

# BROWN ADIPOSE TISSUE

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## 1. INTRODUCTION

One of the most worries of the world scientist community is the **obesity epidemic**, the one which become in one of the most important in our society. The target is to find the way to fight it because obese people have a higher risk to suffer **cardiovascular problems, cancer or type II diabetes**; thus decreasing the quality and the expectative of life.

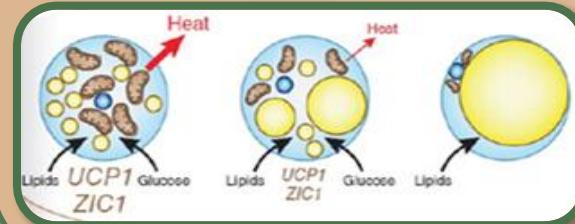
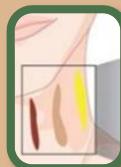
Until a few years ago, the studied methods included diets, physical activities, drugs or cosmetic surgeries. Nowadays scientists are investigating different ways of activating one type of adipose tissue, known as brown adipose tissue, BAT, which is able to **oxidize fatty acids and glucose to generate heat**.

## 2. OBESITY

Defined as the result of an **imbalance** between the **energy intake** and **expenditure** of the person, obesity is a chronic disease that usually begins in childhood or adolescence. It represents one of the most important public health problems in recent years.

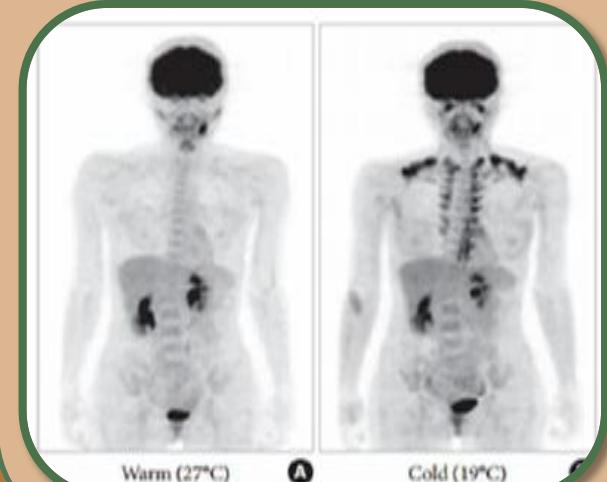
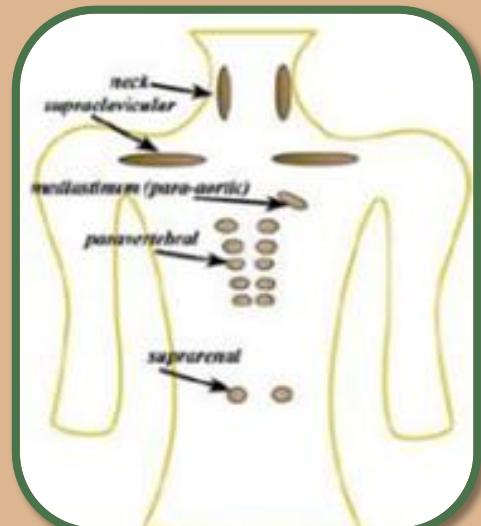
The cause may be the high food availability, especially rich in calories ones, and the evolution towards a more sedentary lifestyle. That is why it is important to combine BAT with **the lifestyle** that people lead.

