Basic Electrophysiological Methods Lecture 3

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Department of Biophysics

GROUP1 Brugada syndrome	GROUP2 Long QT syndrome	GROUP3 Timothy syndrome	GROUP4 Dravet syndrome
1. Şeyma	1. Emre Eryiğit	1. Alfi Aren	1. Ece
2. Aisha	2. Arda	2. Subatay	2.Semanur
3. Efehan	3.Eman	3. Miyasar Jasem Altrkawi	3.Veli
4.	4. Emre Atak	4.	4.Ammar
5.	5.	5.	5.Selin

1. Group leader
   Responsibility: time arrangement for the group discussion
   Everyone will have an idea about the syndremes
   Each person will choose an article related to the syndrome which includes electrophysiological methods
   In the group discussion
      Talk about the syndrome
      Discuss about the methods and results

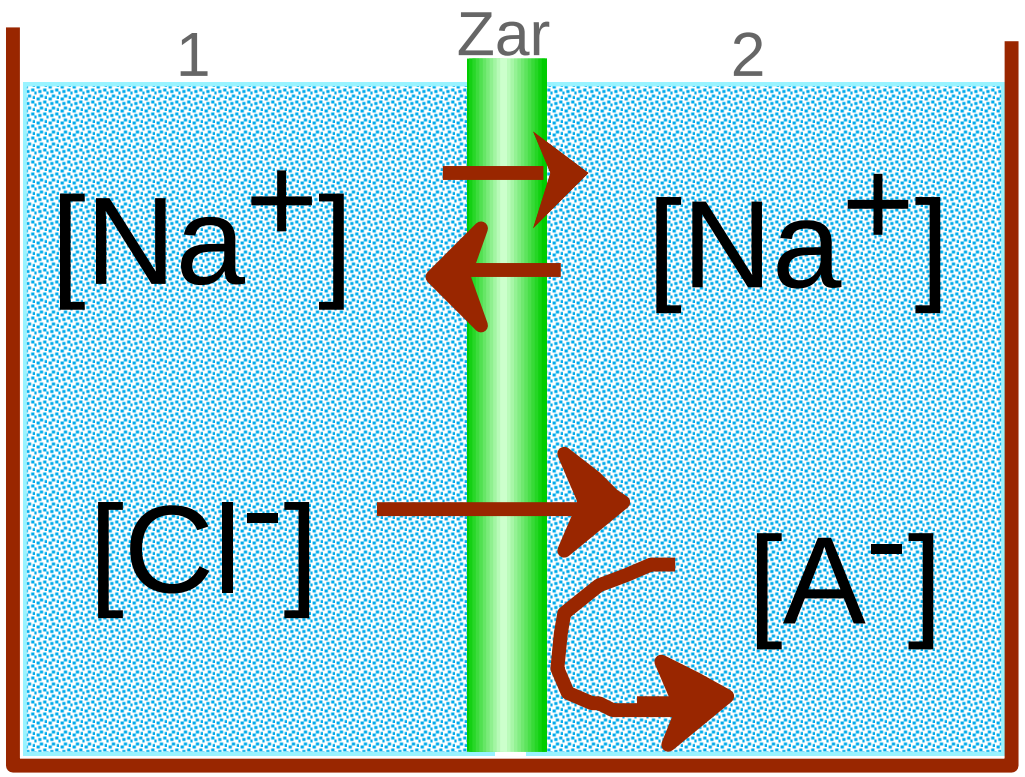
Homework:

