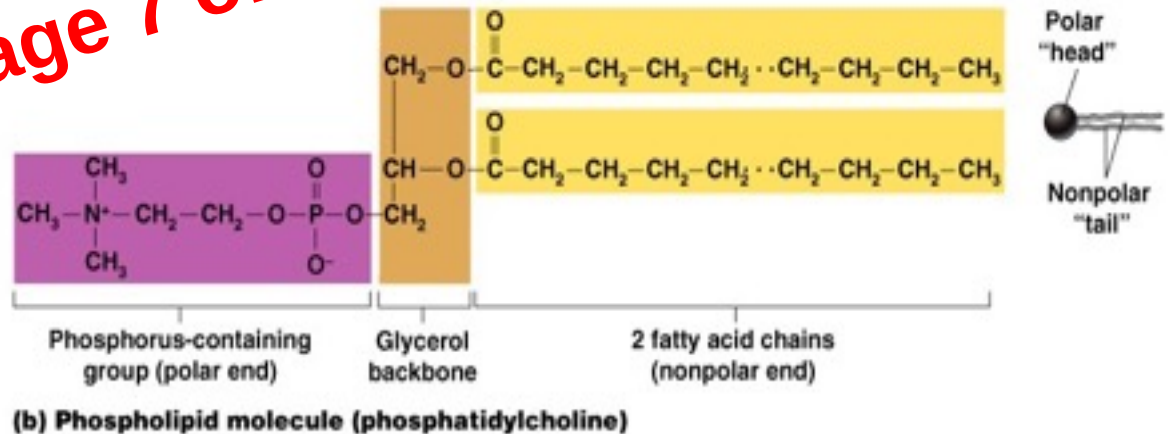


# Nuclear Membrane

- Surrounds the nucleus
- Membrane is made of phospholipid molecules

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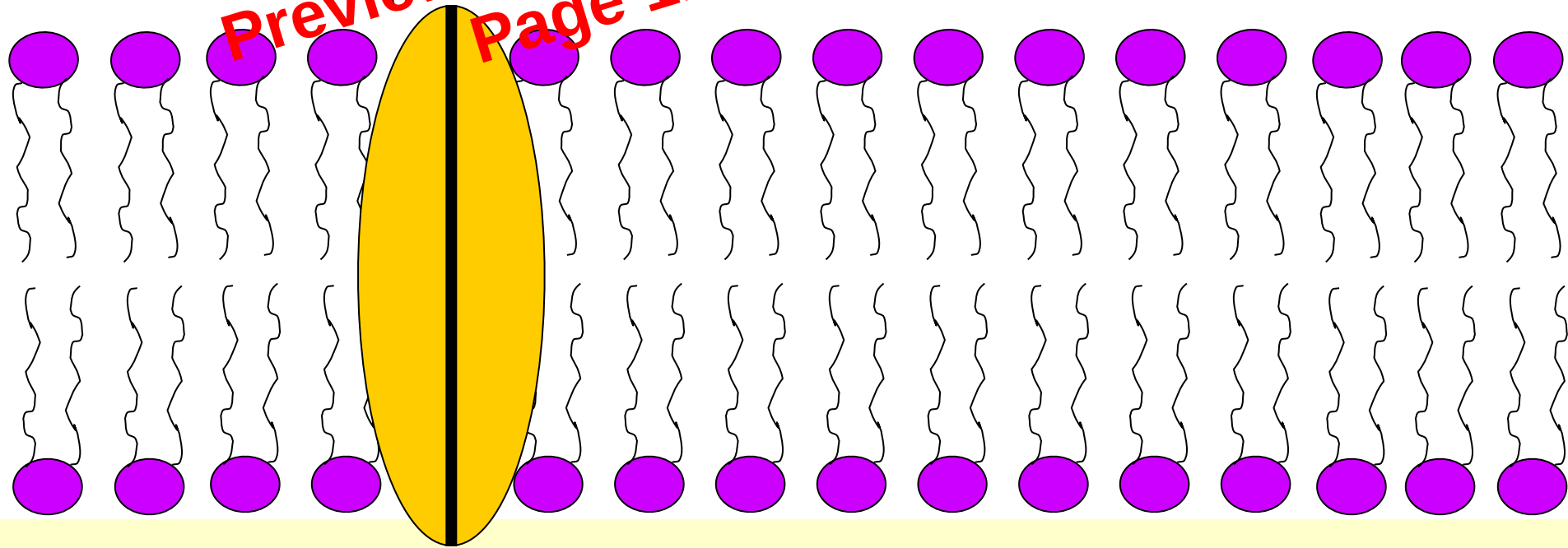
- Contain nuclear pores that allow for exchange of material with the rest of the cell
- Encloses a jellylike fluid called n\_\_\_\_\_

