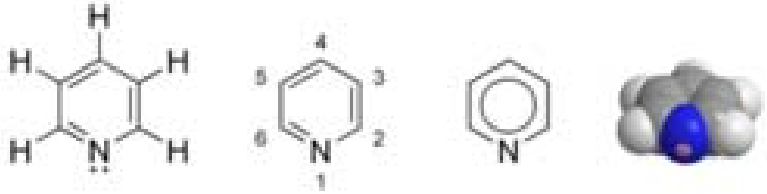
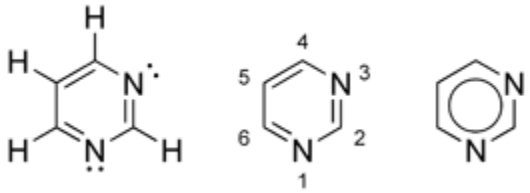
3.14 HETEROCYCLIC AROMATIC MOLECULES have aromatic rings in which 1 or more atoms are NOT C atoms. The most common heteroatoms are N and O. Some examples of biological importance include:

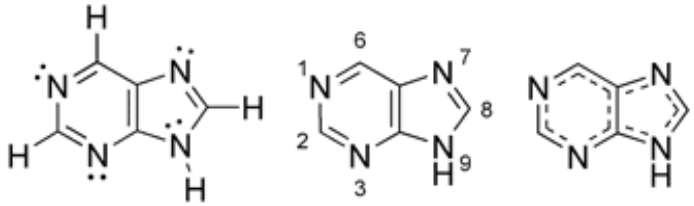
Pyridine



Pyrimidine

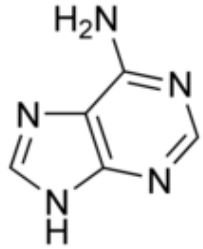
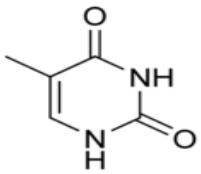
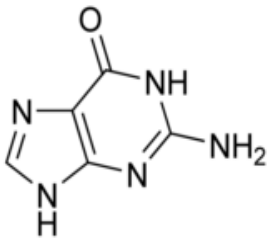
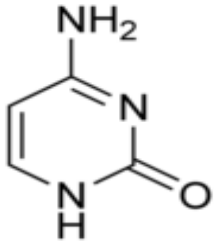


Purine



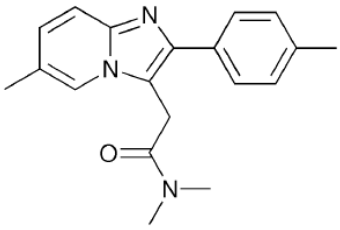
Derivatives of pyrimidine and purine rings are the bases that contain the "genetic code" found in **deoxyribonucleic acid (DNA**) double helix.

Adenine thymine guanine cytosine

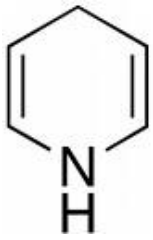





Which of the above DNA bases are purine bases? Pyrimidine bases?

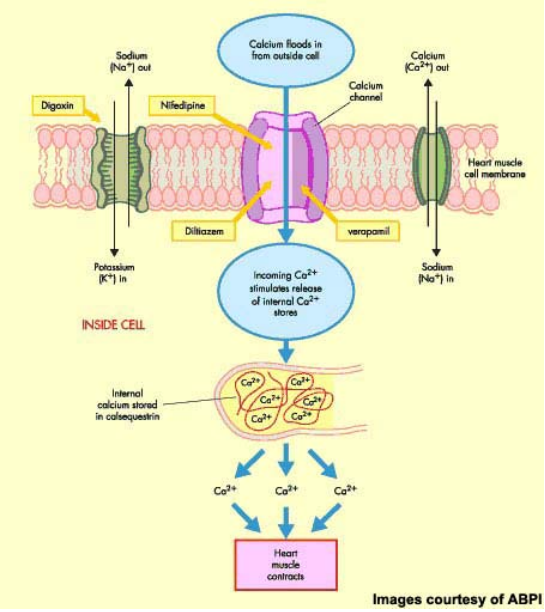
Zolpidem (trade name **Ambien)** is one of the best-selling sleeping pills on the market these days. Its structure is shown below. There are two aromatic ring systems in the structure along with an additional functional group. Identify them.



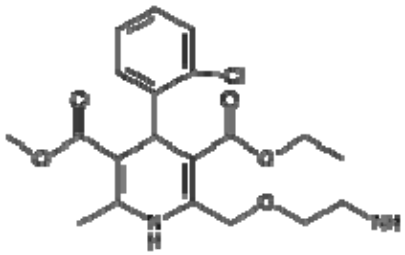
Dihydropyridine is a pyridine which has had two H atoms added to the ring. As a result it has only two double bonds in the ring rather than three and it is NOT aromatic.



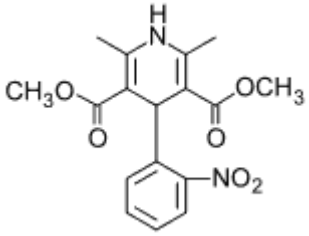
The dihydropyridine ring is the basis for making several drugs which are commonly used for treating hypertension and angina.
Drugs called calcium channel blockers block trans-membrane Ca channels in muscle cells and cause relaxation of the arteries.



By increasing the volume (lumen) of the inside of the blood vessel, they lower blood pressure and reduce angina.
Several of the calcium channel blockers have a dihydropyridine ring as part of their structure. As a result they are sometimes referred to as **dihydropyridine** calcium channel blockers.



Amlodipine(Norvasc)



Nifedipine(Adalat, Procardia)

Amlodipine (Norvasc) is currently one of the most commonly prescribed drugs in the US for treating hypertension.

Label the dihydropyridine ring in each of the above calcium channel blocker molecules.

Identify the functional groups in each of these molecules.