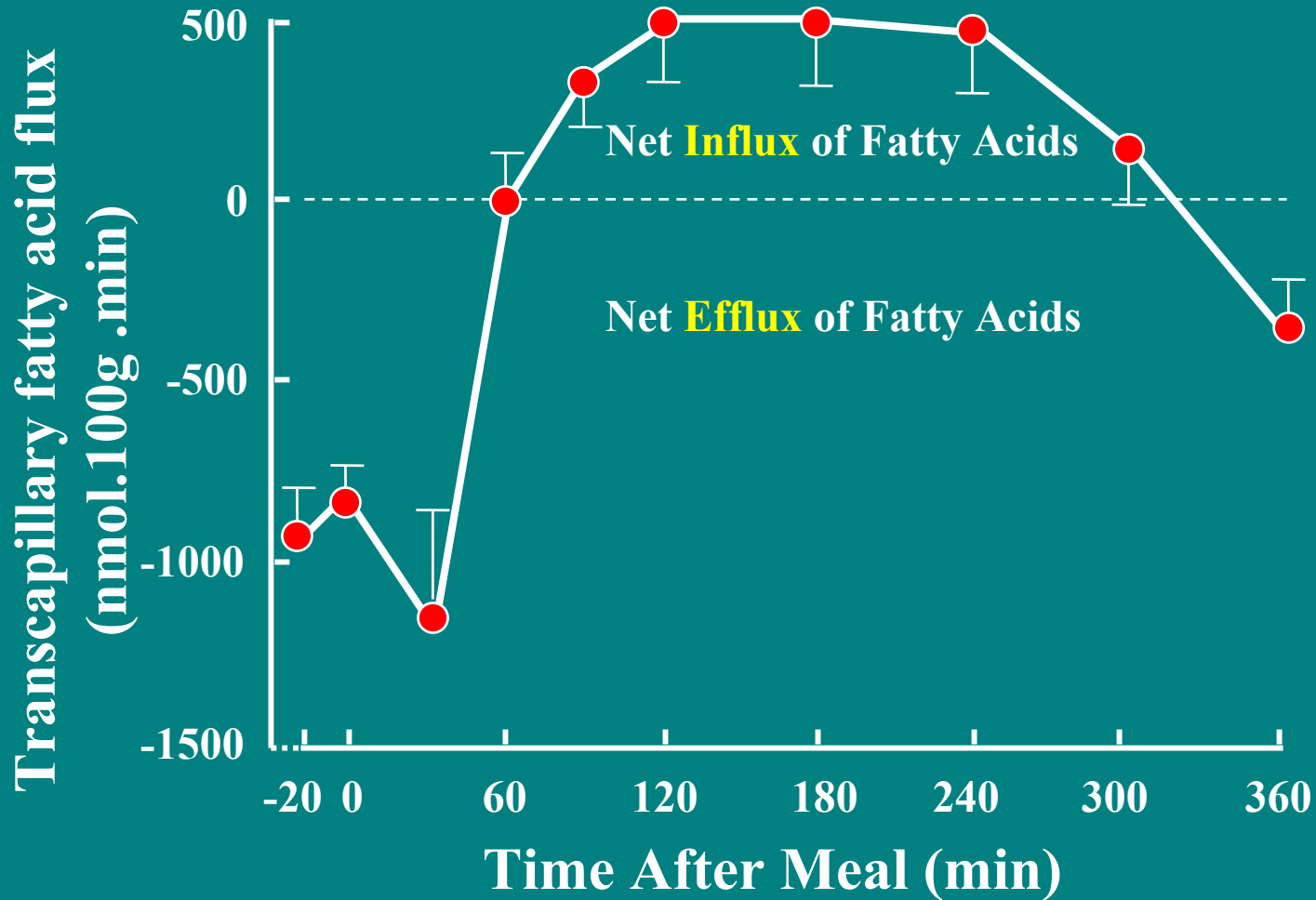


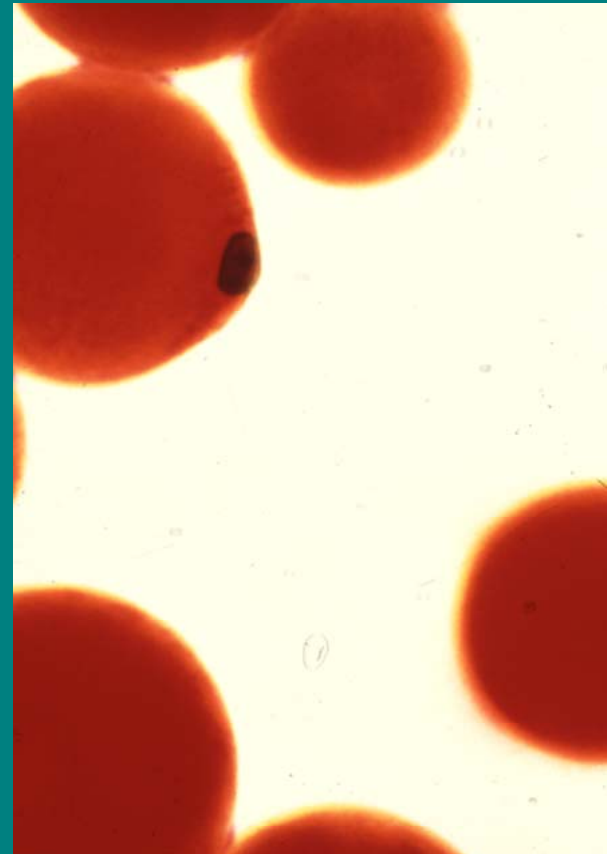
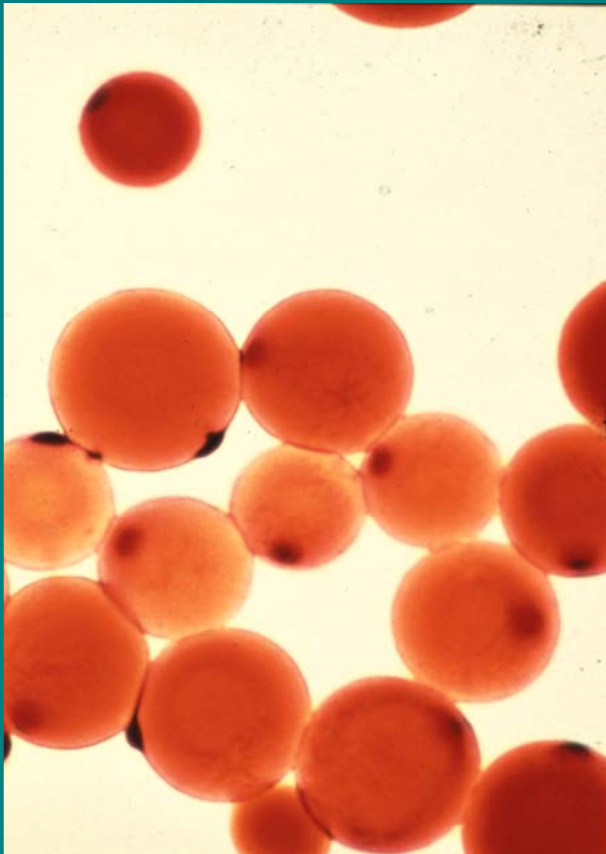
# Adipose Tissue: Location and Metabolism