# Transport Across the Membrane

Outside the Cell

Protein

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• Insoluble in lipids

• Soluble in lipids

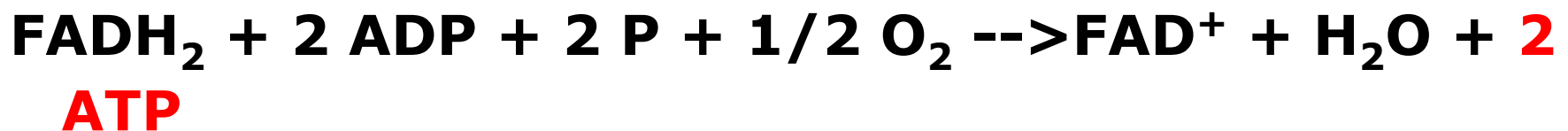
Inside the Cell

# The Mechanism

- Cellular respiration can be broken down into 3 processes:
  - 1. **Glycolysis** occurs in the cytosol.
  - 2. The **Krebs Cycle** takes place in the matrix of the mitochondria.
  - 3. Oxidative phosphorylation via the **electron transport chain** is carried out on the inner mitochondrial membrane.
- without oxygen, respiration consists of two metabolic pathways: glycolysis and fermentation. Both of these occur in the cytosol

# Electron Transport Chain

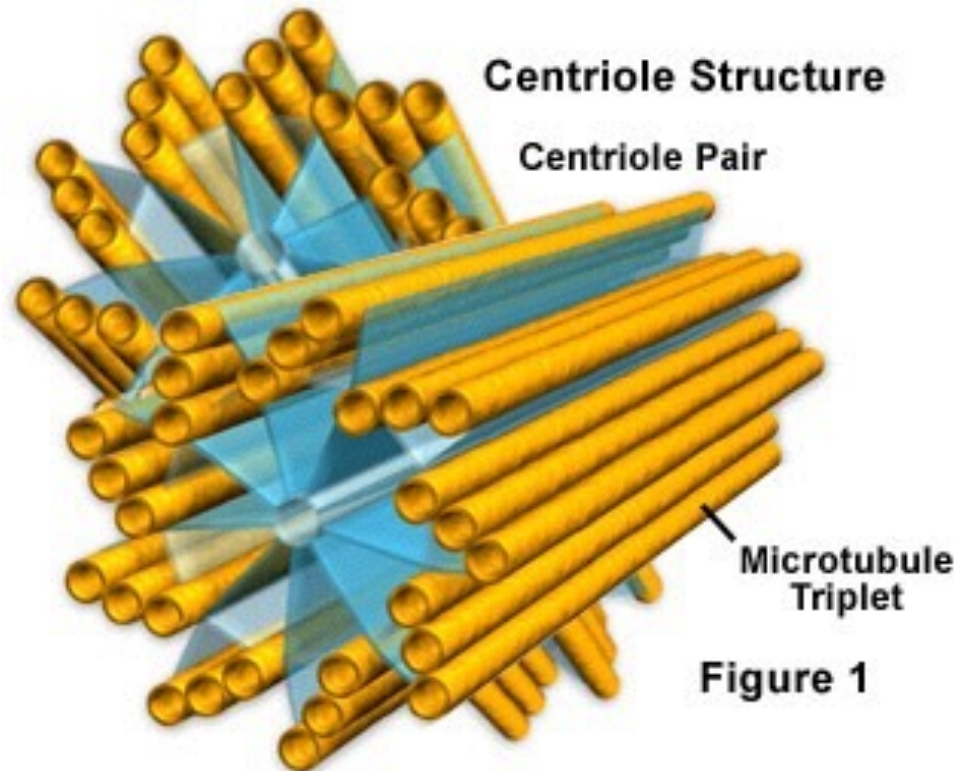
- Consists of a series of protein molecules embedded in the inner mitochondrial membrane
- Here, energy (in the form of ATP) is released from NADH and FADH<sub>2</sub>
- Results given by the following formulas:



# Cytoplasmic Organelles

## Centrioles

- Rod-shaped bodies made of microtubules
- Direct formation of mitotic spindle during cell division



# Selective Permeability

- The plasma membrane allows some materials to pass in and out of the cell while excluding others

