

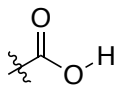
Molecular Fragments And Functional Groups

A. Introduction

Being unable to name compounds accurately is often that restrictive, but correctly interpreting molecular drawings, *eg* as an ester with the intended substituents, is usually vital. The problem is that there are a few ways to draw each functional group, and several widely used abbreviations for fragments that simply must be learned; chemists frequently draw the same molecule in different ways, and different chemists tend to favor different abbreviations. This sucks for you.

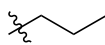
B. Fragments

a molecular fragment
cannot be isolated.

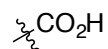


carboxyl

name of fragment

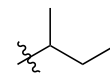


n-propyl

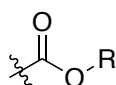


carboxyl

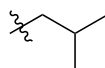
carboxylic acid



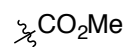
s-butyl



carboxyalkyl



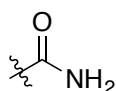
i-butyl



carboxymethyl



i-propyl



carboxamide

amide



t-butyl

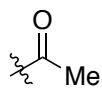


carboxamide

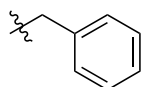
amide



ethyl



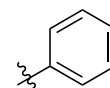
acyl



benzyl



acyl



phenyl



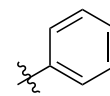
acyl



vinyl



acyl



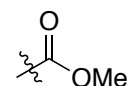
phenyl



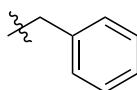
acyl



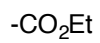
carbonyl chloride
acid chloride



carboxyalkyl



benzyl



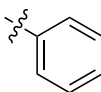
carboxyethyl

Ac

acyl

Bn

benzyl



phenyl



cyano or nitrile

CH₂C₆H₆

benzyl

Ph

phenyl

-COMe

acyl



phenyl



methoxy



cyano or nitrile



i-propyl



ethyl



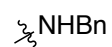
t-butyl



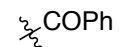
acetyl



phenoxy

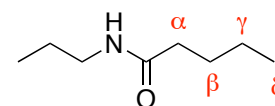
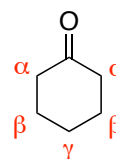
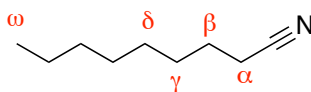
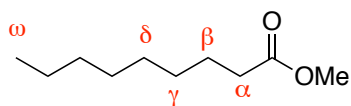


benzylamine



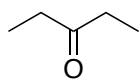
acyl

means last.

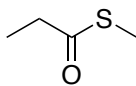


ω is last, δ is more specific

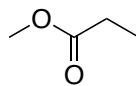
C. Expanded Forms Of Functional Groups



ketone



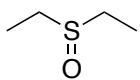
thioester



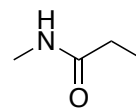
ester



aldehyde



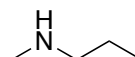
sulfoxide



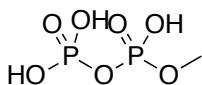
amide



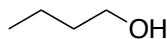
ester



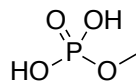
amine



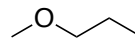
diphosphate



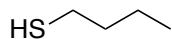
alcohol



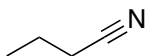
monophosphate



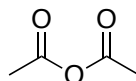
ether



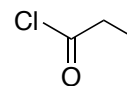
thiol



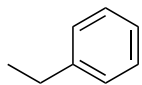
nitrile



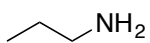
carboxylic acid anhydride



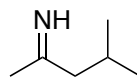
acid chloride



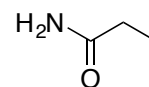
arene or phenyl



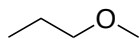
amine



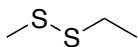
imine



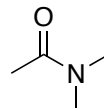
amide



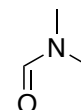
ether



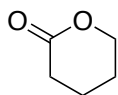
disulfide



amide



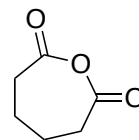
amide



lactam



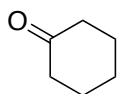
alkene



carboxylic acid anhydride



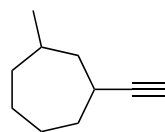
amide



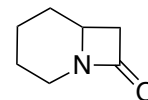
ketone



disulfide



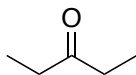
alkyne



amide or lactam

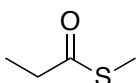
D. Abbreviated Forms Of Functional Groups

