



# EVIDENCE OF EVOLUTION

A change in a population of  
organisms over time (generations)

Ch. 15-1 & 15-3

# 1. FOSSILS- remains of long-dead organisms

-Most found in sedimentary rock

-Biogeography-  
geographical  
distribution of  
fossils & living  
organisms



Bones





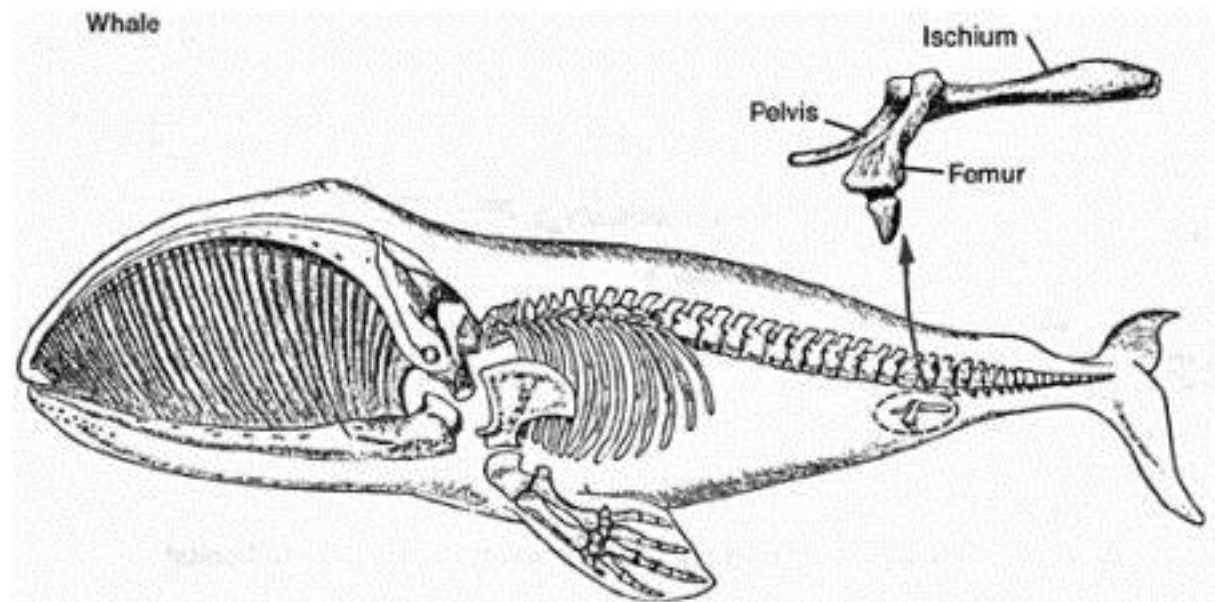




