CALIFORNIA STATE SCIENCE FAIR
2002 PROJECT SUMMARY

Name(s)
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Project Number
S0423

Project Title
Confirming the Identity of an Unknown Piece of DNA by Restriction Mapping

Abstract

Objectives/Goals
The purpose of the ezperiment is to show the basic and at times advanced fucnctions of DNA such as replication, translation, transcription, through the study of DNA sections, that have been catalyzed with DNA restriction enzymes (a process called DNA restriction). The purpose of this project is to bring a better udnerstanding of the universal hereditary material along with the benefits of contemplating such a unique macromolecule and its effects on human life, culture, and knowledge. By studying small sections of the material, this project hopes to bring some sense of resolution.

Methods/Materials
1 micro centrifuge tube of lambda DNA; 1 micro centrifuge tube of HindIII; 1 micro centrifuge tube of EcoRI; 1 micro centrifuge tube of KpnI; 1 micro centrifuge tube of BamHI; 1 micro centrifuge tube of Bovine Serume Albumin; 1 bottle of TBE running buffer; 1 microcentrifuge tube of Buffer E; 1 microcentrifuge tub e of Buffer C; 1 bottle of 1% Agarose; 1 bottle of H20; 6X Loading Dye; Wax Paper; Ethidium Bromide; Electrophoresis CHamber; Power Supply; UV Boz and Camera; Micropipets; Micro centrifuge tubes; Rubber gloves; Lab coat; plastic cover; sharpie markers.

Results
After the digestion process, the double digests resulted in what was expcted. The DNA digested EcoRI and KpnI resulted in a bp fragment in between the 100-200 markers. The DNA digested with KpnI and HindIII resulted in a bp fragment a little over the 400 markers. The DNA digested with EcoRI and HindIII resulted in a bp fragment in between the 500 and 600 markers.

Conclusions/Discussion
The hypothesis was proven to be correct. The experiment resulted wiht the appropriate base pairing observed in the picture. With the appropriate resulting of base pairs, it can be concluded that the piece of DNA was a 3BHSD clone. THe KpnI ssite divided the insert unevely into ~170 bp and ~400bp regions. By this, my assumption about the insertion with orientation from 5' to 3' was correct also. Thus, showing that the KpnI site was closer to the EcoRI site.

Summary Statement
To figure out the unknown.

Help Received
used lab equiptment at California State University Los Angeles under the supervision of Charlly.