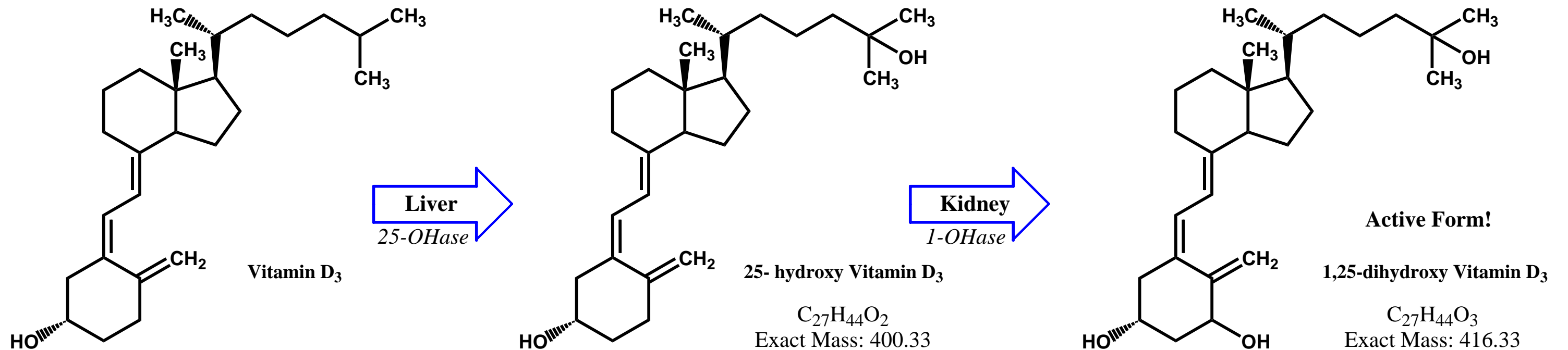


7-Dehydrocholesterol (pro-Vitamin D₃) in the skin is irradiated by UV light (λ 290 nm to 315 nm), which causes ring opening and conversion to pre-Vitamin D₃

Heat energy absorbed by pro-Vitamin D₃ is sufficient to cause enthalpic rearrangement, resulting in Vitamin D₃, Cholecalciferol

BUT, Vitamin D₃ is essentially biologically inactive in cellular systems! It must be converted to its active form as follows:



Vitamin D₃ in the bloodstream circulates to the Liver, where it is acted on by the *25-Hydroxylase* enzyme. This forms 25-hydroxy Vitamin D₃. This is also barely active, and flows out into the bloodstream to be further metabolized.

25-hydroxy Vitamin D₃ in the bloodstream circulates to the Kidneys, where it is acted on by the *1-Hydroxylase* enzyme. This forms 1,25-dihydroxy Vitamin D₃. **1,25 Dihydroxy Vitamin D₃ is the active form of the nutrient!**