## 2. VESTIGIAL STRUCTURES- body parts/features reduced in size with no apparent function

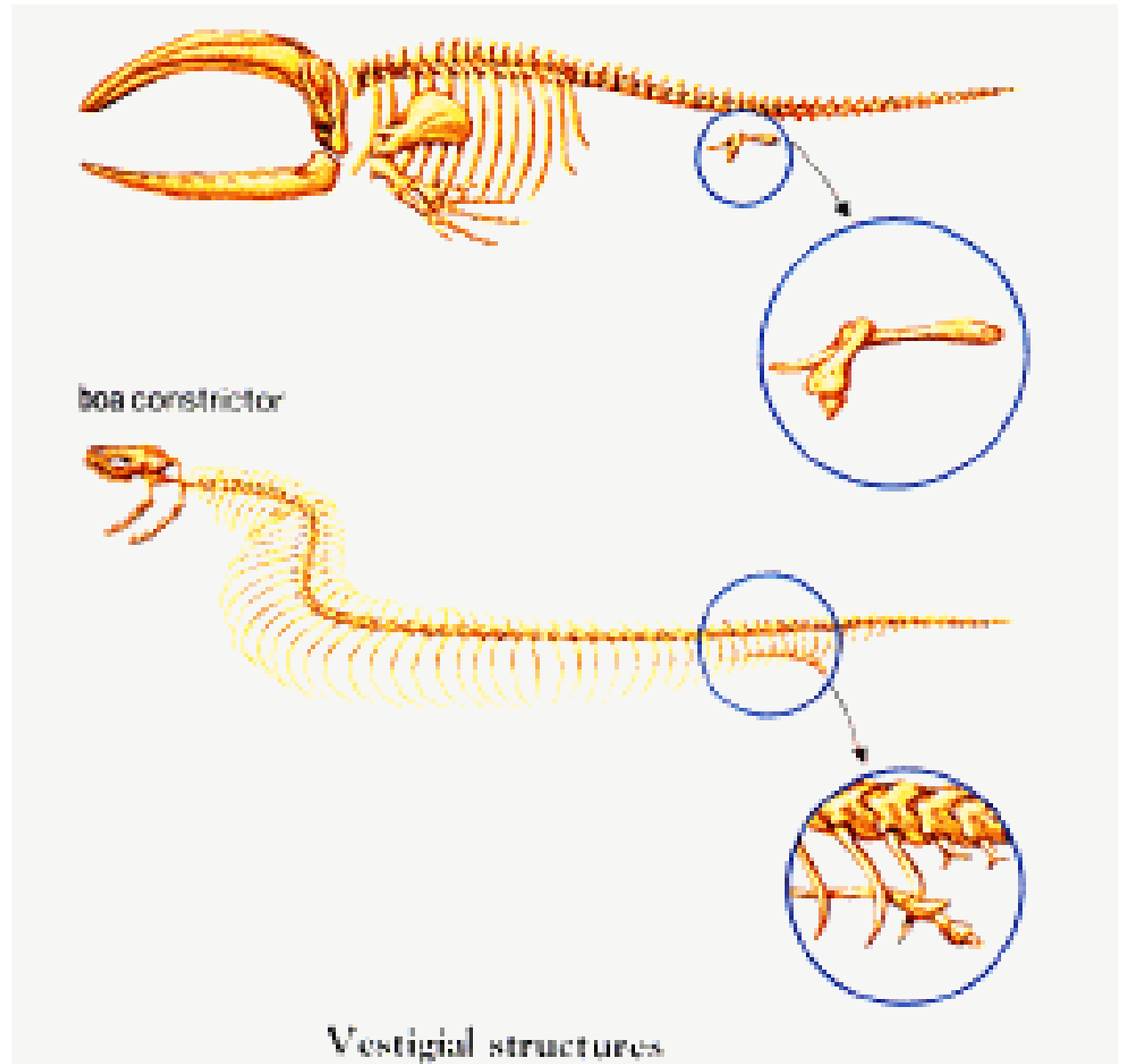
In humans- tail bone, ear-  
wiggling muscles, appendix,  
wisdom teeth

In whales-  
pelvic &  
leg bones



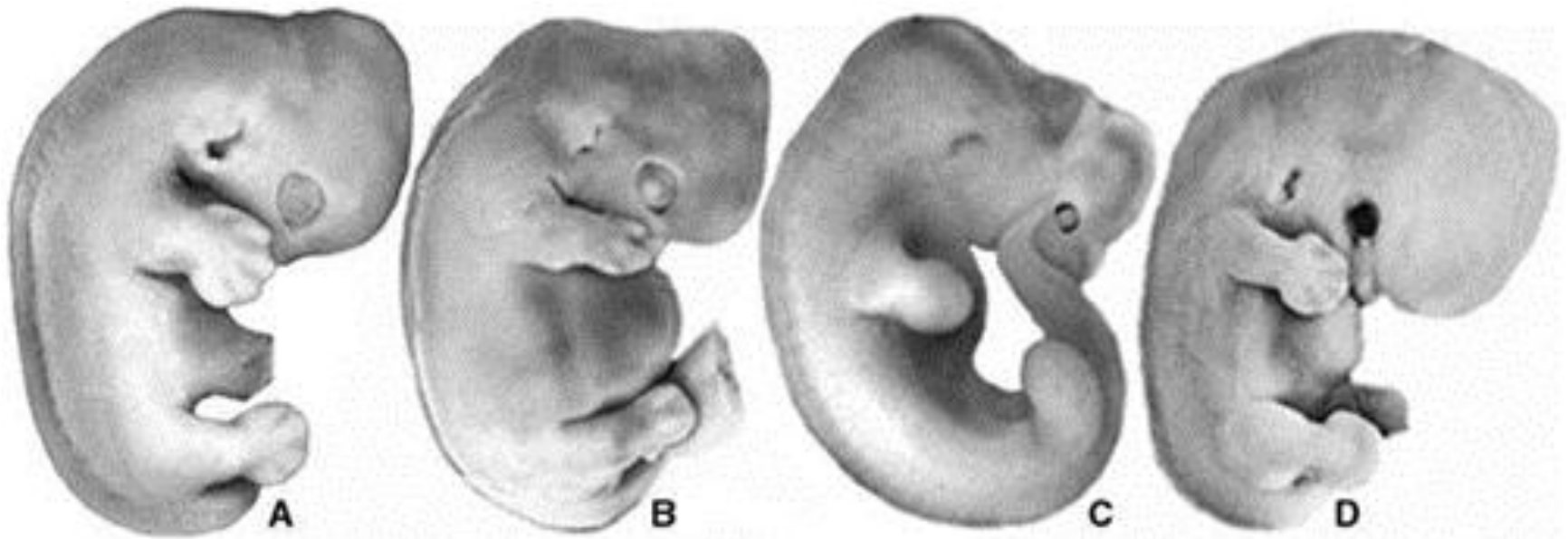
baleen whale


Features  
useful or  
functional in  
an ancestor,  
but not to the  
modern  
organism





