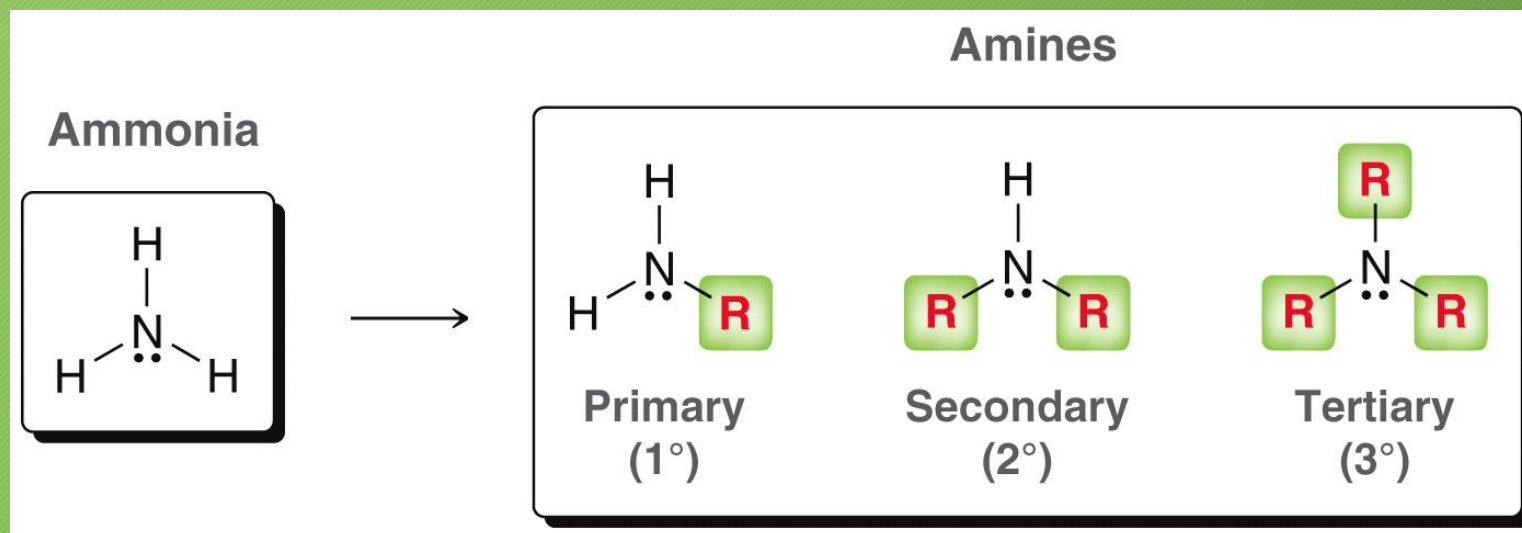


Ch 22 Amines

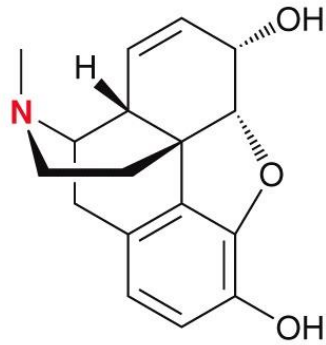
22.1 Introduction to Amines

- **Amines** are derivatives of ammonia in which one or more of the protons have been replaced with an alkyl or aryl groups.

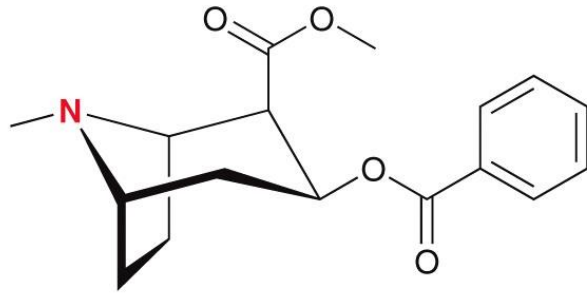


- Amines are designated as primary, secondary, or tertiary

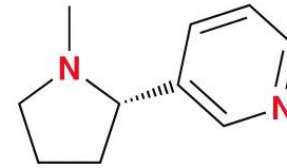
- Naturally occurring amines isolated from plants are called **alkaloids**



