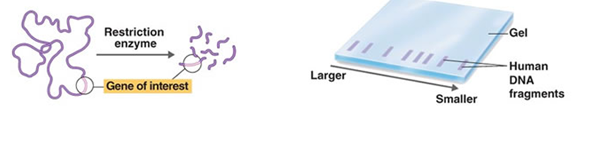
**Creating a DNA profile**

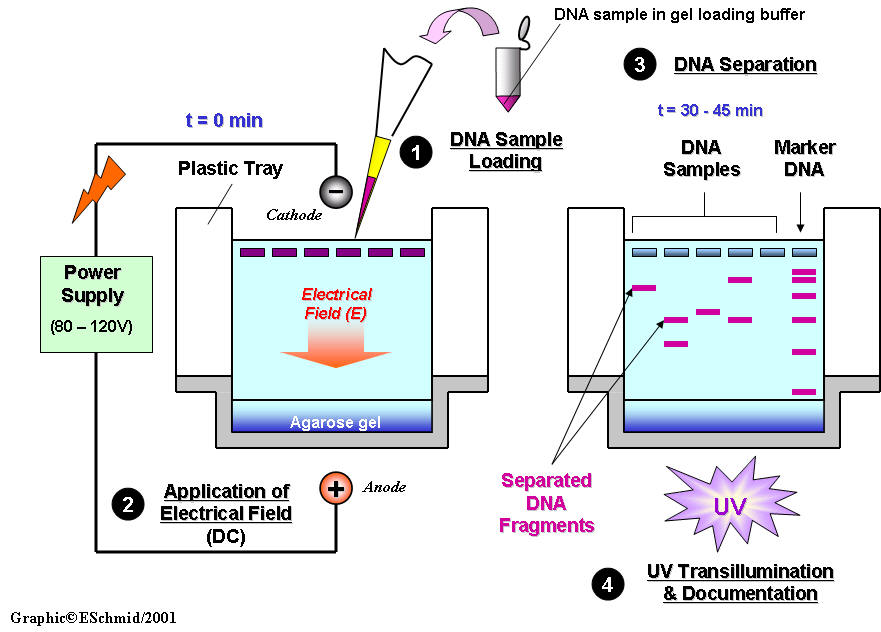
**-Agarose gel electrophoresis-**

*The restriction fragment length polymorphism* is a method which had been used for DNA fingerprinting in forensic science before PCR emerged.

In the first step, in the restriction digest, the DNA is cut using restriction enzymes into smaller restriction fragments. As the number of restriction sites vary from person to person due to random mutation at those sites, a distinct pattern is obtained when separated in a gel. The restriction fragments are, therefore, separated in an agarose electrophoresis.



**Figure 1. The procedure of DNA fingerprinting in the old ages. First, DNA is cut into smaller fragments at specific recognition sites. Afterwards these fragments are loaded onto a gel.**



**Figure 2. The single steps in an agarose electrophoresis.**

**Figure 3. The resulting gel from an analysis of an unknown sample A) which was collected from a crime scene. Both samples B) and C) are suspects.**

**Task: Write a lab report for the electrophoresis step including the sections:**

**1. Introduction:** You explain the physical principle of this method and why an electric current is applied.

**2. Question and hypothesis:** You state the scientific question that is answered in the experiment shown in figure 3. and propose a possible hypothesis ( you could form an if-clause ).

**2. Materials:** You list the materials and chemicals required for an agarose gel electrophoresis.

**Hint**: Before loading, the DNA fragments are mixed with a loading buffer( containing dyes. glycerol and typically EDTA which inhibits the activity of nucleases). To make DNA bands visible in a gel, ethidium bromide is added to the gel.

**3. Procedure:** You describe the single steps **in passive voice** beginning with the preparation of a gel. You don't need to write the exact volumes and concentrations of the chemicals.

**4. Result/Conclusion:** You interpret the results from figure 3. and you identify the criminal.

**5. Discussion:** Here, you come up with possible errors that could have occurred and you propose further application or discuss the social and moral impacts which this scientific method implies.

**Content :** \_\_\_\_\_\_\_\_\_ /40 P. **Language:** \_\_\_\_\_\_\_\_\_\_\_\_ /60 P.

**Total points: \_\_\_\_\_\_\_\_\_\_\_\_\_**

**GRADE: \_\_\_\_\_\_\_\_\_\_\_**

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| Note | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
| Punkte | 100-95 | 95-90 | 90-85 | 85-80 | 80-75 | 75-70 | 70-65 | 65-60 | 60-55 | 55-50 | 50-45 | 45-36 | 36-27 | 27-18 | 18-9 | 9-0 |

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| Note | 1 | 2 | 3 | 4 | 5 | 6 |
| Anzahl |  |  |  |  |  |  |