**Naming/Drawing Functional Groups**

**YOYO:** Below is a picture of capsaicin, the molecule responsible for giving chili peppers their spicy taste. Using Table R, circle and label the functional groups. (Each point represents a carbon)



What are Functional Groups?

* Functional groups are a group of moles that are attached to organic molecules. The functional groups give the molecule its properties, regardless of what molecule contains it. Different functional groups have different physical and chemical properties.

Naming Functional Groups

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| --- | --- |
| Halides* Have one or more of the halogens as a branched group
* Naming Rules:
	+ Name the chain
	+ Add the halogen prefix
	+ Add location of the halogen
* Condensed Formula: CH3CHClCH2CH2CH3

Image result for 2 chloropentane* Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
 | Alcohols* The functional groups is (-OH)
* Naming Rules:
	+ Name the chain
	+ Add the –ol ending
	+ Add the location of the –OH
* Condensed Formula: CH3CH2OH

Image result for ethanol* Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
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| Ether* Ethers are made up of two carbon chains connected by an O in the middle
* Naming Rules:
	+ Identify the two chains and name them separately
		- Use Table P for the prefix, and use –yl as the suffix
	+ Add the word ether at the end
* Condensed Formula: CH3OCH2CH3

* Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
 | Aldehyde* The aldehyde functional group is a C with a double bond O and an H at the **end** of the molecule
* Naming Rules:
	+ Name the chain
	+ Add –al suffix (this is always at the end of the molecule, there is no need to add the location)
* Condensed Formula: CH3CH2CH2CH2CH2CH2CHO

* Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
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| Ketones* Ketones have a C double bonded to an O somewhere in the middle of the compound
* Naming Rules:
	+ Name the chain
	+ Add the suffix –one
	+ Add the location of the functional group
* Condensed Formula: CH3COCH3

Related image* Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
 | Organic Acids* Organic acids can easily be identified by the –COOH group at the end of the molecule
* Naming Rules:
	+ Name chain
	+ Drop the ending and add –oic acid
* Condensed Formula: CH3COOH

* Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
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| Amines* Amines can be identified by a single N somewhere in the compound
* Naming Rules:
	+ Name the chain
	+ Add the suffix –amine
	+ Give the location of the N
* Condensed Formula: CH3CHN2CH2CH2CH2CH2CH3

Image result for 3 heptanamine* Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
 | Amides* Amides also have an N, but the N must be connected to an H and a C which is double bonded to an O
* Naming Rules:
	+ Name the chain
	+ Add the suffix –amide
* Condensed Formula: CH3CH2CH2CH2CONH2

Image result for pentamide* Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
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| Esters* Esters are the products of a reaction between an organic acid and an alcohol
* They can be identified by the C double bonded to an O and another O somewhere in the compound
* Naming Rules:
	+ Name the chain bonded to the O first and add the –yl suffix
	+ Name the chain with the double bond =O last and add the suffix –oate
* Condensed Formula: CH3CH3COOCH2CH2CH3

Image result for ethyl propanoate* Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
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