

# Promising New Approaches to Clinical Interventions Aimed at Reducing Obesity and Preventing Progression and Complications of Diabetes

## Overview

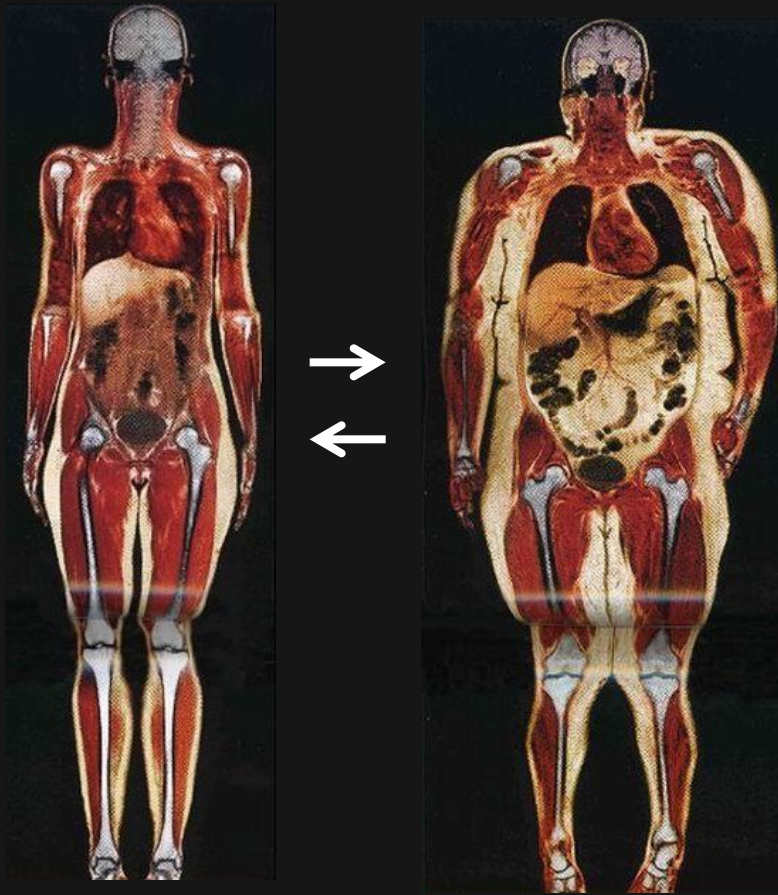
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SCHOOL OF MEDICINE

# Medical Complications of Obesity



**Coronary Heart  
Disease & Stroke**

**Insulin resistance  
B-cell failure  
(Diabetes)**

**Atherogenic  
Dyslipidemia**

**Nonalcoholic fatty liver  
disease**

**Immune System**

**Pulmonary disease**

**Hypertension**

**Gall bladder disease**

**Gastroesophageal  
reflux disease**

**Gynecologic  
abnormalities**

**Osteoarthritis**

**Gout**

**Phlebitis**

**Venous stasis**

**Cancer**

**Cognitive  
dysfunction**

**Why do people become obese?**

**Why is excess body fat bad?**

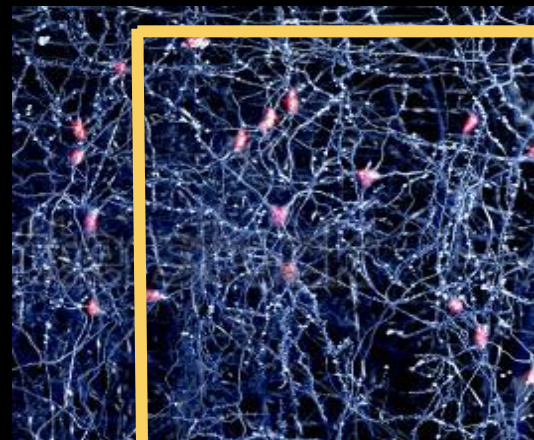
**Why is weight loss good?**

**Best ways to prevent excessive weight gain & produce meaningful weight loss?**



86 billion neurons  
 More oligodendrocytes, microglia and astrocytes  
 >100 neurotransmitters

