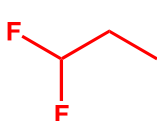
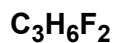


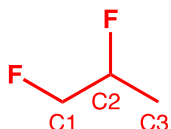
Constitutional Isomers and Line-Angle Structures

Please provide the line-angle structures and the IUPAC name for *all* of the constitutional isomers of the following:

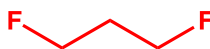
Hint: fluorine designated with *fluoro-* prefix.



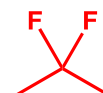
1,1-difluoropropane



1,2-difluoropropane



1,3-difluoropropane



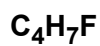
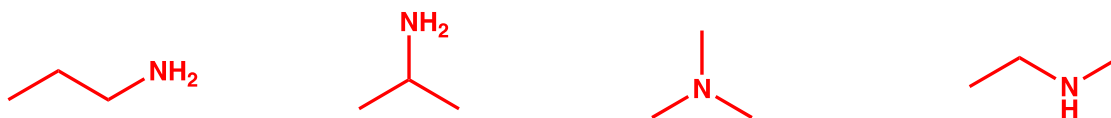
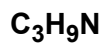
2,2-difluoropropane

Explanation

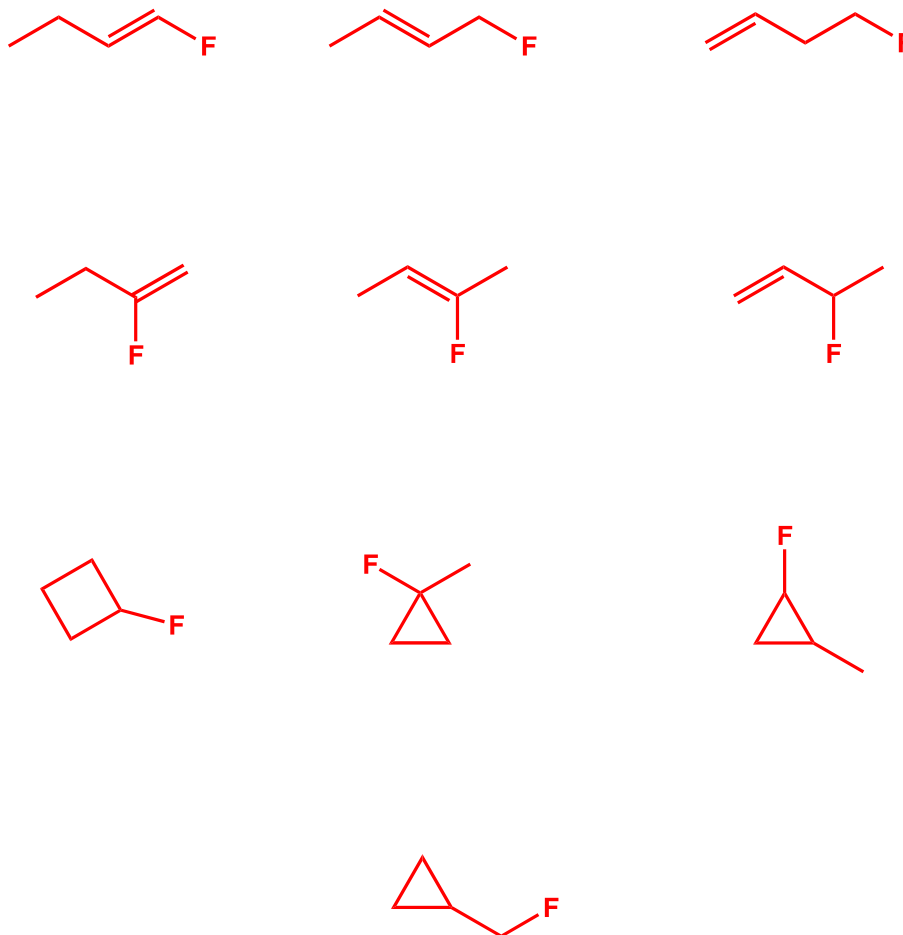
three-carbon backbone: propane

di: two; **fluoro-**: fluorine substituent

Provide the line-angle structures for *all* of the constitutional isomers of the following:

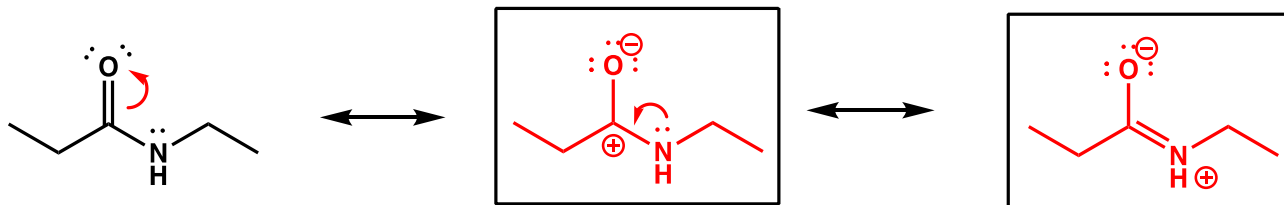


Hint: begin by imagining all possible carbon chains, then add substituents to give all possible constitutional isomers. Make sure to count the hydrogens!



Resonance Structures

Please provide the resonance structures for the following molecule, using arrows to show the flow of electrons.



Why is it reasonable to propose the middle structure?

The adjacent nitrogen is able to delocalize the positive charge.