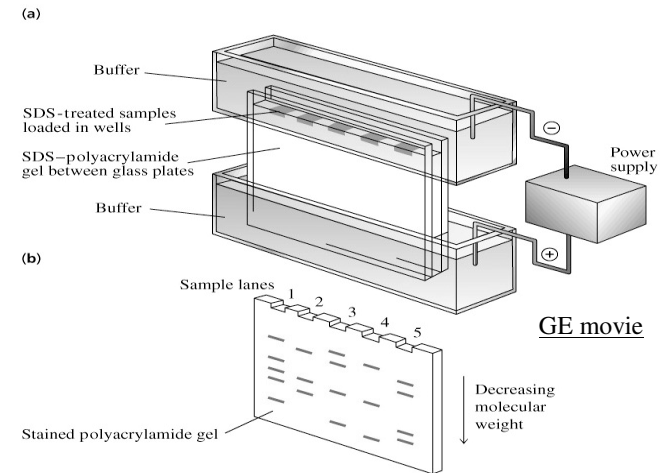


Electrophoresis

אלקטרופורזה ELECTROPHORESIS

Diagram of a typical electrophoresis apparatus.



- Gels may be run either vertically or horizontally in slabs or tubes.

Electrophoretic Mobility מביליות אלקטרופורטית

$$\mu = \frac{q}{6 \pi r \eta}$$

- q - charge (fixed for strong acids and bases
pH dependant for weak acid and bases)
- $6\pi r$ - effective ionic volume (N.B. complexation
and counter ion)
- η - viscosity

