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Short Communication

Innovative Aspects of Gene Mapping

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Abstract

Genetic mapping is a way to identify exactly which chromosome has which gene and exactly pinpointing where that gene lies on that particular chromosome. Mapping also acts as a method in determining which gene is most likely recombine based on the distance between two genes. Researchers begin a genetic map by collecting samples of blood., saliva, or tissue from family members that carry a prominent disease or trait and family members that don't. The most common sample used in gene mapping, especially in personal genomic tests is saliva. Scientists then isolate DNA from the samples and closely examine it, looking for unique patterns in the DNA of the family members who do carry the disease that the DNA of those who don't carry the disease don't have. These unique molecular patterns in the DNA are referred to as polymorphisms, or markers.

Key words: Gene; gene mapping; DNA

Genetic mapping

Gene mapping describes the methods used to identify the locus of a gene and the distances between genes. Gene mapping can also describe the distances between different sites within a gene.

The essence of all genome mapping is to place a collection of molecular markers onto their respective positions on the genome. Molecular markers come in all forms. Genes can be viewed as one special type of genetic markers in the construction of genome maps, and mapped the same way as any other markers.

The process to identify a genetic element that is responsible for a disease is also referred to as "mapping". If the locus in which the search is performed is already considerably constrained, the search is called the fine mapping of a gene. This information is derived from the investigation of disease manifestations in large families (genetic linkage) or from populations-based genetic association studies.

Genome sequencing

Genome sequencing is sometimes mistakenly referred to as "genome mapping" by non-biologists. The process of "shotgun sequencing" resembles the process of physical mapping: it shatters the genome into small fragments, characterizes each fragment, then puts them back together (more recent sequencing technologies are drastically different). While the scope, purpose and process are totally different, a genome assembly can be viewed as the "ultimate" form of physical map, in that it provides in a much better way all the information that a traditional physical map can offer.

Applications of genetic mapping

Identification of genes is usually the first step in understanding a genome of a species; mapping of the gene is usually the first step of identification of the gene. Gene mapping is usually the starting point of many important downstream studies.

1. Gene mapping As a name suggests that it's a map of our genome present on chromosome . Describes the order of genes or other markers and the spacing between them on each chromosome. Scientists isolate DNA and examine it for any disease and traits then they determine where the gene responsible for that trait is located using DNA markers .

2. Types of gene mapping Genetic linkage maps Physical maps

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3. Genetic linkage maps Shows the relative locations of specific DNA markers along the chromosome

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