Synthesis of R207910

Significance: R207910 is a selective inhibitor of the ATP synthase proton pump of both drug-sensitive and drug-resistant Mycobacterium tuberculosis. The synthesis of R207910 depicted features two novel transformations: (1) a catalytic enantioselective proton migration using a bimetallic Y complex (A → C) and (2) a CuF-catalyzed diastereoselective allylation reaction (C → E).

Comment: Mass spectrometric evidence suggests that the active catalyst in the enantioselective proton migration reaction (A → C) is a ternary complex comprising two ytterbium atoms, three molecules of the ligand B and one molecule of 4-methoxypyridine N-oxide. A catalytic cycle for the reaction is postulated. The allylation step could be performed with as little as 1 mol% of the CuF complex at the expense of a diminished dr (5.6:1).