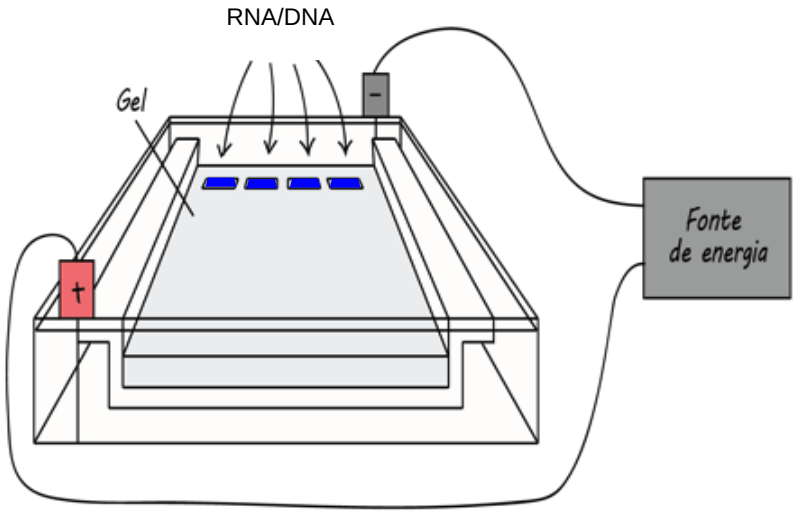
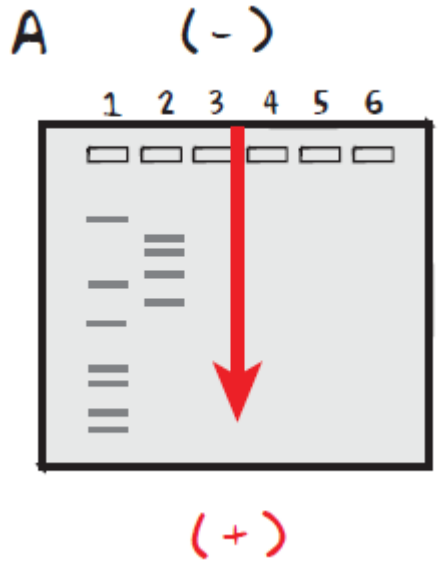
# Testing RNA extraction results: agarose gel electrophoresis




Separation of RNA/DNA fragments according to size – smaller fragments migrate faster




(-) Negative electrode
(+) Positive electrode

# Components

## Agarose:

- **Polysaccharide extracted from algae**
- Used in 0.5 - 2% concentration
- Easy to prepare
- Non-toxic
- RNA/DNA fragments migrate through the agarose pores

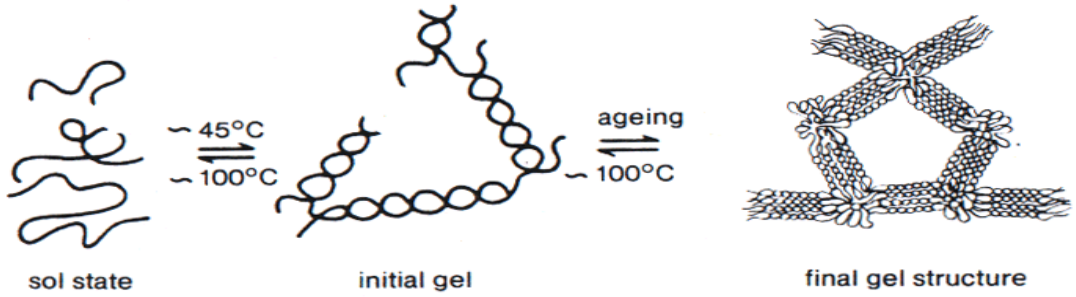
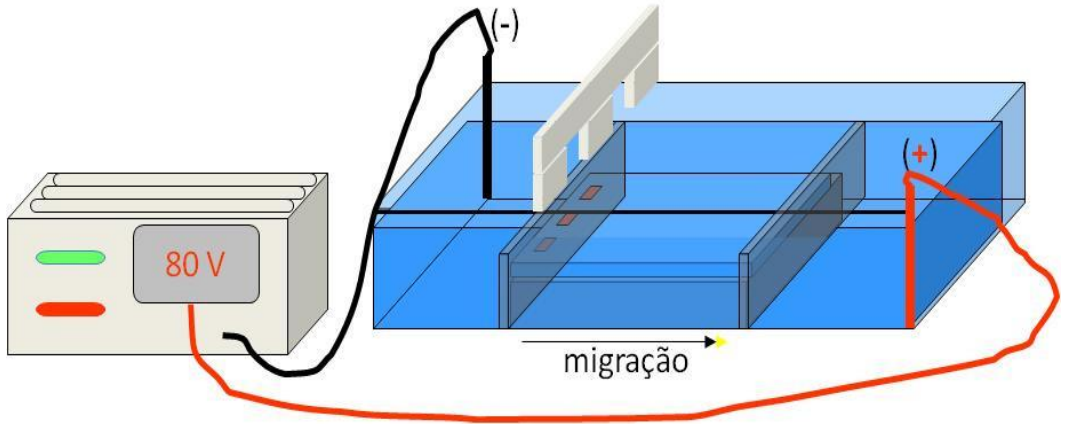



