

# Multiple Stereocenters

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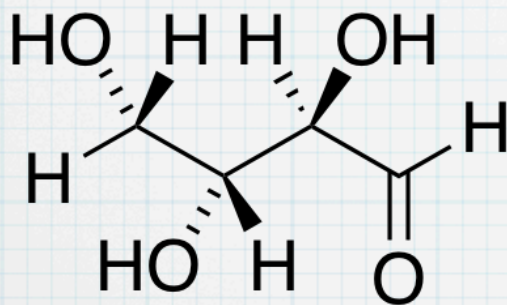
UCI Chem 51A  
Dr. Link

# Goals

- \* After this lesson you should be able to:
  - \* Identify multiple stereocenters in molecules
  - \* Determine the relationships between stereoisomers with multiple stereocenters
  - \* Identify meso compounds

# Stereochemistry Review

How many stereocenters?

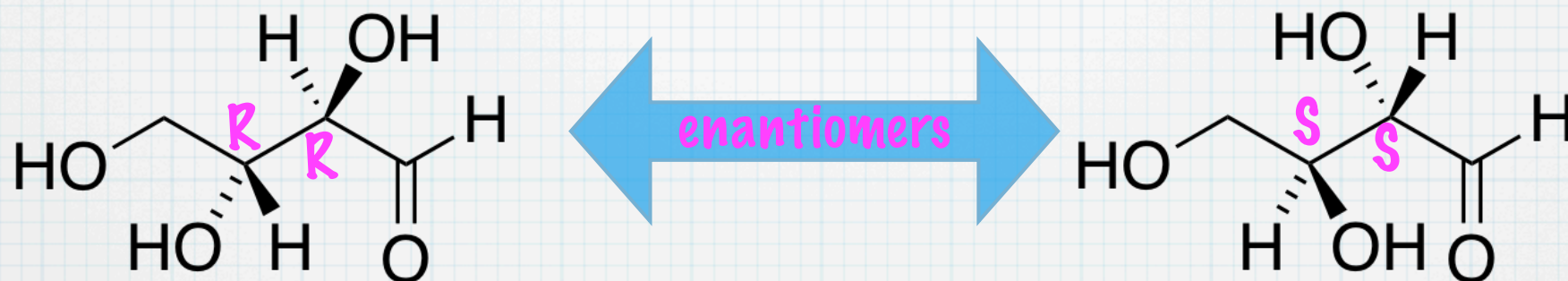


R or S?

Enantiomer?

# Diastereomers

\* Can we draw other stereoisomers?

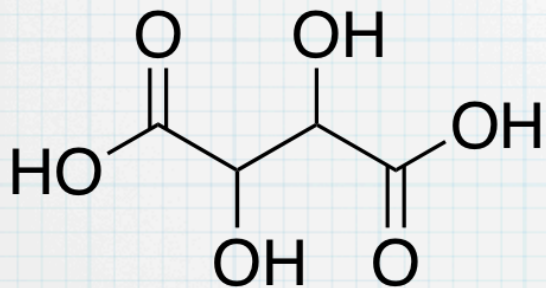


# Enantiomers vs Diastereomers

- \* **Enantiomers:** mirror images, not superimposable, **ALL** stereocenters inverted
- \* **Diastereomers:** stereoisomers, not mirror images, **NOT all** stereocenters inverted
- \* Note: There is no such thing as “dianteomers”!

Max # stereoisomers =  $2^n$   $n$  = # stereocenters

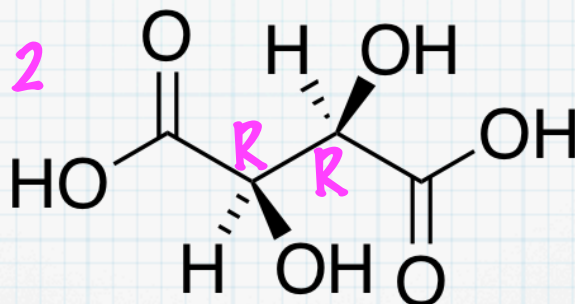
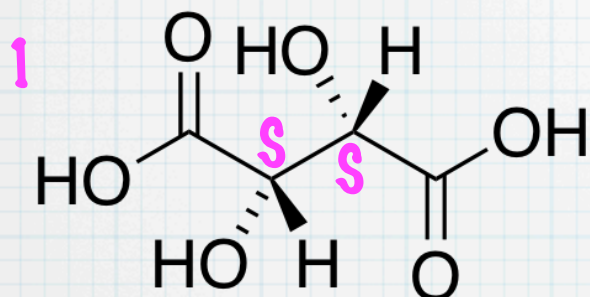
# How Many Stereoisomers?



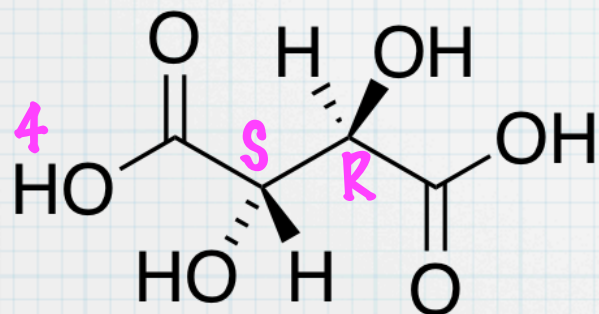
$$\text{Max \#} = 2^2 = 4$$

Relationships

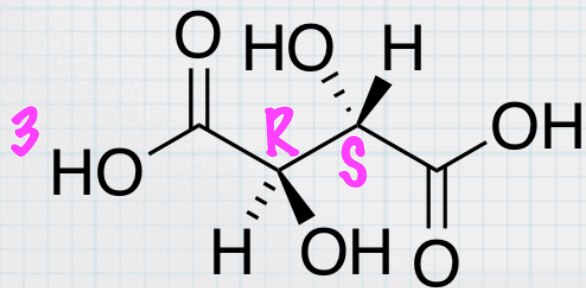
# Rotate/Flip!



definitely enantiomers



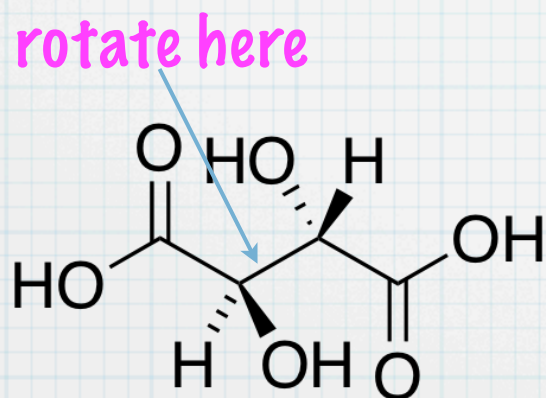
flip horizontal



flip vertical

# Meso Compounds

- \* Meso compounds: Appear to be enantiomers, but actually the same molecule!
- \* Watch out for planes of symmetry!



- \* Meso compounds are achiral!



# Wrapping Up

- \* Practice identifying all stereocenters in complex molecules
- \* Practice drawing all stereoisomers of a given compound
- \* Practice differentiating between diastereomers and enantiomers
- \* Practice identifying meso compounds
- \* Use your model kits!