Isoelectric Focusing of Proteins Separation by pI

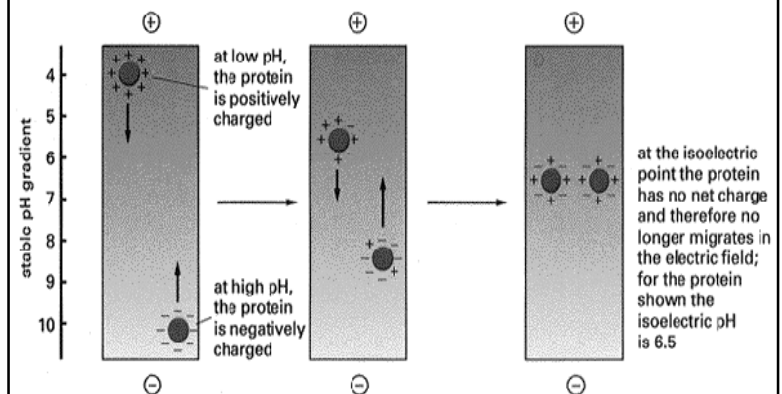
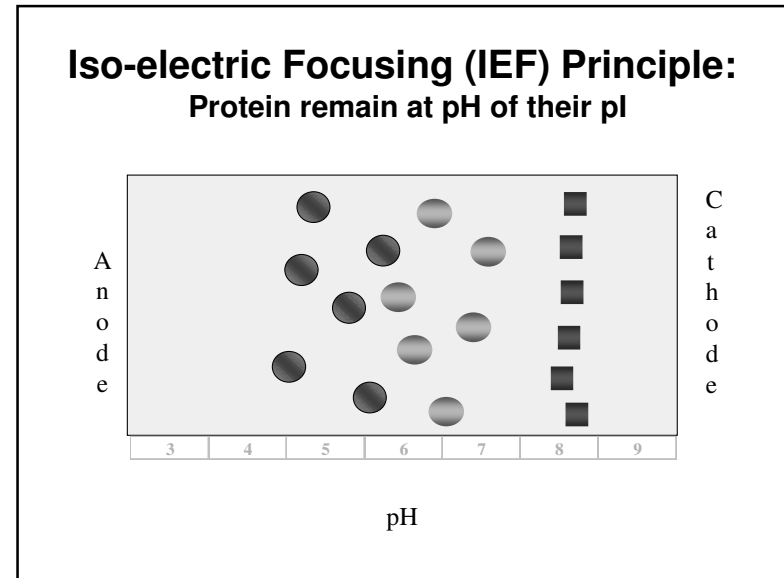
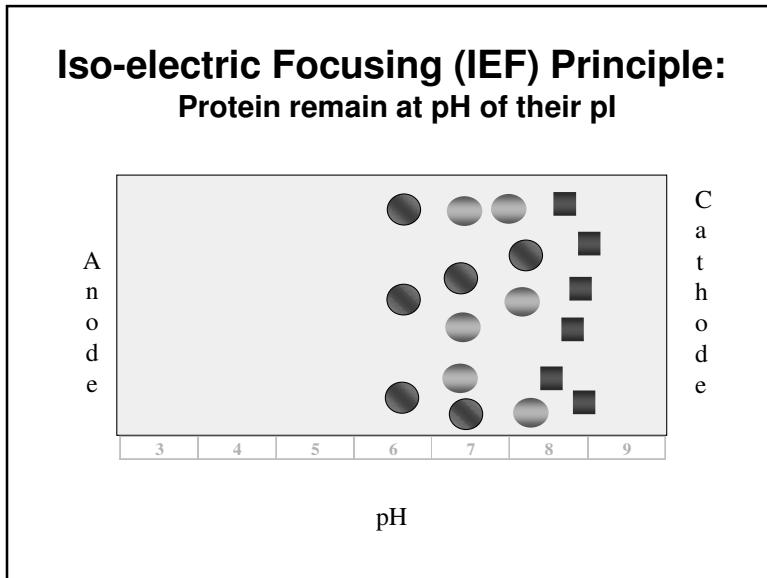
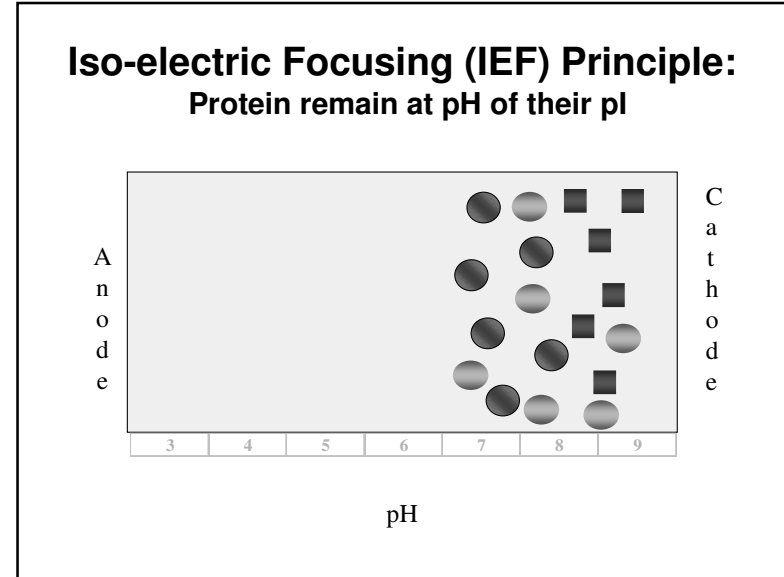
