

DNA Diagnostic Direct Methods

DNA direct methods are still pretty new and are only recently becoming more popular. Just a few years ago it was sci-fi to use them. In order to use it, it is necessary to know *the exact sequence of DNA* segment that you are looking for. Compared to the indirect methods, they use different probes - **oligonucleotide probes**. We can get them by the process of **sequencing**.

There is one big *advantage* of direct methods. You can also find affected people **without positive family history**. We can identify the only one carrier in the family. The *disadvantage* is the *very high costs* associated with this examination.

The direct methods do not look for genes connected with some disease. They search *specific nucleotide sequence* of DNA, which leads to disease. So it is necessary to know how it looks like.

We recognize a few types of DNA direct diagnostics:

SSCP - Single Strand Conformation Polymorphism

- a single strand of DNA is able to create some secondary structure according to a temperature and other surrounding conditions
- structure determines how fast the DNA passes through electrophoresis gel
- highly sensitive method - just one nucleotide change leads to different speed of passage
- we compare normal DNA with the affected one

DGGE - Denaturing Gradient Gel Electrophoresis

- the structure of DNA determines a melting point
- mutation leads to change in electrophoresis

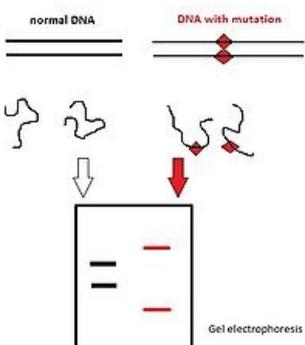
Heteroduplex analysis

- depends on a complementarity of DNA strands

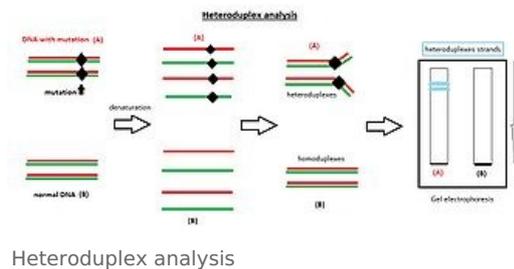
Mismatched cleavage

- DNA strand is divided in a place where the double stranded structure is not complete - in the place of mutation

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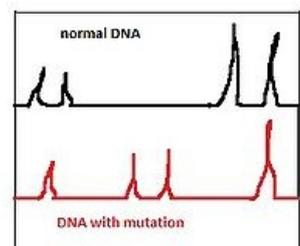


SSCP



Heteroduplex analysis

Mismatched cleavage



Mismatched cleavage

Related articles

- DNA Diagnostic Indirect Methods

Bibliography

- SOUKUPOVÁ, SOUKUP, . *Kapitoly z lékařské biologie a genetiky II*. 2. edition. 2005. ISBN 80-7184-581-7.



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