

Course Chem 343 Lecturer Coellman  
 Day Wednesday Date 10/21/15  
 Notes Taken By Nolan Rlyth Total # of Pages 5

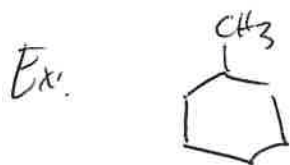
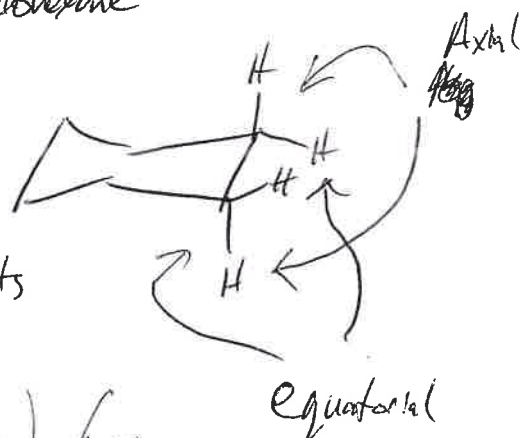
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Next week: office hour after class on Monday  
 Review session, chem 13371 Tuesday, 5 pm

Recall: Conformational analysis of cyclohexane

"Chair" conf. most stable

Axial vs. Equatorial - different environments  
 (for substituents)

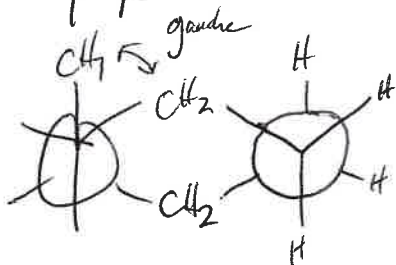


vs.



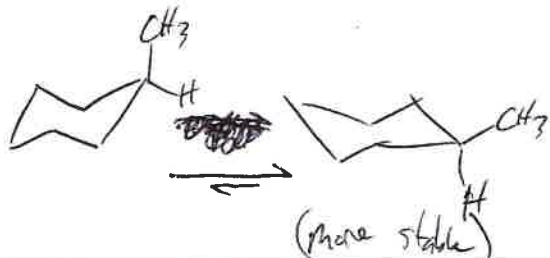
1,3-diaxial interactions

Newman proj.



Cyclohexanes almost always can access 2 chair conformations. Convert from one to the other, all ax  $\rightarrow$  eq and vice versa

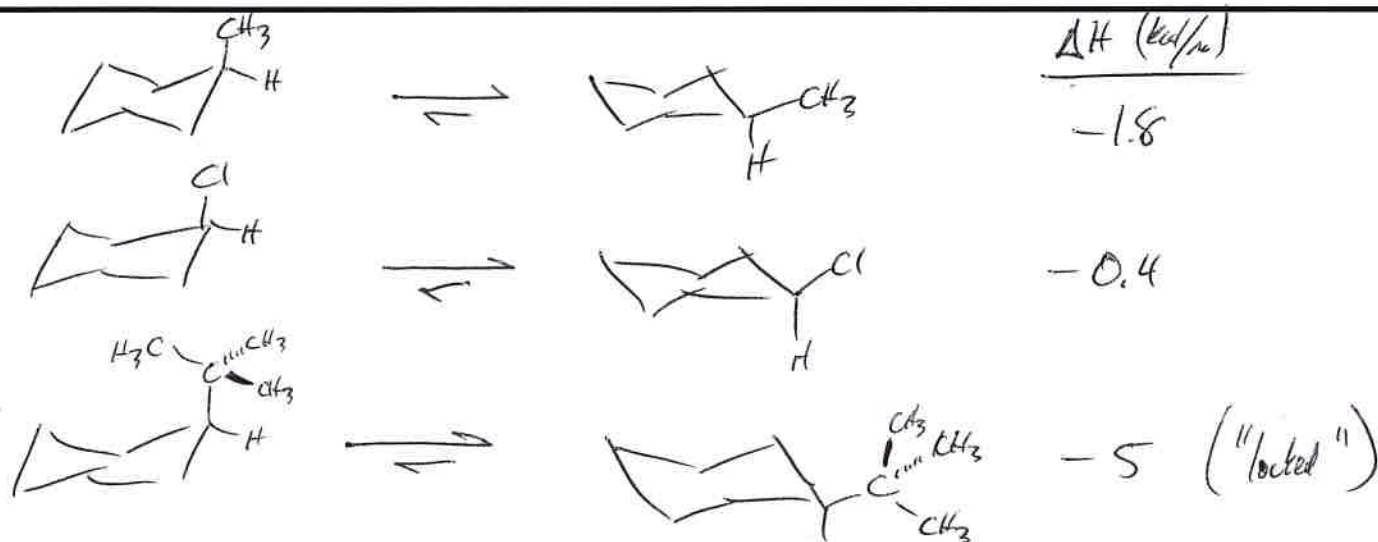
Ex.