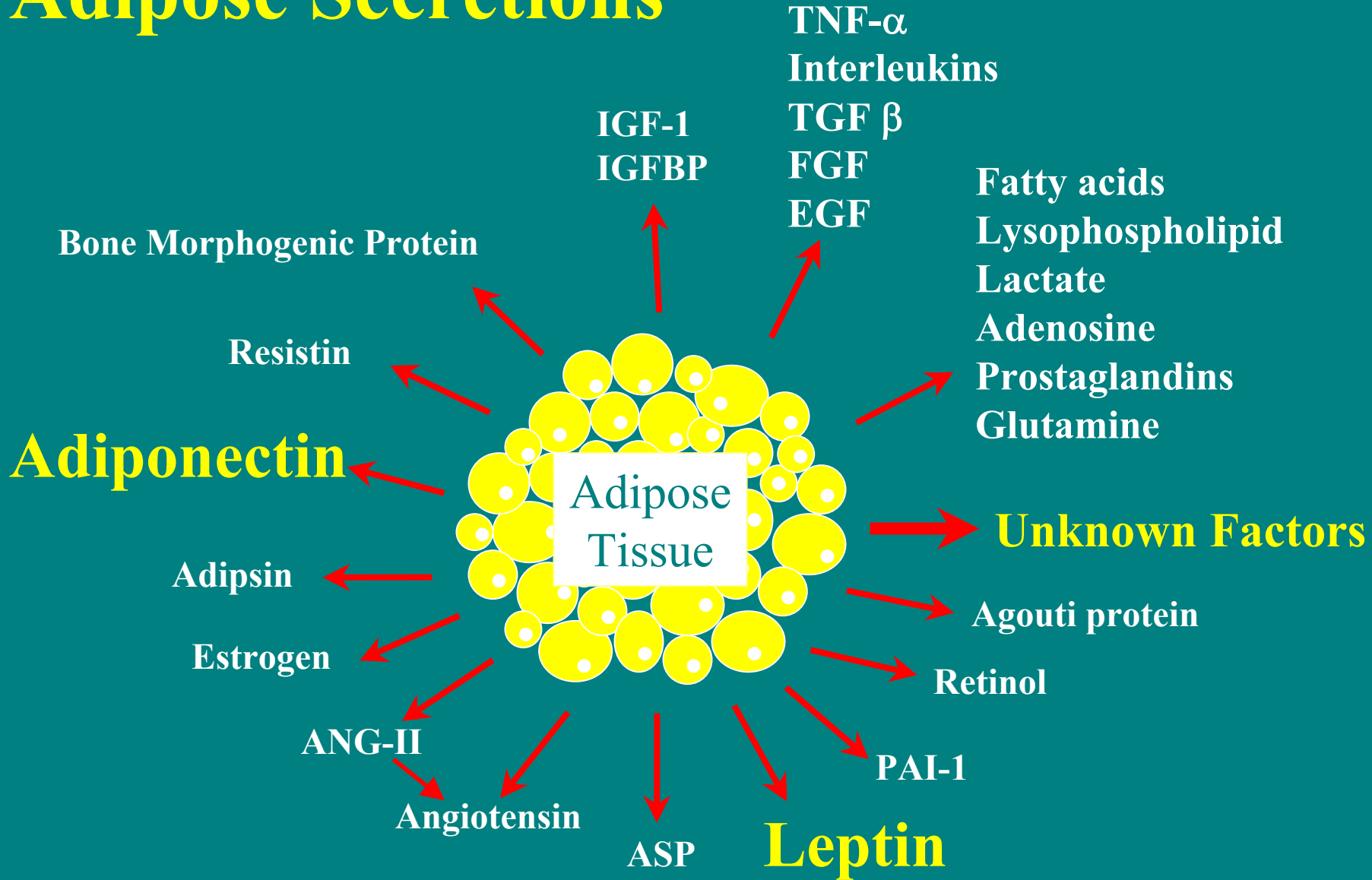
Net transcapillary flux of fatty acids in adipose tissue in the postabsorptive and postprandial states