Fig. 25. Gel structure of agarose. (Låås, T. Doctoral thesis. Acta Universitatis Upsaliensis 1975. Reproduced by kind permission of the Author.)

## Electrophoresis Buffer:

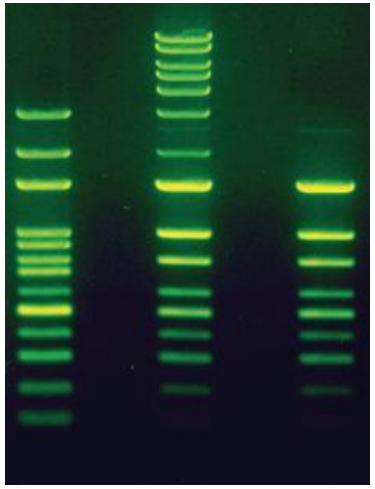
- **The salts on the buffer drive the electric current and promote the RNA/DNA migration on the gel**
- TAE (Tris-acetate-EDTA electrophoresis buffer) / TBE (Tris-borate-EDTA electrophoresis buffer)



# Components

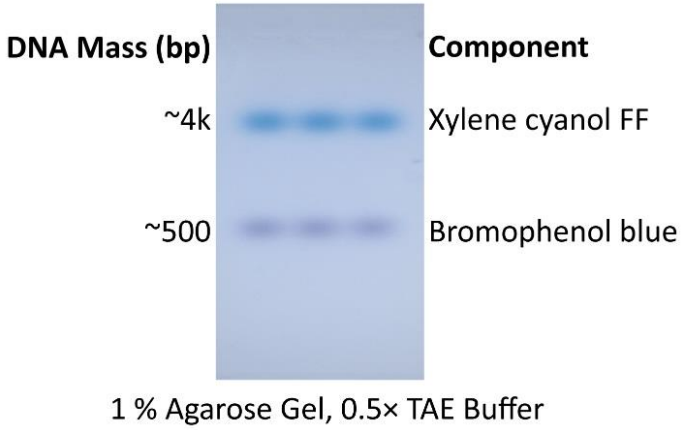
## RNA/DNA stain:

- **Emits fluorescence under UV, when bounded to DNA or RNA**
- Green safe, Red safe, GelRed, etc



## Loading Buffer:

- **Glycerol + stain (Bromophenol blue)**
- **Mixed with the RNA/DNA - increase density for sample loading in the gel wells**
- Check the extent of migration on the gel (the stain migrates faster then any nucleic acid)




1 % Agarose Gel, 0.5× TAE Buffer

# Components

## Molecular Weight Marker:

- **Mix of DNA fragments with several sizes**
- **It is typically applied on the first well of the gel**
- Enables to determine the size of the nucleic acid bands from the sample by comparison with the bands from the MWM