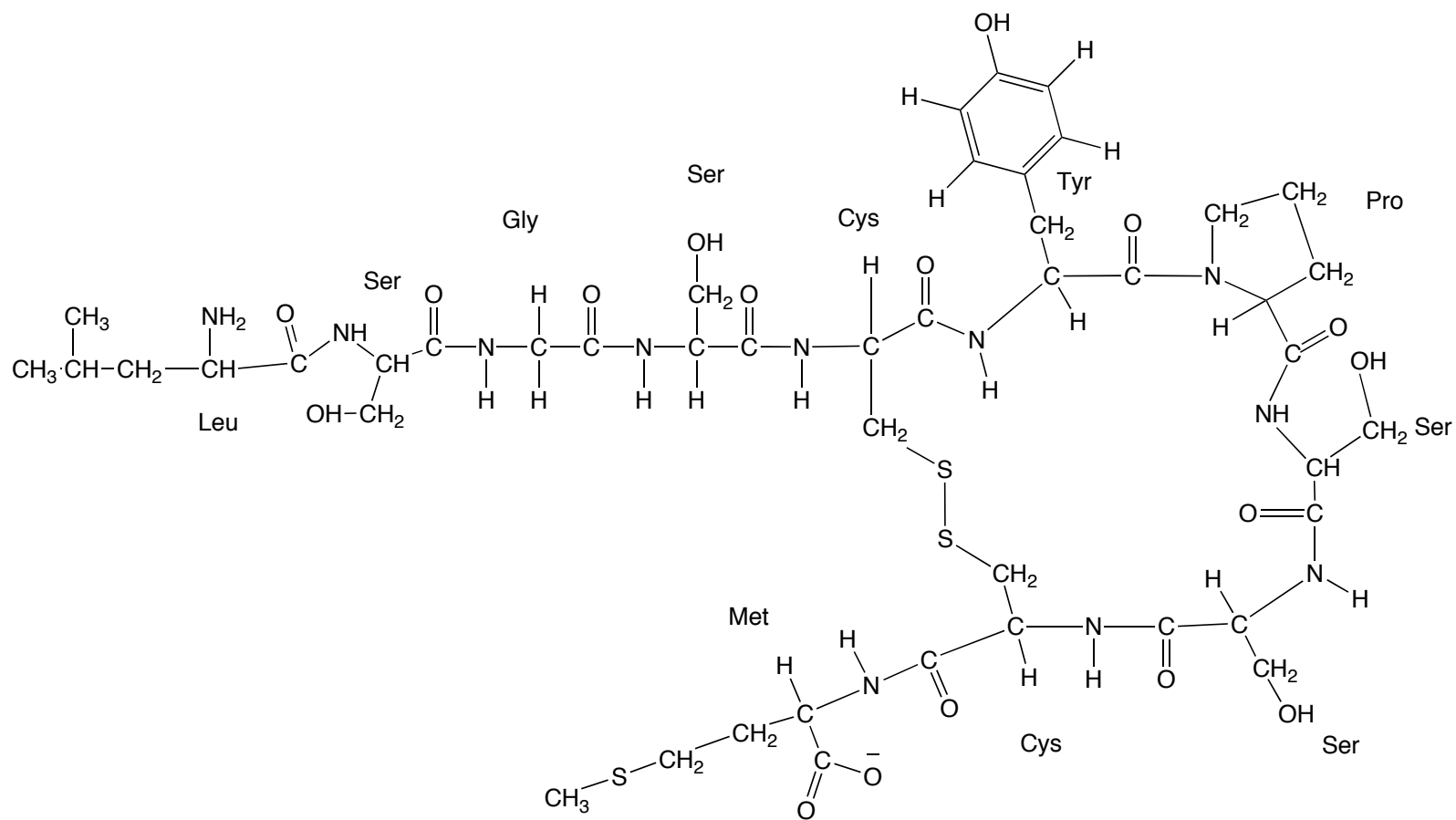


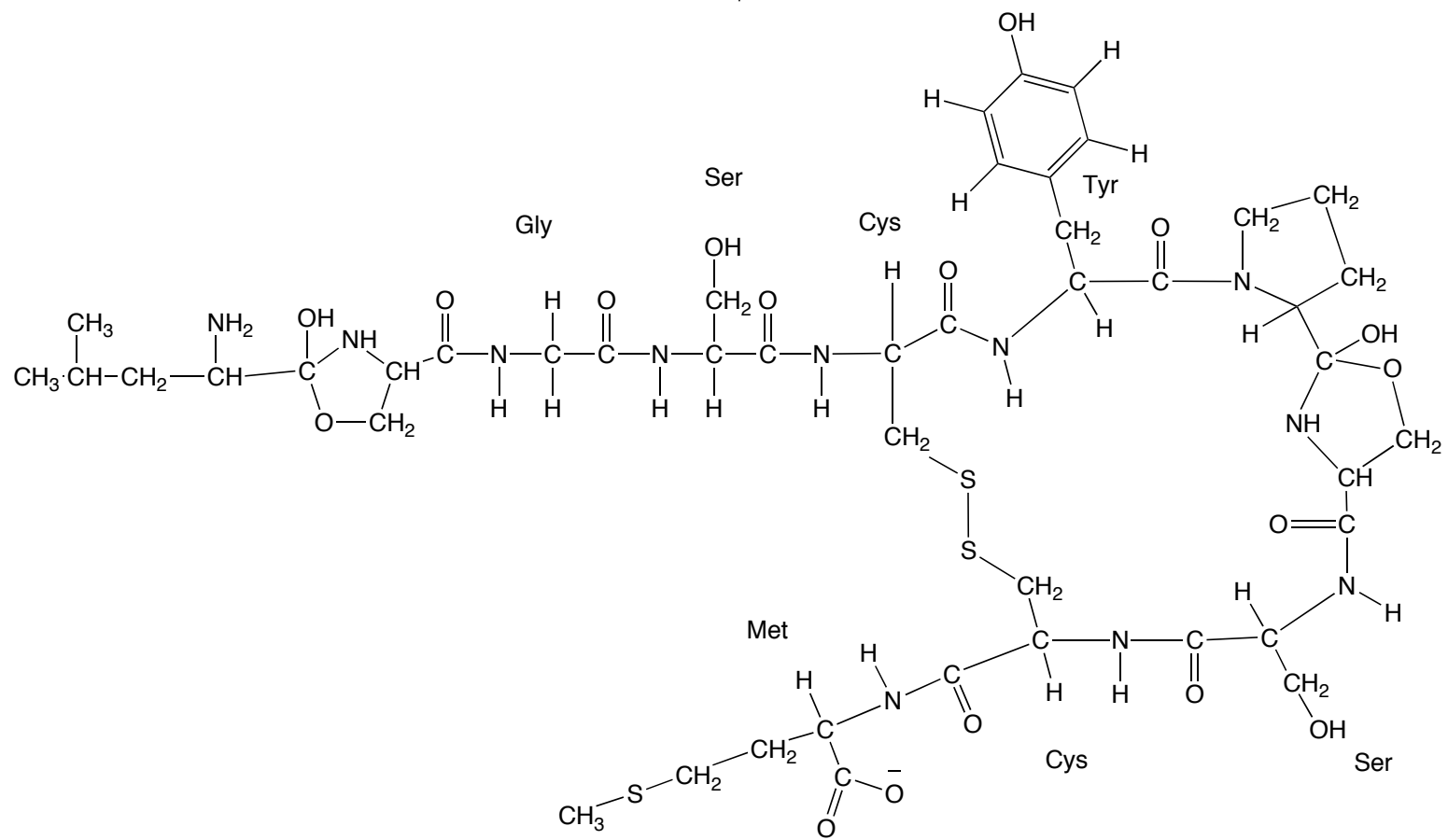
From
 Leu-Ser-Gly-Ser-Cys-Tyr-Pro-Ser-Ser-Cys-Met
 to
 Methanobactin
 in 6 Easy Steps.



