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| Example and Brief Description | More Offspring than will Survive (overproduction) | Variation  | Selection Pressures  | Who survives and breeds? | Potential Consequences |
| Antibiotic Resistant BacteriaAntibiotic resistance is the ability of a microorganism to withstand the effects of an antibiotic | More bacteria are produced than can be supported by the environment, resulting in competition for limited resources. | Due to random mutations, some bacteria may have genes that help them resist the effects of antibiotics.  | Presence of antibiotics in the environmentMisuse of antibiotics give a greater chance of bacteria developing resistance. | Bacteria without the resistance mutation die or are largely unable to reproduce to pass their gene onto offspring. Bacteria with the resistance genes survive long enough to be able to reproduce and pass their genes on to their offspring. Bacteria can also pass genetic material in the form of plasmids to each other via horizontal gene transfer, so receiving bacteria can also reproduce to pass these genes on to offspring 🡪 this can also be between species, not just populations | Offspring are also not affected by antibiotic.Over many generations, the frequency of the resistance gene increases until it comes to dominate the population.Bacteria with multiple antibiotic resistant genes are called superbugs. Organisms infected by antibiotic resistant bacteria are less likely to recover because bacteria are more difficult to kill via antibiotics. Eg. MRSA (methicillin- resistant Staphylococcus aureus) is resistant to most antibiotics. It is now the most prevalent drug-resistant pathogen in hospitals, and has been reported in community outbreaks.  |