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## Selective Permeability

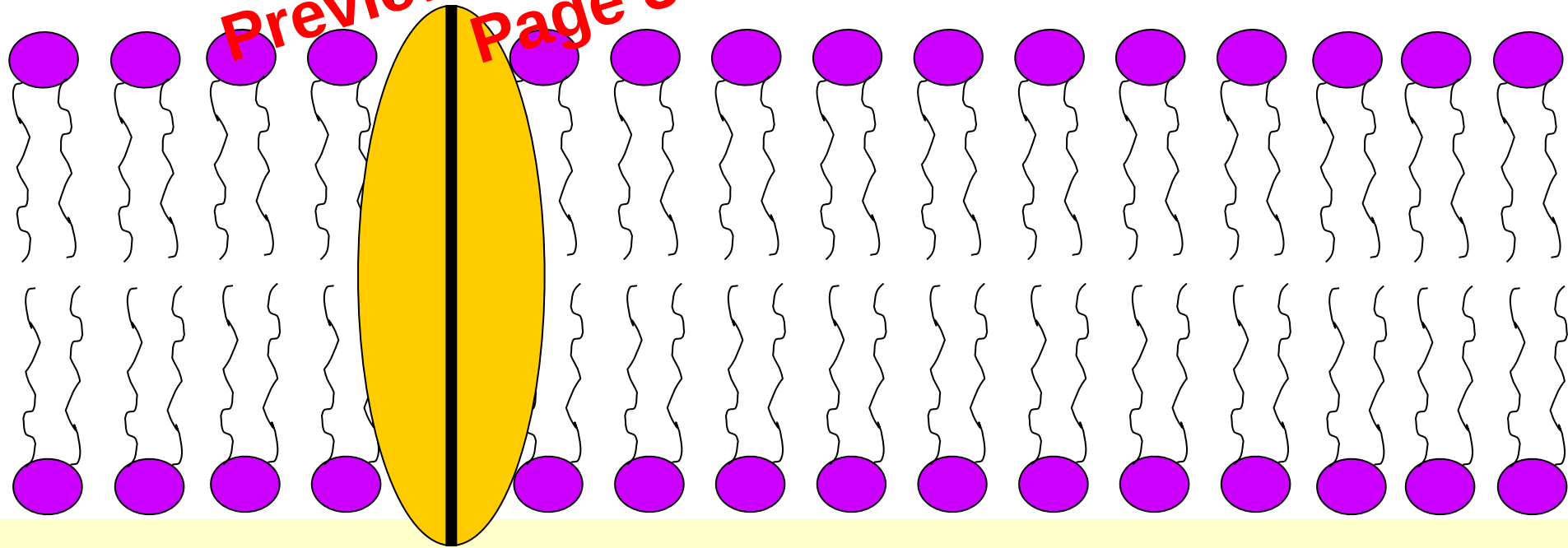
- For example:
  - Nutrients can enter the cell
  - Undesirable substances are kept out

# Passive Transport Processes

Outside the Cell

Protein

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- Insoluble in lipids
- Soluble in lipids

Inside the Cell

# Active Transport Processes

## Bulk transport

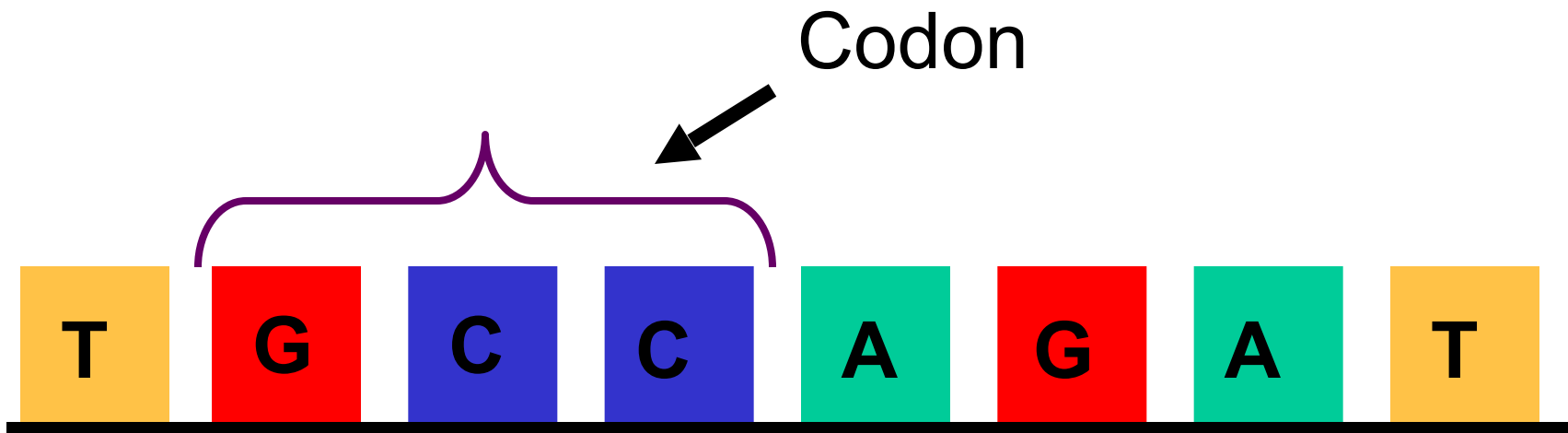
### b) Endocytosis

- Moves materials **IN** to the cell
  - Substances are engulfed into vesicle
- Types of endocytosis
  1. **Phagocytosis** – cell eating
  2. **Pinocytosis** – cell drinking

# Protein Synthesis

## Gene

- The segment of DNA has a code made of the nucleotide bases
- Each sequence of **three** *n*\_\_\_\_\_ codes for **one** *amino acid*



# Protein Synthesis

Two major phases:

1. T

- ~~“Decoding” phase~~
- mRNA copies the info from DNA