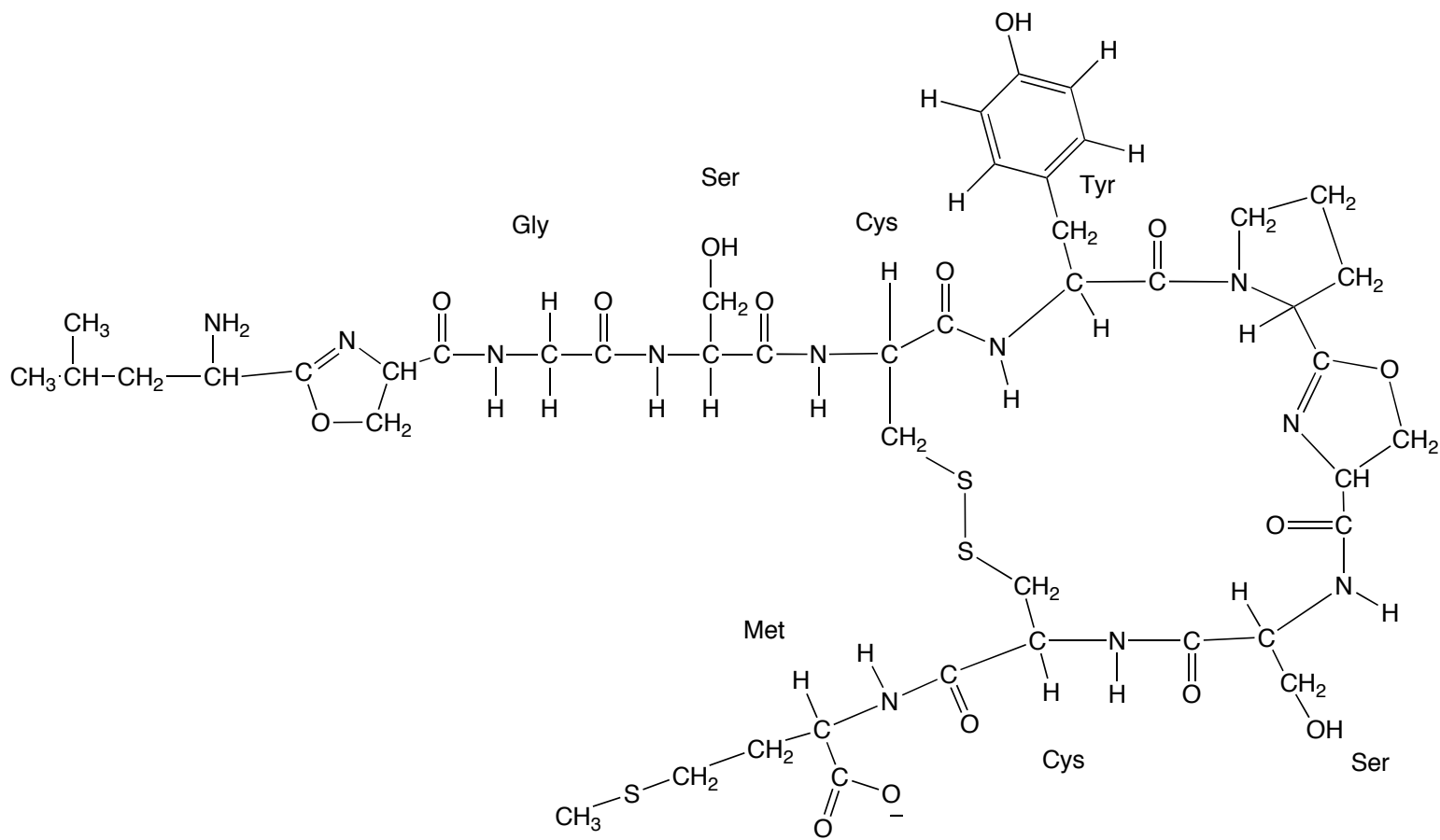
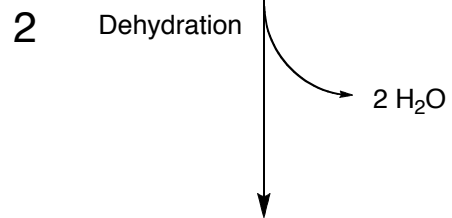
Exact Mass: 1146.43

1 Cyclization

(This step, along with the next three, have been found to form oxazoles in other biological systems. See Li et al, 1996)



