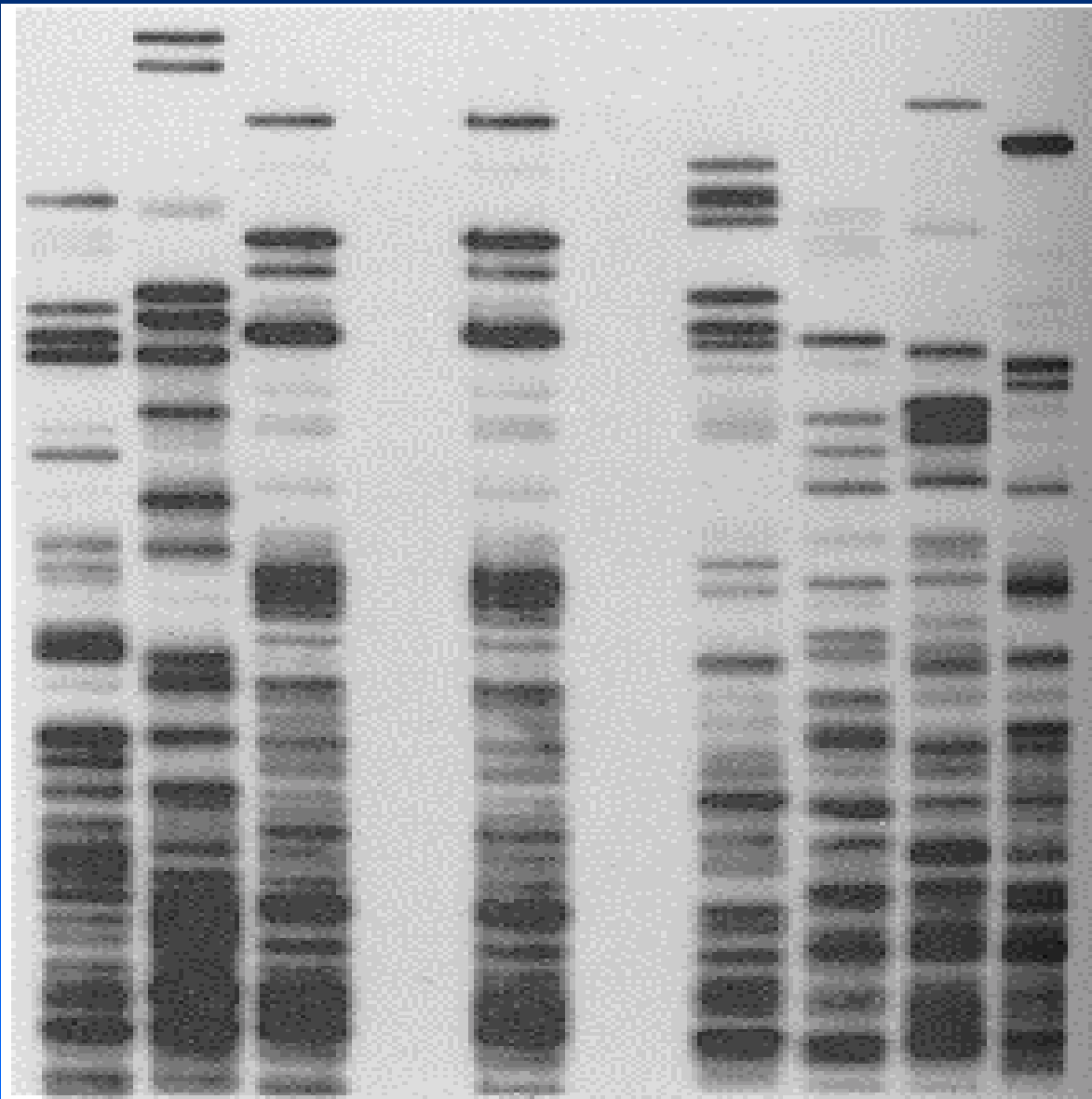


# Progression of DNA Typing Markers

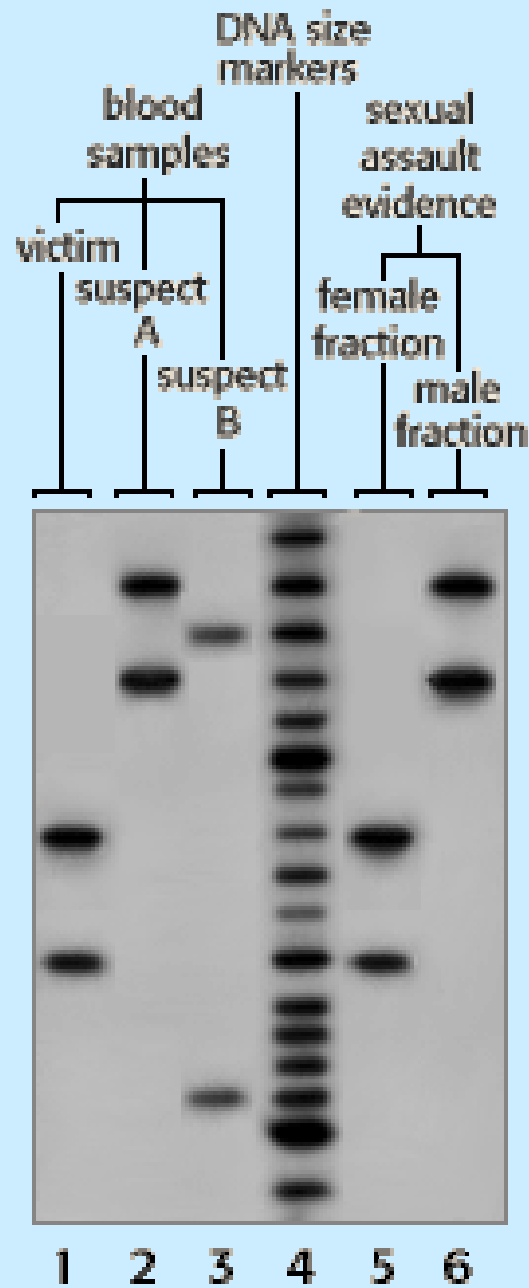
- RFLP
  - multilocus VNTR probes
  - single locus VNTR probes ( **$^{32}\text{P}$  and chemiluminescence**)
- PCR
  - DQ-alpha (**reverse dot blot**)
  - PolyMarker (**6 plex PCR; dots for SNPs**)
  - D1S80 (**AMP-FLPs**)
  - singleplex STRs with silver staining
  - multiplex STRs with fluorescent dyes

