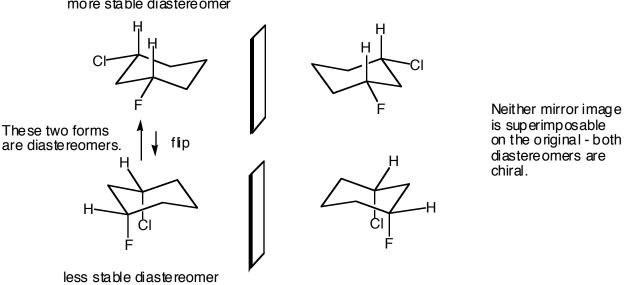
Answers to Problem 38, Chemistry 301X - 2006

The more stable conformation of *cis*-1-chloro-3-fluorocyclohexane is the one with the two groups equatorial. Ring 'flip" generates the less stable conformation with the two alkyl groups axial. Each of these two diastereomers is chiral.

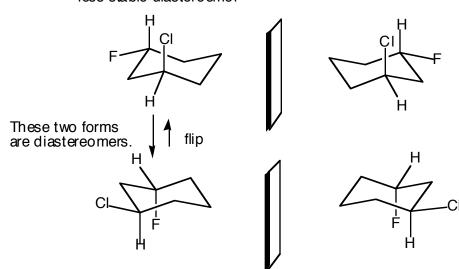
cis-1-chloro-3-fluorocyclohexane more stable diastereomer



The situation is the same in the trans molecule. The more stable conformation has the large chloro group equatorial. Ring "flip" generates the less stable conformation with the large chloro group axial. Each of these two diastereomers is chiral.

trans-1-chloro-3-fluorocyclohexane less stable diastereomer

more stable diastereomer



Neither mirror image is superimposable on the original - both diastereomers are chiral.