– from Frayn, Diabetologia 2002

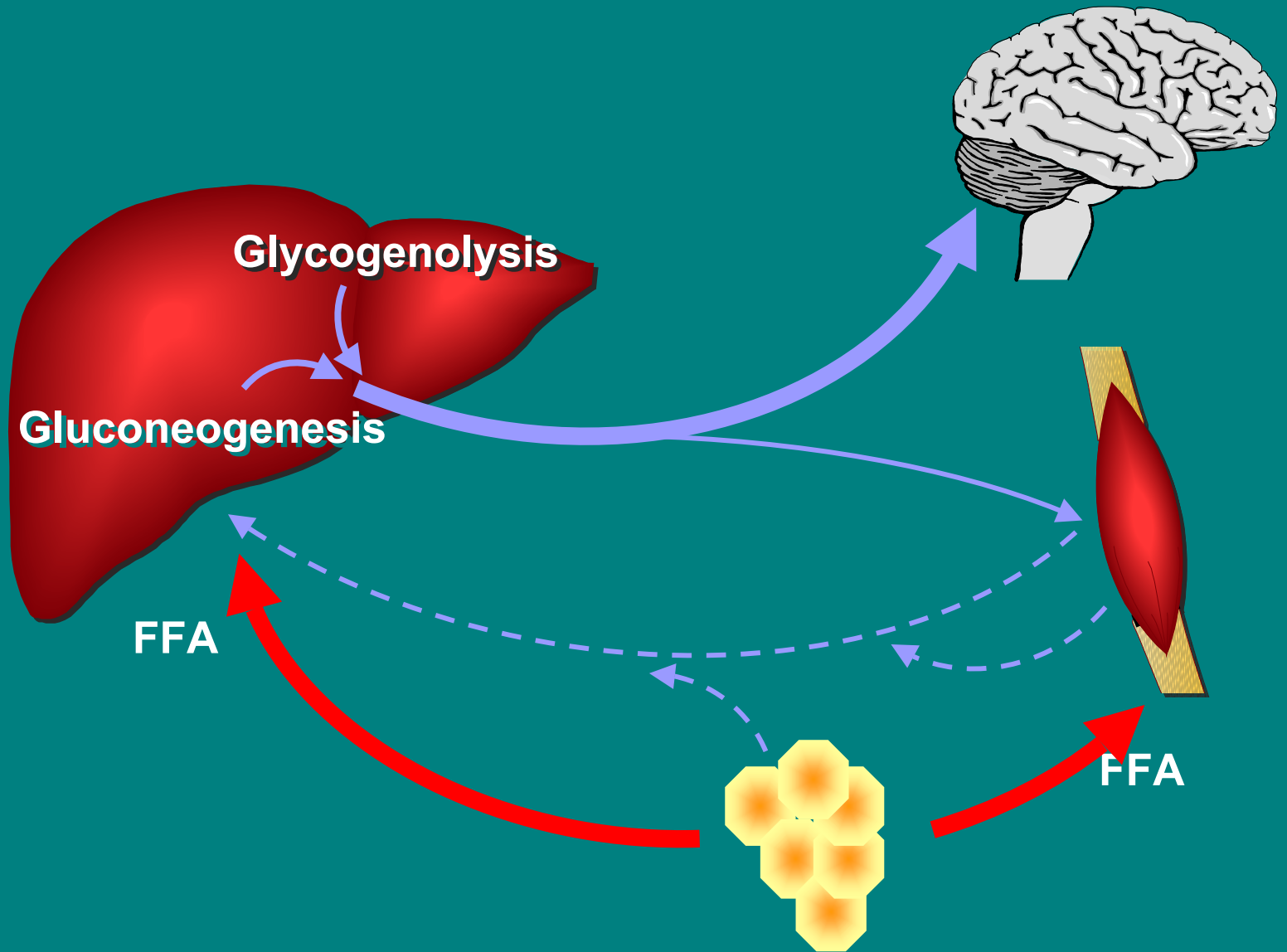
# Adipocyte Size



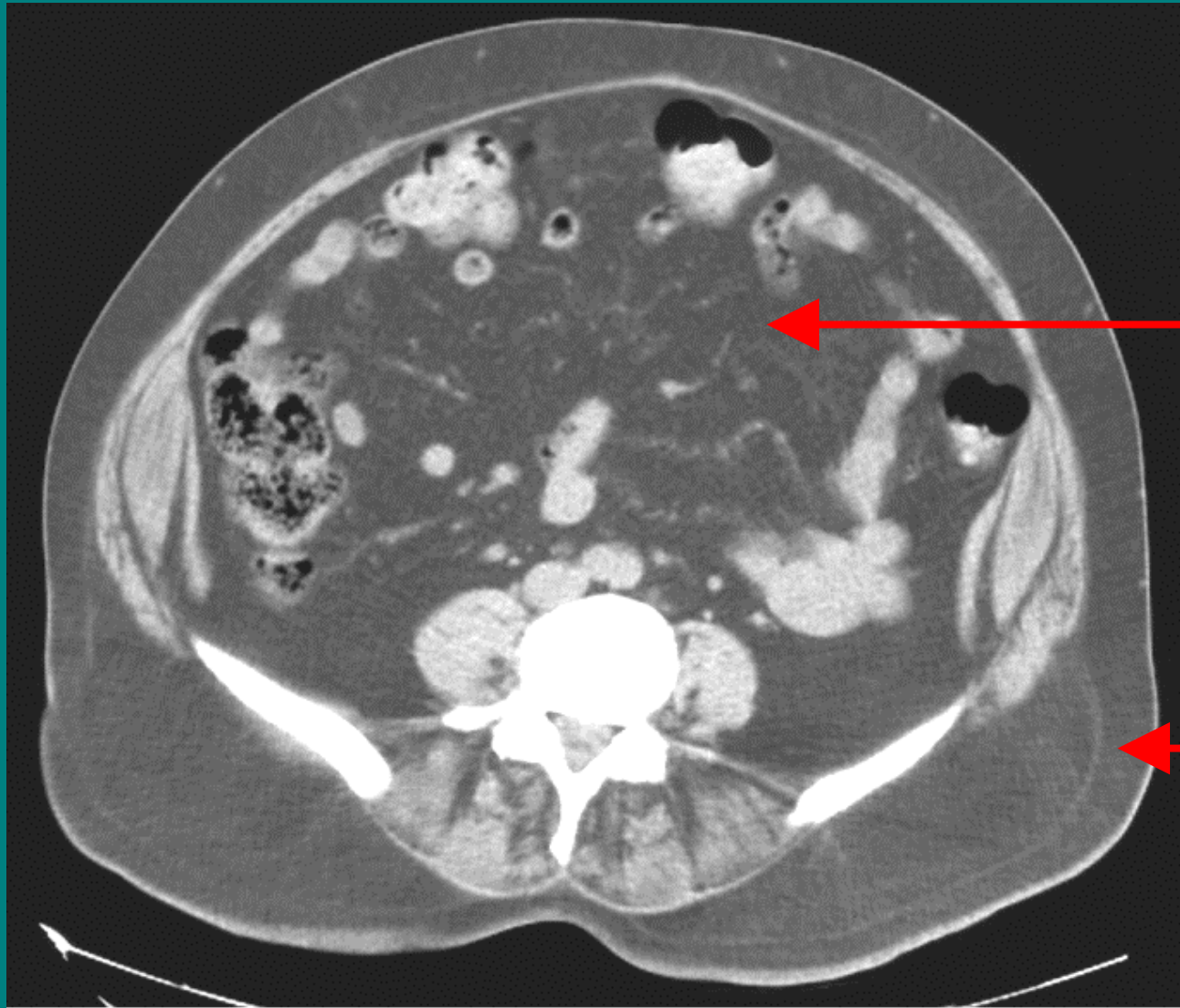
# Adipose Secretions



# FFA flux in the Fasting State