# **Changing Technologies Paradigm Shift: Restriction Fragment-Length Polymorphisms to Short Tandem Repeats**

- **Five RFLP probes provide almost exclusive identity (~ 1 in  $10^9$  individuals)**
- **RFLP requires a minimum of 25 ng of relatively undegraded DNA (1000 - 20,000 basepairs)**
- **Short Tandem Repeats (STRs) only require ~ 1 ng DNA that can be partially degraded**
- **Discrimination power: 5 RFLP probes equals ~ 12 STR loci**



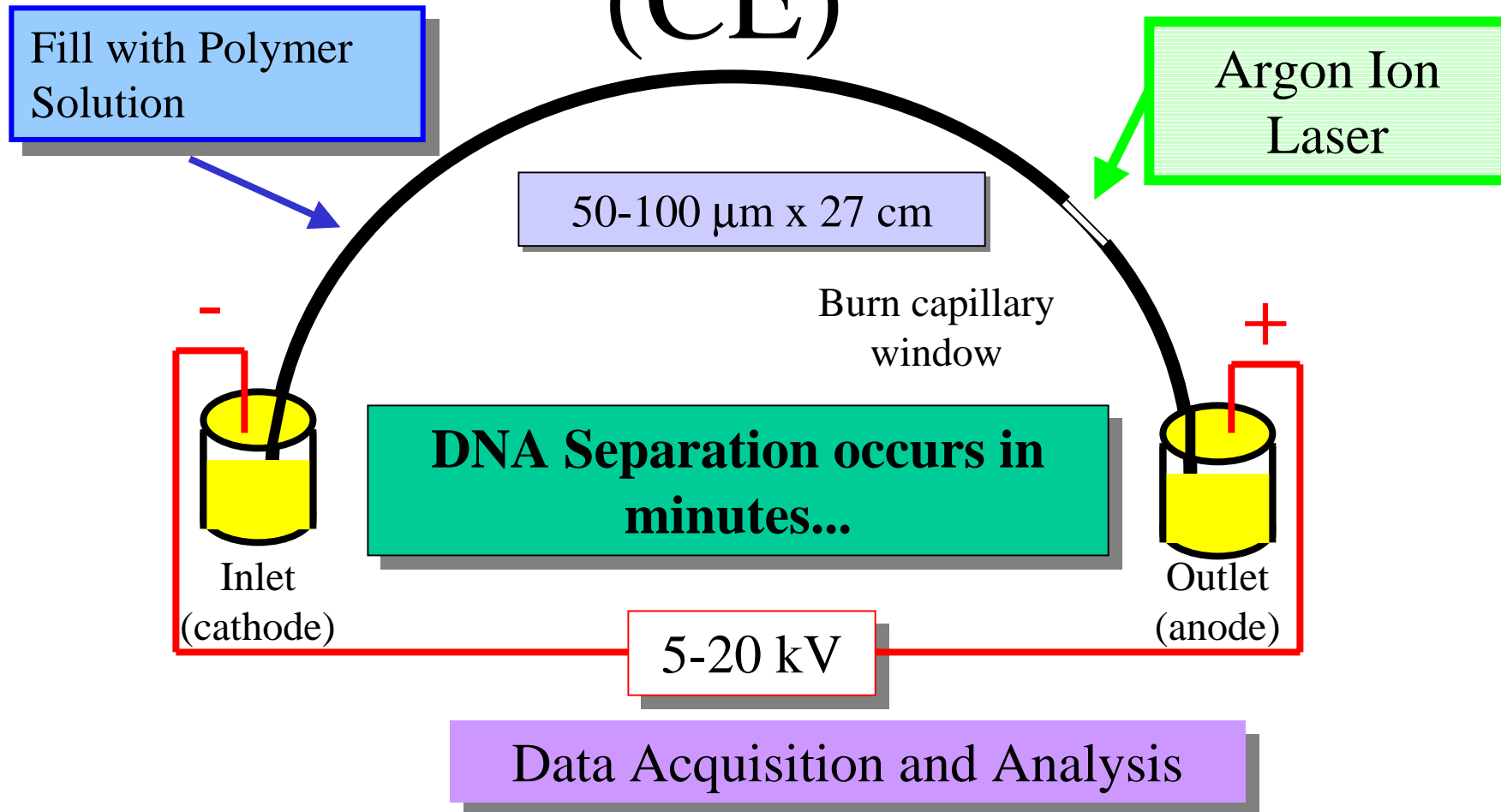
**1**   **2**   **3**   **Bloodstain**   **4**   **5**   **6**   **7**  
**Suspects**