EtCOEt

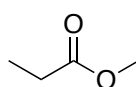


name of functional group
_____ketone_____

EtCO(SMe)



name of functional group
_____thioester_____

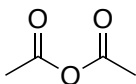
EtCO₂Me

name of functional group
_____ester_____

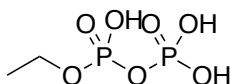
EtCOH



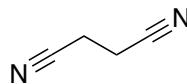
name of functional group
_____aldehyde_____

MeCO₂COMe

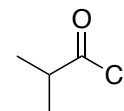
name of functional group
_____carboxylic acid anhydride_____

EtOP(O)(OH)OP(O)(OH)₂

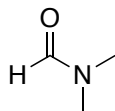
name of functional group
_____diphosphate_____

NCCH₂CH₂CN

name of functional group
_____nitrile_____

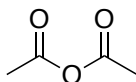
(CH₃)₂CHCOCl

name of functional group
_____acid chloride_____

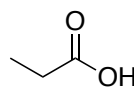
HCONMe₂

name of functional group
_____amide_____

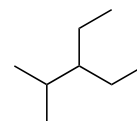
MeCOOCOMe



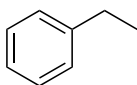
name of functional group
_____carboxylic acid anhydride_____

CH₃CH₂CO₂H

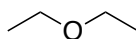
name of functional group
_____carboxylic acid_____

(CH₃)₂CHCH(CH₂CH₃)₂

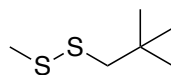
name of functional group
_____alkane_____

C₆H₅CH₂CH₃

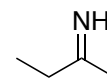
name of functional group
_____arene_____

CH₃CH₂OCH₂CH₃

name of functional group
_____ether_____

CH₃S₂CH₂C(CH₃)₃

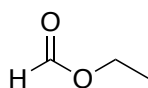
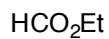
name of functional group
_____disulfide_____

CH₃CH₂CNHCH₃

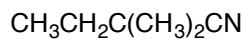
name of functional group
_____imine_____



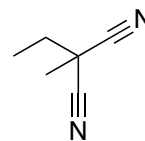
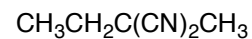
name of functional group
_____sulfoxide_____



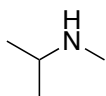
name of functional group
_____ester_____



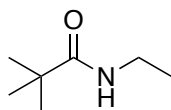
name of functional group
_____nitrile_____



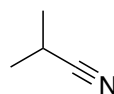
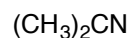
name of functional group
_____nitrile_____



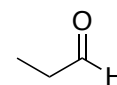
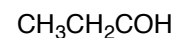
name of functional group
_____amine_____



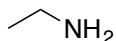
name of functional group
_____amide_____



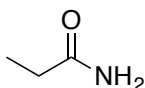
name of functional group
_____nitrile_____



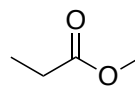
name of functional group
_____aldehyde_____



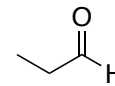
name of functional group
_____amine_____



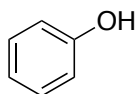
name of functional group
_____amide_____



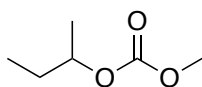
name of functional group
_____ester_____



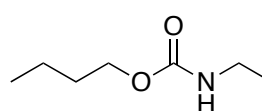
name of functional group
_____aldehyde_____



