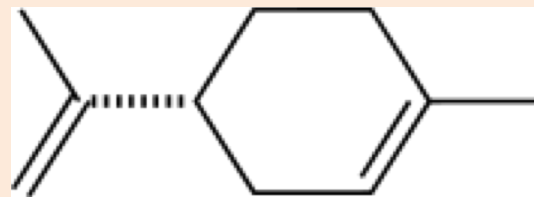
- Molecule building kit

1. Place a drop of each essential oil on a separate piece of tissue in a sealable jar
2. Create four labels saying Mint, Orange, Lemongrass and Lavender
3. Ask participants to smell each of the oils and label which one is from which plant
4. Show how the structures of the molecules that give rise to the smells are all made of carbon, hydrogen and oxygen.
5. Show that limonene does not contain oxygen
6. Ask participants to write down the formula of each molecule
7. Show that menthol and citronellol are isomers of each other (contain the same numbers of carbon, hydrogen and oxygen, but in different arrangements)

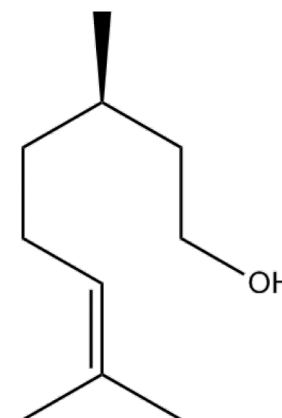
Linalool



Limonene



Menthol



Citronellol

### Extensions to the activity

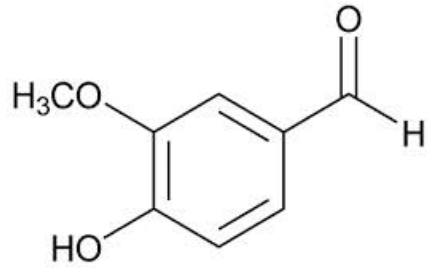
- Use molecular building kits to build each of the molecules to demonstrate the shapes and what isomers are.
- Add vanillin and Wintergreen to the activity

### Questions related to the activity

- Why does the shape of the molecule affect how it smells/tastes?
- Are any of the molecules charged?
- How might charge affect taste/smell?



Vanillin



Methyl salicylate