**Which Suspect,  
A or B, cannot  
be excluded from  
potential perpetrators  
of this assault?**

# Capillary Electrophoresis

(CE)



# ABI PRISM<sup>®</sup> 310 Genetic Analyzer



**Automated gel  
pouring**

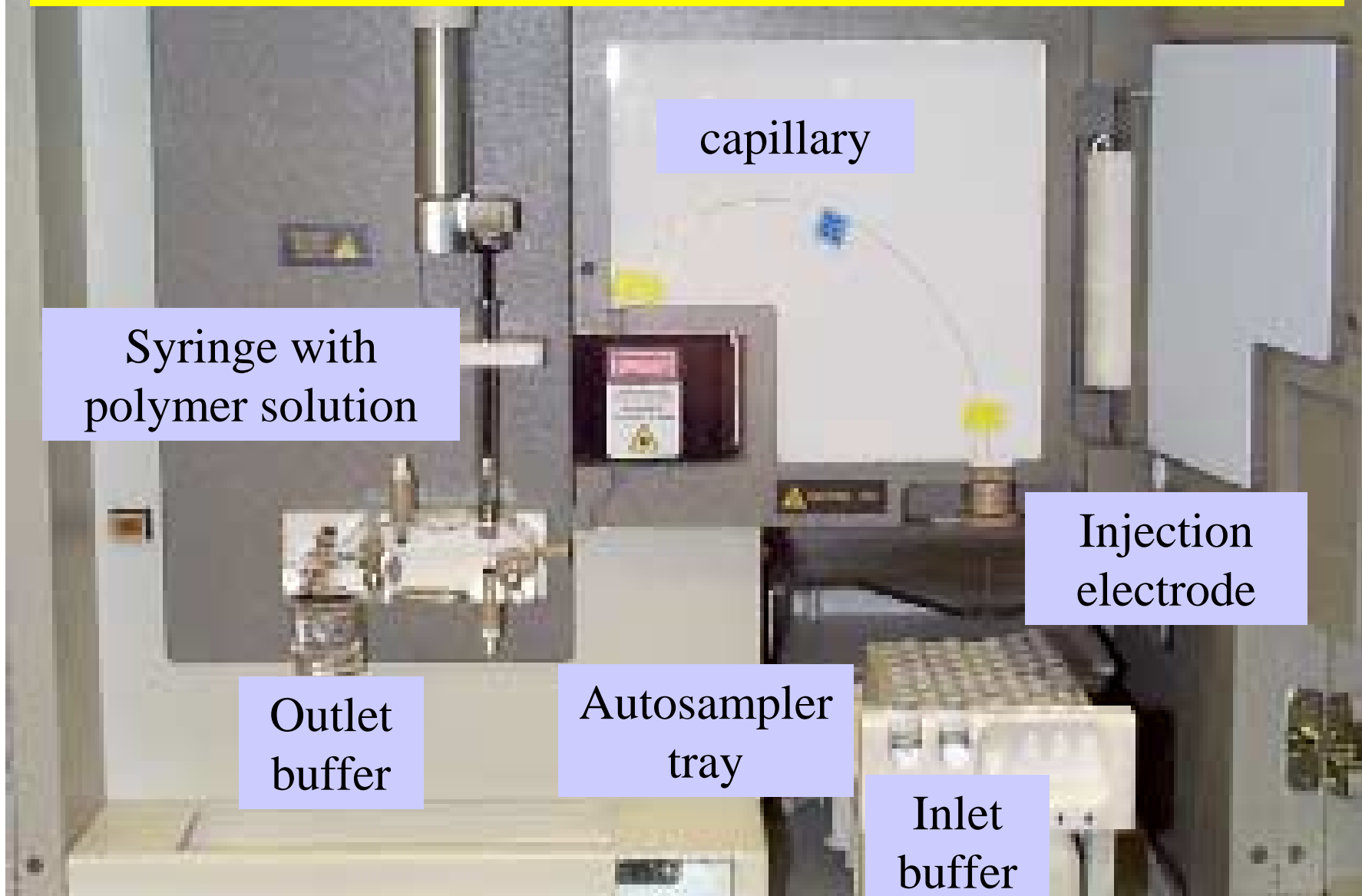


**Automated sample  
injection**