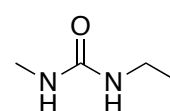
name of functional group
_____phenol_____



name of functional group
_____carbonate_____

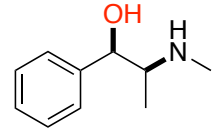
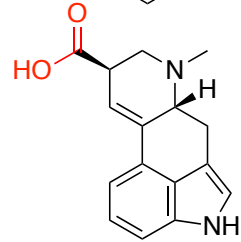
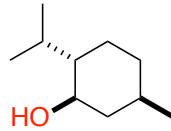
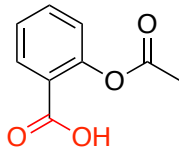
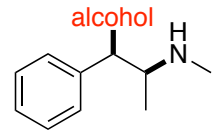
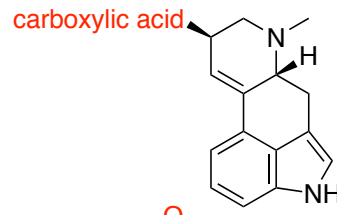
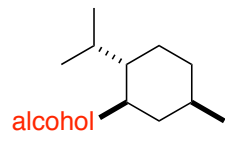
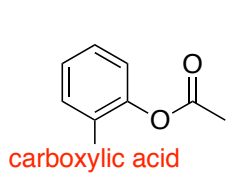


name of functional group
_____carbamate_____



name of functional group
_____urea_____

Find this question hard? Remember: go to the web and to figure out the answers for the maximum benefit **(do not look at a key!)**.

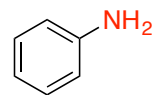
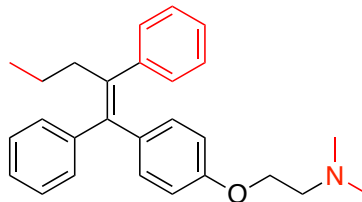
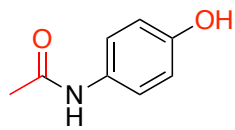
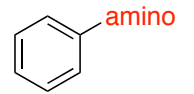
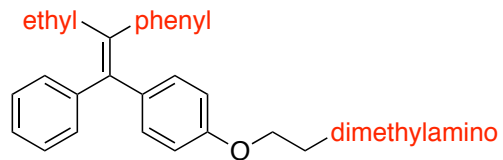
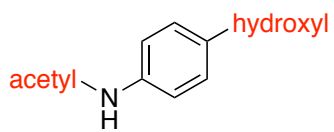


aspirin

menthol

lysergic acid (LSD)

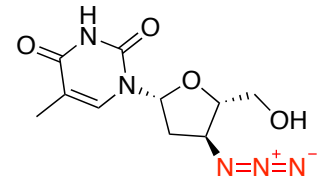
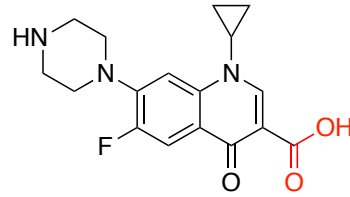
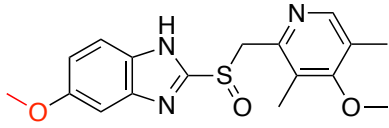
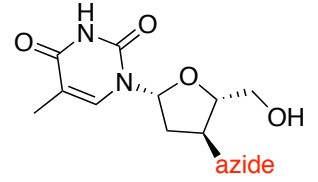
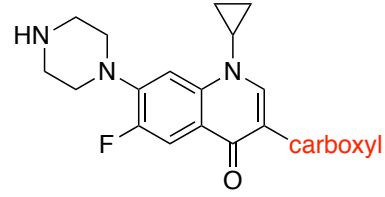
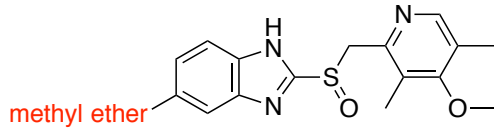
ephedrine



