Biology Year End Review

Variation

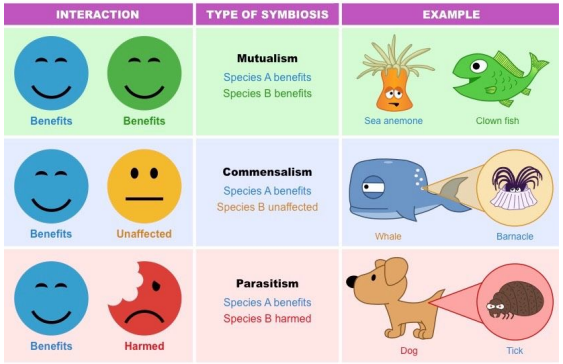
- Differences in organisms are known as variations
- Intraspecific variation - variation within a species
- Interspecific variation - variation between species
- A species is any group of organisms that look similar and can mate to produce fertile offspring

Adaptations

- A variation that helps an organism survive is an adaptation - can be physical or behavioural
- Natural selection is the inheritance of successful variations
- Natural selection can lead to speciation and contribute to evolution

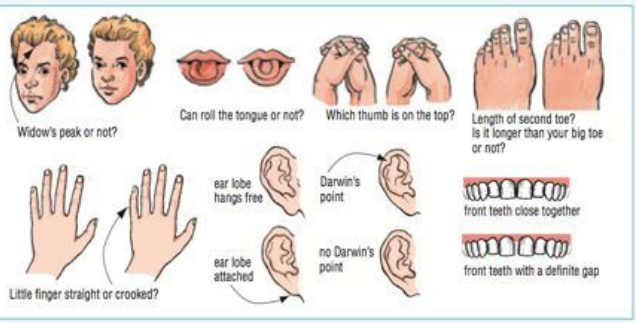
Niches

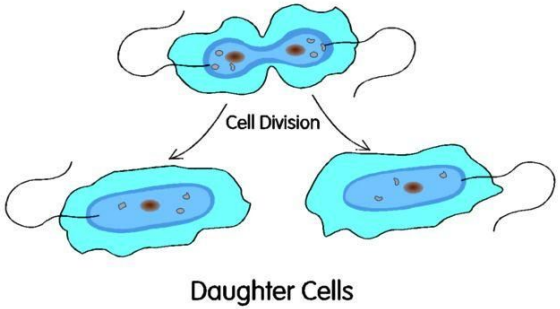
- Niche is where an organism lives and its roles in the environment
- Generalists have a large niche while specialists have a small niche
- Mutualism, commensalism, parasitism - 3 types of symbiotic relationships



Heritability

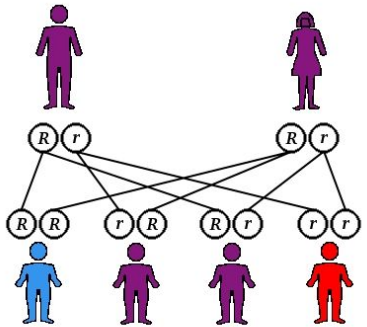
- Traits are passed down through the genes that are inherited
- Sexual reproduction allows a new individual to inherit some genes from each parent
- Asexual reproduction guarantees identical offspring with an exact copy of the parent’s genes