Morphine
(A potent analgesic isolated from the unripe seeds of the poppy plant *Papaver somniferum*)

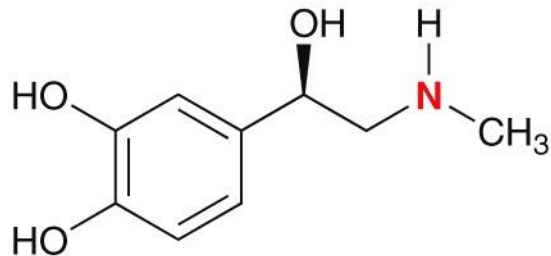


Cocaine
(A potent stimulant isolated from the leaves of the coca plant)

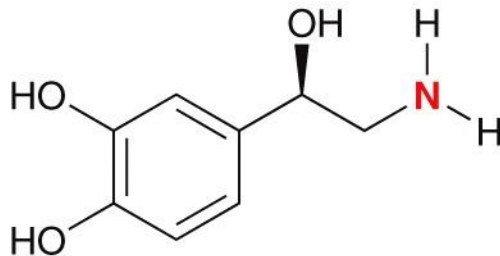


Nicotine
(An addictive and toxic compound found in tobacco)

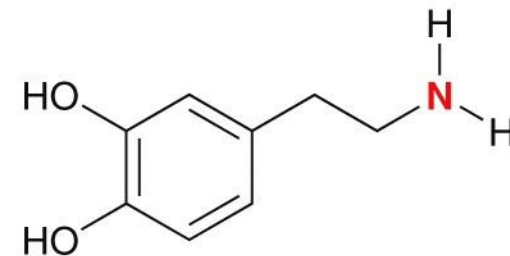
- Some naturally occurring amines are vital to neurochemistry:



Adrenaline
(A "fight-or-flight" hormone, first discussed in Chapter 7)



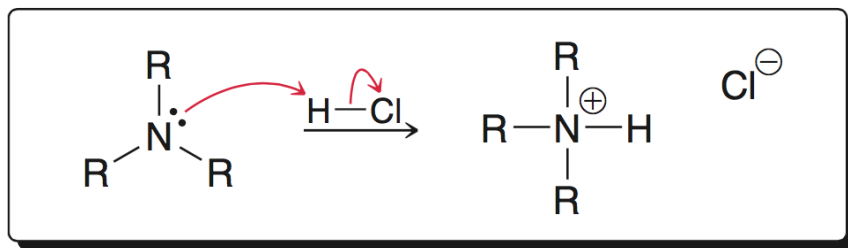
Noradrenaline
(Regulates heart rate and dilates air passages)



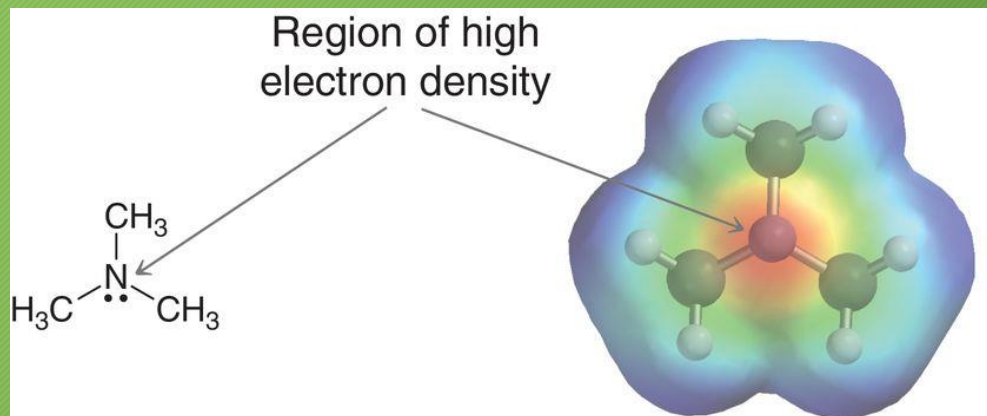
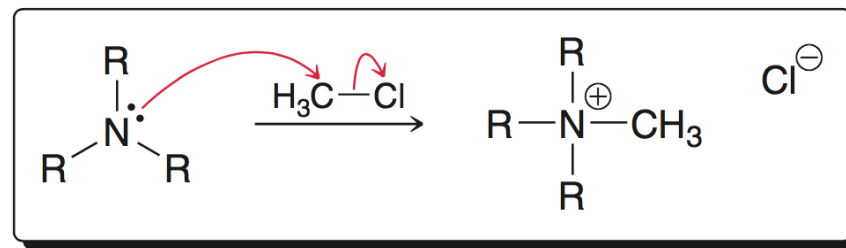
Dopamine
(Regulates motor skills and emotions)

