

Genetically Modified Organisms (Crops and animal production)

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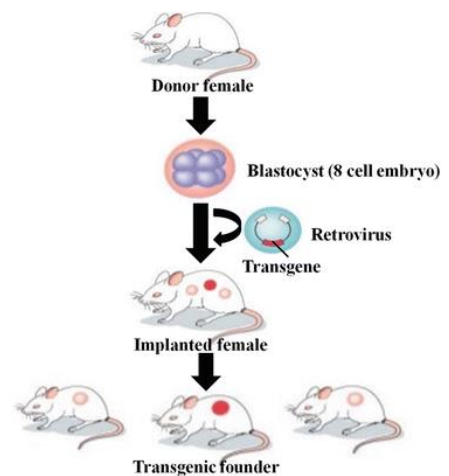
DNA's discoveries importance



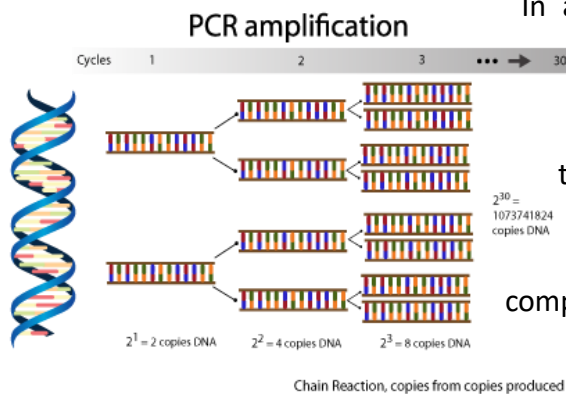
The discovery of DNA can be remounted to Gregor Mendel with his selective breeding experiments. This led to discover its structure by scientist like Friedrich Miesche, who extracted DNA and discovered nucleic acids, or Tomas Morgan, who verified Walter Sul-ton's chromosome theory with fruit fly experiments. With this discoveries, microbiologist like Hamilton O.Smith discovered the type II restriction enzymes, which were found to be essential to genetic engineering by helping advance the technique of DNA recombination. It was then in 1973 that Stanley Cohen and Herbert Boyer created the first genetically modified organism by removing a gene from one organism and inserting it into another.

Relation with DNA

Genetically modified organisms are created by altering its DNA by genetic engineering techniques. It involves inserting a new DNA into the genome (into the cells) of an organism, giving it different characteristics. To achieve these genetics can make two processes: One is to apply the appropriate DNA segment on the surface of tiny metal particles which then are inflicted on the cells or the other is to use viruses or bacteria which can transfer their DNA into a host cell.



Relation with DNA and inheritance



In an extent GMO is related with DNA replication because of the way, PCR (Polymerase Chain Reaction) a process that's based on the principles of DNA replication, can detect "the inserted transgenic DNA (GMO)" (Genetic Analysis, 2020) in a sample by amplifying DNA copies billions of times. By using short DNA segments (primers) that complement the transgenic DNA sequence, specificity for the inserted DNA is achieved. The process of amplification is carried out by the enzyme DNA

polymerase, which causes the synthesis of new DNA utilizing the primers as templates. Additionally, genetically modified organisms are related with inheritance by achieving of passing a certain trait through reproduction after the specific DNA sequence is inserted.

Advantages

The advantages of GMOs are that they play a key role in biomedical research for contributing humanity. For example, GMO animals are produced for human consumption, like the super-salmons (which mature faster) or GMO crops that have resulted beneficial on being resistant to pests, having a longer shelf life or even tasting better. These benefits had help farmers to save money in pesticides, and thus lowering the prices for costumers.



Risks



But GMO has been controversial over the years because of the risks it might have. For example, according to Center for Food Safety. Org, unexpected allergy reactions might be caused by GMO food or toxicity caused by their instability. Additionally, GM organisms have a risk of spreading to non-GMO plants and animals, crossbreeding with them. It is still unclear the long-term environmental effects of genetically engineered organisms might cause.

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