

LECTURE #5 NOTES

OBJECTIVES

- Identify the high-energy phosphates and discuss their roles in various forms of biological work.
- Outline the process of electron transport.
- Describe Oxidative Phosphorylation
- Explain oxygen's role in energy metabolism.
- Describe anaerobic energy release occurs in cells.
- Describe lactic acid formation during exercise.
- Describe the Krebs cycle.
- Contrast ATP yield from carbohydrates, fats, and proteins.
- Explain the statement, "Fats burn in a carbohydrate flame."

ANABOLISM AND CATABOLISM

ATP – THE ENERGY CURRENCY

ATP HYDROLYSIS

HOW TO MAKE ATP

ATP A LIMITED SUPPLY

**ATP PRODUCED BY ANAEROBIC METABOLISM:
THE SHORT TERM ENERGY SOURCE**

ANAEROBIC ENERGY RELEASE FROM SUGAR

ANAEROBIC PRODUCTION OF ATP

**ATP PRODUCED BY OXIDATION (AEROBIC METABOLISM)-
LONG-TERM ENERGY SOURCE**

AEROBIC ENERGY RELEASE FROM FOOD

CELLULAR OXIDATION

ELECTRON TRANSPORT

OXIDATIVE PHOSPHORYLATION

ROLE OF OXYGEN IN ENERGY METABOLISM

ENERGY RELEASE FROM CARBOHYDRATE

AEROBIC ENERGY FROM GLUCOSE: THE KREBS CYCLE

FORMATION OF LACTIC ACID

NET ENERGY FROM CHO

ENERGY RELEASE FROM FAT

ENERGY RELEASE FROM PROTEIN

THE METABOLIC MILL

METABOLIC FATE OF MACRONUTRIENTS