- The N atom of an amine possesses a lone pair that has a region of high electron density. The presence of this lone pair is responsible for most of the reactivity of amines
- Amines, the lone pair, can react as a base or a nucleophile.

Functioning as a base



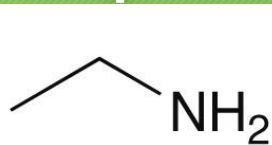
Functioning as a nucleophile



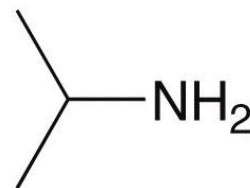
22.2

- IUPAC nomenclature allow for two different ways for naming primary amines

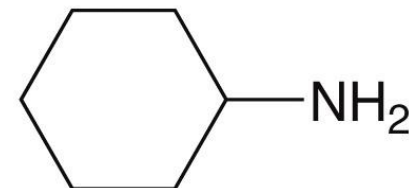
1. Name the alkyl group ending in “yl” followed by the suffix “amine”



Ethylamine

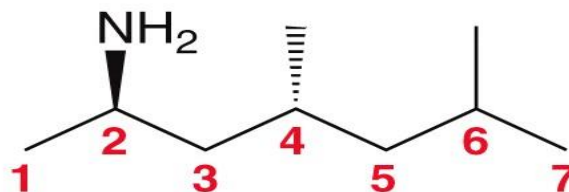


Isopropylamine



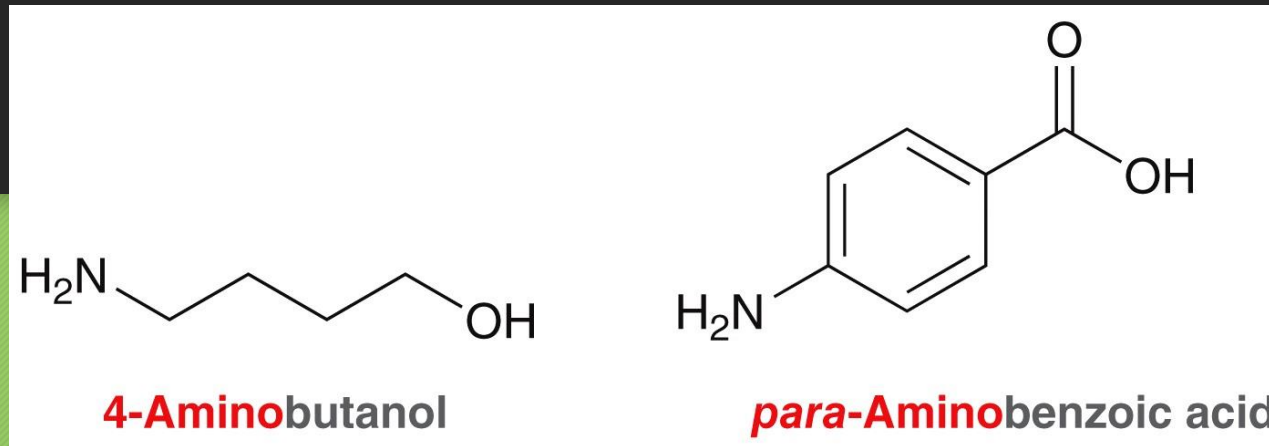
Cyclohexylamine

2. More complicated 1° amines are named as alkanamines. They are named the same as alcohols, but the suffix **-amine** is used instead of **-ol**

