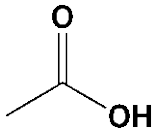
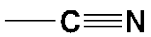
The X group attached to the cyclohexane ring for Part 3 of the molecular modeling exercise.

-F	fluoro	Choi, Hyunjoon; Kouvchinov, David; Nguyen, Kim; Tonne, Patrick; El Khoury, Anton
-Cl	chloro	Cogar, Krystal; Kirby, Nicole; Nguyen, Duy; Teso, Gabriel; Tsai, Jeffrey
-Br	bromo	Stornanti, Michael; Mergener, Adam; Khalsa, Harimander; Capo, Steven;
-OH	hydroxyl	Caldarone, Nicholas; Keoppel, Spencer; Mai, Thanh; Shriki, Avshalom
$-CO_2H$	carboxylic acid	Seol, YunHee; Palmer, Carolyn; Kakou, Ulrich; Boyle, Emily;
$-CH_3$	methyl	Boussy, Christopher; Ingalls, Bailey; Lu, Da; Sasaki, Kanae; Kriksceonaitis, Samantha
$-CH_2CH_3$	ethyl	Salalayko, Nicholas; Levine, Rachel; Huynh, Jesse; Barbato, Alexandra;
$-CH(CH_3)2$	2-propyl	Arvind, Meghana; Gordin, Daniel; LeBlanc, Michael; Rushanan, Marguerite; Zebracki, Jessica
$-C(CH_3)_3$	tert-butyl	Ramachandran, Hema; Park, Nathaneal; Furash, Ross; Adelman, Jacob;
-CN	cyano or nitrile	Al-Khamees, Sarmad; Gentry, Matthew; Plaka, Evgenia; Lapointe, Eric; Finnerty, Aidan



carboxylic acid group



cyano group

Note that you may not see good agreement with experimental values for some groups. Molecular mechanics has limitations. If the calculated value for your group does not agree well with the experimental values, comment on it in your conclusions.