

Lecture 1: Origin of life

- What is life?
- What is necessary for life to begin?
- What happens then?
  
- Why did Dr Parker say that all life was the same?
- Some biochemistry

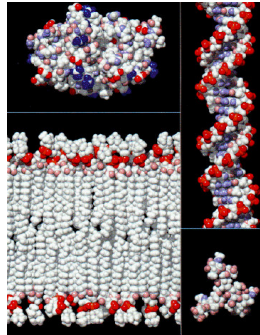
### What's in a cell?

- Membrane
- Genetic material
- Machinery



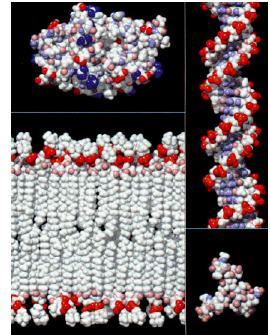
### Life's important molecules

- Proteins: enzymes (machines), actin filaments (skeleton, transport)
- DNA (information/blueprint to build proteins)
- Lipids (build membranes)



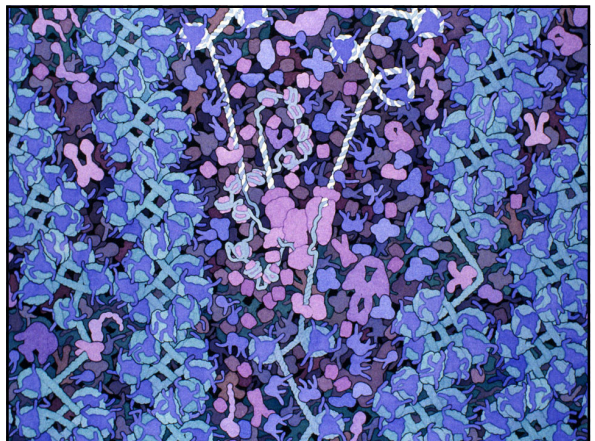
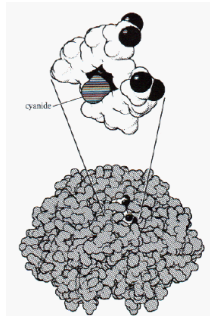
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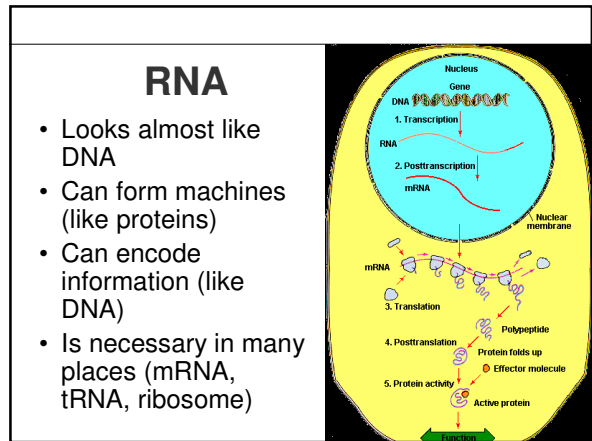
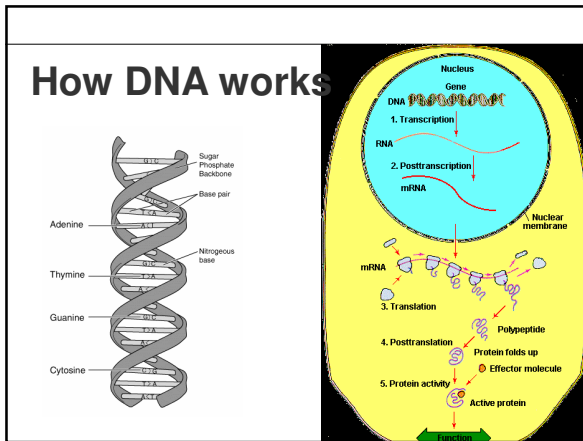
- Proteins, DNA, Lipids are mostly made up of Hydrogen (H, white), Carbon (C, pink), Oxygen (O, red), Nitrogen (N, light blue)



### How enzymes work

- Enzymes are proteins
- Proteins are long chains of amino acids
- Crumpled up and shaped in a particular way
- Often with a particular 'reactive center' or 'binding site'





*Origin of life*

## RNA-world?

- Chemicals → RNA → cells → proteins → DNA?
- DNA vs proteins first: chicken and egg
- What made the first RNA?
- How do scientists study this?