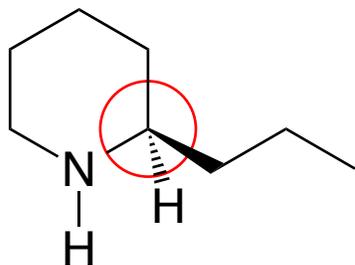
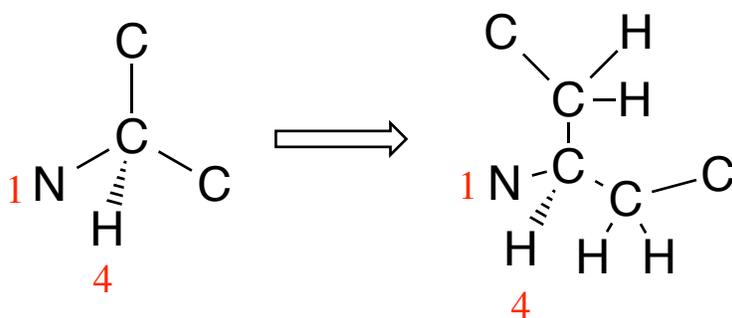
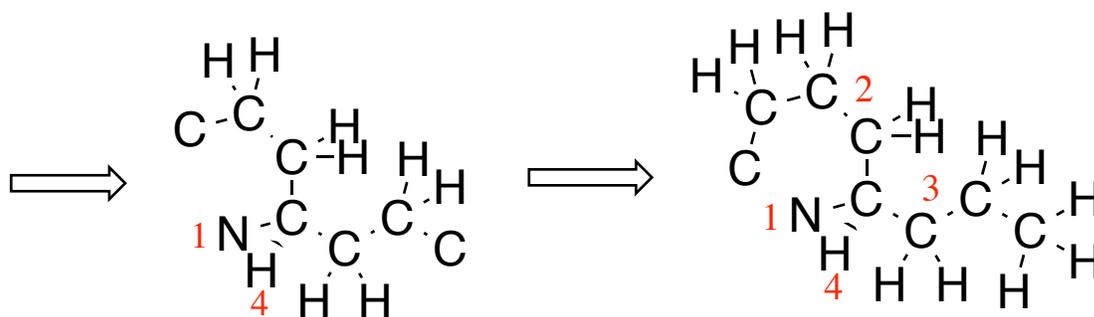
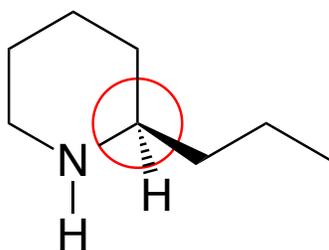


Previous lecture: Enantiomers of coniine**Determining R/S configuration of the stereocenter:**

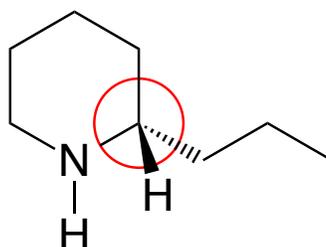
- We can assign highest priority to the N and lowest to the H, but cannot immediately tell which carbon attached to the stereocenter is of higher/lower priority. When this is the case, we look at the next substituents in the chain.



- We cannot tell at the second attached carbon, so we move on to the third.
- We still cannot tell at the third, so we move on to the fourth.
- At the fourth carbon we can see a difference. The carbon that is part of the propyl group ends in a CH₃ so it is bonded to three H, and the other carbon is bonded to two H and one C. The propyl group gets lower priority (3) and the other group gets higher priority (2).
- Counting 1,2,3 → clockwise is *R*. This is the *R* enantiomer.

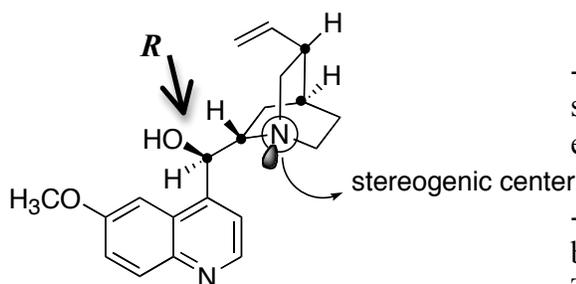


R - enantiomer of coniine



S - enantiomer of coniine - invert EVERY stereocenter

Chiral Centers:



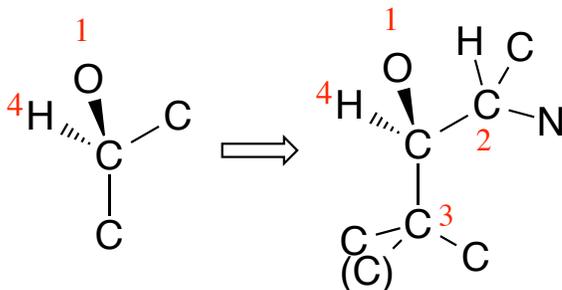
quinine - anti-malarial drug
from the bark of the tree
Cinchona officinalis

- Carbon stereocenters are shown with dots in this example.