## 3. TYPES OF ADIPOSE TISSUE



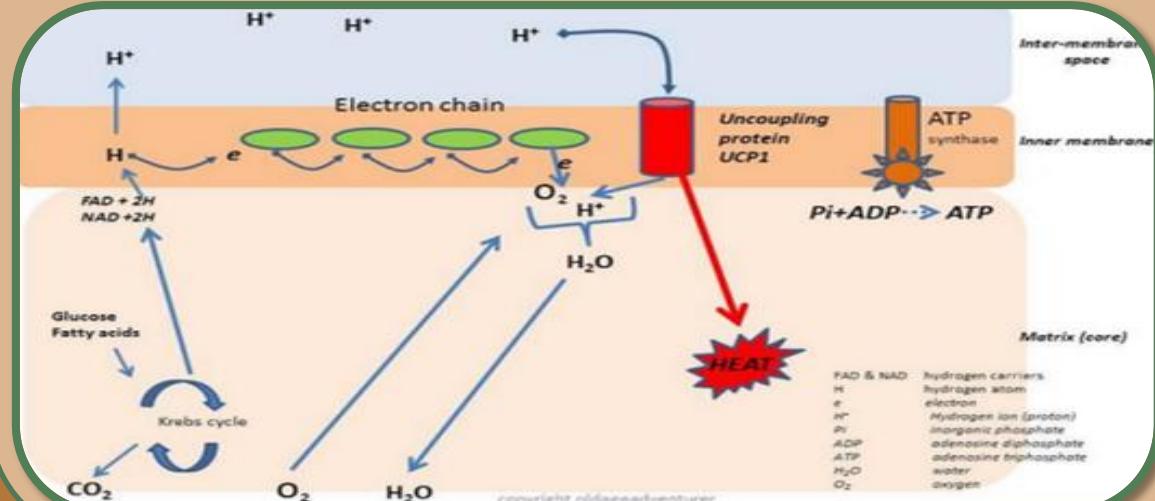
There are **three different types** of adipocytes: white, brite and brown. On the one hand, WAT, is able to store energy as triglyceride. This is **the most abundant** in human bodies. On the other hand, BAT, **oxidize lipids to generate heat**. In addition, it has a high vascularization to ensure the supply of substrate and oxygen. The **thermogenic property** of brown fat cells is carried out by the mitochondria that it have. To finish, the brite adipocytes share characteristics of both types, as in the same way that brown cells, the brite ones have thermogenic properties too.

## 4. BAT

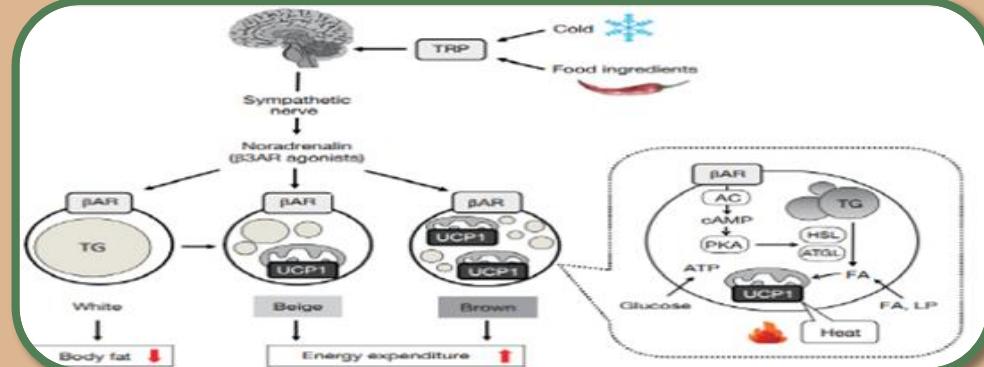


## 5. MECHANISM AND REGULATION OF THERMOGENESIS

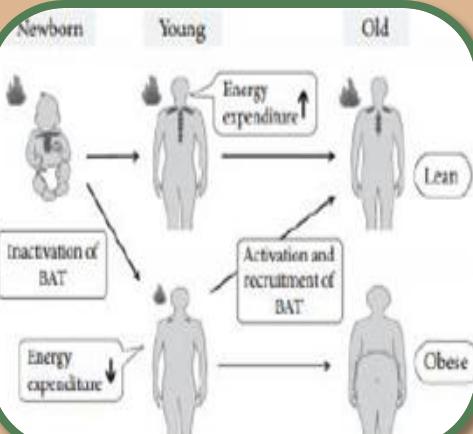
BAT is able to **produce heat without shaking** thanks to the high level of mitochondria, which are composed by uncoupling proteins, UCP-1.



## 6. PHYSICAL REGULATION: THE NOREPINEPHRINE



## 7. RELATION BAT- OBESITY



## 8. CONCLUSION

Nowadays health and food are totally connected. The reason is that poor nutrition can have very bad consequences in human health, finishing on disease. The main objective should be awareness society. Although there are some cases where this solution is not enough. On the last few years, knowing that adult people contain a very important part of BAT, scientists have been investigating how differentiate brown adipocytes in order to use it as a therapeutic method. It seems that in the future it could become a very important method to combat one of the biggest problems that exist today, obesity.