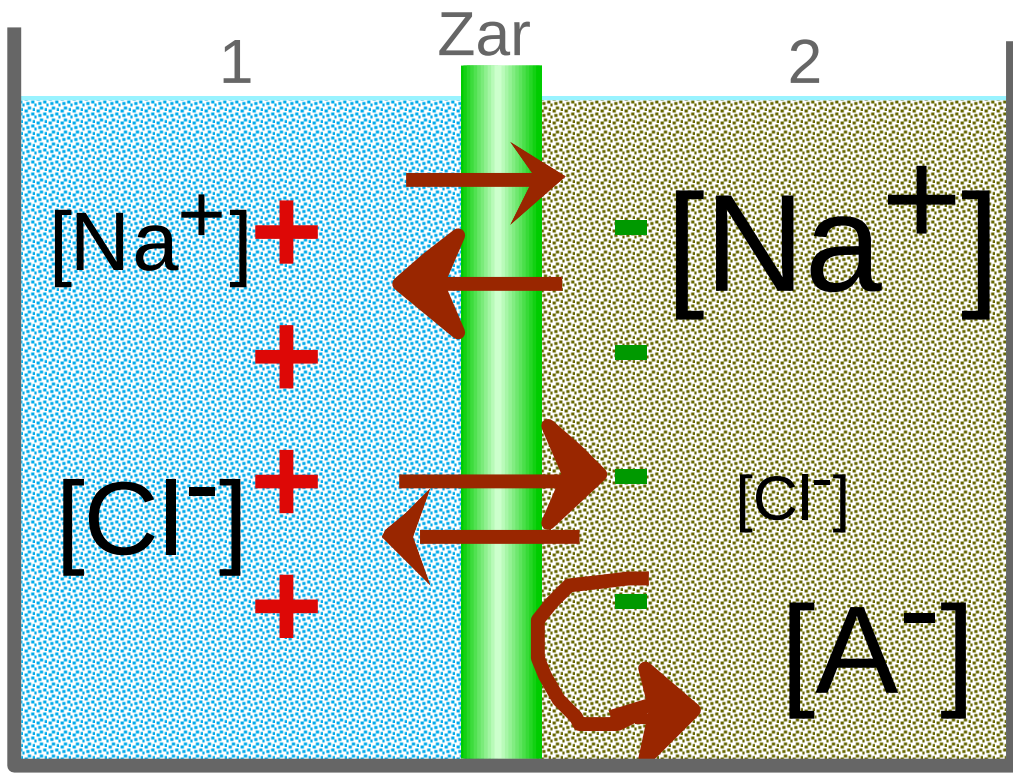
- Give information about the syndrome:
  - What is the ……syndrome?
  - What are the symptoms of ……. syndrome?
  - How common is ……. Syndrome in Turkey and in the world ?
  - Are there any similar syndromes?
  - …….
- Find articles about ……syndrome
  - Each student will find an article related to the syndrome (includes electrophysiological methods)
    - In the article;
      - Methods
      - Results
      - Discussion

Lecture Outline:

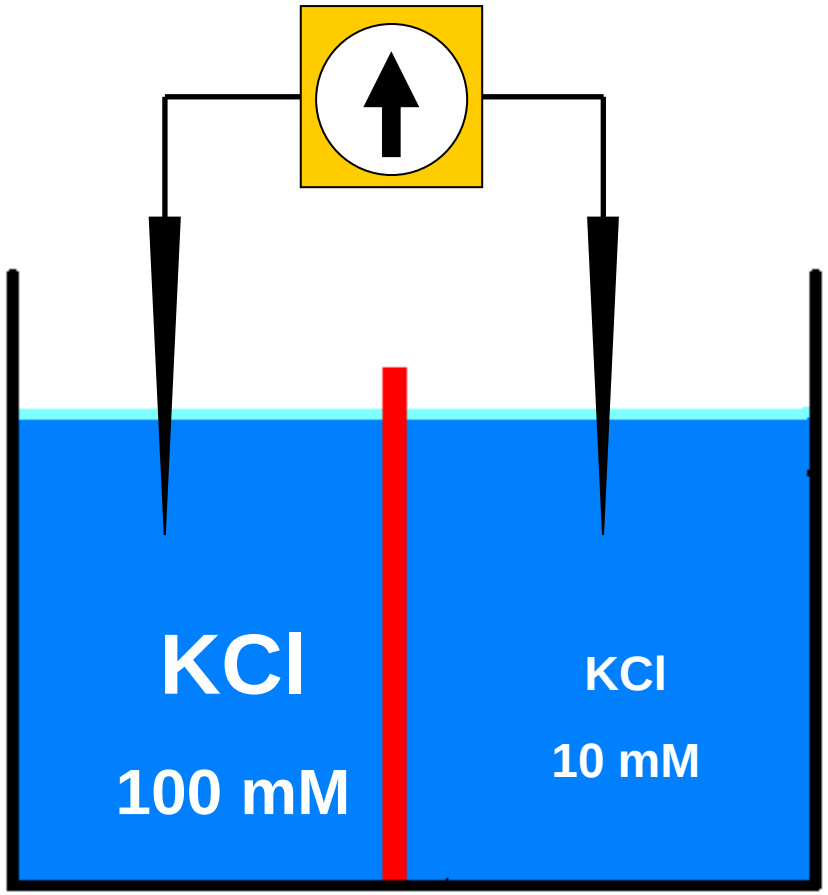
- **Nernst Equation**
- **Goldman-Hodgkin-Katz Equation**

