



PHYSIOLOGY



NPTEL- DTH Swayamprabha Video Lectures in Physiology

Physiology is a study of function of an organism. Medical students in India learn Physiology in their first year, along with Anatomy and Biochemistry. The Physiology course in Indian medical colleges is categorized into 'organ systems' and has didactic lectures as well as practical sessions under the following headings:

General physiology (Cell Physiology: Membrane transport, Membrane potentials, Body fluids) Blood, Muscle and tissues, Excretory system, Digestive system, Respiratory system, Cardiovascular system, Endocrine system, Reproductive system, Nervous system and special senses.

It is a commendable initiative by the Ministry of Human Resources Development, Govt of India, that strives to bring medical lectures into open access portals on the internet, enabling students to listen to the lectures when convenient. The objective is not to replace their contact time with faculty in their respective colleges, but to free up the contact time for a higher level of discussions, interaction and experimentation, given that the basic information is available.

Faculty of national eminence with a strong research background have been identified to handle the different organ systems. In phase I, two sets of lectures have been made available; 22 lectures in General Physiology and 11 lectures in Hydrogen ion homeostasis. Structured courses will be built around the lectures and made available in the form of MOOC shortly.

The Physiology faculty of NPTEL and DTH Swayamprabha are looking forward to this learning experience with a wider audience.



1.1. PHYSIOLOGY

1.1.1. GENERAL PHYSIOLOGY (CELL PHYSIOLOGY AND BODY FLUIDS)

SI No	Title	Expert	Duration
1	GP 1: Cell Membrane: lipids	Dr. Sathya Subramani	0:22:57
2	GP 2: Cell Membrane: Proteins	Dr. Sathya Subramani	0:22:38
3	GP 3: Membrane Transport: Ion channels part 1	Dr. Vinay Timothy Oommen	0:28:27
4	GP 4: Membrane Transport: Ion channels part 2	Dr. Vinay Timothy Oommen	0:28:27
5	GP 5: Membrane Transport: Facilitated diffusion	Dr. Sathya Subramani	0:33:19
6	GP 6: Membrane transport: Secondary active transporters	Dr. Sathya Subramani	0:32:16
7	GP 7: Membrane Transport: Primary active transporters and ABC transporters	Dr. Sathya Subramani	0:26:20
8	GP 8: Cell signaling mechanisms part I	Dr. Sathya Subramani	0:15:51
9	GP 9: Cell signaling mechanisms part II	Dr. Sathya Subramani	0:15:44
10	GP 10: Cell signaling mechanisms part III	Dr. Sathya Subramani	0:19:30
11	GP 11: Cell signaling mechanisms part IV	Dr. Sathya Subramani	0:22:10
12	GP 12: Cell signaling mechanisms part V	Dr. Sathya Subramani	0:36:07
13	GP 13: Cell signaling mechanisms part VI- ionotropic receptors	Dr. Sathya Subramani	0:18:47
14	GP 14: Donnan effect and equilibrium	Dr. Sathya Subramani	0:20:57
15	GP 15: Membrane potential	Dr. Sathya Subramani	0:41:21
16	GP 16: Action potential part 1	Dr. Sathya Subramani	0:28:56
17	GP 17: Action potential part 2	Dr. Sathya Subramani	0:39:04
18	GP 18: Calcium transporters	Dr. Anand Bhaskar	0:30:32
19	GP 19: Cardiac action potentials	Dr. Anand Bhaskar	0:37:11
20	GP 20: Body fluids	Dr. Vinay Timothy Oommen	0:29:30
21	GP 21: Osmosis	Dr. Vinay Timothy Oommen	0:30:44
22	GP 22: Oedema	Dr. Anand Bhaskar	0:13:11



1.1.2. HYDROGEN ION HOMEOSTASIS

SI No	Title	Expert	Duration
1	HH 1: Introduction and sources of acid	Dr. Sathya Subramani	0:23:47
2	HH 2: Chemistry fundamentals	Dr. Sathya Subramani	0:21:37
3	HH 3: Buffering of carbon dioxide in venous blood	Dr. Sathya Subramani	0:24:28
4	HH 4: Buffering of fixed acids	Dr. Sathya Subramani	0:20:01
5	HH 5: Role of kidneys	Dr. Sathya Subramani	0:44:12
6	HH 6: Overview of acid-base disorders	Dr. Sathya Subramani	0:11:26
7	HH 7: Metabolic acidosis	Dr. Sathya Subramani	0:20:05
8	HH 8: Metabolic acidosis - renal tubular acidosis	Dr. Sathya Subramani	0:26:53
9	HH 9: Metabolic alkalosis	Dr. Sathya Subramani	0:39:43
10	HH 10: Respiratory alkalosis	Dr. Sathya Subramani	0:28:02
11	HH 11: Respiratory acidosis	Dr. Sathya Subramani	0:28:02

1.1.3 NERVE MUSCLE PHYSIOLOGY

SI No	Title	Expert	Duration
1	Neuromuscular junction structure, special features and transmission	Dr.Latha R	0:22:12
2	Neuromuscular junction – Applied aspects of Neuromuscular junction and Neuromuscular blockers	Dr.Latha R	0:26:35
3	Functional anatomy and ultrastructure of skeletal muscle	Dr.Latha R	0:24:51
4	Molecular basis of skeletal muscle contraction	Dr.Latha R	0:25:02
5	biophysical properties of skeletal muscle part I	Dr.Latha R	0:26:10
6	Biophysical properties of skeletal muscle part II	Dr.Latha R	0:32:43



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1.1.4 RESPIRATORY PHYSIOLOGY

S:No	Lecture Title	Expert	Duration
1	RS1 Cellular respiration	Dr. Sathya Subramani	0:13:04
2	RS2 Transport of oxygen in blood	Dr. Sathya Subramani	0:39:58
3	RS3 Tissue Hypoxia	Dr. Sathya Subramani	0:32:58
4	RS4 final Arterial hypoxia	Dr. Sathya Subramani	0:42:04
5	RS5 Transport of CO ₂ in blood, Alveolar ventilation equation	Dr. Sathya Subramani	0:32:37