acetaminophen (tylenol)

tamoxifen

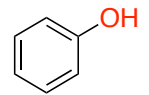
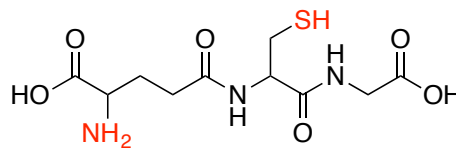
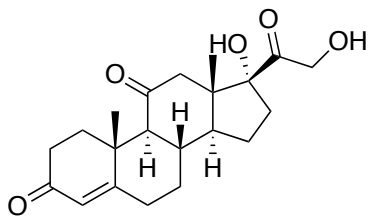
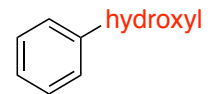
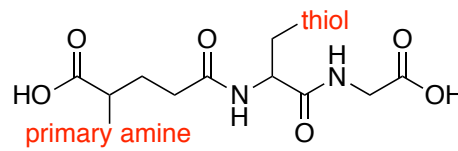
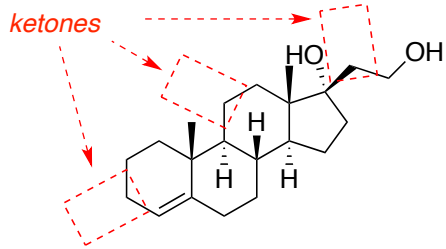
aniline



omeprazol

ciprofloxacin "cipro"

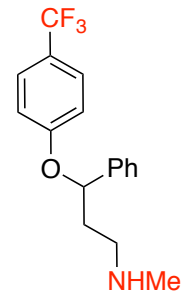
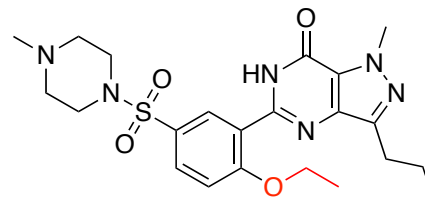
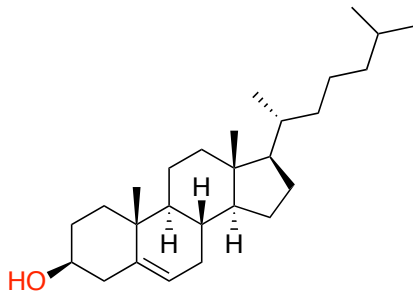
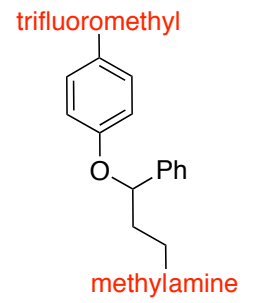
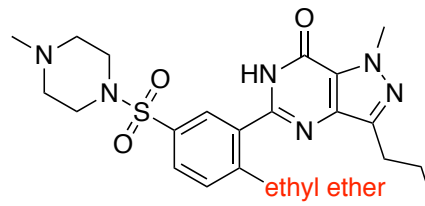
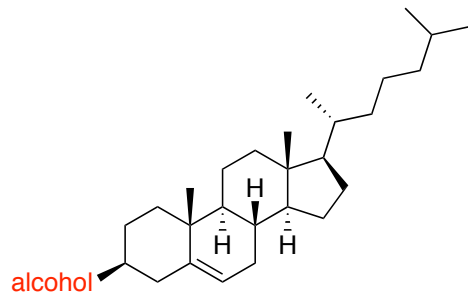
azidothymidine



cortisone

glutathione

phenol



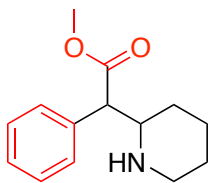
cholesterol

viagra

prozac



My chemistry instructor might like me to take methylphenidate (other name: **retalin**) to improve my attention.



methylphenidate