Gibbs-Donnan Equilibrium





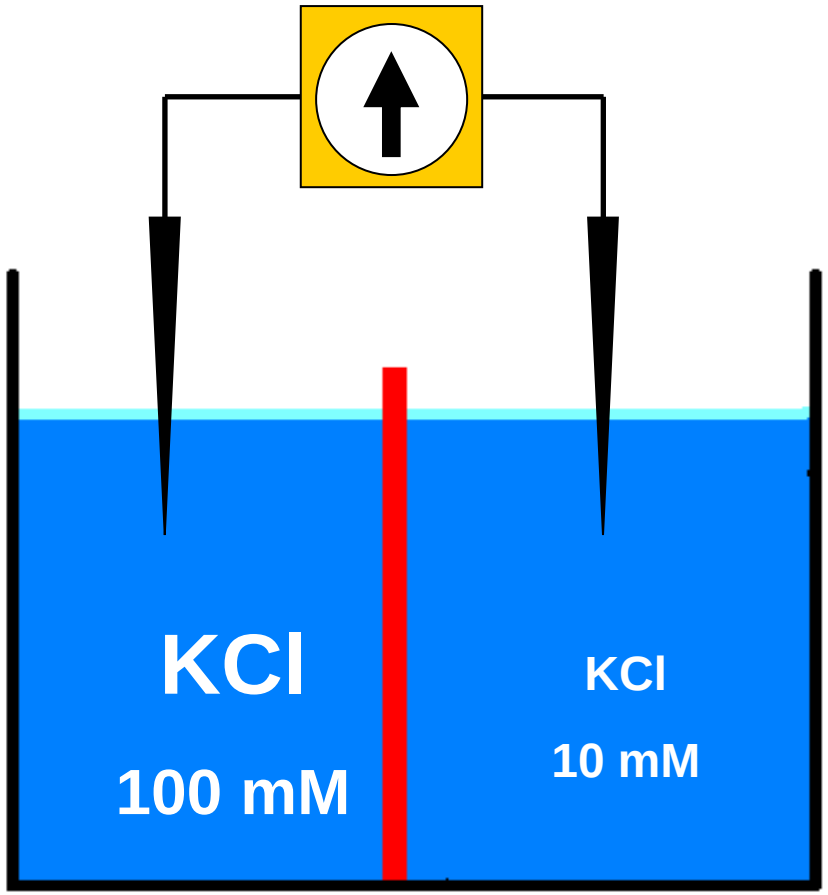
Ionic Equilibrium



- Concentration gradient

$\Delta V = ?$

How Does Ionic Balance Occur?