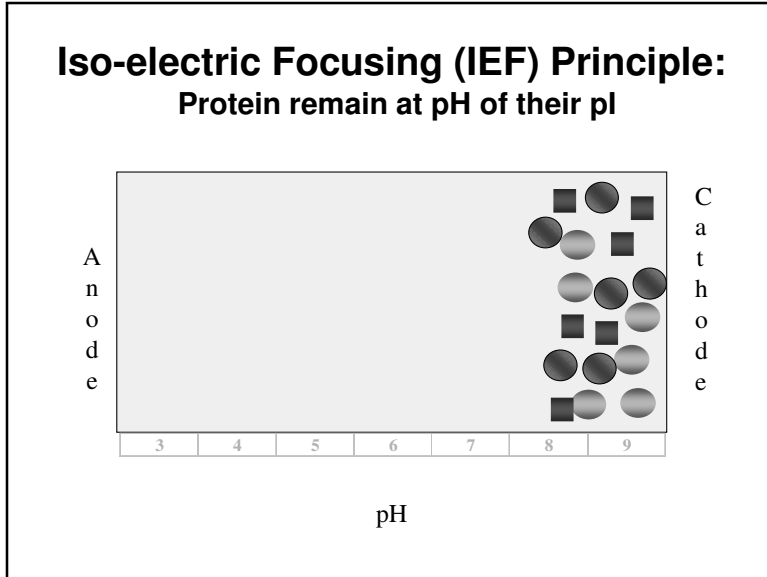
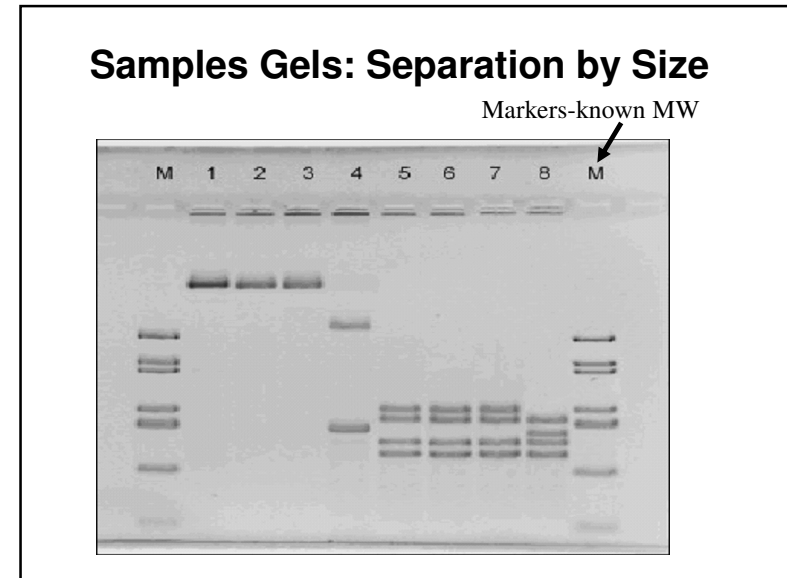
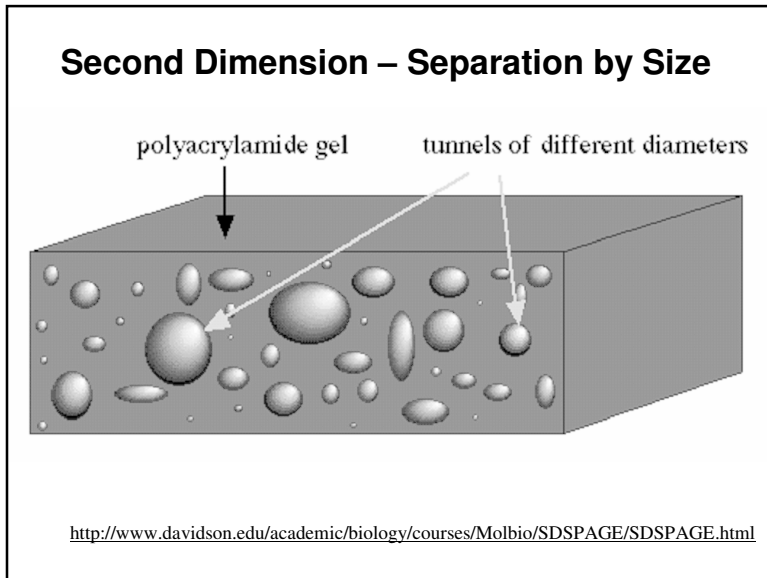
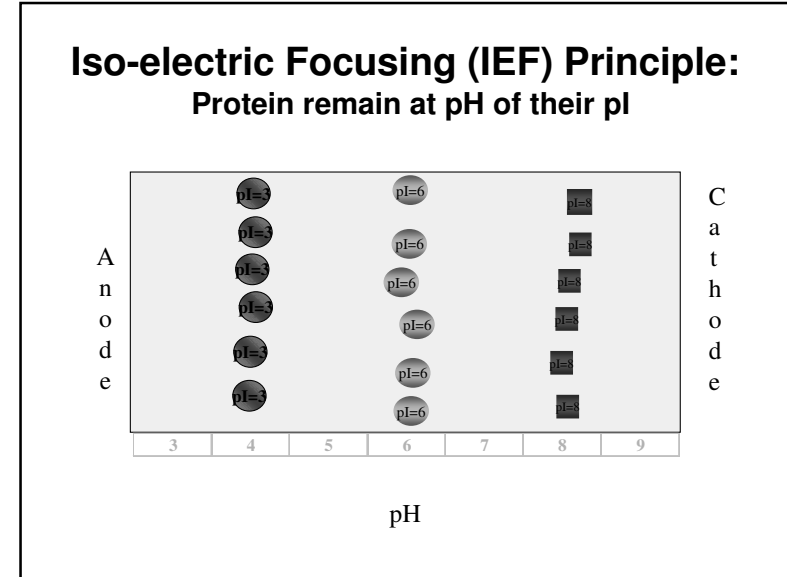
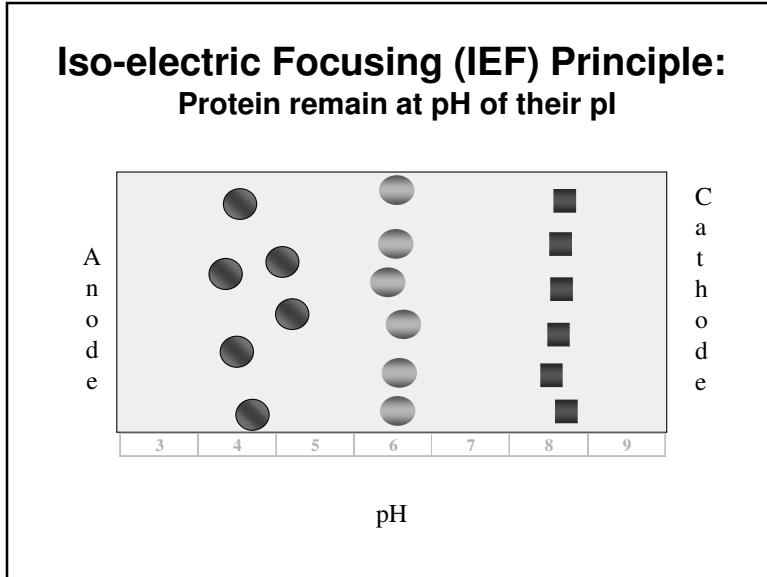


