Development of novel test devices for rapid on-site detection of DNA at crime scenes

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Have you ever looked at the news and wondered why some criminal cases take so long to resolve, even with DNA evidence? One major reason is the inefficiency of current DNA analysis: it can take months, and up to 40% of the samples sent for testing don't even contain enough DNA to produce a profile. My research aims to change this by developing a test device that can quickly identify whether a trace contains sufficient DNA right at the crime scene.

We are working on multiple approaches to detect if DNA is present, which means that the possibilities for you are broad. However, the overlapping activity for all approaches is the development of a Lateral Flow Assay (LFA). Other activities can be the development of multiplex PCR, nanoparticle functionalization, synthesis of DNA intercalators, DNA extraction and electrochemical detection.

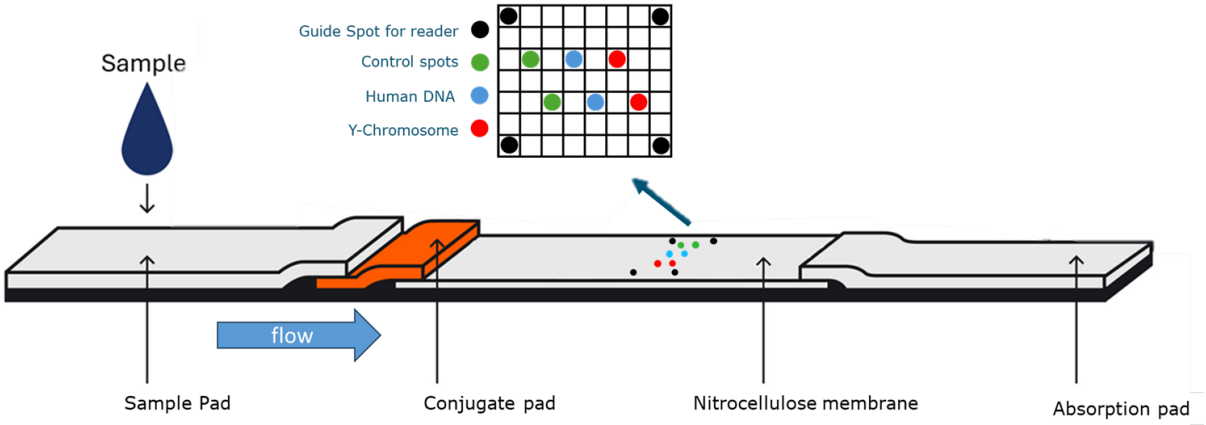

Figure 1: Schematic representation of a Lateral Flow Microarray, which is able to detect if human DNA and if the Y-Chromosome is present in a trace.

Learning goals:

- Development of a sensor (Lateral Flow Assay)
- Optional: PCR, bioconjugation, organic synthesis, working with human material

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