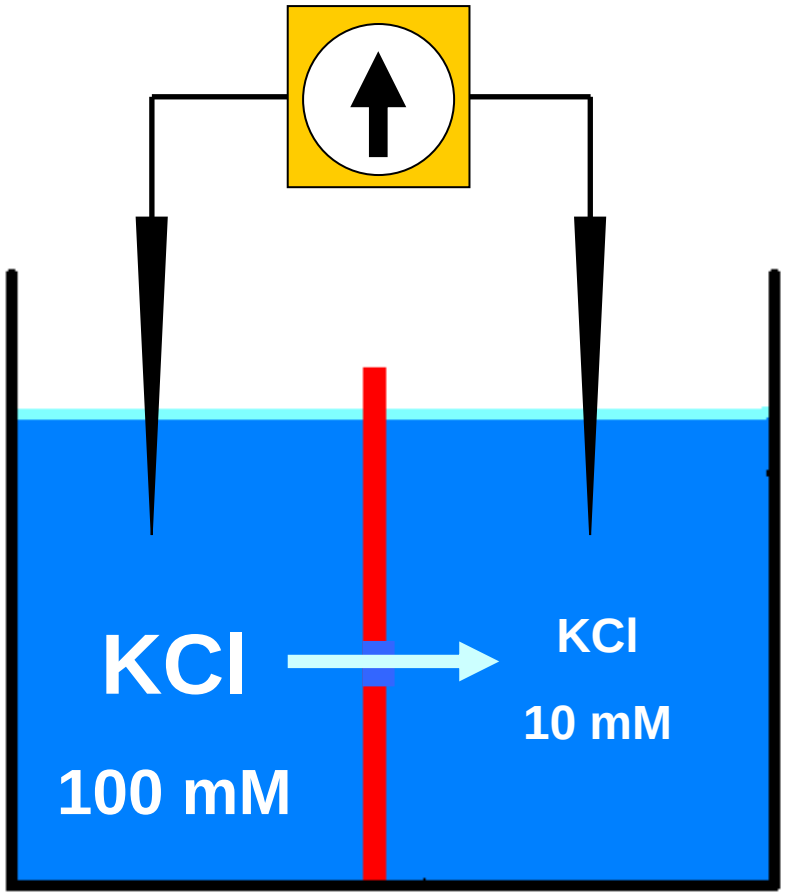


- Concentration gradient

$\Delta V = ?$

$\Delta V = 0$

How Does Ionic Balance Occur?



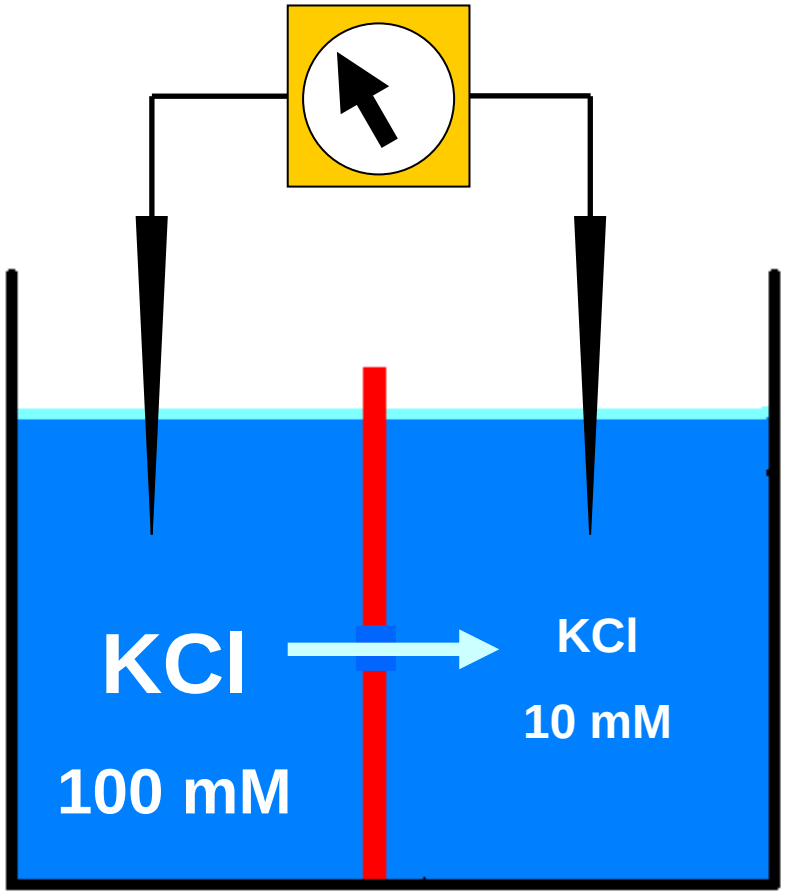
- Membrane permeability is equal for both K and Cl ions;
  - ⇨ Concentration gradient
  - ⇨ Electroneutrality

$\Delta V = ?$

$\Delta V = 0$

How Does Ionic Balance Occur?

