



## Main Role of Bioenergetics in Living Organisms

Jean-Philippe Chaput\*

Healthy Active Living, Ottawa, Canada

### INTRODUCTION

Bioenergetics is the branch of biochemistry concerned with the energy expended in the formation and breaking of chemical bonds in biological molecules. Some species, such as autotrophs, may obtain energy from sunshine (photosynthesis) without consuming or breaking down nutrients. Bioenergetics is a discipline of biology that studies how cells convert energy, most commonly through the production, storage, or consumption of Adenosine Triphosphate (ATP). Most components of cellular metabolism, and thus life itself, rely on bioenergetic activities such as cellular respiration and photosynthesis. Let's start by defining our course's theme. Bioenergetics (biological energetics) is a branch of biology that studies the processes of converting external sources of energy into biologically relevant work in living systems. The notion that organisms are open systems that function only under constant interchange of materials and energy with the surrounding medium is the first fundamental property of bioenergetics. This system's thermodynamics are fundamentally different from traditional thermodynamics. To grow and reproduce, maintain their structures, and adapt to their environs, all living creatures require energy; metabolism is the collection of mechanisms that makes energy available for cellular operations. In order to carry out cellular operations, living creatures must obtain energy from food, nutrients, or sunshine. The study of energy in living things is known as bioenergetics. Autotrophs are plants and algae that produce their own sustenance. CO<sub>2</sub>, H<sub>2</sub>O, and inorganic nitrogen and sulphur compounds received through the roots are used to synthesize all of the hundreds of chemicals that plants possess. CO<sub>2</sub>, which is assimilated by photosynthesis, is the only source of carbon.

It covers two primary processes: cellular respiration and photosynthesis, which both include energy transformation (changing from one form to another). Bioenergetics is a type of psychodynamic psychotherapy that integrates body and mind work to assist people in resolving emotional issues and realizing their full potential for happiness and satisfaction in life. Psychotherapists who practice bioenergetics think there is a link between the mind and the body. ATP has the structure of an RNA nucleotide with three phosphates bound to it. Pushing a mattress and yelling; inhaling deeply into an area of emotional pain and allowing yourself to cry; or smashing a foam cube with a tennis racquet to engage your aggression and possibly anger or other emotions are examples of these exercises. Because energy is lost as metabolic heat when animals from one trophic level are consumed by organisms from the next, energy diminishes as it goes up trophic levels. The quantity of energy transmitted between trophic levels is measured by Trophic Level Transfer Efficiency (TLTE). The majority of biologists disagree. Viruses are not made up of cells, and therefore are unable to maintain a stable condition, develop, or generate their own energy. Viruses are more like androids than true live organisms, despite the fact that they proliferate and adapt to their surroundings. Photosynthesis is the only primary biological activity that converts inorganic materials to organic molecules, such as carbohydrates, proteins, nucleic acids, lipids, and pigments, using a source of energy, sunlight, from outside the earth's environment. Most other creatures are heterotrophs, meaning they must consume and catabolize carbs and lipids in order to survive.

**Correspondence to:** Jean-Philippe Chaput, Healthy Active Living, Ottawa, Canada, E-mail: [jean@pchaput.com](mailto:jean@pchaput.com)

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