

Factors to be considered in conducting plasmid purification and its application i...

[Science](#), [Biology](#)



The paper " Factors to Be Considered in Conducting Plasmid Purification" is an excellent example of a term paper on biology. Plasmid purification happens to be an area of microbiology and it involves some principles which in most cases are performed in laboratories. In this particular case what is of interest is to do with the purification of DNA. There are various ways through which DNA purification can be done and plasmid purification happens to be an example of these. In most cases what happens when conducting plasmid purification is that there are some kits involved in the process. These kits are what will help an individual to isolate the plasmid DNA on the basis of the scale and the purity that is needed. (Horak, 1998) In this regard, there are some things that are to be put into consideration when conducting plasmid purification. In this case, it will be of the essence to consider some of the things that are of importance when carrying out this process.

Possession of a plasmid number

This determines the volume of culture that will be used in the purification process. Again in this same regard, it should be noted that manipulation of some of the properties of these plasmid patterns may influence the final outcome. Such properties include the size, origin of replication among other things. These will influence the outcome in terms of the quality and the DNA yield. The number attached to this will influence the binding capacity, for example, QUIGEN-tip 100 and QUIGEN-tip 500.

The nature of the host bacteria

<https://assignbuster.com/factors-to-be-considered-in-conducting-plasmid-purification-and-its-application-in-gene-therapy-modeling-of-diseases-and-creation-of-antibiotics/>

The strain of the bacteria used will go a long way in influencing the quality and the quantity. It has been seen that when high amounts of carbohydrates have released the quality of the DNA that is released will be comparatively lower. At the same time, high endonuclease levels during lysis will bring about low DNA quality. These are exhibited in HB101 and the JM100 series among others.

The Background of the chosen bacteria

There should be antibiotic selection in all aspects of growth. This ensures that the cells not receiving plasmid fails to continue to grow and thrive even under the pressures of antibiotic. The sensitivity of these antibiotics to temperature changes is also another fact that should be taken into account.

Application of Plasmid Purification

Gene Therapy

There are some gene therapies whose success is greatly dependent on the insertion of some genes which prove to be therapeutic and in this case without causing mutations, injury or an immune response. One of the approaches that can be used in this case is that of application of plasmid vectors. (Lipps, 2008)

Models of diseases

The knowledge about plasmids is used at times used to carry out genetic engineering in the embryonic stem cells with the intention of creating a genetic disease model, say of an animal.

Episomes

This application is particularly to do with some known diseases for example cancer. The cancer viruses, in this case, are kept in the latent state. What happens, in this case, is that the chromosomes of the host cell remain separated from the episomes.

Creation of Antibiotics

Certain characteristics that are portrayed by the plasmids when interacting with the cells make it possible for the development of antibiotics. An example of this is the rate of replication of the plasmid-containing cells in relation to the daughter cells. For example, daughter cells taking not receiving plasmids may take over the culture. An example of a component, in this case, is ampicillin which appears in some of the commonly used antibiotics in different concentrations. (Ehlert, 1993)

Advantages of the process

There are some advantages that come about in the application of plasmid purification in DNA replication.

1. Leads to advances in areas such as cloning

Through adequate knowledge of DNA and its associated activities has led to certain developments in the areas of replication. In the case of cloning, it may be easier to develop cells of an organism without necessarily having to go through the natural process.

2. Reduces time spent in research

With this kind of information, the time that is spent in scientific research is

greatly reduced. This is so because it encompasses several issues regarding cells and organisms at the same time. This has especially been boosted by the development of kits which tend to make use of this technology leaving the researchers to focus on other areas of their research.

3. Gene Development

In this same connection, there are developments genes. For example in the case of genes that are incompatible with each other for example relating to a donor and recipient may be restructured in a way that will make them compatible with each other thanks to the technology that is available at the moment.

There are still many advances that are being made in the area of cell study. What is there today will prove to be rather redundant in a few years to come. However, at the moment it will be of the essence to get an understanding of what is currently being applied and try making use of it in the best way possible for the purpose of realizing developments in our lives. (Lipps, 2008)