



Biology

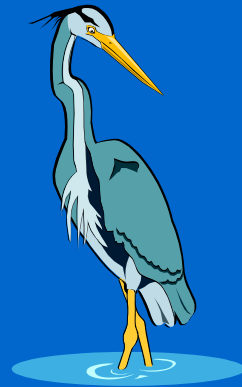


The study of life



Characteristics of living things:

- Made up of one or more cells
- reproduce
- grow and develop
- obtain and use energy
- respond to their environment



Biology: the study of life

- Bio = life
- logy = study of
- biologist: anyone who uses the scientific method to study living things
- there are many branches of biology that vary in size and complexity



STEPS OF THE SCIENTIFIC METHOD

- Determine the problem
- observe and collect information
- make a hypothesis
- test your hypothesis by designing an experiment and performing the experiment
- analyze your results
- draw conclusions
- go back to above steps and rethink, re-experiment, and re-conclude

Tools of a biologist -microscopes

- Compound light microscopes
 - most common
 - 1-1000x magnification
 - very versatile
 - limited resolution (focusing ability)
- Electron microscopes
 - view small objects
 - limit of resolution is 1000x smaller than a light microscope
- transmission
- scanning



MICROSCOPES

- TRANSMISSION
 - beam of electrons shine onto sample and then magnifies the image onto a fluorescent screen
 - can take pictures also
- SCANNING
 - beam of electrons move back and forth across the object and forms a 3-D image on a TV screen
 - only shows outside of specimen but is very detailed

*Limits of electron microscopes: operate only in a vacuum, TEM's need organisms to be stained, specimens must be dead