PHYLOGENY

the evolutionary history of a species or groups of species

SYSTEMATICS

an approach to classifying organisms and determining their evolutionary relationships

ANALOGY

similarity due to convergent evolution rather than to a shared ancestry

EVALUATING MOLECULAR HOMOLOGIES

in this example 11 / 12 original bases have NOT changed since the species diverged

1.) homologous DNA sequences are identical between the 2 species

2.) deletion and insertion mutations shift and matching sequences

3.) those areas that are shaded in orange no longer match because of the mutations

4.) the matching regions are realigned using a computer program that puts gaps in sequence 1

TAXONOMY

- common names can be confusing

- scientific name=	**binomial nomenclature**
	* genus and species

HOMOLOGY

phenotypic and genetic similarities due to shared ancestry are called homologies

CLADISTICS

- cladistics uses common descent as the primary criteria to classify organisms

- due to descent with modification, organisms share some, but NOT ALL characteristics with their ancestors

PHYLOGENETIC TREE

- connect classification and phylogeny

- represents a hypothesis about evolutionary relationships

PHYLOGENIES

- phylogenies are inferred from both:

-molecular data	*gene sequences
	*protein sequences
-morphological features	* presence or absence of fins
	*number of legs
	*structures of the organism

PARSIMONY

-maximum parsimony

simplest explanation that is consistent with the facts

LIKELIHOOD

-maximum likelihood

a tree can be found that most likely reflects the sequence of events

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