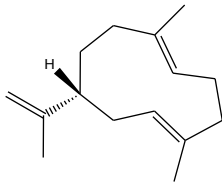


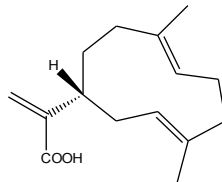
farnesyl
pyrophosphate

MrTPS3



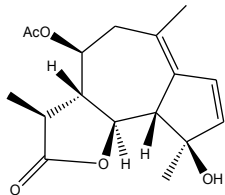
(+)-germacrene A

**germacrene A
oxidase**

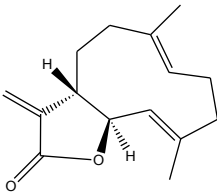


germacrene A acid

**costunolide
synthase**

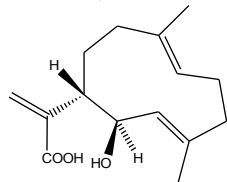


matricine



(+)-costunolide

spontaneous



6α-hydroxy
germacrene A acid