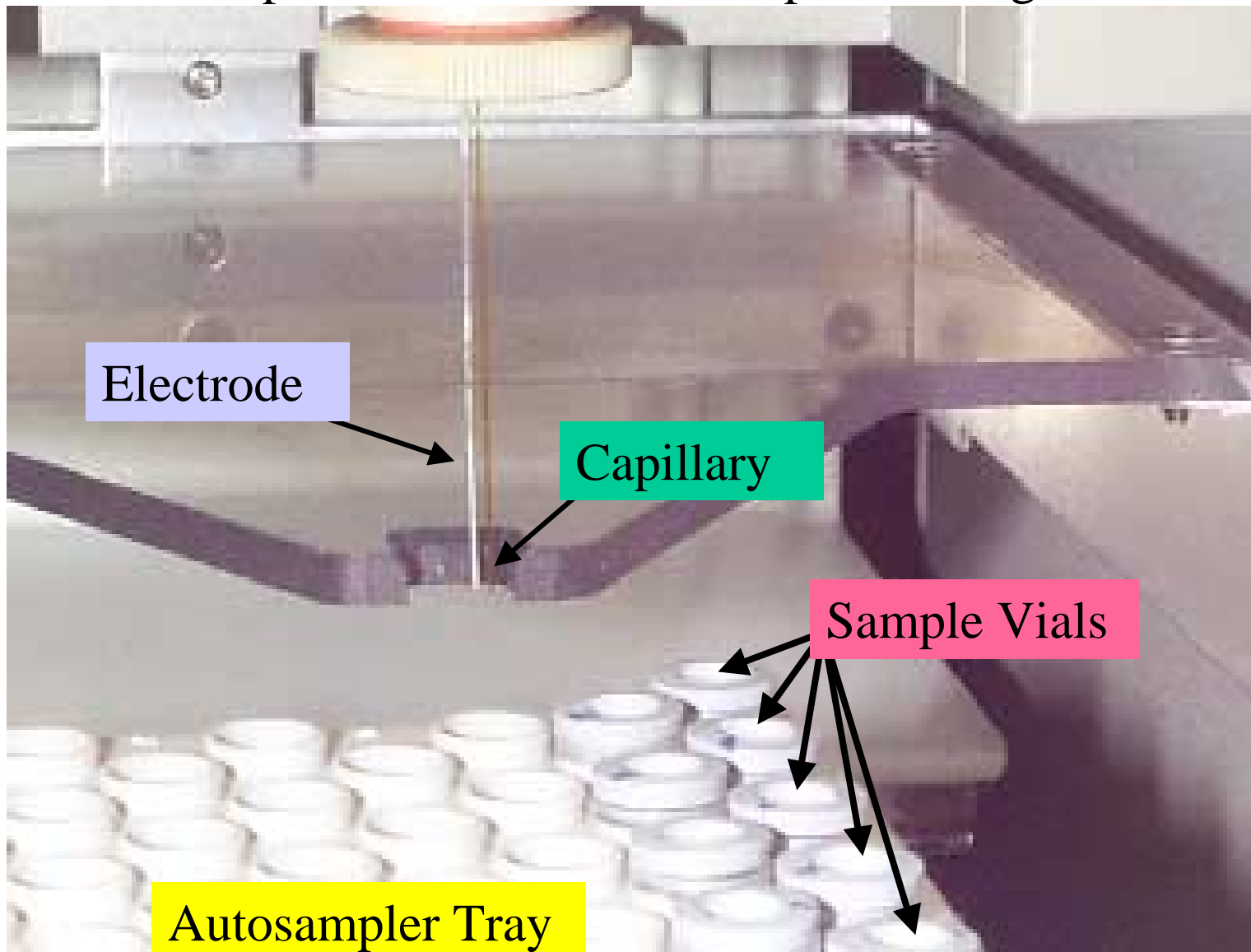


**Capillary electrophoresis with  
multi-color detection capabilities**

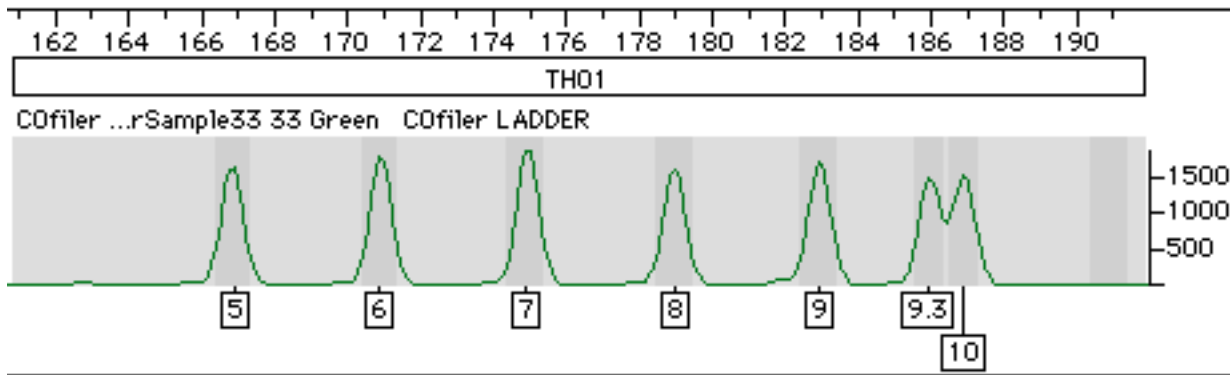
# ABI Prism 310 Genetic Analyzer



## Close-up of ABI Prism 310 Sample Loading Area



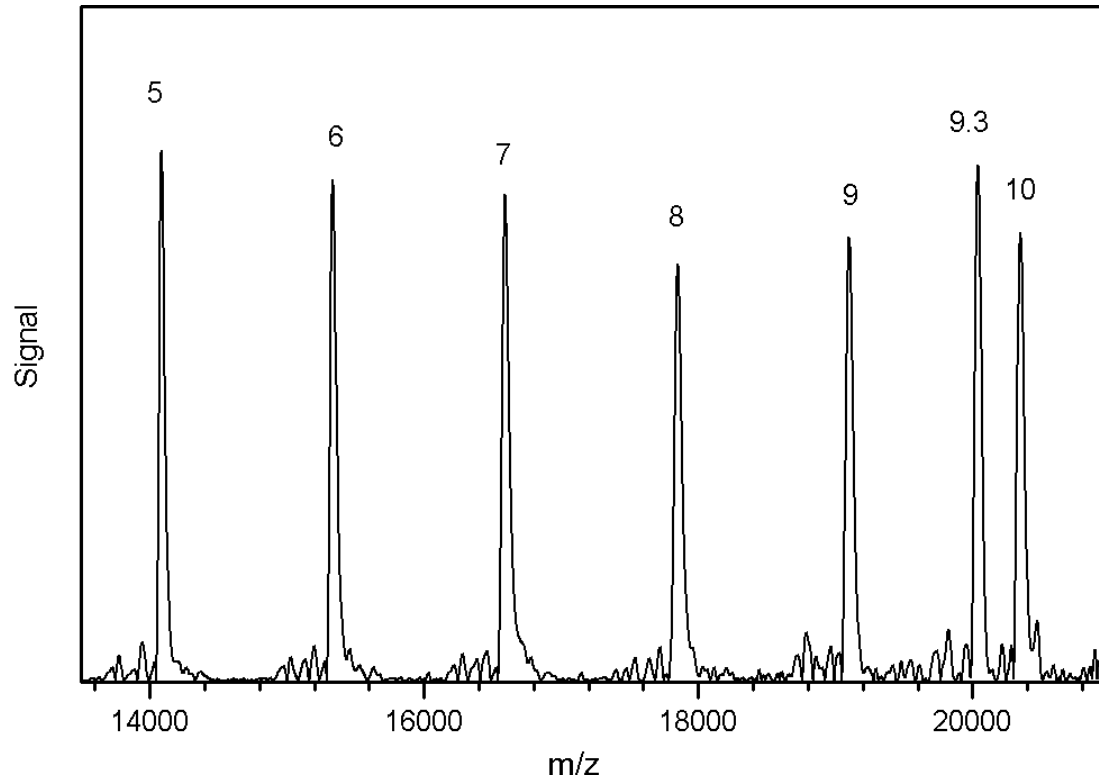




