

skip:

4.16

4.17

Note that 4.18 is SODAR.

Read 4.19 ; but won't be
tested on it until after
chapter 9.

chapter 5 - Stereochemistry

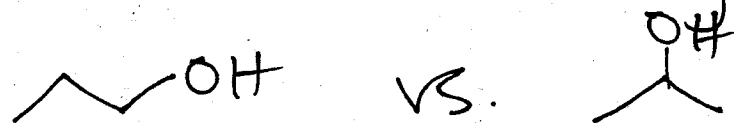
Chemistry in 3D.

Biological significance

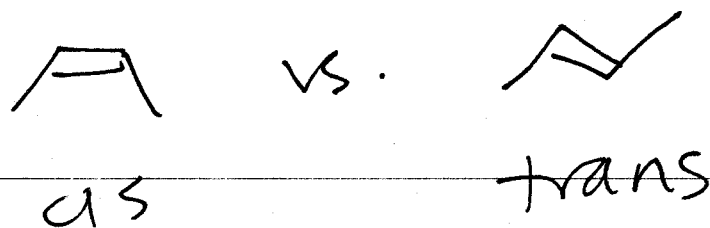
- * all but one of the 20 essential amino acids are "left-handed" — your body can't use a "right handed" one!
- * DNA is chiral
- * many drugs are chiral.
- * enzyme rxns — "lock + key"
- * everyday objects are chiral

Isoomers -

1. constitutional isomers - same mol. formula
different connectivity

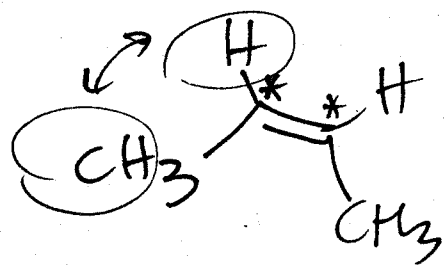


2. stereoisomers - same formula, same connectivity, different 3D arrangement.



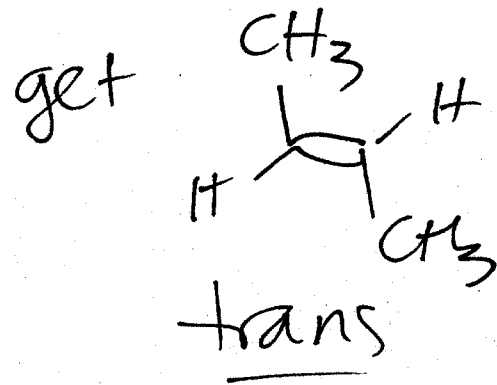
* stereoisomers cannot be interconverted by simple bond rotation. (Not conformers)

a. stereogenic center - an atom bearing groups such that switching two groups produces a stereoisomer



cis

swap the
CH₃ for
the H



comparisons
Types of Stereoisomers

b. enantiomers - nonsuperimposable
mirror images

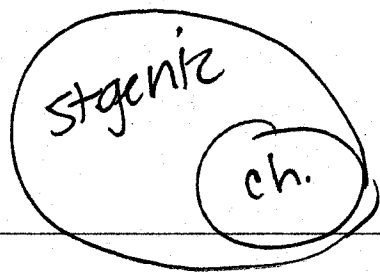
c. diastereomers - nonsuperimposable
not mirror images

(cis/trans)

A chiral molecule is defined as one that is not superimposable on its mirror image.

This is a property of an individual thing.

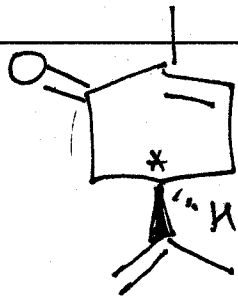
A chirality center - a tetrahedral atom w/ 4 different groups attached.



* if a molecule contains only one chirality center it will have an enantiomer.

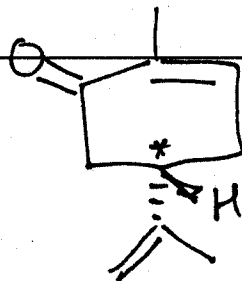
* if a molecule contains >1 chirality centers, now both enantiomers + diastereomers are possible.

carvone



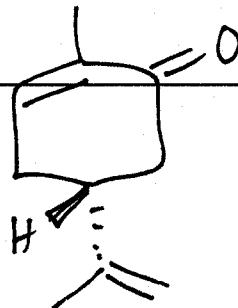
(R)

spearmint



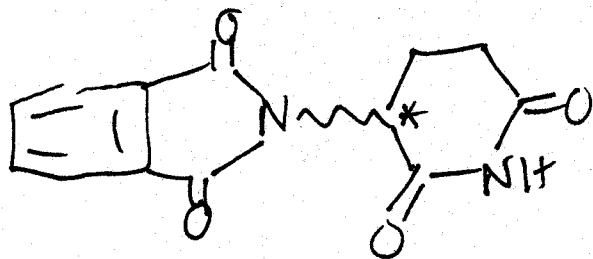
(S)

caraway



mirror image
of (S)

Thalidomide



originally produced as a
pair (mix) of enantiomers?

enantiomer A. treatment for
morning sickness

enantiomer B. caused major
birth defects.