

One of the most famous is that of darwins finches essay sample



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There are many examples of natural selection. One of the most famous is that of Darwin's finches. He observed these birds when he travelled to the Galapagos Island when on his travels on the HMS Beagle. He observed the differences in the size and shape of the bird's beaks on the different islands, as they had evolved to eat different food types on the different islands of the archipelago. He brought back samples of the birds and these are now preserved in the Darwin Centre in the National History Museum in London.

Some examples are:

The large ground finch had a strong beak with which to crack nuts open.

The large tree finch has a strong, sharp beak and it uses this to grasp large insects like beetles.

A warbler finch has a small pointed beak and it catches flying insects on the wing.

The cactus finch has a long thin beak so that it can probe between the spines to take nectar from the cactus flowers and eat the seeds.

The woodpecker finch has a very hard beak that it uses to hammer wood, and it is able to use a cactus spine to probe the bark for insect larvae.

Another commonly referenced example of natural selection was observed in the 19th century in Great Britain, and was caused due to polymorphism of colouration in moths. The peppered moth, *Biston betularia*, had two main forms - a pale wing with darker speckled markings and a very dark coloured wing. The dark wing is called the melanic form as it has a high concentration of the pigment melanin which makes it dark coloured. In 1849 there was only

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the pale coloured moths in Manchester, but by 1895 the proportion of melanic moths had risen to 95% of the population. In the fifty years or so between then Manchester had become so industrialised that the pollution had turned the surfaces of many buildings and trees black. In polluted areas the darker moths had the selectional advantage as they could not be seen easily by birds and eaten, whereas in unpolluted areas the light speckled moths had the selectional advantage as they blended in on the natural lichen or tree bark. The genotype of melanic is CC or Cc and pale is cc.

One of the most worrying examples of natural selection is that of antibiotic resistance by a number of bacteria. When a person is prescribed a course of antibiotic medication it is important that they take the complete course and not stop before the end, even if the symptoms have disappeared. The reason for this is that the susceptible bacteria will be killed immediately and those that have a greater resistance are not affected immediately, if at all. This means that they will survive, be spread to another host and will go on to reproduce and infect them. The evolutionary change is that all bacteria will end up deriving from the antibiotic resistant strain, and this will mean that certain antibiotics are useless in treating that particular disease or infection. This is why many GP's are so cautious about prescribing antibiotics these days, as they have to keep treatments for when they are really needed so as to prevent the spread of antibiotic strains of bacteria. In many areas of the world, "superbugs" have developed. These are bacteria that are resistant to almost every form of known antibiotic, and so are almost impossible to treat. Examples are MRSA (Methicillin-resistant Staphylococcus aureus) and Clostridium difficile.

MRSA – This is the most serious of the hospital superbugs. It has since been re-named multi-drug resistant *Staphylococcus aureus*. *Staphylococcus aureus* is a bacteria that causes many types of infection in the human body, from boils to impetigo, and it is extremely infectious. If a MRSA bacterium enters the bloodstream it can cause septicaemia, septic shock, pneumonia, abscesses, meningitis and death. It is mainly a concern for surgical patients in hospitals.

*C. difficile* – *Clostridium difficile* (*C. difficile*) is a bacterium that is present naturally in the gut of around two-thirds of children and 3% of adults. *C. difficile* does not cause any problems in healthy people. However, some antibiotics that are used to treat other health conditions can interfere with the balance of ‘good’ bacteria in the gut. When this happens, *C. difficile* bacteria can multiply and produce toxins (poisons), which cause illness such as diarrhoea and fever. At this point, a person is said to be infected with *C. difficile*. Most cases happen in a healthcare environment, such as a hospital or care home. Older people are most at risk from infection, and most cases occur in people aged over 65. Children under the age of two are not usually affected.