Figure 4-44. Alberts et al. Molecular Biology of the Cell, 3rd edn.

Electrophoresis



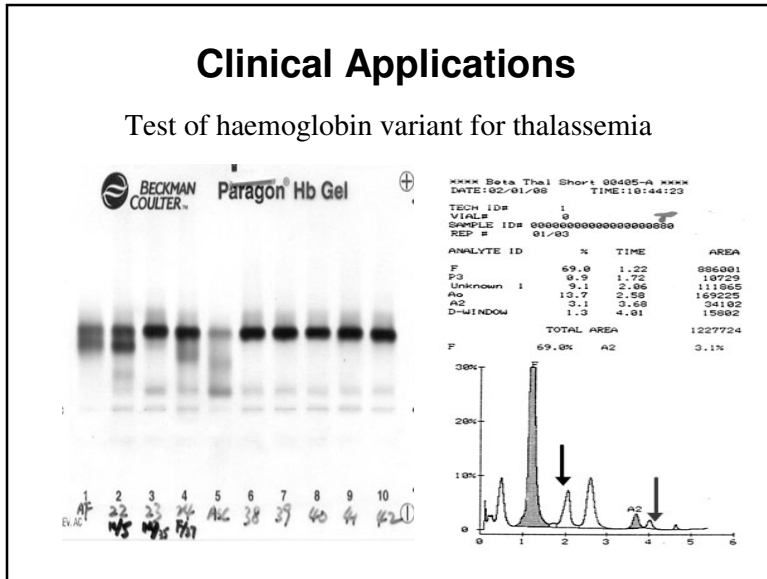
Electrophoresis



Electrophoresis

Clinical Applications

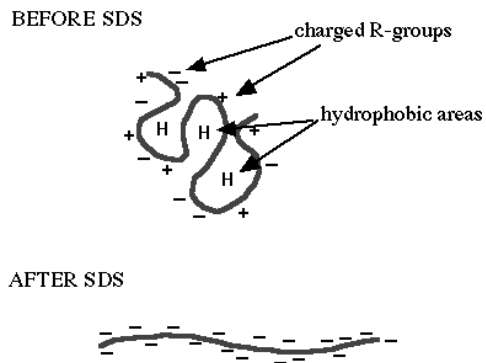
Test of haemoglobin variant for thalassemia