Membrane is permeable only for K ion

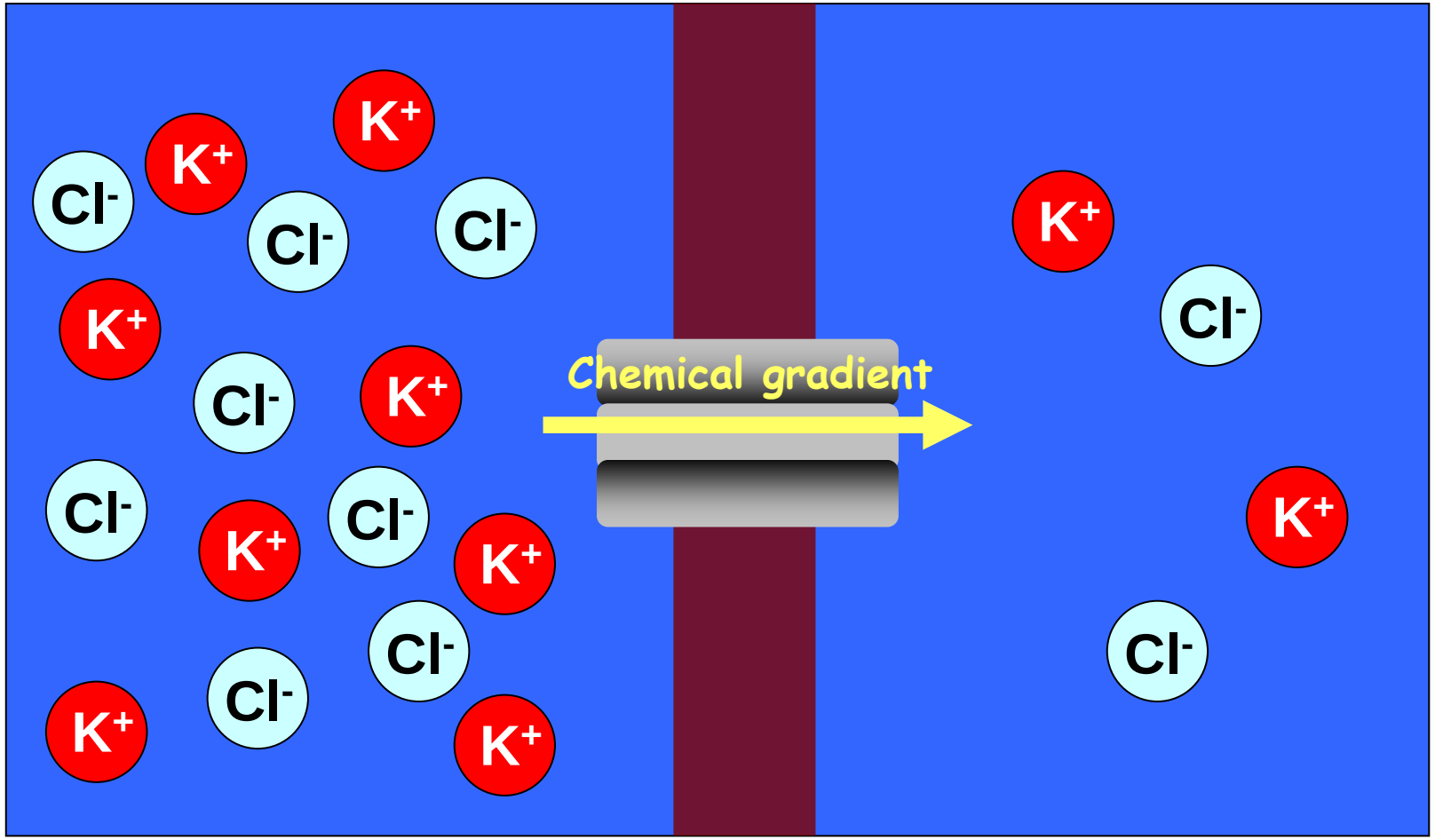


- Concentration gradient