### 3. EMBRYOLOGY- the comparison of embryos in their earliest stage of development



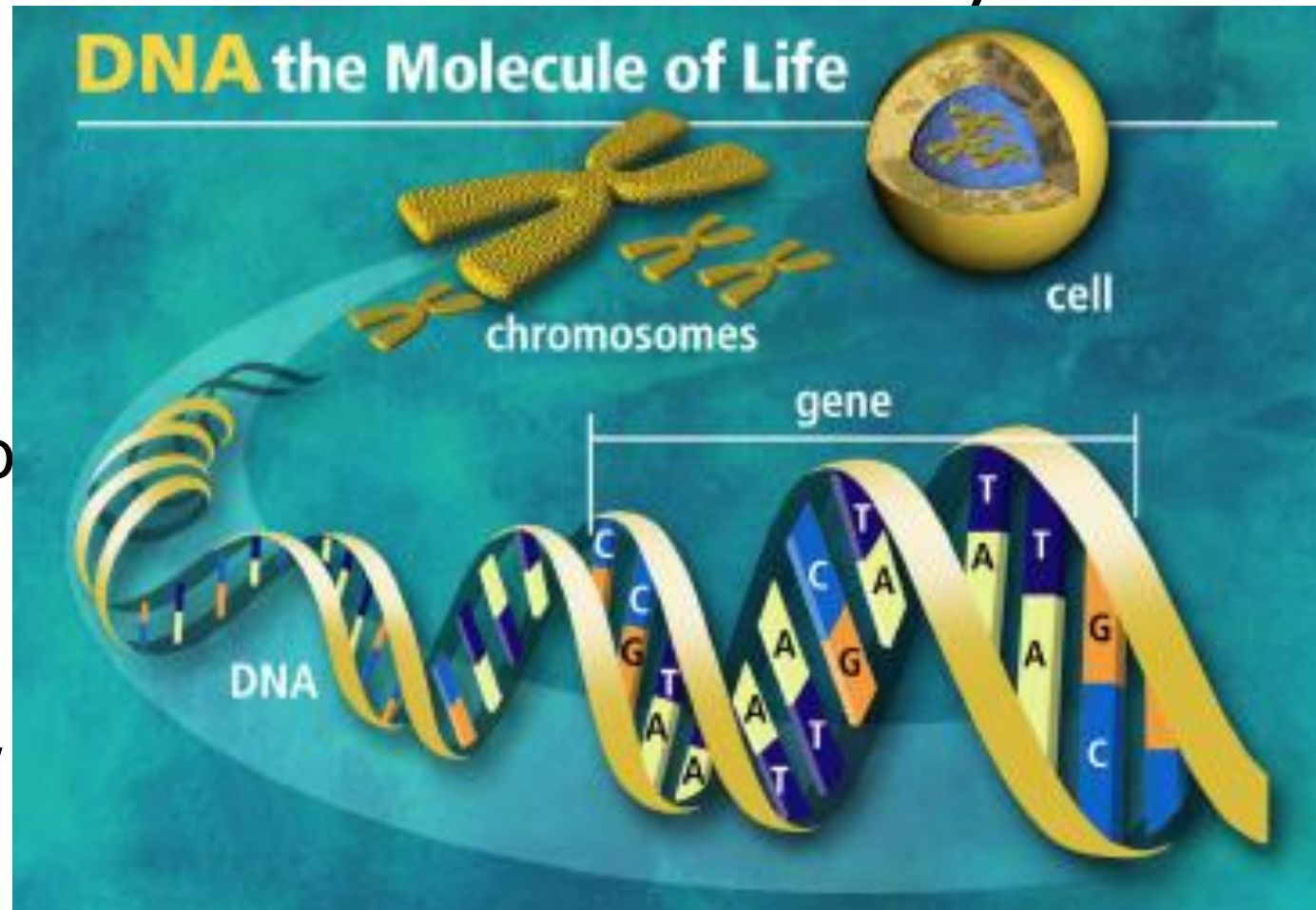


# Four Common Characteristics of All Vertebrates (Phylum Chordata) at some point in their life

- Nerve cord
- Backbone
- Tail
- Gills or gill slits (pouches)

