

CHEM 321:
A METHOD FOR DOING RETROSYNTHETIC ANALYSIS

➔➔ IDENTIFY.....LIST.....REJECT & SELECT.....REPEAT ←←

1. IDENTIFY the CLASS of the target molecule
2. LIST (without prejudice) all the generic reactions that you have learned by which you could make this class of compound (not necessarily this *very* compound)
3. Review all the generic reactions in the list, REJECTING those that will not work to make your exact target molecule
4. SELECT, from those remaining, one generic reaction that you are sure will give you the exact compound you seek
 - the specific substrate for the proposed reaction will have the same number and bonding pattern of carbon atoms that the target has unless you are doing a C-C bond forming reaction
 - if doing a C-C bond forming reaction, the individual pieces will each have an atom connectivity such that once assembled they give the correct bonding arrangement
 - in either case, once you write the properly connected C atoms of the substrate, add to this skeleton (at the correct location) the necessary functional group, as demanded by the generic reaction you selected
 - write the necessary conditions and reagent(s) or steps over the reaction arrow.
 - Double-check to be sure that the reaction will work as desired and give the exact structure wanted
5. REPEAT steps 1 – 4 using the substrate you just wrote as your new target molecule
 - DO NOT try to figure out how to use an allowed starting compound – you'll get there automatically if you follow this procedure
 - Keep repeating the procedure until your SELECTED reaction permits you to use an allowed starting compound as its substrate