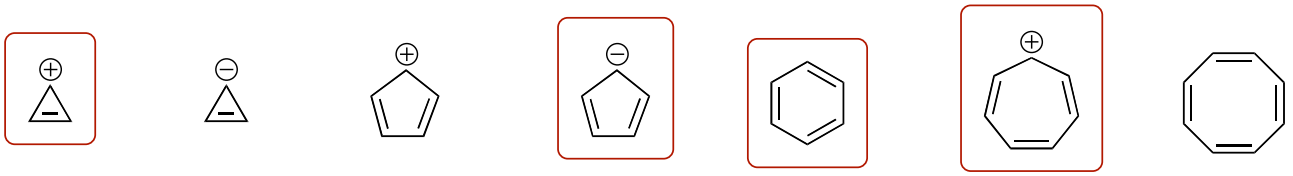
Chapter 15 - Benzene and Aromaticity

Aromatic Hydrocarbons

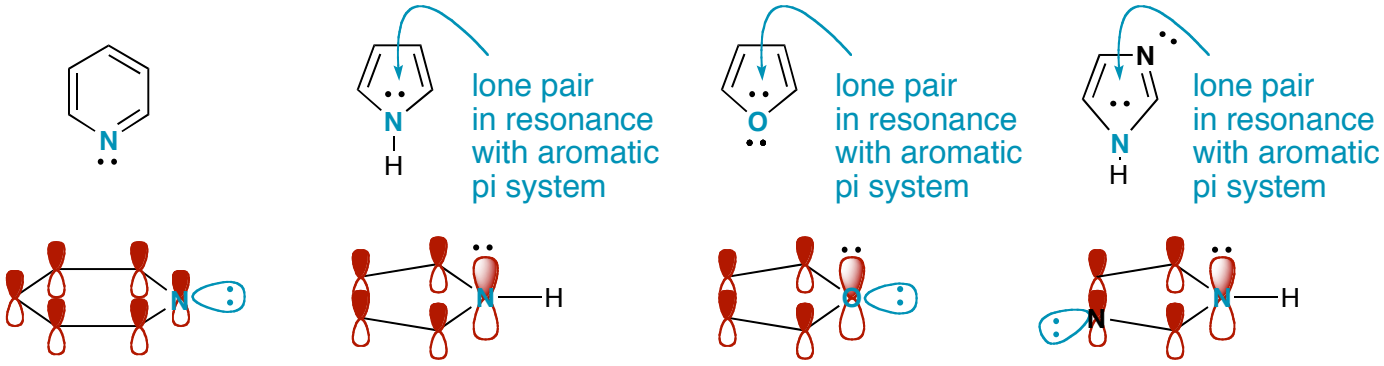
Below are some examples of fully conjugated systems which are aromatic or not aromatic. Note that carbocations or carbanions may be included in the conjugation. Thus, if the ring has the proper number of electrons, they can be aromatic.



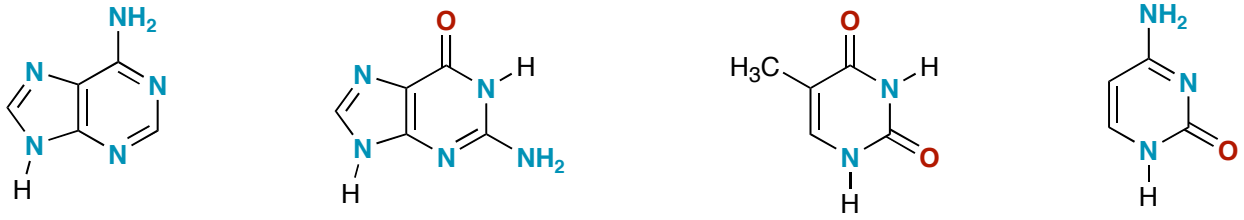
AROMATIC 2 pi electrons | 4 pi electrons | 4 pi electrons | **AROMATIC** 6 pi electrons | **AROMATIC** 6 pi electrons | **AROMATIC** 6 pi electrons | 8 pi electrons

Aromatic Heterocycles

Heteroatoms can also be in aromatic rings. The lone pair on an oxygen may be part of the aromatic pi-electron system. If the heteroatom is drawn with a double bond to it, it's lone pair is orthogonal to the pi-system and is not part of the resonance. If the heteroatom has only single bonds drawn to it, the lone pair is in a p-orbital and part of the aromatic pi-electron system.



Take a look at the DNA bases. Which are aromatic? What lone pairs are conjugated with the pi-systems?



Adenine | Guanine | Thymine | Cytosine