Brown adipose tissue (BAT) is a type of fat tissue that is present in babies, neonates, and some hibernating species. It is responsible for thermogenesis, which helps to maintain body temperature when the environmental temperature is lower. BAT is characterized by its high metabolic rate and contains large numbers of mitochondria, which are responsible for producing heat. It is also known to be involved in glucose metabolism, insulin sensitivity, and the development of type 2 diabetes.

The location of brown adipose tissue is primarily in the interscapular region, although it can be found in other areas such as the cervical, thoracic, and abdominal regions. Its presence is also influenced by genetic factors, body mass index, and certain medications. The activation of brown adipose tissue is regulated by various factors, including thyroxine, cortisol, and insulin. The studies suggest that the activation of brown adipose tissue can be induced by cold exposure, hypothyroidism, and certain medications.

Brown adipose tissue is an important target for therapeutic interventions, as it can contribute to the treatment of obesity and type 2 diabetes. The research is ongoing to understand the molecular mechanisms underlying the activation of brown adipose tissue and to develop effective strategies to exploit its metabolic properties for health benefits.