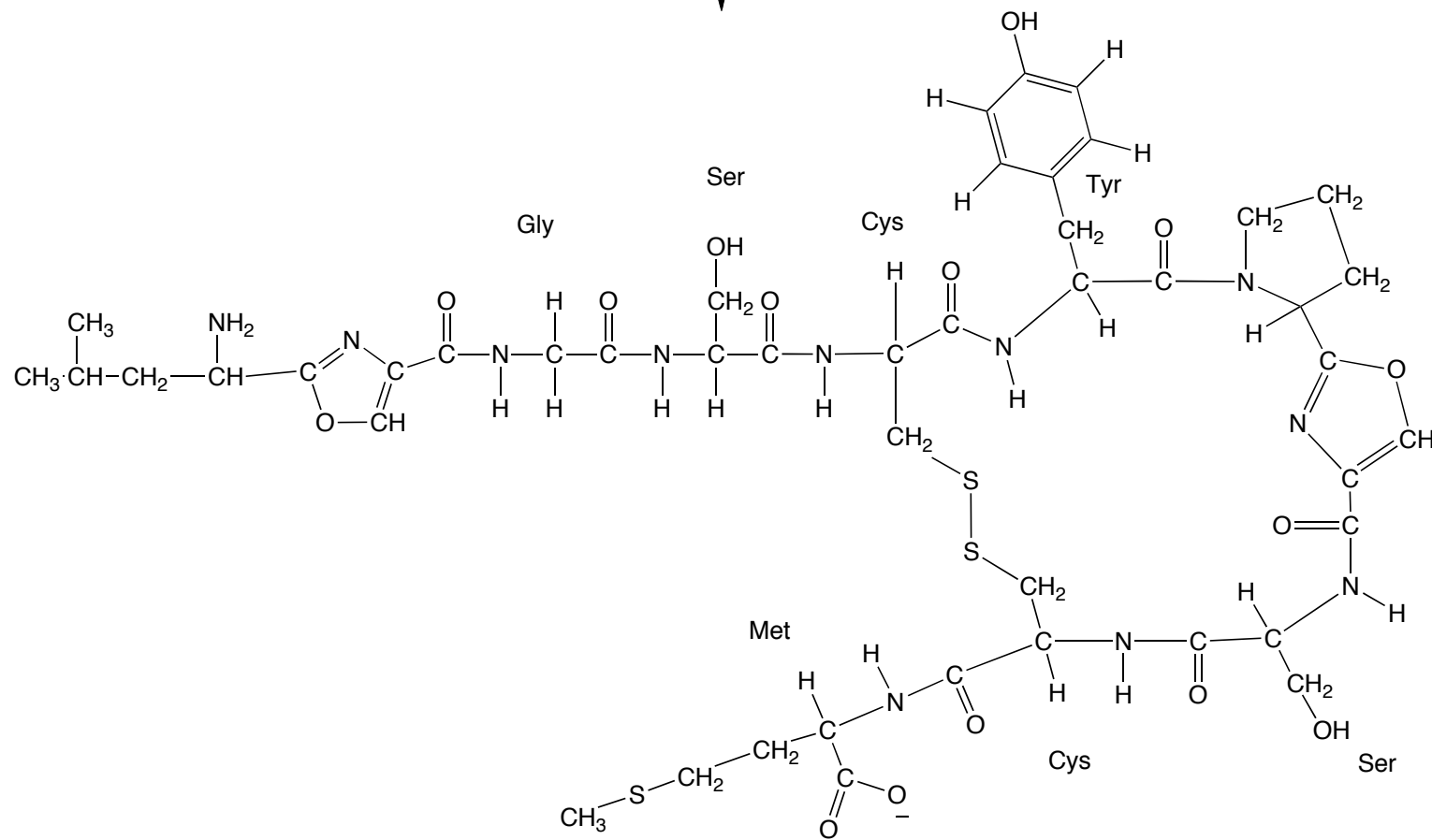
Exact Mass: 1130.40



Exact Mass: 1094.38

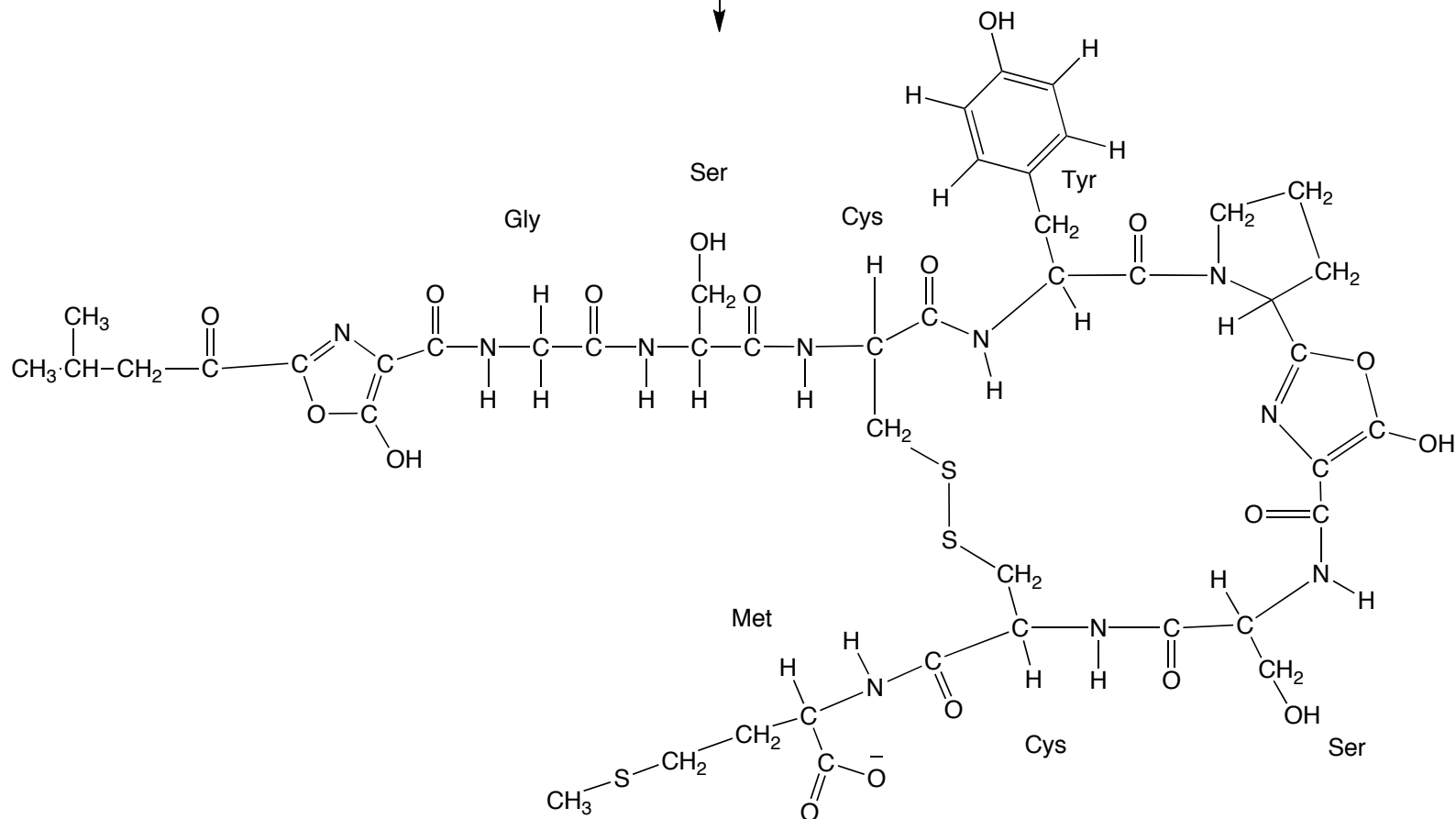
3 Dehydrogenation

4 H



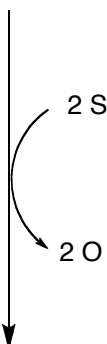