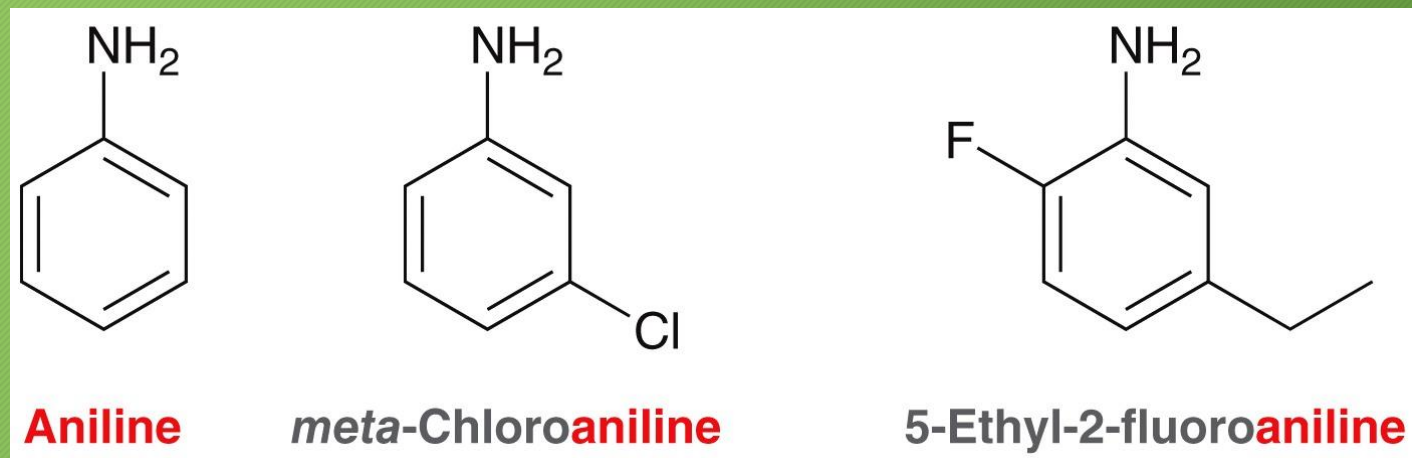


(2R,4R)-4,6-Dimethyl-2-heptanamine

3. Use the term “amino” for the group as a substituent

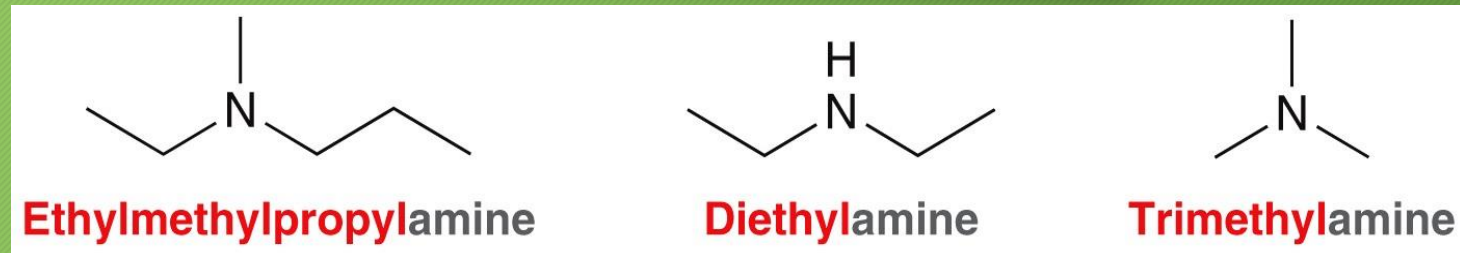


4. If the amine is directly attached to an aromatic ring, the parent name is “aniline”



- There are multiple methods for naming secondary and tertiary amines

1. Name the alkyl groups, followed by **-amine** suffix. Use “di” and “tri” if there are more than one of the same group.



2. Find the carbon parent chain, and use the suffix, amine. Smaller groups attached to the amine should be named as alkyl groups with the N-locant