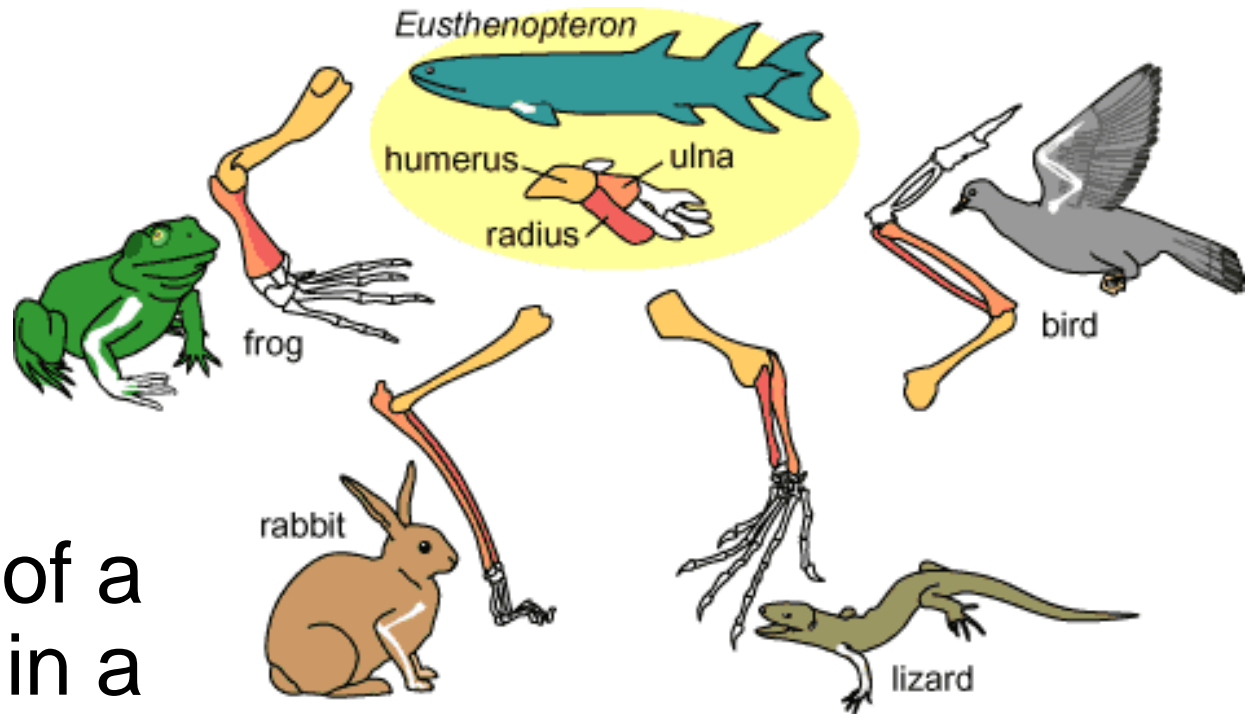
# 4. DNA STUDIES (SIMILARITIES IN MACROMOLECULES)

Compare amino acid sequences between organisms to determine degree of kinship (how close are they related?)



