# Organic Chemistry

9/18/18

CHONPS + the Halogens

Vitalistic Theory - all living things are created by a God or Gods and were not meant to be studied or created in a lab.

Organic Compounds contain carbon + hydrogen
"hydrocarbon"

C - 4 bonds - typical shape tetrahedral

Prefix - indicating the # of carbon in the parent chain.
* list is in table 2.2 pg 24 of text book.

endings - indicate type of bonds between carbon

| Ending | Bond | General Formula | Illustration | |
|---|---|---|---|---|
| -ane | all single between carbon | $C_nH_{2n+2}$ | C-C | |
| -ene | at least one double bond between carbon | $C_nH_{2n}$ | C=C | * |
| -yne | at least one triple bond between carbon | $C_nH_{2n-2}$ | C≡C | * |

* Double + Triple bonds require a location #

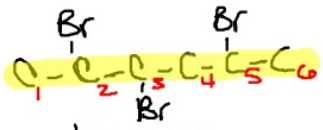
$C_2 \equiv C_3$ ex. 2-heyne

## Branches

Halogens - list 1st and if more than one list alpha order

fluoro, chloro, bromo, iodo

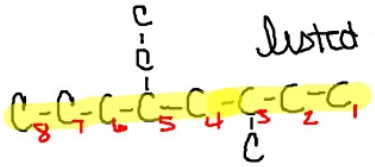
if there are multiples list all locators + matching prefix



2,3,5-tribromoheptane

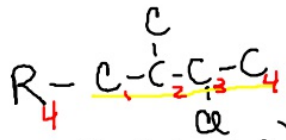
Alkyl - carbon branches  locator # - carbon # prefix + yl

listed in alpha order



5-ethyl-3-methyloctane

Complicated branches



4-(3-chloro-2-methyl butyl)-

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Vitalistic Theory - all living things were made by a God or Gods and were not meant to be worked with in a lab.

living organisms → carbon based → "hydrocarbon"

Nomenclature IUPAC

Parent Chain - longest continuous chain of carbon

Prefixes - indicate the # of carbon in the parent chain
* Table 2.2 on page 24

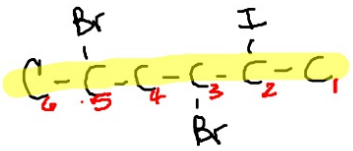
Endings - indicate the type of bonds between the carbon

| Ending | Meaning | General Formula | Example |
|---|---|---|---|
| -ane | all P.C. are single carbon to carbon | $C_nH_{2n+2}$ | C-C |
| -ene | the P.C. contains at least one double bond between carbon | $C_nH_{2n}$ (remove 2H for every additional double bond) | C=C * |
| -yne | the P.C. contains at least one triple bond between carbon | $C_nH_{2n-2}$ (remove 4H for every additional triple bond) | C≡C * |

* requires locator # to indicate position in the P.C., dbl + trpl take precidence in # over branches.

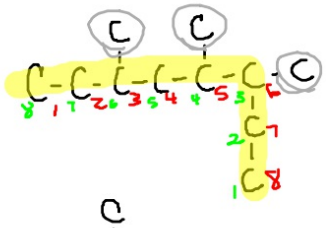
## Branches

Halogens - Bromo, Chloro, Fluoro, Iodo (list 1st and in alpha order)
- if multiples list grouped together



3,5-dibromo-2-iodohexane

Alkyl - Carbon based branches — # of carbon prefix+yl
list in alpha order, grouping multiples



3,4,6 ~~3,5,6~~

3,4,6-trimethyl octane