

DNA synthesis by using Glycosyltransferases Micro Fluid Chip

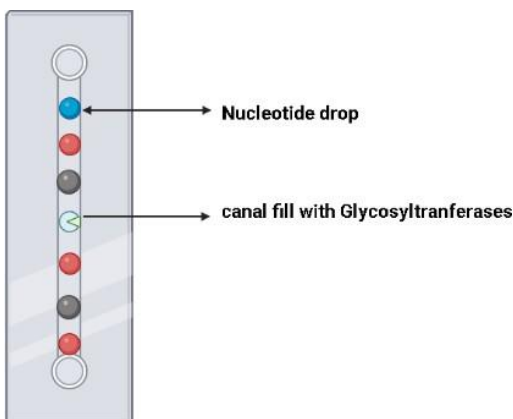
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Abstract

DNA synthesis is a molecular biology process in which the DNA is created by using artificial method. There is different standard method for gene synthesis like: oligonucleotide synthesis, endonuclease-mediated assembly, annealing base connection of oligonucleotide. Oligonucleotide synthesis is methods of relatively short fragment of nucleotide with define sequence. The production of oligonucleotide the necessary bases adenine, thymine, guanine, and cytosine is added the synthesis is a computer control process that repeats several steps until full length product. Finally, the concentration of each oligonucleotide adjusted. The mixture of oligonucleotide is than provided gene synthesis lab. Oligo lab is assembled into the gene of your choice assembly by PCR (Polymerase chain reaction). DNA is made of nucleotides each nucleotide contains a phosphate group, a sugar (deoxyribose) and four nitrogenous bases adenine, guanine, cytosine, thymine. A deoxyribose sugar is the five carbon sugar molecules that help form the phosphate backbone of DNA. Deoxyribose sugar is a lacking of one oxygen atom that why called deoxyribose sugar. A deoxyribose sugar contains a "OH" group which play important role in our technique.

Gene synthesis by using Glycosyltransferases Micro Fluid Chip method is simple and cost-effective method which DNA is synthesis by using syringe nozzle and micro fluid chip. Syringe consists of four types of nozzle and four types of syringes each nozzle is fill with different nucleotides (A,T,C,G). Nozzle drop it nucleotides drops on the micro fluid chip according to the sequence. The micro fluid chip carries short drops of nucleotides and Glycosyltransferases start adds DNA nucleotide according to the arrangement of drops or nucleotide.

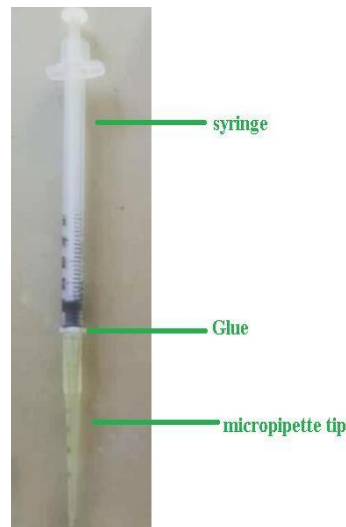


Syringe Nozzle Design and Droplet:

Syringe nozzle consists of four types of nozzle each nozzle fill with different nucleotide in order to make a very small drop of nucleotide.

Procedure:

1. Take a syringe and nozzle(Micropipette tip)
2. Place a tip on the syringe by using glue



Reaction mechanism:

Condensation is a process in which two or more molecules combine to form a large molecule with the loss of small molecule such as water. The nucleotides join together by the formation of phosphor ester bond. The OH group of a phosphate on one nucleotide faces a condensation reaction with the OH group on the carbohydrate ring of another nucleotide.

References:

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