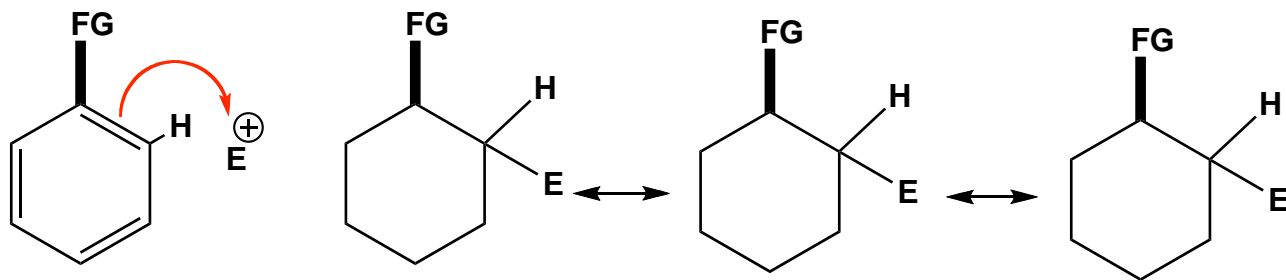
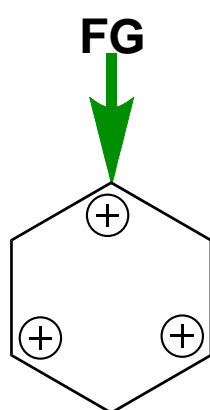
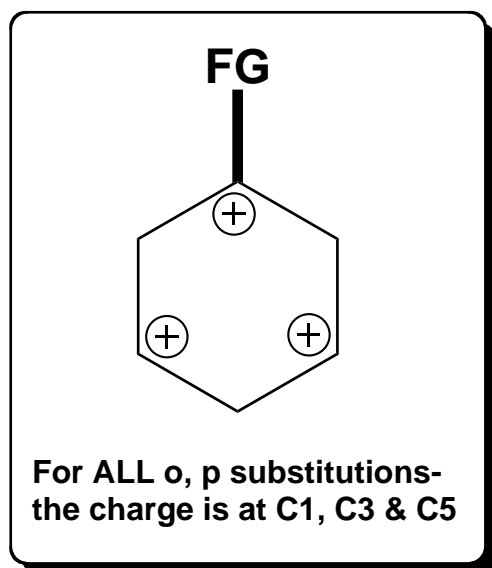
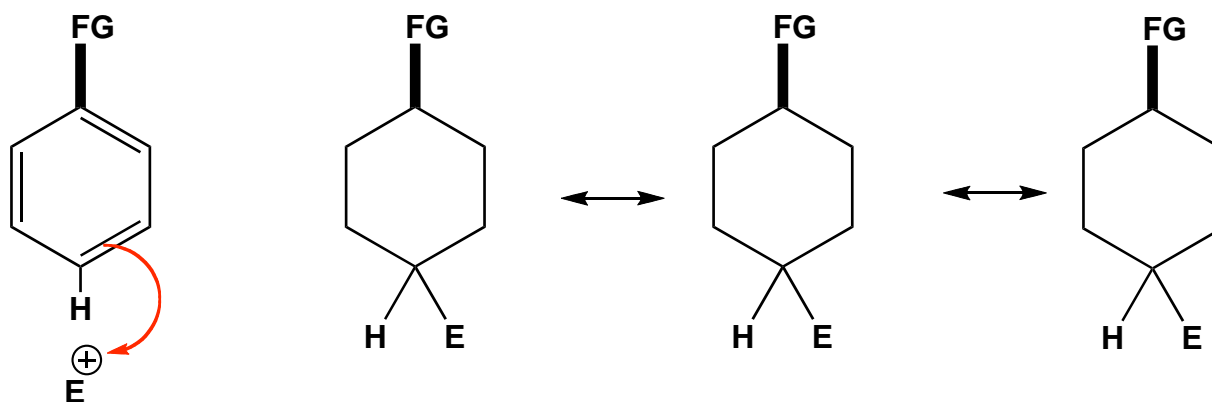


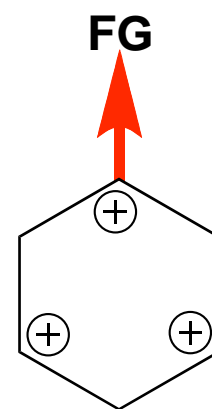
ortho substitution:



para substitution:

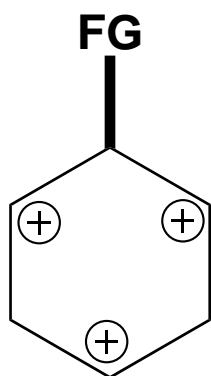
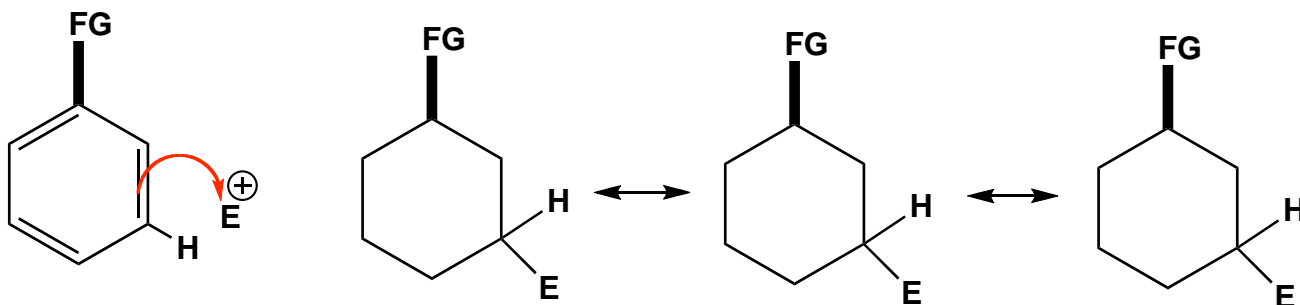


If the FG stabilizes a  $\oplus$  by  $e^-$  donating groups, then the o, p substitution is FAVORED



If the FG destabilizes a  $\oplus$  by  $e^-$  withdrawing groups, then the o, p substitution is DISFAVORED

meta substitution:

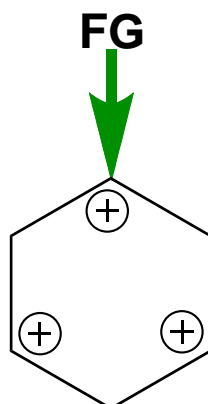
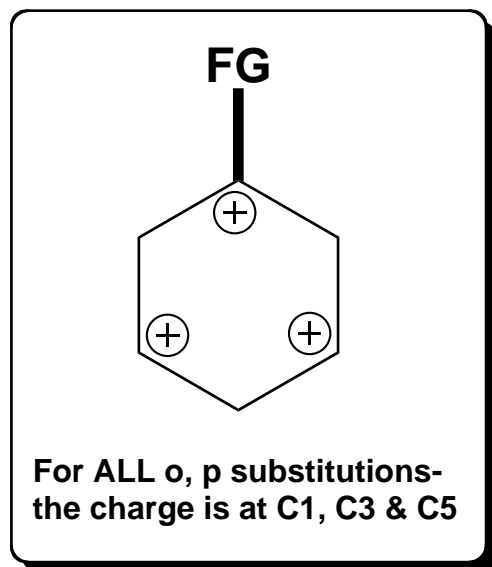


For ALL m substitutions-  
the charge is at C2, C4 & C6

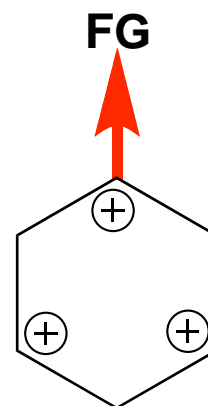
With m substitution, the FG is never adjacent to the carbocation, so the FG can neither stabilize or destabilize these intermediates; i.e. all these cations (resonance structures) are equally stable.

How are meta products favored???

The product distribution (ratio of o, p & m isomers) is controlled by this family of resonance structures:

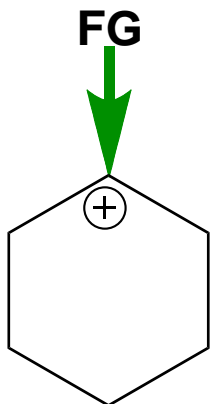


If the FG stabilizes a  $\oplus$  by  $e^-$  donating groups, then the o, p substitution is FAVORED

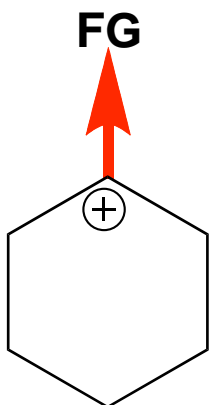


If the FG destabilizes a  $\oplus$  by  $e^-$  withdrawing groups, then the o, p substitution is DISFAVORED

In the family of resonance structures from the o, p isomers:



FG which are  $e^-$  donating groups, will stabilize THIS resonance structure and favor o, p isomers. Groups which have lone pairs of  $e^-$  such as N and O.



FG, which are  $e^-$  withdrawing groups, will DE-STABILIZE this resonance structure and DISFAVOR the o, p isomers and by default, FAVOR the m isomer. Electropositive groups containing a carbonyl