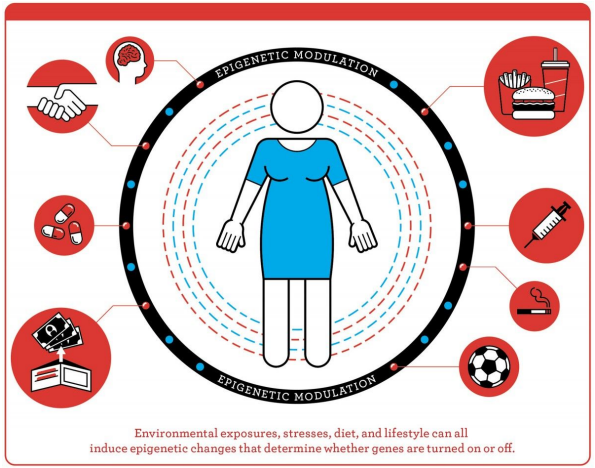
Genetics

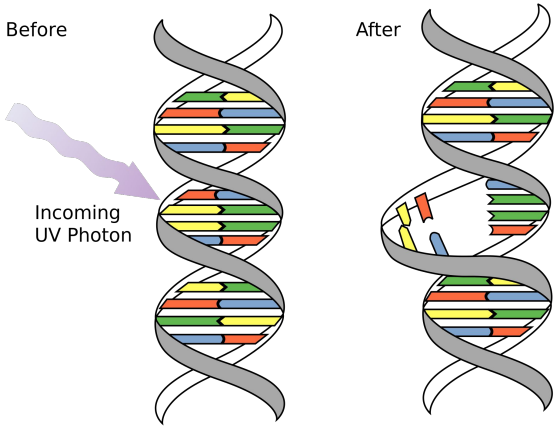
- Variations can be discrete or continuous - limited possibilities or range of possibilities
- Each gene has two forms, dominant or recessive, known as alleles
- Dominant alleles will always be expressed if they are present
- Some traits will show partial dominance



Traits

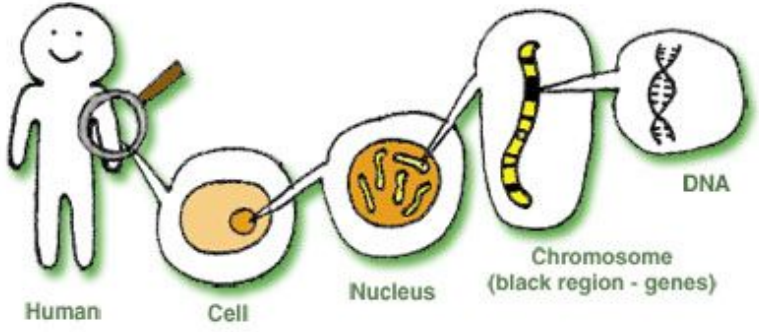
- Mutations can be caused by changes in the DNA of an organisms
- The environment can influence gene expression





DNA

- Deoxyribonucleic acid is the molecule which contains heritable material
- DNA is coiled tightly into chromosomes (humans have 46, 23 pairs) which are found in the nucleus of a cell
- Genes are section of code within the DNA which tell the cell to produce specific proteins

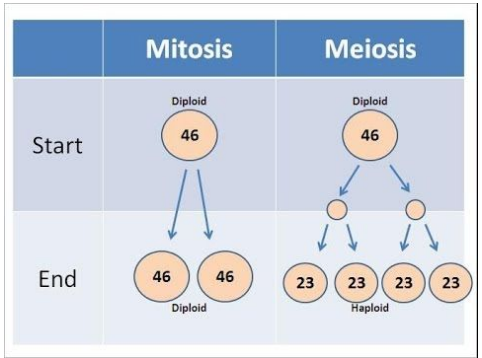


DNA

- Dna is shaped like a coiled ladder known as a double helix
- A - T, C - G, are nitrogen base molecules
- The sides of the ladder are made of sugar and phosphorus molecules

Cells

- Mitosis - somatic cells create an exact copy of themselves to grow, repair or maintain part of the body
- Meiosis - 4 gametes (sex cells) are produced which all have different genetic material - contain half of the normal amount of chromosomes
- When two gametes meet they fertilize and create a zygote

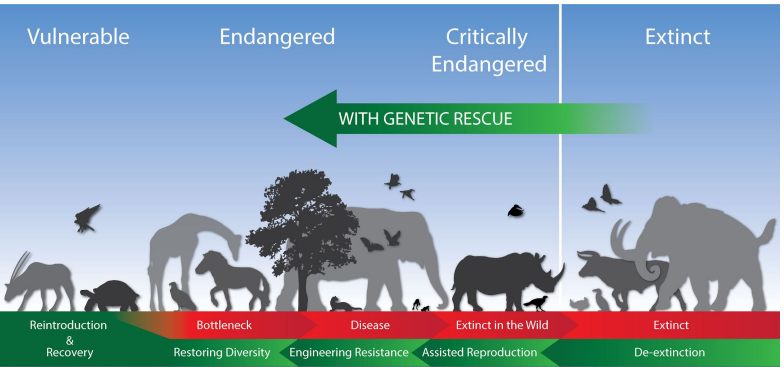


Changing Genes

- Manipulating the genes of an organism is known as genetic engineering
- Transgenic organisms contain the genetic material from another organisms
- If humans selectively breed organisms we can produce offspring with desired traits - artificial selection

Extinction

- Species that no longer exist are extinct
- Species that are no longer found in an area they used to be found in are extirpated
- Humans have accelerated extinction rates through destruction of habitats, hunting, climate change, etc



Preserving Biodiversity

- More biodiversity is found near the equator
- Zoos and seed banks can help provide safe places for biodiversity to start again
- Zoos will often exchange animals to increase the genetic diversity of the species