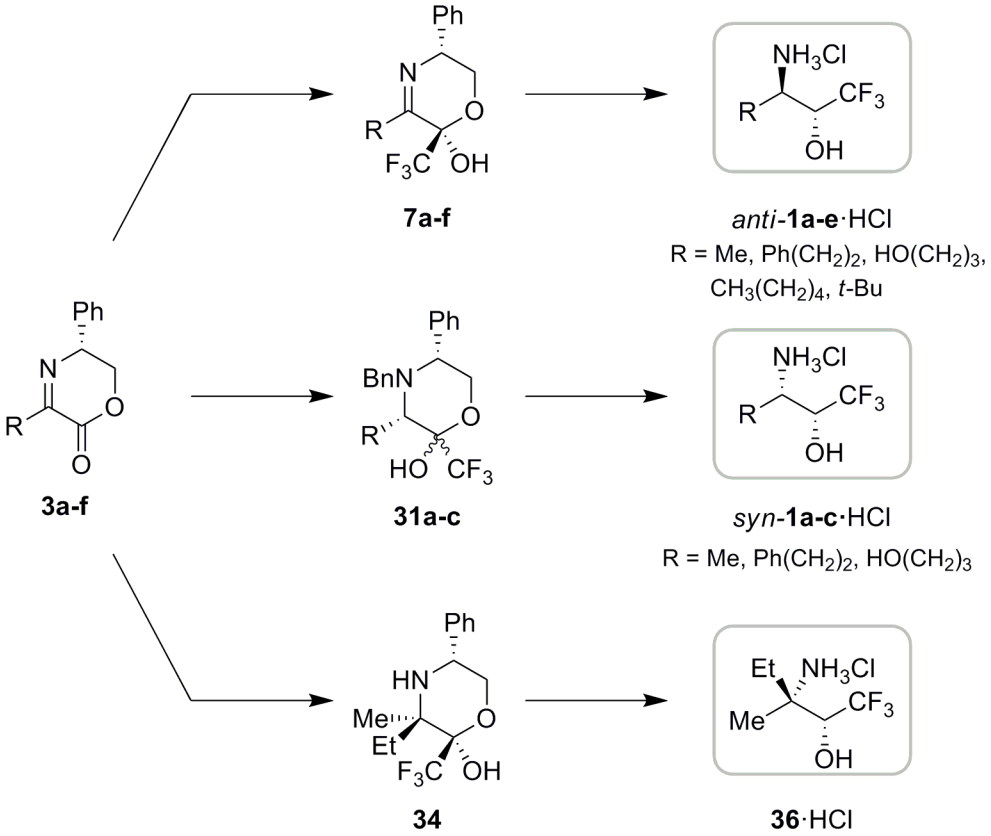
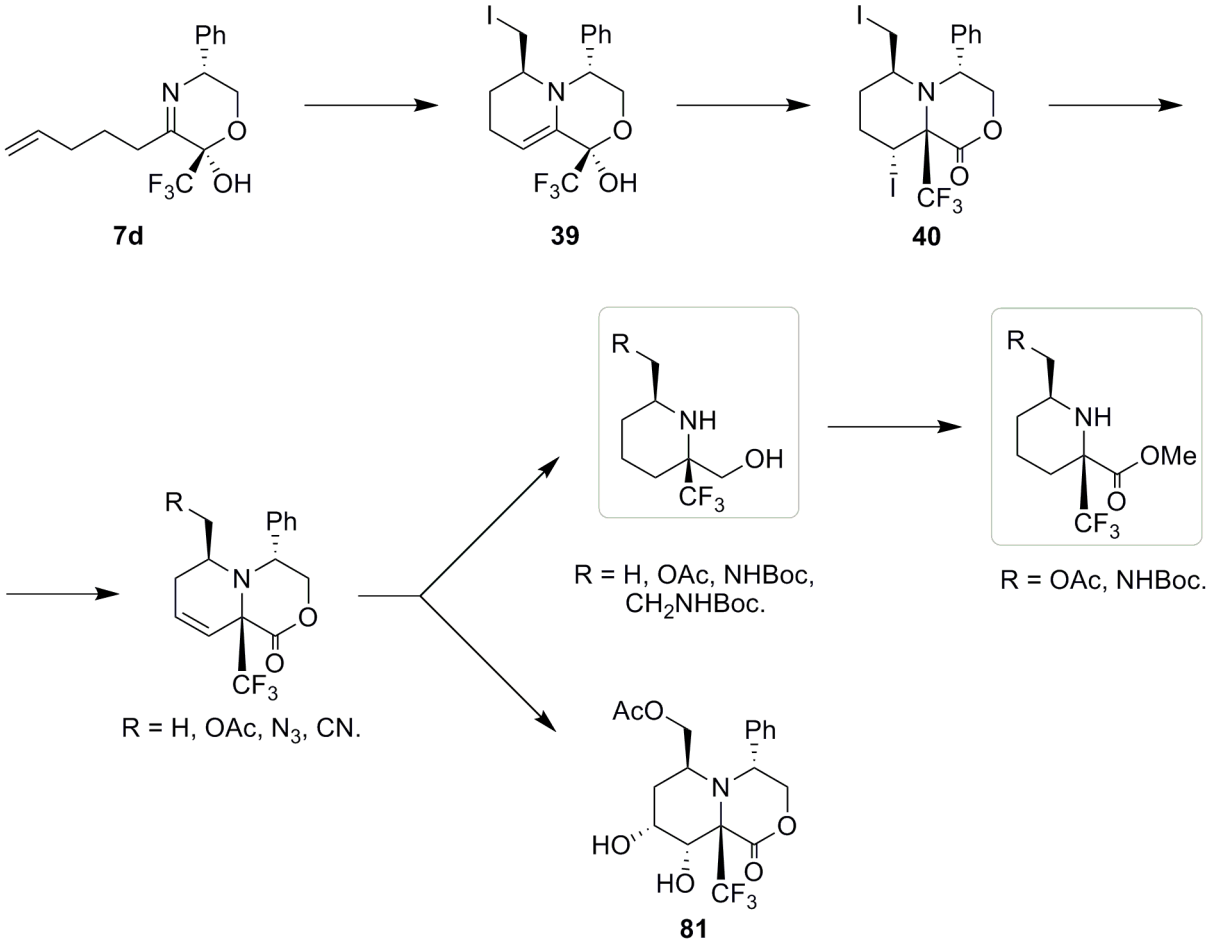
In connection with the interest of our research group in the preparation of enantiopure fluorine-containing synthons of biologically interesting molecules, the aim of this thesis is to develope an efficient method for preparing opticallly pure β-amino-α-trifluoromethyl alcohols. These fluorinated compounds are a useful class of molecules because they could be used in the synthesis of new peptidomimetics or as precursors of more elaborated bioactive molecules. In addition, fluorinated amino alcohols have also been used as chiral ligands/auxiliaries in asymmetric processes.

The reaction of chiral 5,6-dihydro-2*H*-1,4-oxazin-2-ones **3a-f** with $TMSCF_3$ in the presence of a suitable activator led to trifluoromethyl lactols **7**, which were selectively reduced to *anti*-β-amino-α-trifluoromethyl alcohols **1**. The corresponding *syn* diastereoisomers were obtained when the starting imines were reduced and the nitrogen atom was conveniently protected. This methodology also allowed the synthesis of amino alcohols containing a quaternary center in β-position



Scheme 1.

In the second chapter, the preparation of optically pure quaternary 2-(trifluoromethyl)piperidines was developed. The synthesis started from a bicyclic (trifluoromethyl)diiodolactone **40** obtained by migration of the CF_3 group. The final products included four derivatives of α-(trifluoromethyl)pipecolic acid and also the compound **81** which was a suitable precursor for the synthesis of (trifluoromethyl)iminosugar frameworks.



Scheme 2.

Finally, in the last chapter a theoretical discussion of the mechanism for the CF_3-migration has been carried out as well as an experimental research in order to find the suitable conditions for undergoing this rearrangement in other substrates.