Exact Mass: 1090.34

5 Transamination

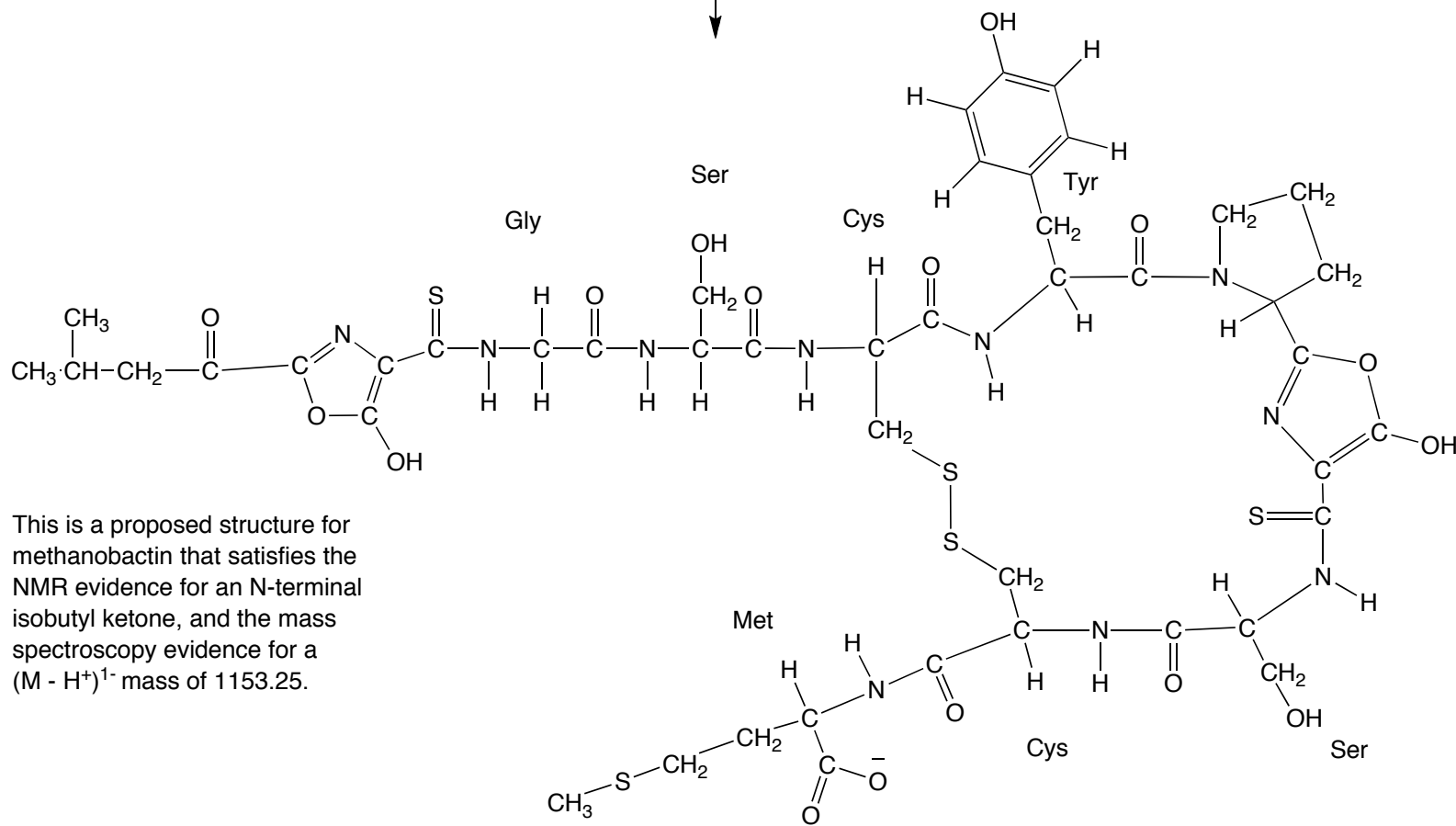


Exact Mass: 1121.30

6 Sulfurization



(Copper can catalyze the reverse of this reaction, see Shibahara et al, 2007)



This is a proposed structure for methanobactin that satisfies the NMR evidence for an N-terminal isobutyl ketone, and the mass spectroscopy evidence for a $(M - H^+)^{1-}$ mass of 1153.25.

Exact Mass: 1153.26