# 5. HOMOLOGOUS STRUCTURES-

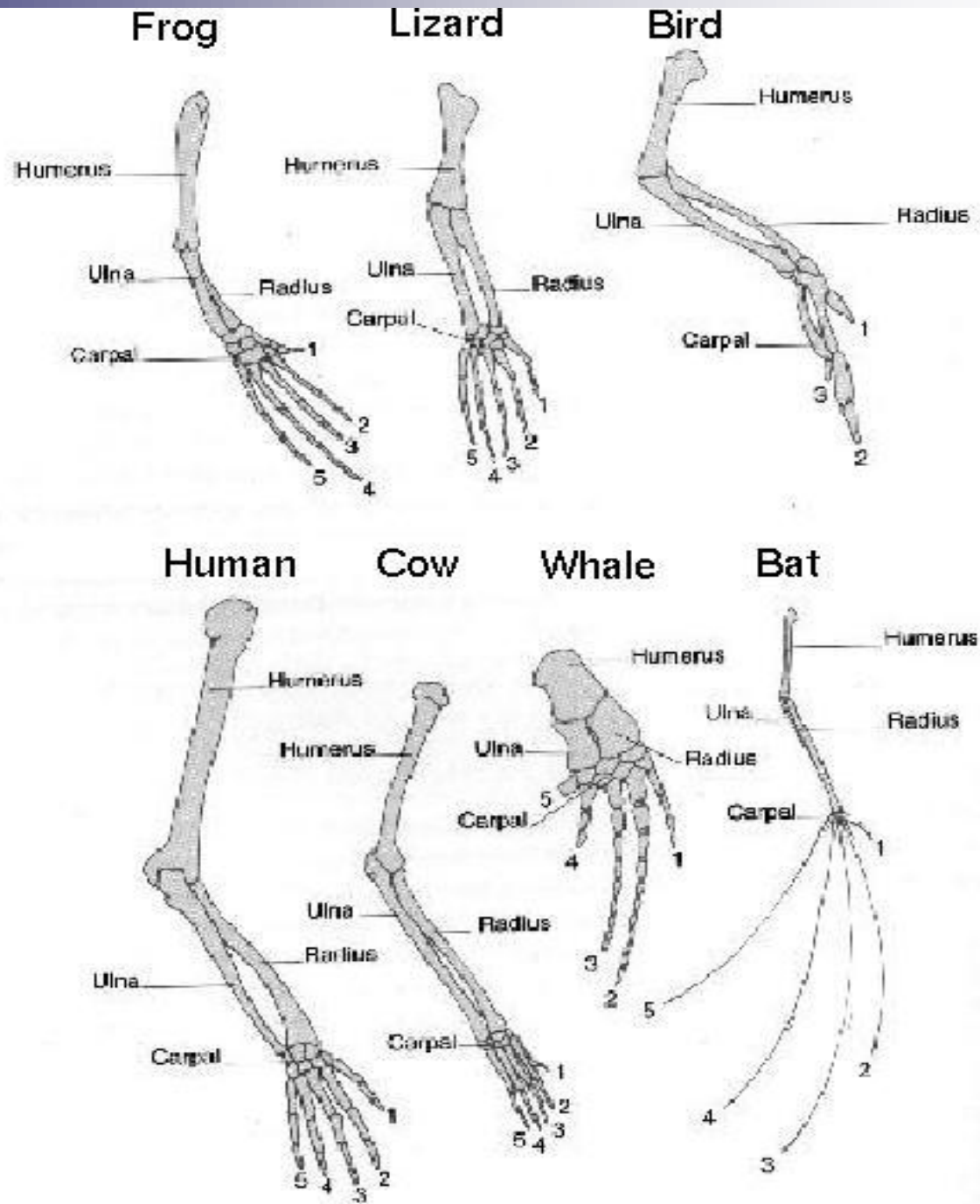
Body parts similar in origin and structure



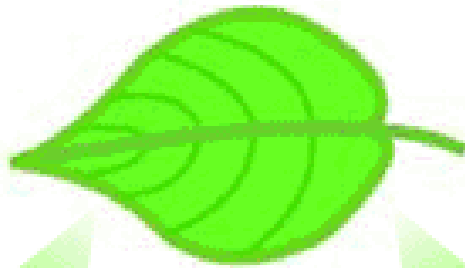
- Modifications of a feature found in a fairly recent common (shared) ancestor

# Vertebrate Forelimbs

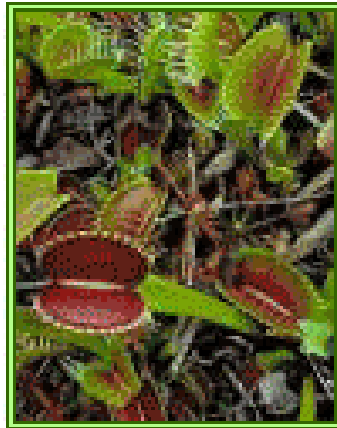
Humerus,  
radius,  
ulna



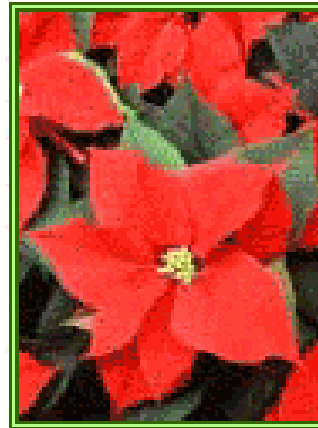
# Homologous Leaves



**Pitcher Plant**  
leaves modified  
into pitchers to  
catch insects



**Venus' Flytrap**  
leaves modified  
into jaws to catch  
insects



**Poinsettia**  
bright red leaves  
resemble flower  
petals



**Cactus**  
leaves have  
become spines

# Homologous Behaviors

- Behaviors can be homologous
- “Bower” courtship behavior
- Satin (left) and MacGregor’s (right) bowerbirds



# Homologous Genes

- Pax-6 gene builds eyes in developing bodies of fly, human and hummingbird