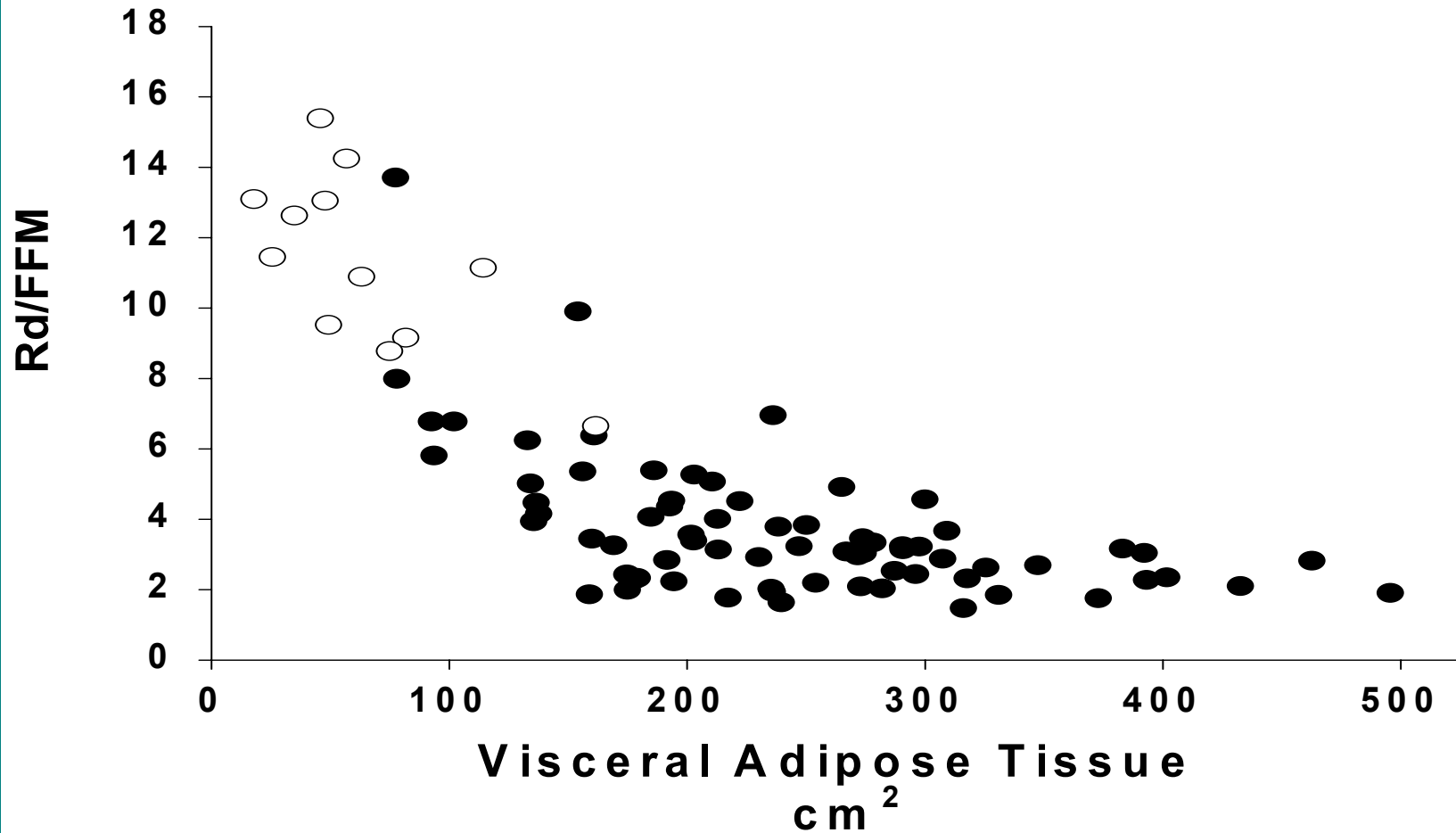
# Abdominal CT



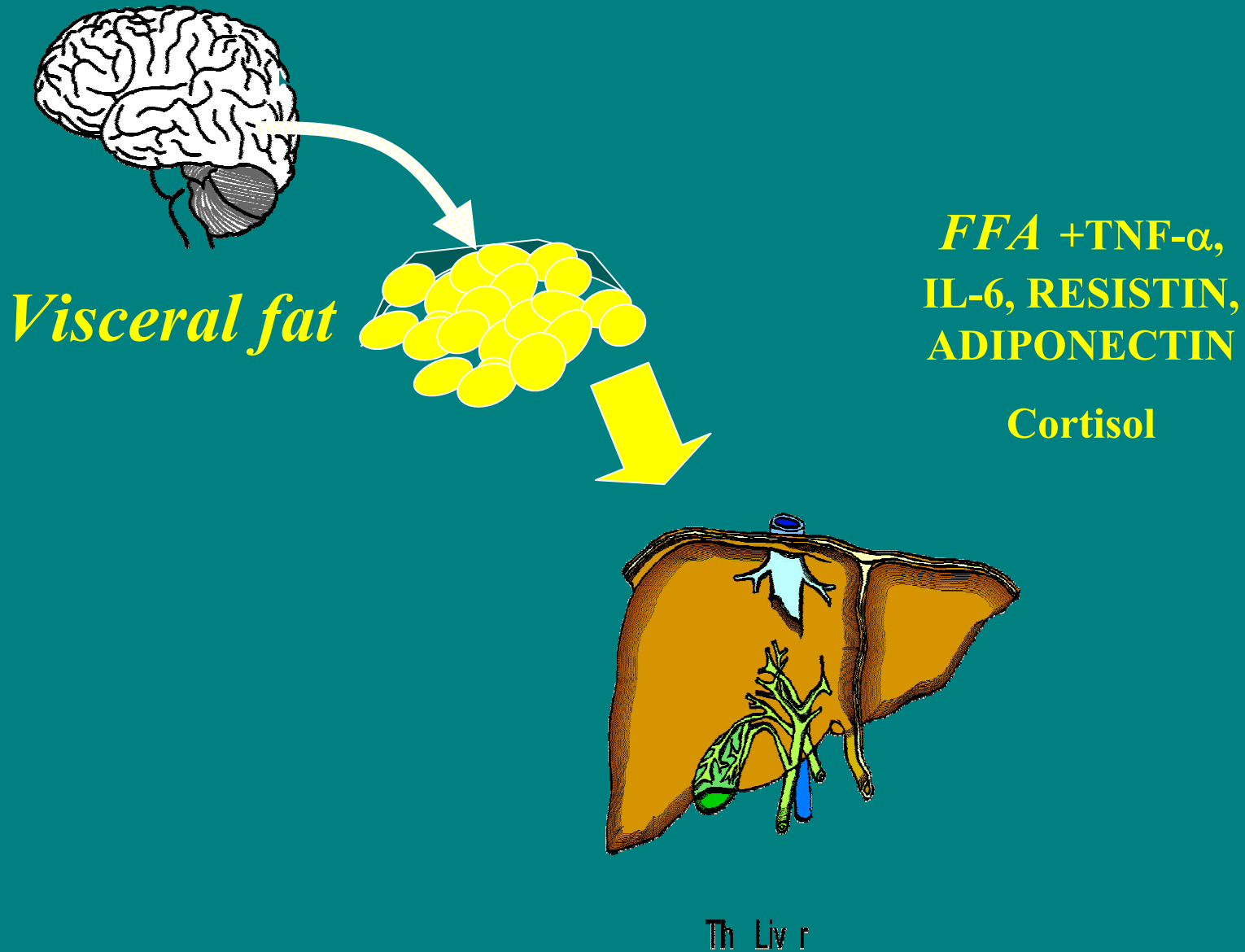
Visceral  
Adipose Tissue

Subcutaneous  
Adipose Tissue

# Relation of VAT to IR



# Visceral-Hepatic Axis