- Membrane is selectively permeable

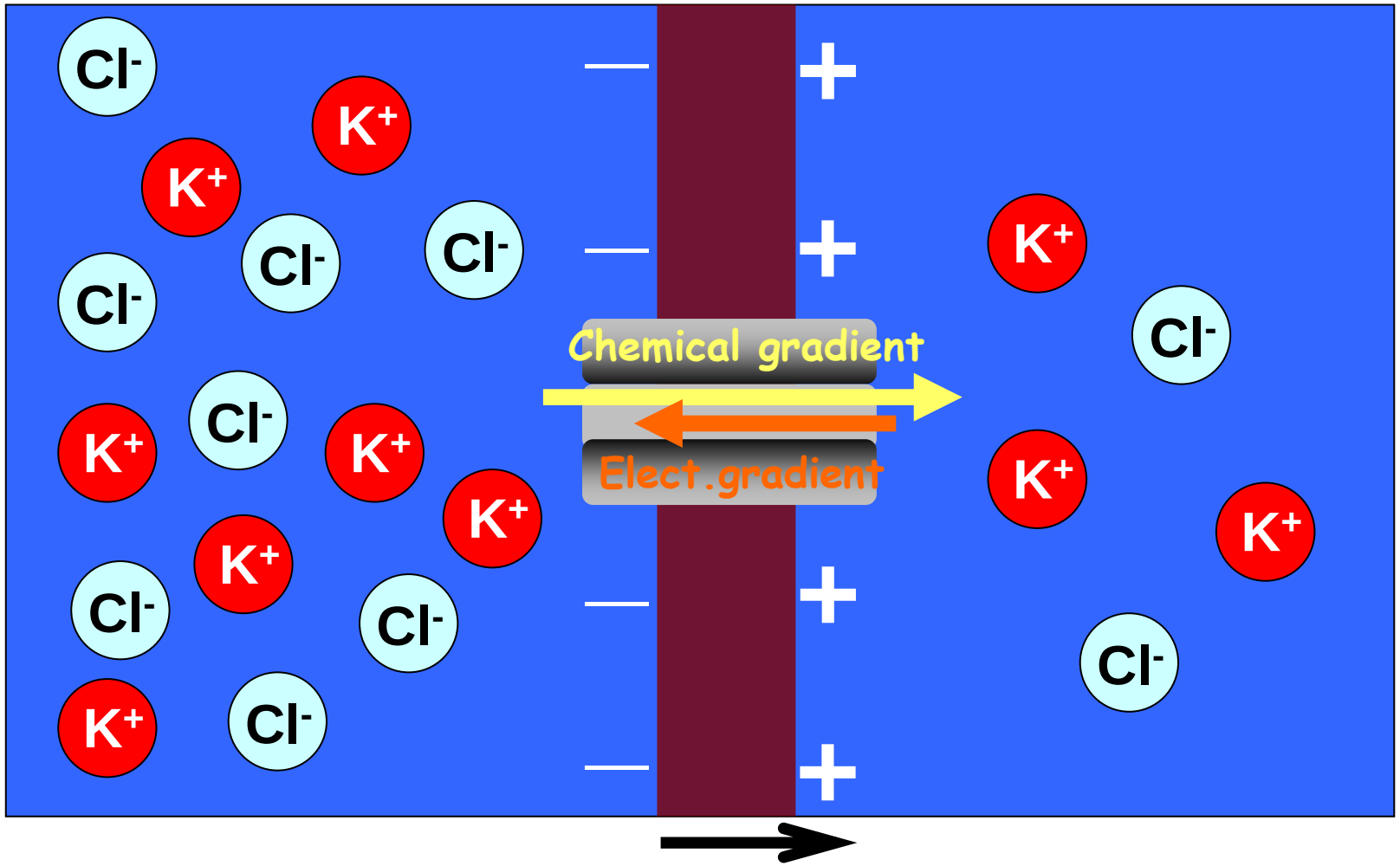
$\Delta V \neq 0$

How Does Ionic Balance Occur?

