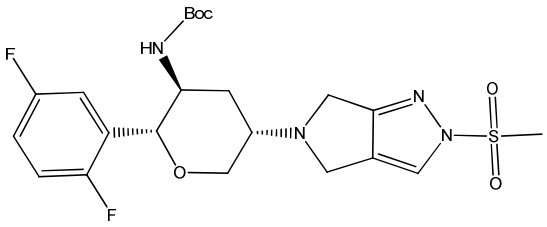
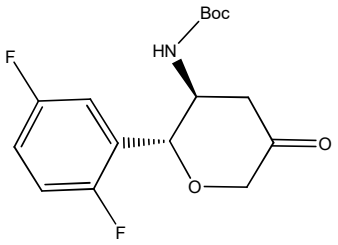
to produce compound:



(3f);

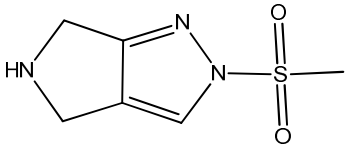
and

(g) ketone substrate compound:



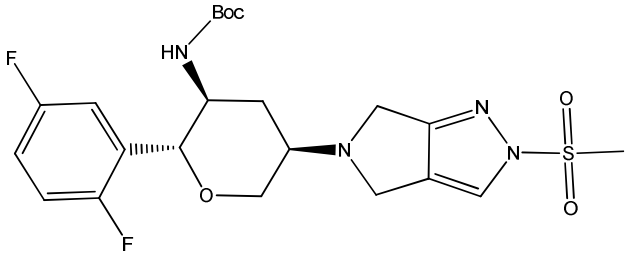
(1d),

and amine substrate compound:



(2c),

to produce compound:



(3g).

3. The engineered polypeptide of Claim 2, wherein the imine reductase activity in converting the ketone and amine substrate compound pair to the listed amine product compound under suitable reaction conditions is increased at least 1.2-fold as compared to the corresponding activity of the reference polypeptide of SEQ ID NOS:360, and/or 550.

4. A polynucleotide encoding the engineered polypeptide of any one of Claims 1 to 3.

5. The polynucleotide of Claim 4, in which the polynucleotide comprises a nucleic acid sequence selected from the group consisting of the odd-numbered sequence identifiers of SEQ ID NOS:1199 - 1299.