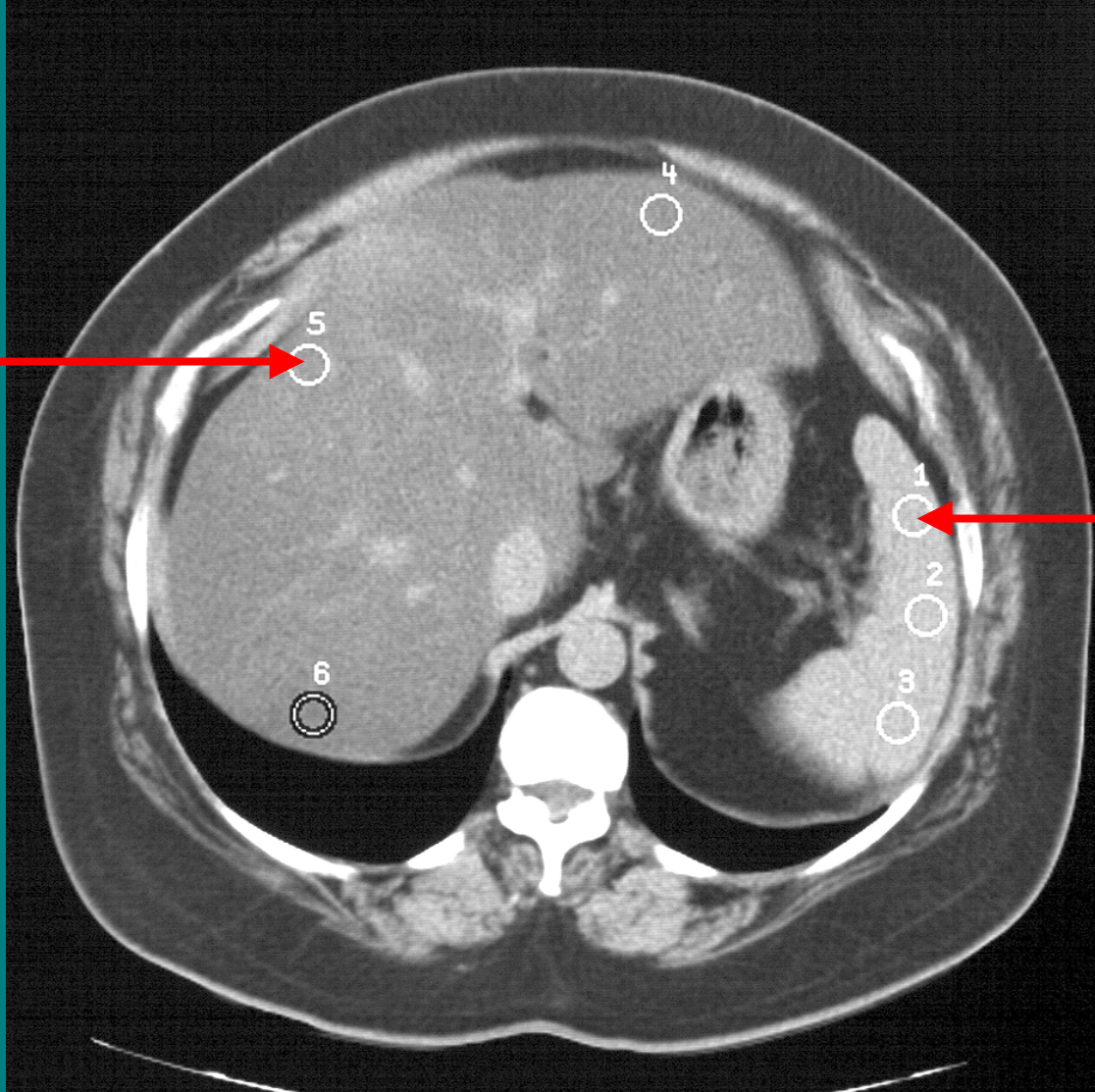




# Liver and Spleen CT with Regions of Interest (ROI)

$L/S \text{ Ratio} = \text{mean Hounsfield Unit (HU) of Liver ROI} \div \text{mean HU of Spleen ROI}$

