ADIPOSE TISSUE

A Specialty Connective Tissue
Function of Adipose Tissue

• Largest repository of energy in the body
  – Triglycerides
  – 9.3kcal/g

• Contributes to thermal insulation
  – Important for temperature regulation

• Fills spaces between structures/protects
  – Between organs
  – Aids fit of valves in heart
  – Pads of fat protect heels, palms
How Fat is Used in Adipose Cell

- Fatty acid + glycerol move into cell from capillary.
- Sympathetic stimulation (NE) and Ep from adrenal gland stimulate adipose cell:
  - Release fatty acid, glycerol
  - Used as a source of energy
Adipose Dynamics

capillary

FFA
Glycerol
Glu
(insulin)
nucleus

triglyceride

NE
Glycerol
FFA
Ep

LIVER
Route of FFA to Adipose Tissue

- Capillary endothelium
- Basal lamina
- CT ground substance
- Adipocyte basal lamina
- Adipocyte plasma membrane
Development of Fat Tissue

Mesenchymal cell

Fibroblast

Lipoblast

Lipoblast

Multilocular adipocyte

Unilocular adipocyte
In a human newborn, multilocular adipose tissue constitutes 2—5% of the body weight and is distributed as shown. The black areas indicate multilocular adipose tissue; shaded areas are a mixture of multilocular and unilocular adipose tissue. (Modified, redrawn, and reproduced, with permission, from Merklin RJ: Growth and distribution of human fetal brown fat. Anat Rec 1974;178:637.)
Adipose Tissue

Unilocular

Multilocular (Brown Fat)
Adipose Tissue
Adipose Tissue

Location: Subcutaneous
ADIPOSE TISSUE