

GTS 354

Semester Test 2

Summaries based on the lecture slides & additional information from articles.

Robustness	Ability to maintain a phenotype/function in the presence of internal or external influences
Plasticity	Permanent or temporary changes in phenotype (molecular and other), or phenotype responses in different environments. (Genotype-phenotype-environment)
Purifying selection/ NEGATIVE selection	Mode of natural selection that eliminates deleterious mutations and preserves the <i>status quo</i> in protein-coding genes. $Ka/Ks \ll 1$
Non-synonymous substitutions	Nucleotide substitutions in protein-coding genes that lead to amino acid changes in the encoded protein
Synonymous substitutions	Nucleotide substitutions in protein-coding genes that do not lead to amino acid changes in the encoded protein
POSITIVE selection	Mode of natural selection that INCREASES the frequency of initially rare beneficial alleles in a population; in protein-coding genes. This regularly leads to $Ka > Ks$
Genome architecture	Mapping of genetic elements onto the genome, including gene order, and clustering and co-regulation of genes with related functions
Neutral sequence network	Sequences connected by small sequence changes, very small difference in fitness between neighbours (the size and shape of the peaks indicate the size of the networks)

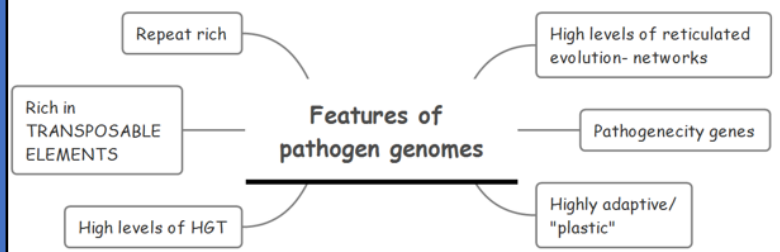
Terminology tables

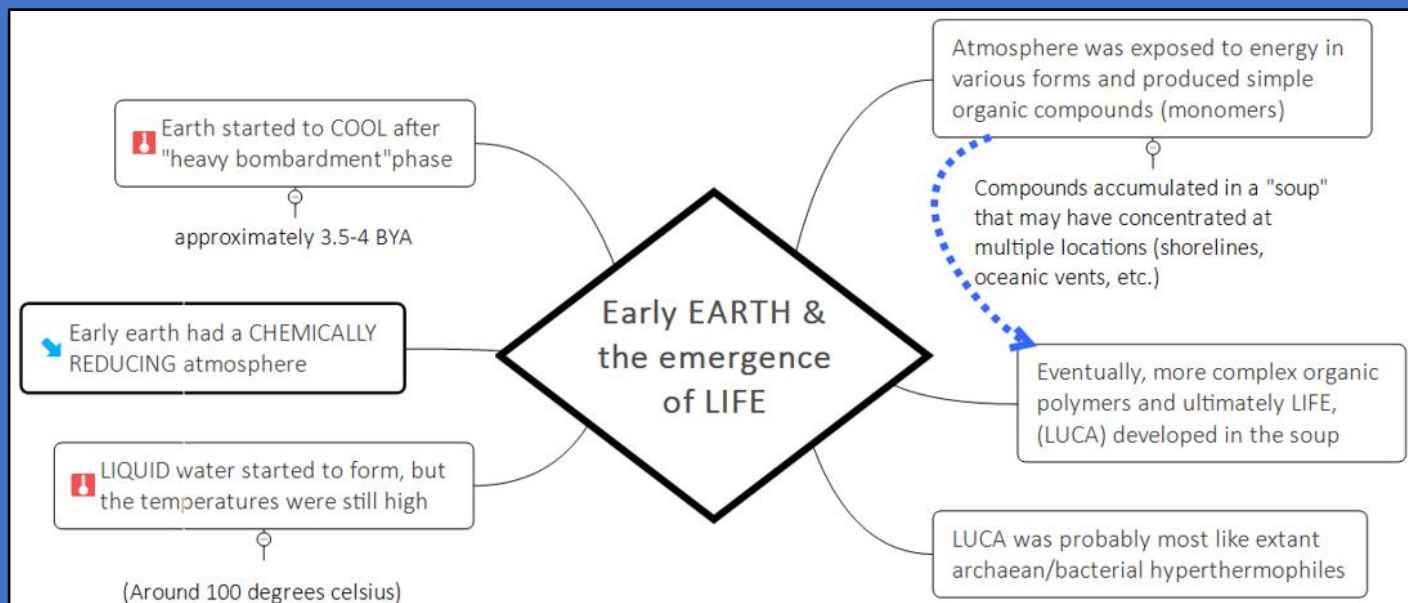
Includes lecture 11-20

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Phylogenetic networks:

- Bifurcating phylogeny may not be appropriate for FAST EVOLVING organisms
- Horizontal Gene Transfer contradicts a bifurcating phylogeny
- When is an evolutionary network most appropriate?
=When LARGE amounts of DNA is lost & acquired over short time periods





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