**Denaturing Gel:
Sodium Dodecyl Sulfate (SDS)
PolyAcrylamide Gel (PAGE)**

**SDS-PAGE Electrophoresis of
Denaturated Proteins**

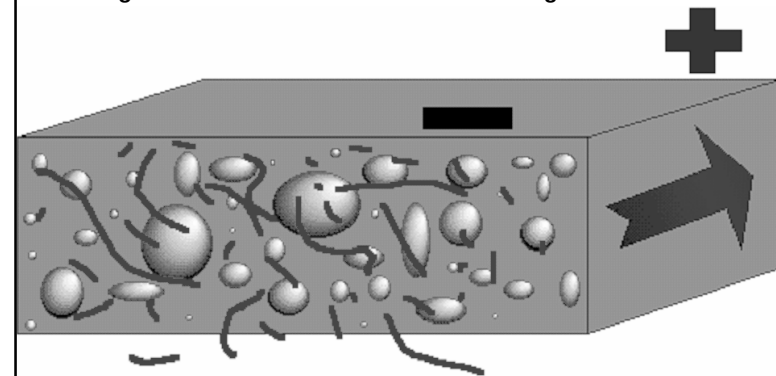
Denaturation of Proteins by SDS



<http://www.davidson.edu/academic/biology/courses/Molbio/SDSPAGE/SDSPAGE.html>

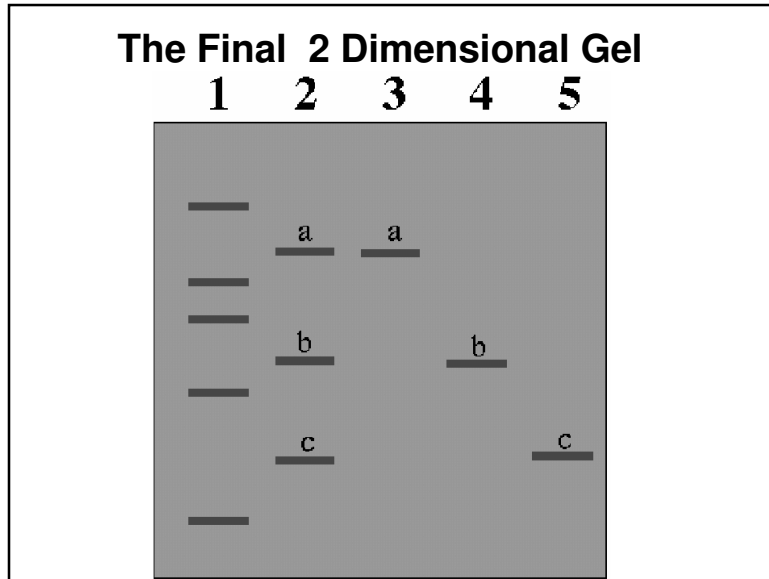
SDS – PAGE Electrophoresis

Migration of the Denaturated Proteins Through the Gel Until



<http://www.davidson.edu/academic/biology/courses/Molbio/SDSPAGE/SDSPAGE.html>

Electrophoresis



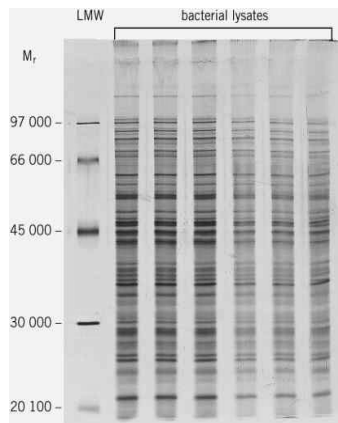
2nd Dimension-to separate by size

Five steps:

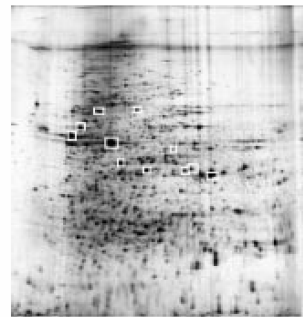
1. Isolate proteins
2. Denature proteins by adding sodium dodecyl sulfate
3. Load onto gel
4. Apply voltage gradient
5. Stain or blot

Gel Electrophoresis

1D SDS Gel Electrophoresis



2D SDS Gel Electrophoresis



2-D gel of glioblastoma multiforme brain tumor cell culture extract stained with PlusOne Silver Staining Kit, Protein, using silver staining protocol 2 of the Processor Plus. p53 antigen that were detected on the 2-D blot above are boxed.

Application: Proteomics

Fig. 19. Spot identification