Membrane is permeable only for K ion

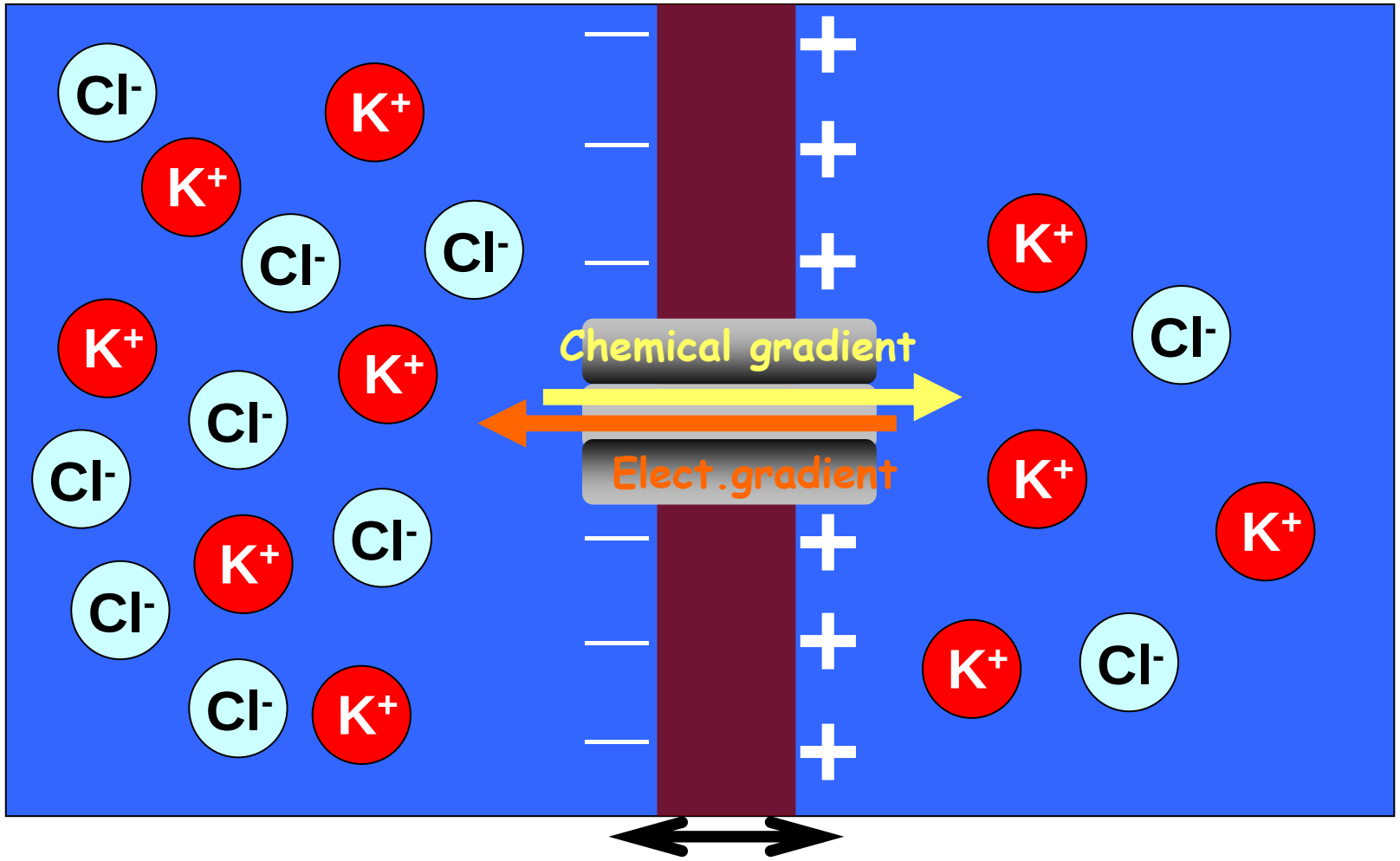


How Does Ionic Balance Occur?



Flux is in 2 direction but Net flux is to the right side

How Does Ionic Balance Occur?



Flux is in 2 direction and Net flux is 0