### ABI 310 Result

9.3 allele: 1071 sec

10 allele: 1073 sec



### Mass Spec Result

9.3 allele: 203.3  $\mu$ sec

10 allele: 204.8  $\mu$ sec

### Allele 10

COfiler™ size: 187 bp

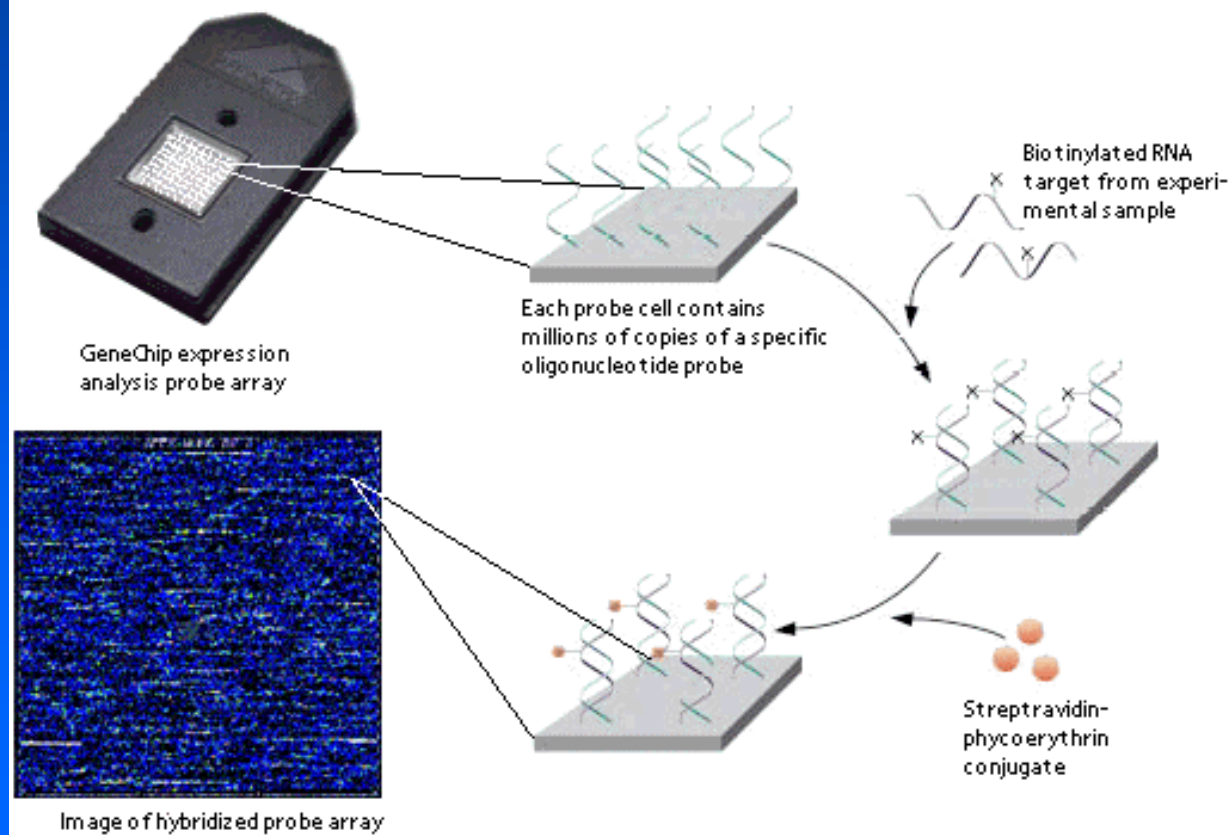
MS size: 83 bp