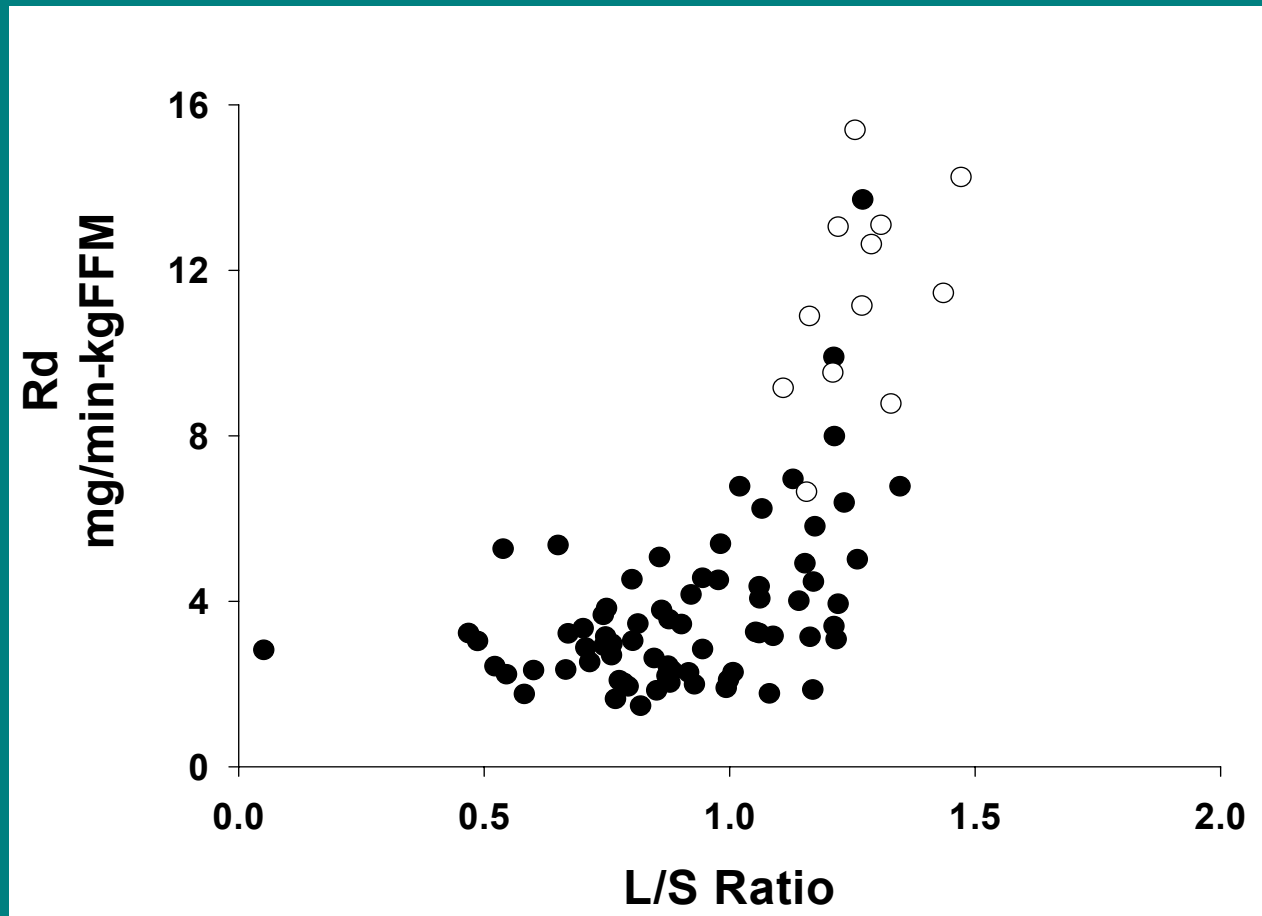
**Liver ROI**  
4 = 9.8 HU  
5 = 0.5 HU  
6 = -2.4 HU



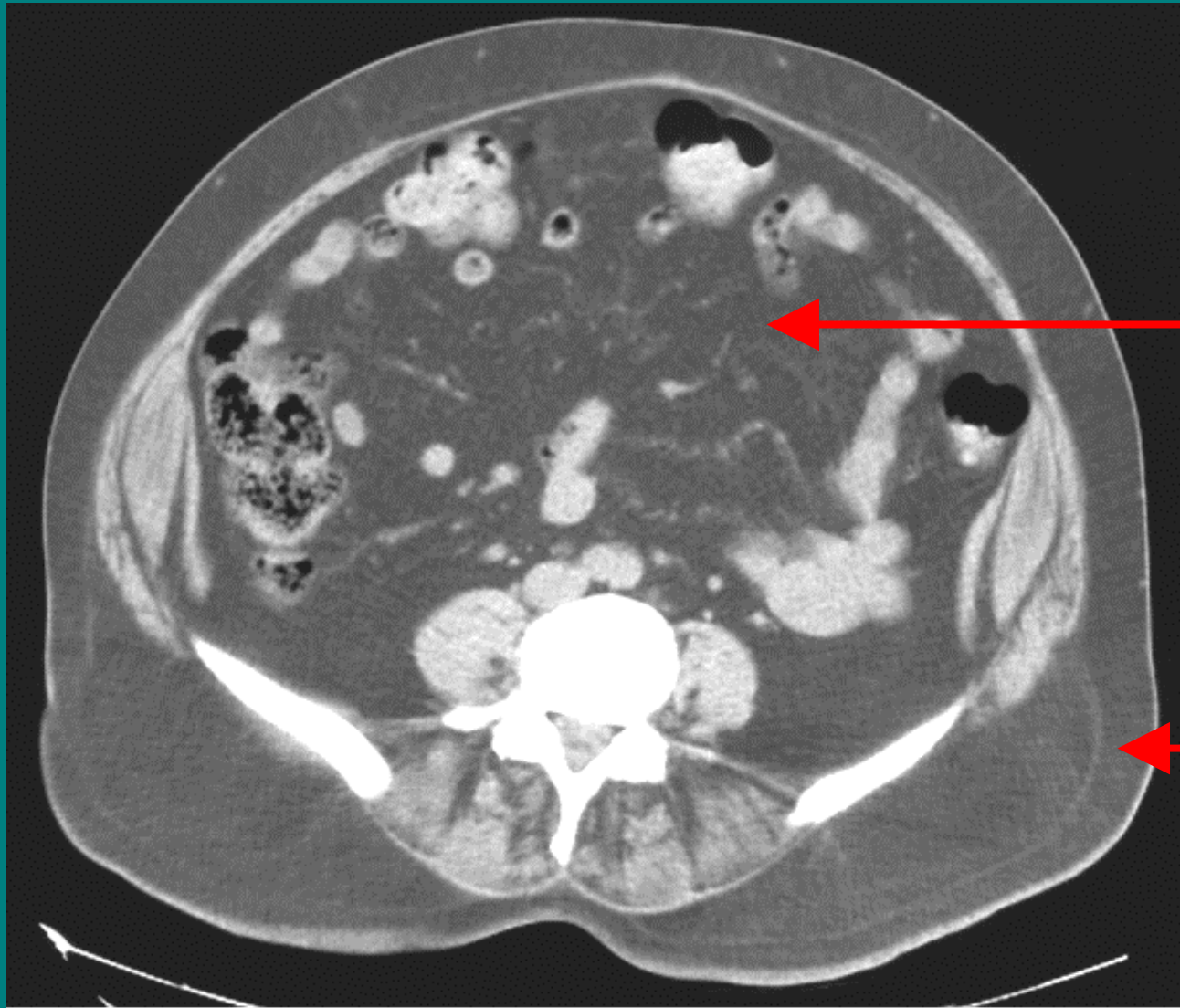
**Spleen ROI**  
1 = 53.1 HU  
2 = 52.6 HU  
3 = 52.7 HU