Larger substituent size  $\rightarrow$  Larger preference for equatorial position

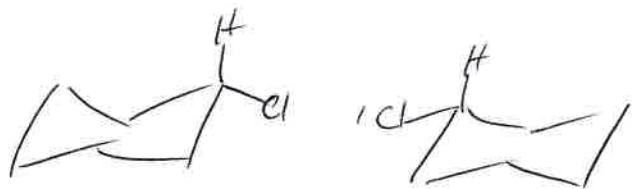
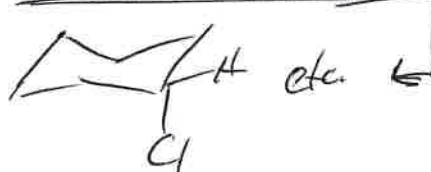
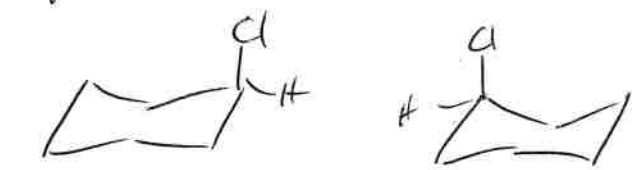
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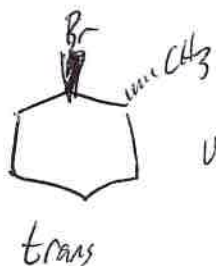
Do not be confused by different ways of drawing cyclohexane derivatives.

All are the same

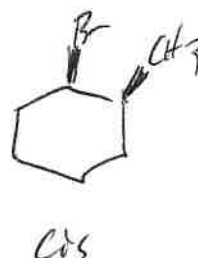


Disubstituted cyclohexanes

"cis" vs. "trans"  
 Same vs. opposite  
 side of ring

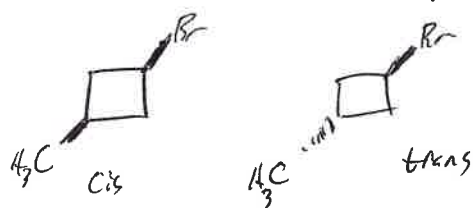


vs.

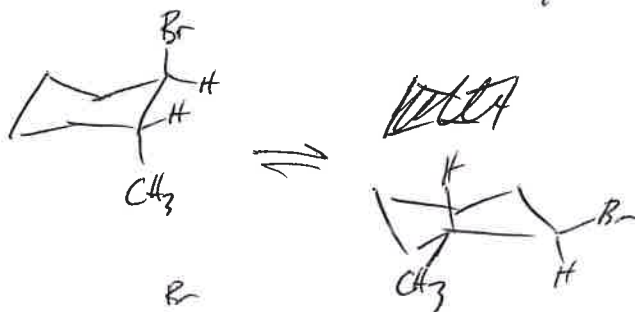


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Note: Cis and Trans used for all ring sizes and all  
 Sub. Spacings Conformations of disub. Cyclohexanes

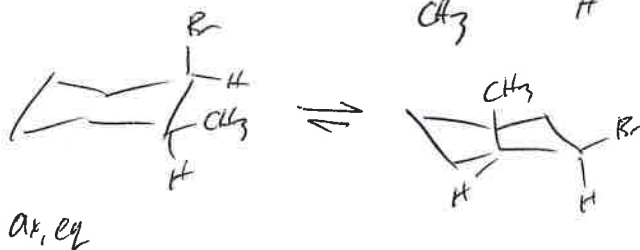


trans:

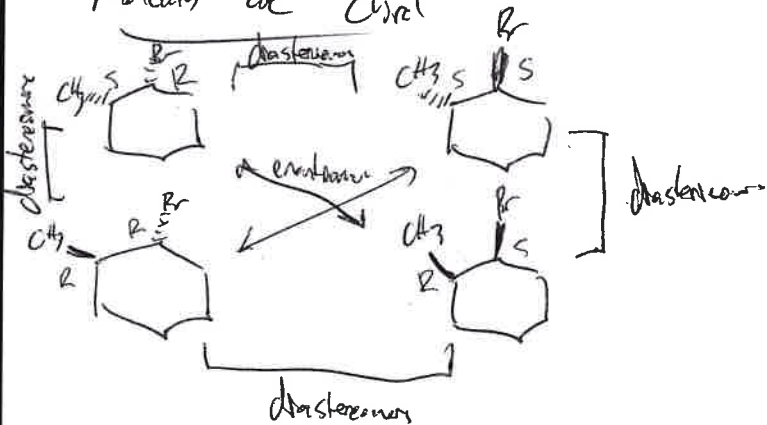


Work out relationships for  
 1,3 or 1,4 isomers

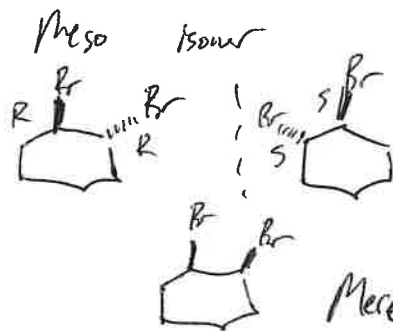
cis:



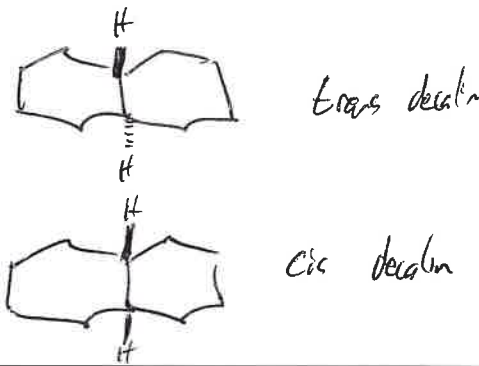
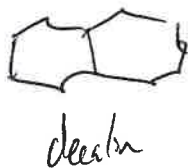
Molecules are chiral



IF substituents are the same

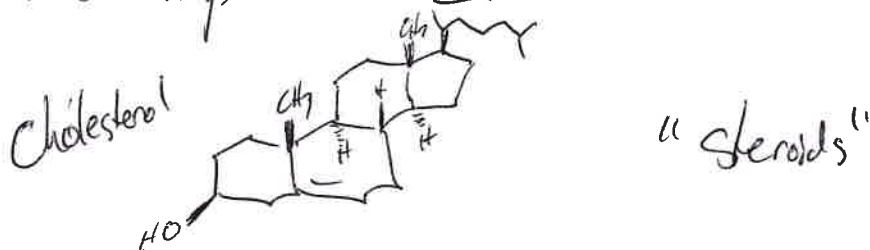


≥ 2 rings possible  
 IF rings share 1 bond,  
 "fused" rings

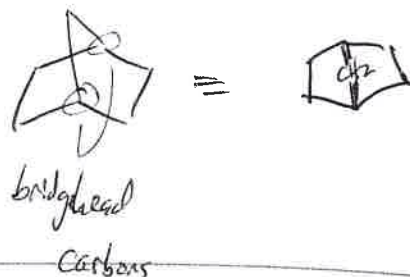
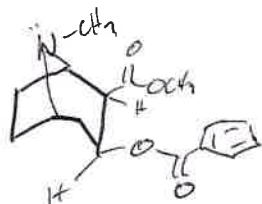


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Fused rings are very common in organic/biological chem

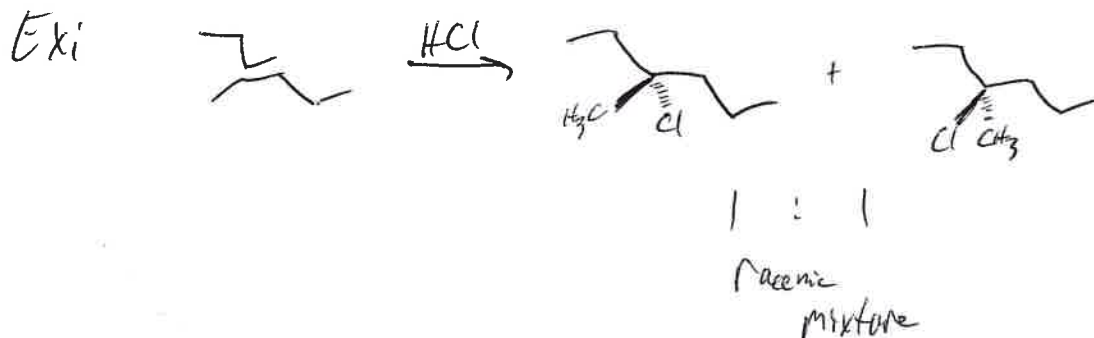


Bridged bicyclic systems — Ex: "norbornane"



Interplay between stereochemistry and reactivity:

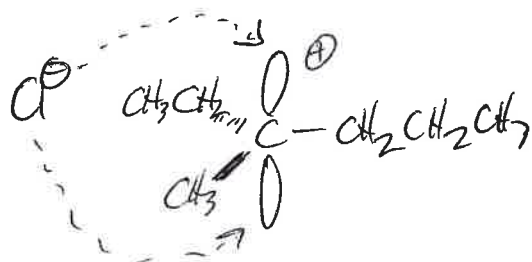
in general: Achiral starting material, form 1 stereocenter in product  $\rightarrow$  Racemic mixture



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Transition state for racemic product



Planar -  $\text{C}^{\ominus}$  attack equally likely from either side