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## Physiology of the fat tissue

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Adipose tissue (AT) has long been regarded as mainly a resting tissue dedicated to energy storage and release. In recent years, this view has dramatically changed following new insights into the endocrine activity of adipocytes and the immunological functions of AT. The biology of AT is a “black hole” in the field of dermatology, aesthetic medicine, plastic, aesthetic and cosmetic surgery. The demand for surgical procedures involving the manipulation of subcutaneous AT is rising every year: surgical removal, liposuction and lipofilling procedures, lysing with hypo-osmotic solutions or phosphatidylcholine/biliary salt mixtures, radiofrequency devices, external ultrasound, cryolipolysis etc. The physicians sucking out AT and placing it elsewhere or using different noninvasive devices with rather crude technology must think carefully about the fate of the tissue and cells they manipulate. Those performing techniques aimed at adipocyte rupture must question the evolution of the products appearing in AT after lesions promoted by such treatments. Obesity is recognized as having an impact on clinical medicine, nutrition and aesthetic medicine but the acknowledged physiological role of subcutaneous AT on skin biology is largely unknown and research is neglected. AT is also an abundant, accessible, and replenish able source of adipose derived adult stem cells that can be isolated from liposuction. These adipose-derived stem cells (ASCs) are multipotent, differentiating along the adipocyte, chondrocyte, myocyte, and osteoblast lineages. ASCs cells could have potential applications for the repair and regeneration of acute and chronically damaged tissues. Nevertheless, a number of additional pre-clinical safety and efficacy studies will be needed before the promise of these cells can be fully realized. The actual use of PRP and his action over the survive of the fat grafting give a great impulse to the technique of lipografting

The need for a better understanding of AT biology and physiology has never been so acute in the field of medicine, dermatology, aesthetic medicine and aesthetic surgery to improve treatments, surgical practices and outcomes. This presentation will focus on the recent findings in human fat cell (adipocyte) metabolism and AT physiology. AT tissue is now recognized as a key endocrine, autocrine and paracrine organ with white adipocytes, but also cells of the stroma-vascular fraction of AT, secreting a number of hormones and paracrine factors involved in endocrine and/or local regulation inside the AT.