# GeneChip

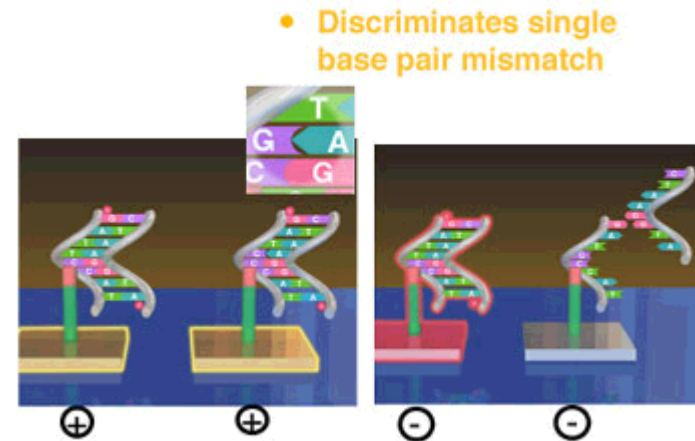
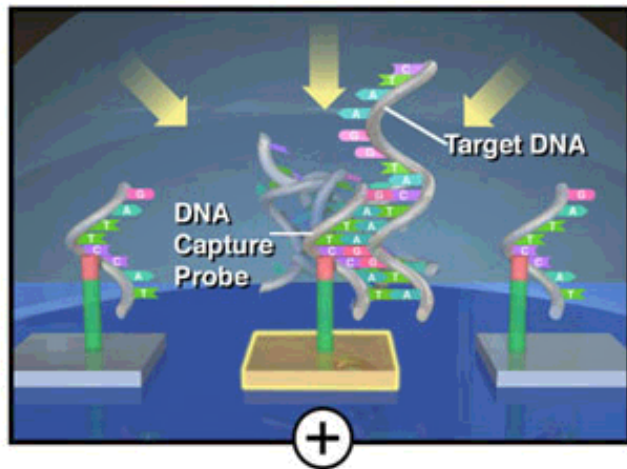
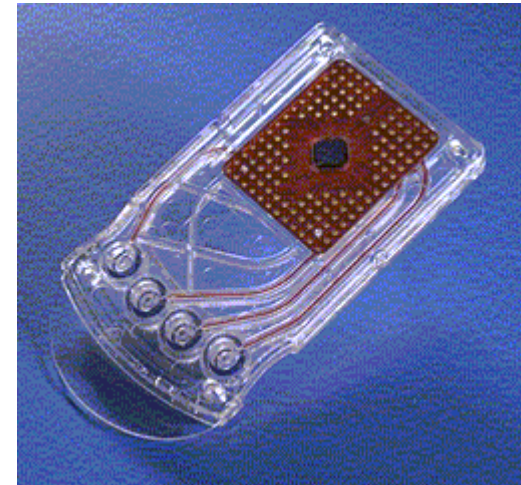
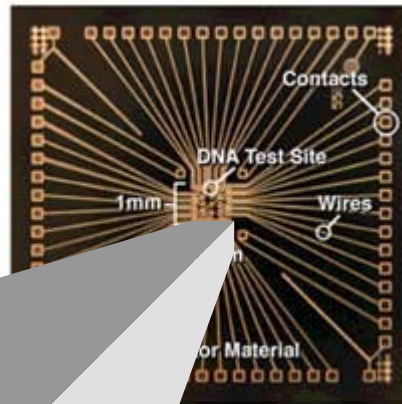


## Expression Analysis

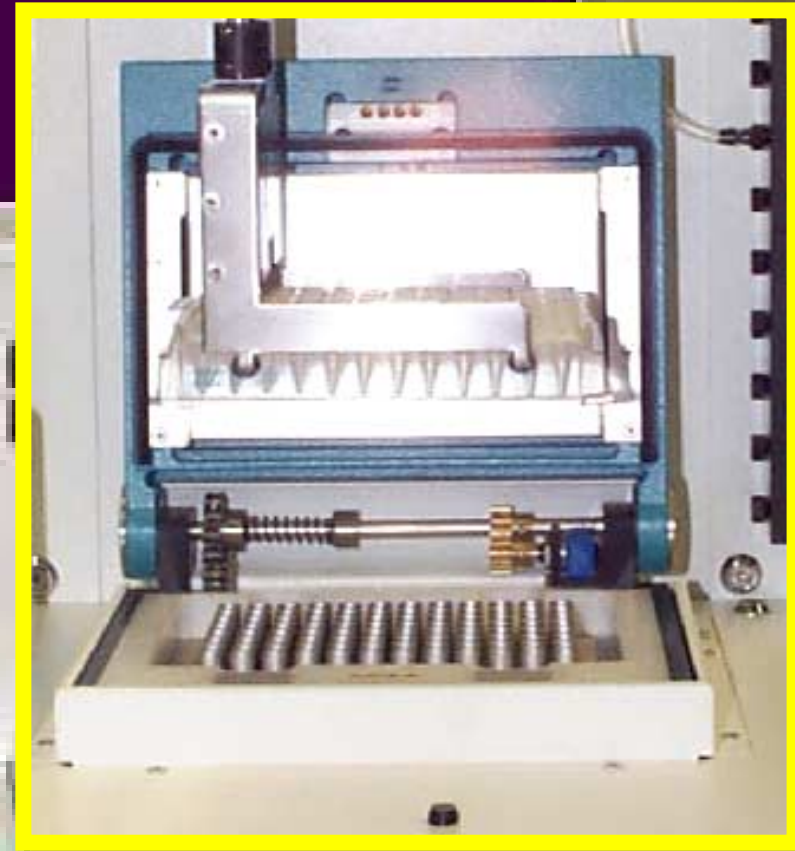
### GeneChip® Expression Analysis Process