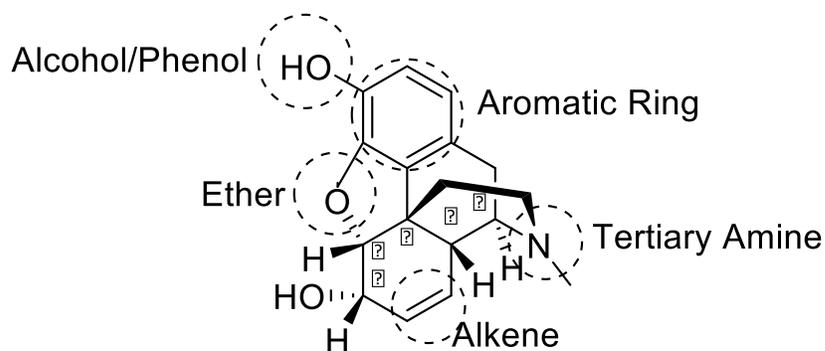
- Nitrogen is a stereocenter here because it can't invert freely. The ring structure restricts its geometry.

malaria is caused by *Plasmodium* species transmitted by *Anopheles* mosquito

Configuration at the alcohol center:

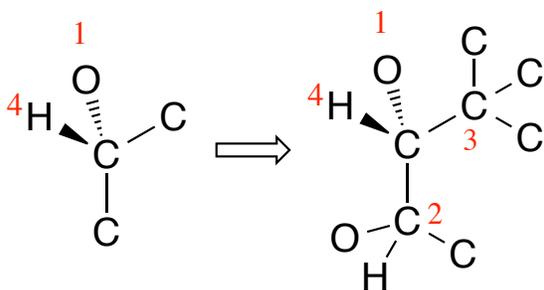


- Cannot assign 2, 3 at first try
- At the second atoms in the chain, there is a difference. The carbon attached to one nitrogen, one carbon, and one hydrogen has a higher priority than the carbon attached to three carbons.
- One nitrogen trumps three carbons.
- Count 1, 2, 3: Clockwise is R.



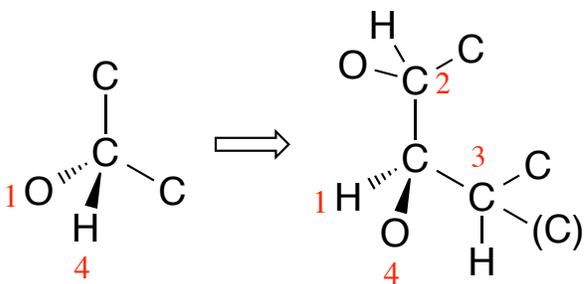
- Morphine (from Morpheus, Greek god of sleep)
- 5 stereogenic centers
- Opium: Sap from the seed pod of opium poppy (*Papaver somniferum*)
- ~10% of opium is morphine
- Morphine is used as an analgesic
- Heroin (diacetylmorphine) is even more potent (and more addictive)

Configuration at the ether stereocenter:



- Cannot assign 2, 3 at first try
- At the second atoms in the chain, there is a difference. The alcohol carbon is attached to one oxygen, one carbon, and one hydrogen. It has a higher priority than the other carbon which is attached to three carbons.
- Count 1, 2, 3: Counterclockwise
- This center is *R* and not *S* because the lowest priority group (the hydrogen) is pointing toward the front, not to the back.

Configuration at the alcohol stereocenter:



- Cannot assign 2, 3 at first try
- At the second atoms in the chain, the ether carbon is attached to one oxygen, one carbon, and one hydrogen. It has a higher priority than the alkene carbon which is attached to two carbons and one hydrogen.
- Count 1, 2, 3: Clockwise
- This center is *S* and not *R* because the lowest priority group (the hydrogen) is pointing toward the front, not to the back.