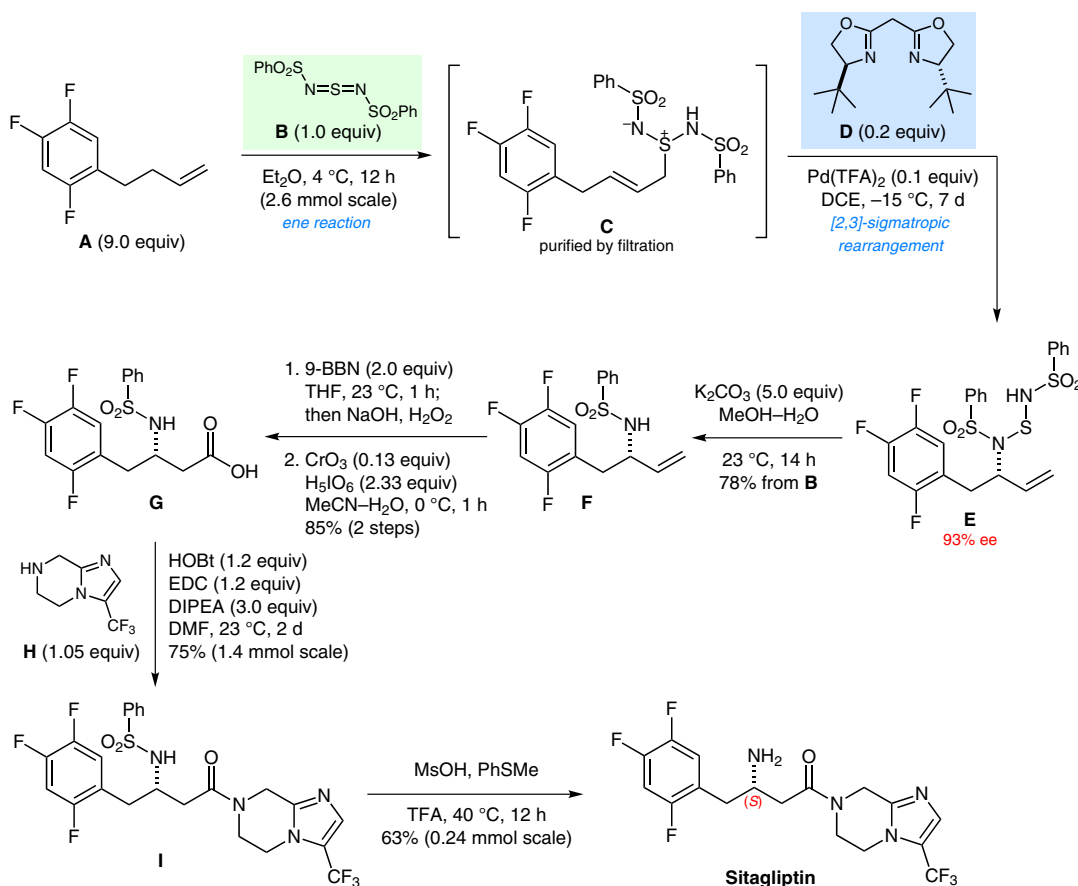


## Synthesis of (S)-Sitagliptin



**Significance:** Sitagliptin is a dipeptidyl dipeptidase-4 inhibitor that is prescribed for the treatment of type II diabetes. The small-scale synthesis depicted features a two-step construction of the allylic amine **E** involving an *ene* reaction using the sulfurdimide **B** followed by a palladium-catalyzed asymmetric [2,3]-sigmatropic rearrangement of ylid **C**.

**Comment:** The ylid **C** does not undergo a [2,3]-sigmatropic rearrangement at  $4^\circ\text{C}$  in the absence of the palladium catalyst. A further five 4-arylbut-1-ene substrates with F,  $\text{CF}_3$  and OMe substituents gave the allylic amination products in 79–94% yield and 81–94% ee.