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"GENE TRANSFER IN DROSOPHILA"

(Article Review)

Zainab A. Al-Tameemi[1], Rawaa Hamid Abdulshahed[2]

[1,2] Directorate of Education in Holy Karbala, Iraq
e.mail zainab.abd1202a@csw.uobaghdad.edu.iq

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ABSTRACT

Drosophila, or fruit flies, have been evident enough to conduct the activity of gene transfer within their body, which has been the main attraction of this paper. The paper has considered an article that has dealt with the "Gene transfer in Drosophila." Other relevant articles by researchers that have conducted similar research, mainly focusing on P elements and DNA transfers, have been discussed in the paper to support the analysis presented by this paper.

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INTRODUCTION

Drosophila is one of the flies' genes that emerges from the family of Drosophilidae. As per medical terms, the Drosophilidae is known to be a diverse and cosmopolitan family of flies that can be referred to as fruit flies often. The paper's main focus is to discuss the transfer of a gene in Drosophila. In this case, the main paper will be reviewed and analyzed. To support the article, various articles or research papers will be studied to make the article review much more efficient. This paper can be informative to provide information to future researchers while conducting practice on the gene transfer of Drosophila.

DISCUSSION

Drosophila is one of the flies genera belonging to the Drosophilidae family. The Drosophilidae are one of the diverse, cosmopolitan families of flies that includes a specific species named fruit flies. They are further known as the pomace flies, an accurate term. These flies are generally known as fruit flies, vinegar or wine flies. The transfer of genes in Drosophila remains the main topic of the article. The generation of the "germline transformants" present in the "Drosophila melanogaster" depends on the operation of exchangeable elements to affect the addition of chromosomes of the vaccinated DNA. The researchers have achieved a proper understanding of the biological factors of the P elements, which has assisted them in achieving success in this approach. It has also helped the researchers to gain knowledge on the syncytial nature of the primary embryo of Drosophila. By conducting the research, it has been found that the 13 embryonic distinctions of the primary embryo following the fertilization process are almost nuclear. Apart from this, it has also been found that it resulted in the formation of a syncytium. As a result, it has been analyzed that if the microinjection in the subsequent section of the embryo is executed before the process of cellularization, then a section of the injected DNA will exist in the "cytoplasm of the pole cells". The cytoplasm of the pole cells is also known as the progenitor of the germline.

As discussed, the researchers have achieved a proper understanding of the P elements, which is the reason for the approach's success. While executing the research, it has been found

that the presence of DNA comprises mainly two major components. The primary component comprises an assistant plasmid comprising the defective "P element capable of producing the P transposase". The P transposase can do activity in trans to assemble P transposons which is itself steady. The latter component includes a "transposon construct". In it, the classification to be combined as a "transgene" is located between the "31-bp P element" with overturned terminal repeats with an appropriate marker. The helper plasmid that has produced the transposase will react on the upturned recurrences of the transposon concept and generate the addition of the transposon within the chromosomal sites of the germline of the recipient. The P element biology and the features of P element-arbitrated change have been revised lengthily. This paper has dealt primarily with all the technical details required to achieve germline transformants. In this case, some of the other researchers have executed research and tested many different novel vectors for "P-element mediated gene transfer". These vectors consist of "restriction sites" to clone a wider variety of "DNA fragments" within a smaller and "non-autonomous P element" [2]. It can be utilized to transduce effectively microinjected DNA fragments sequences into the "germline chromosomes of D. melanogaster". The P element in the vector is the carrier of a rosy genetic factor that attends as an effortlessly scored indicator to generate the transition of DNA fragments that does not converse with a determinable "phenotype" [2]. The disaster of certain P elements constructs to act as "vectors" which proposes that the sequences of the "P elements integrating to the 31 bp converse terminal repeat that is needed for the cis transportation". Moreover, the elimination of the first "38 bp of the sovereign 2.9 kb P element" that evolves to destruct its ability to produce trans-acting factors that are needed for the trans-acting features that are needed for the migration of the non-autonomous P elements. The practitioners have discussed the preparation of a genomic sequence that seemingly emerged by the migration of a 54kb compound P element from a tetrameter plasmid [2]. After making an analysis of another article, it has been understood that the new vectors that are compatible for the P-element arbitrated germ line transition of the Drosophila Melanogaster using the genes of passengers who have given expressions, but they are not clear enough to detect phenotypic changes of the distorted flies. The P element vectors consist of a white gene that is fused to the "heat shock protein 70 gene generator". Exposure of the "white gene" releases the "white phenotype of the receiver flies" partly or totally, which can be executed without heat treatment too. The "distorted descendants" of most founder animals fall within two separate classes that are easily differentiated by the presence of their orange and red eye colours [3]. By conducting the research, it has been found that the baculovirus expression vector system is well known to be a safe, effective, but cell-lytic heterologous protein expression system in the cells of insects. The practitioners have shown the presence of the baculovirus system for the efficient transfer of genes and expression while using the renowned and genetically understood Drosophila S2 cells [4]. Wang *et al*. 2021 have opined that microbes affect host fitness and adaptation in the environment, which has become one of the main attractions in evolutionary biology. In order to understand the function of the microbial genomic variation for host fitness, the practitioners have tested for a relation of bacterial genomic variations and Drosophila melanogaster offspring number that is conducted in a microbial Genome Wide Association Study [5].

CONCLUSION

From the above study it can be concluded that the P element study and the transfer of the DNA has given a positive result to the research. The main emphasis of the paper has been to converse about the transfer of gene that takes place in the Drosophila. In this case the main paper has been reviewed and analyzed. In order to support the article various articles or research papers has been studied in order to make the article review much more efficient. This paper

will be educational in order to provide information to the forthcoming investigators while conducting a practice on the gene transfer of the Drosophila.

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