# STR Analysis by Hybridization on Microchips



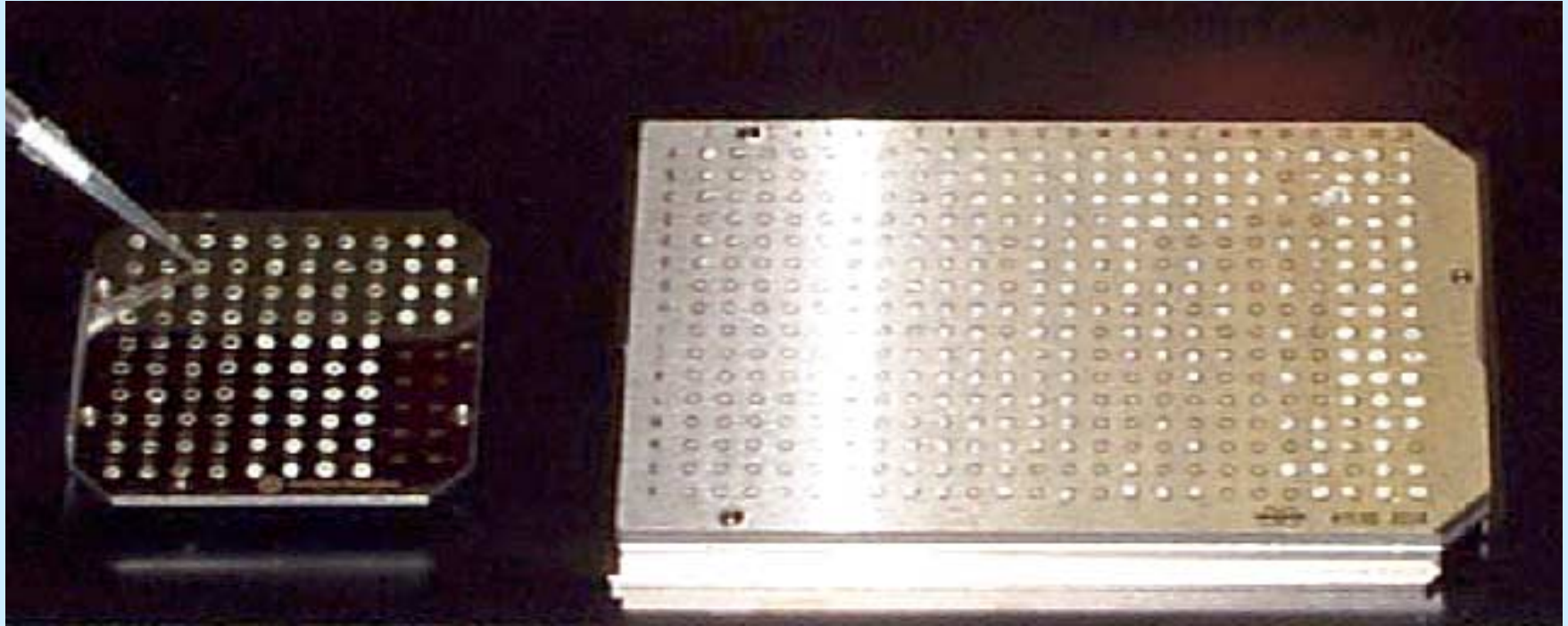
# MWG Biotech RoboAmp 4200



**Automated PCR Setup and Mass Spec  
Sample Preparation**

RoboAmp<sup>®</sup> 4200  
www.mwgbio.com

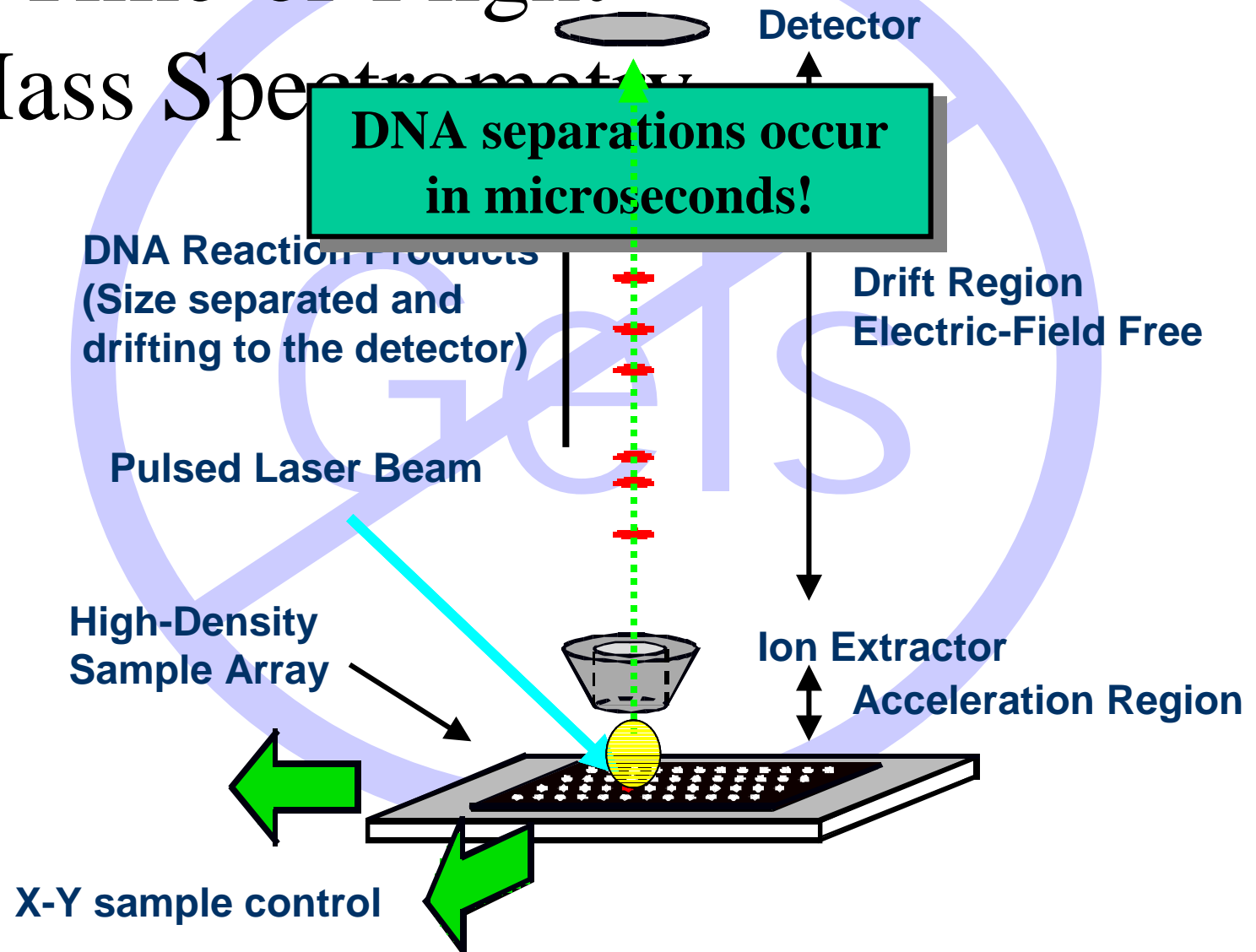
# Mass Spec Sample Plates



PerSeptive Biosystems  
(100 positions)