**L/S Ratio = 0.05**  
indicating  
severe fatty  
liver infiltration

# Relation of Fatty Liver and IR



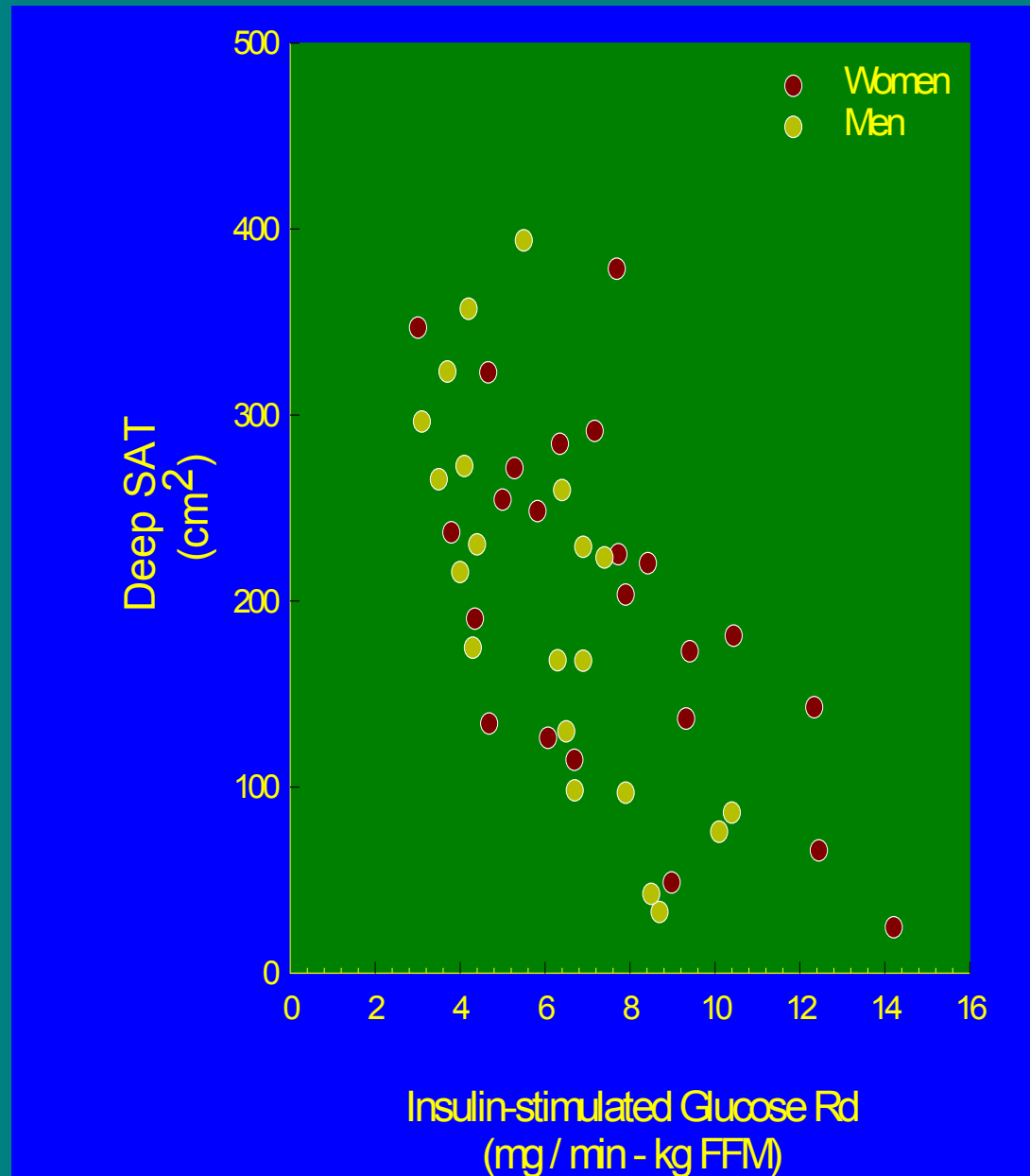
# Abdominal CT



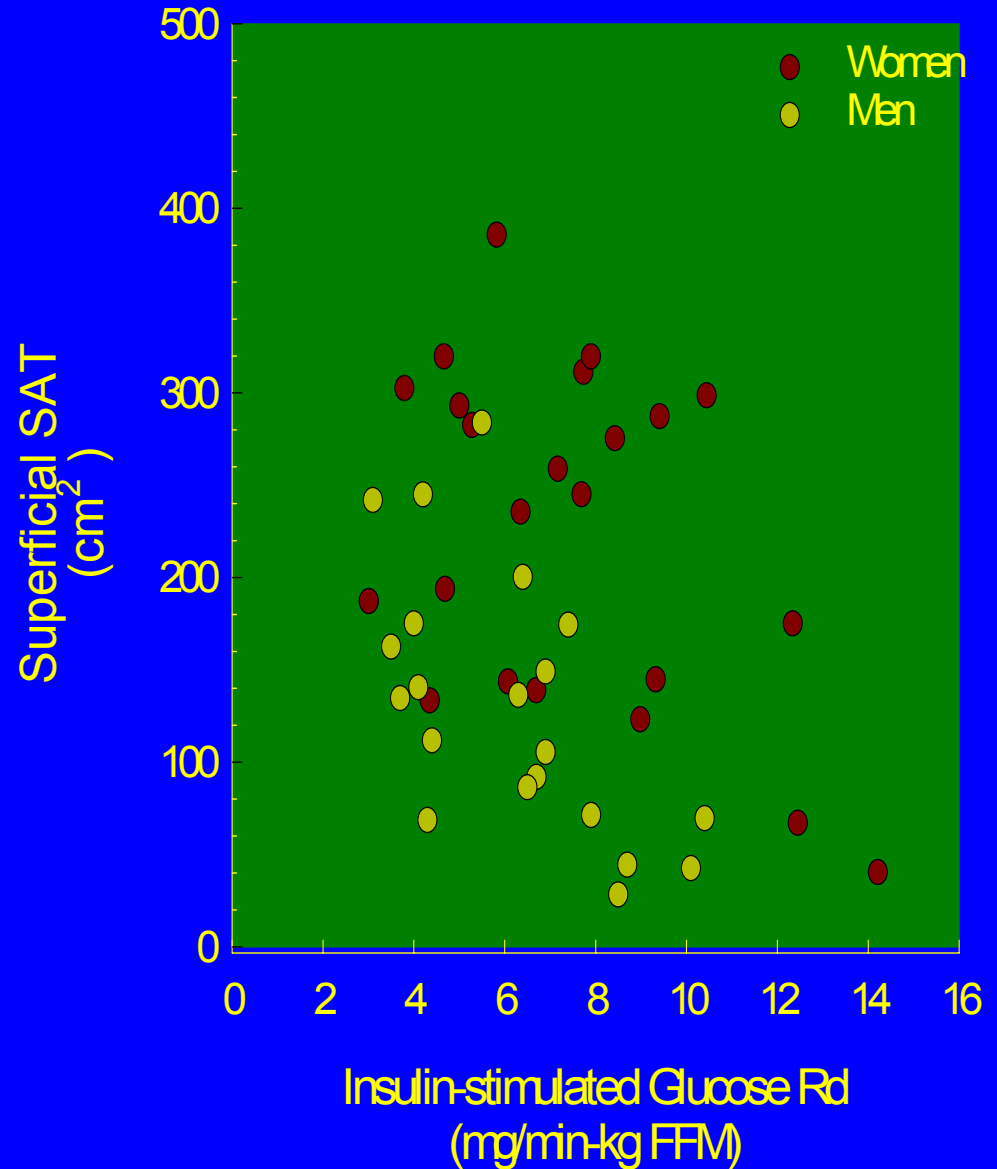
Visceral  
Adipose Tissue

Subcutaneous  
Adipose Tissue

- Deep SAT vs Insulin Sensitivity
- $r = -0.64$ ;  
 $p < 0.01$
- No effect of gender



- Superficial SAT versus Insulin Sensitivity
- $r = -0.29$ ; ns
- Was significant in men



# Visceral Adipose Tissue



**VAT= 75.7%**  
**Total Fat = 738.53 cm<sup>2</sup>**

**VAT= 20.5%**  
**Total Fat = 728.46 cm<sup>2</sup>**

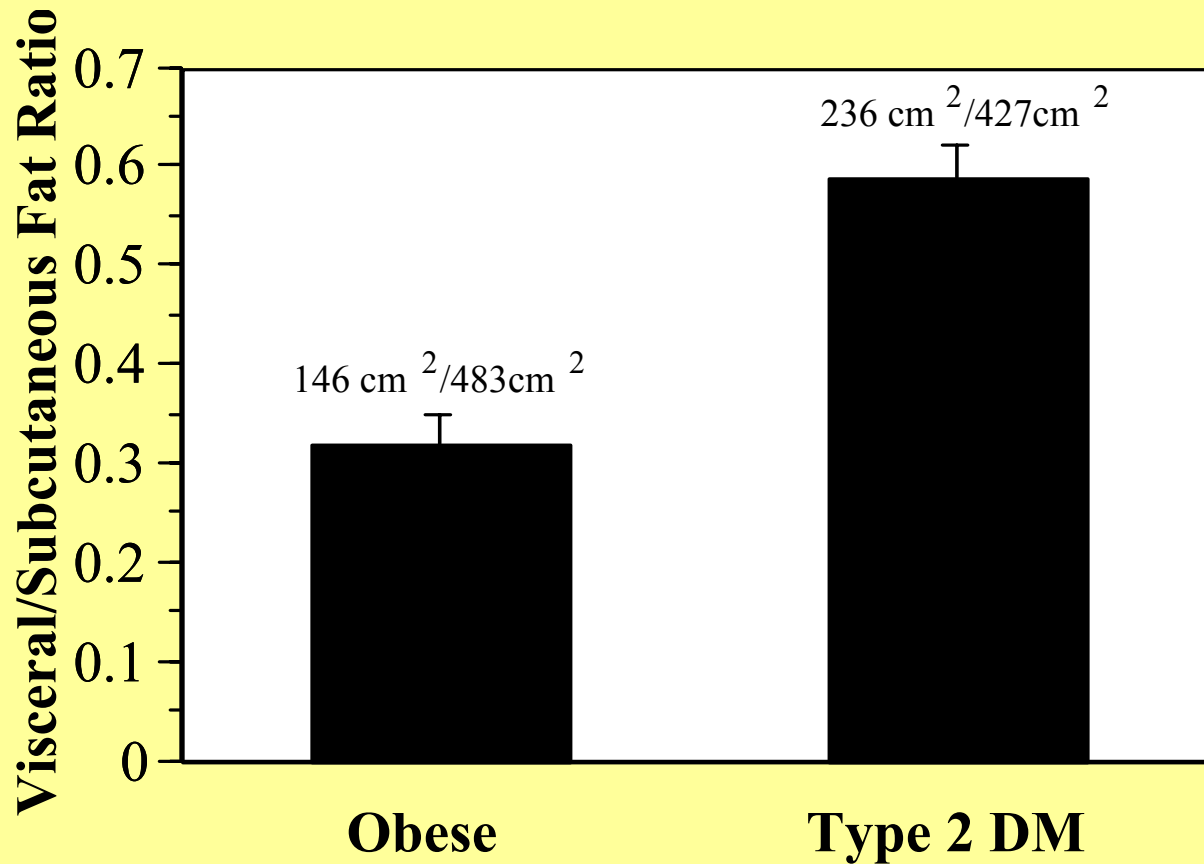
# SAT / VAT in IGT in youth.

Weiss et al, Lancet, 2003

- Evaluated IR and IGT in obese teenagers.
- Those with IGT had  $\uparrow$  VAT (70 vs 50 cm<sup>2</sup>), and had  $\downarrow$  SAT (480 vs 620 cm<sup>2</sup>).
- VAT / SAT : 0.07 vs. 0.16



# Ratio of VAT to SAT in Type 2 DM





# Women in Health ABC

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	NGT	IGT	DM
Muscle attenuation (HU)	<b>34.7 ± 6.5</b>	<b>33.7 ± 7.2</b>	<b>33.0 ± 7.2†</b>
Mid-thigh fat (cm <sup>2</sup> )			
Subcutaneous	<b>104.0 ± 44.6</b>	<b>110.6 ± 52.1</b>	<b>107.7 ± 45.2</b>
Abdominal fat (cm <sup>2</sup> )			
Visceral	<b>116.1 ± 54</b>	<b>140.8 ± 60.3*</b>	<b>162.2 ± 65.5†‡</b>
Subcutaneous	<b>322.4 ± 120.4</b>	<b>345.6 ± 135.4*</b>	<b>370.0 ± 127†</b>

# Sequential Model of Weight Gain and Insulin Resistance