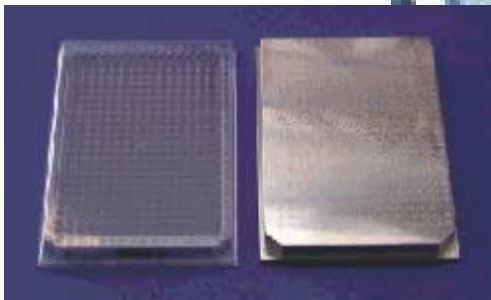
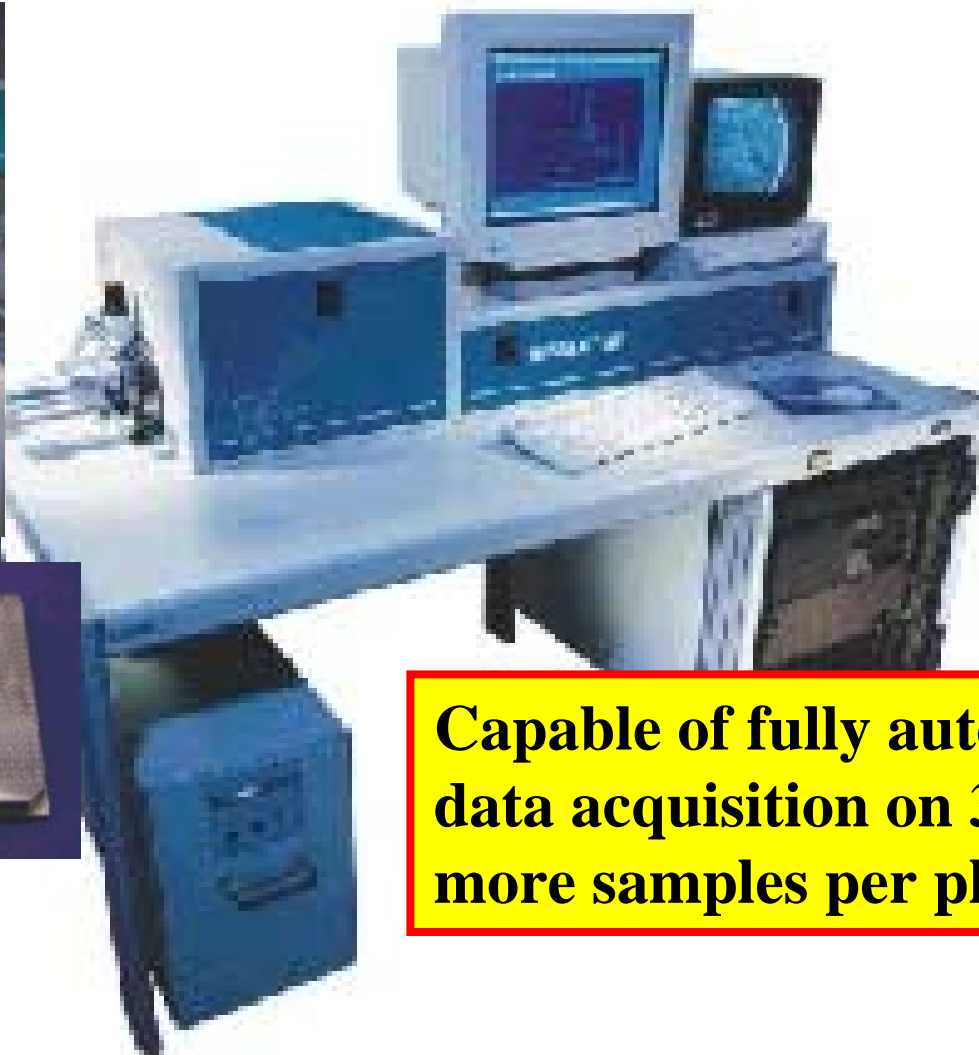
Bruker  
(384 positions)

# Time-of-Flight Mass Spectrometry



# Bruker BIFLEX III Time-of-Flight Mass Spectrometer

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**Capable of fully automated data acquisition on 384 or more samples per plate**