# Regulation of Food Intake



**Brain**

## Modulating Factors

- Liking (palatability)
- Wanting (reward/addiction)
- Emotions
- Cues, habits, stress, portion size
- Environment/Lifestyle
- Circadian rhythms
- Executive Function (frontal cortex)

## Neurochemicals

### Stimulate

- NPY
- AgRP
- Orexin-A
- MCH
- Cannabinoids

### Inhibit

- POMC
- CART
- α-MSH
- CRH
- Oxytocin
- GLP-1
- NE/CCK

## Episodic & Tonic signals

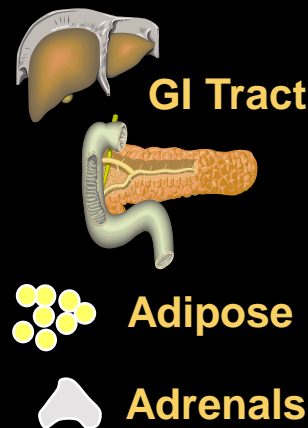
- Glucose (GLUT 1), FFA, AA
- CCK, GLP-1, PYY, Oxyntomodulin
- Vagal afferents
- Insulin, Glucagon, PP, Amylin
- Leptin
- Ghrelin
- Cortisol
- Gut bacteria

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## Peripheral Organs

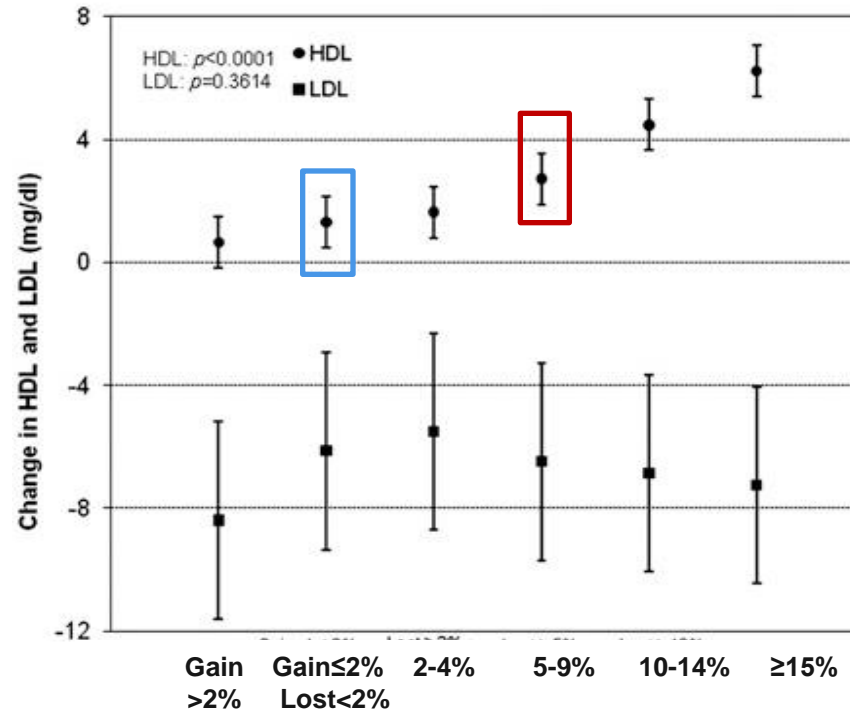
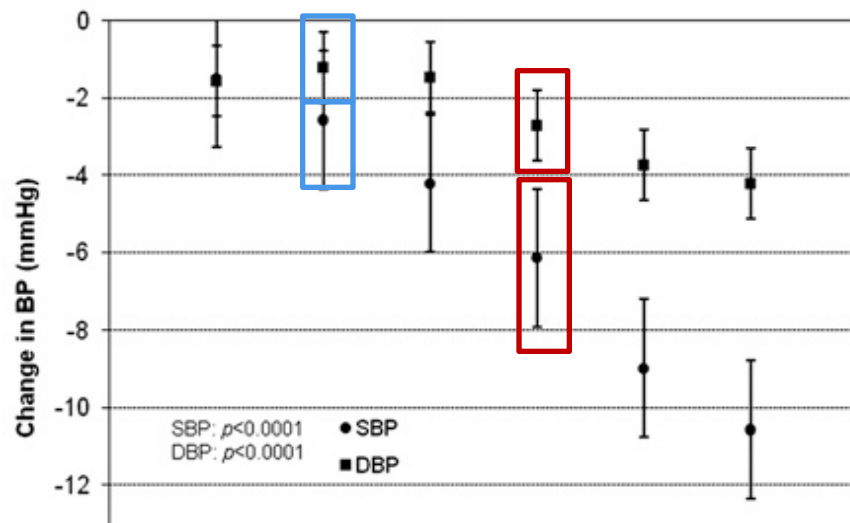
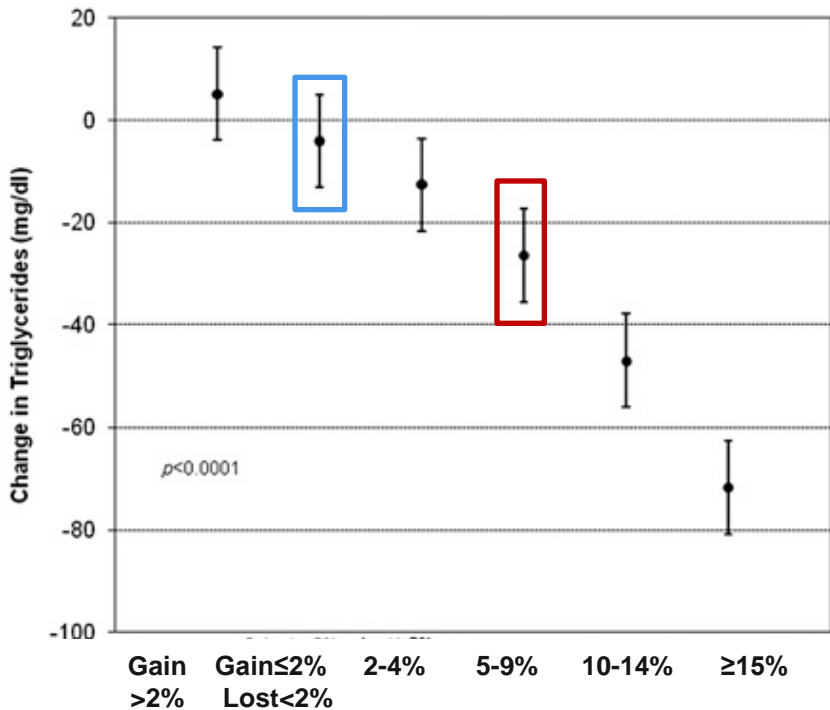
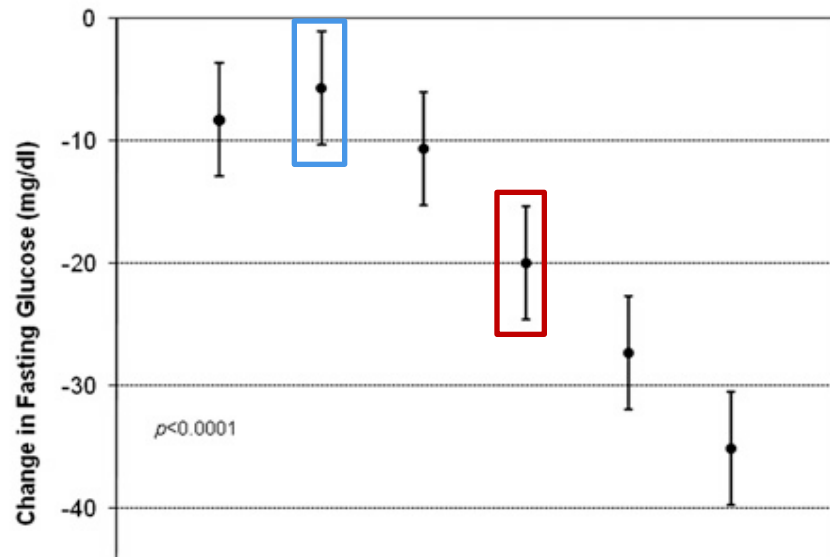


Eyes, nose, tongue, ears

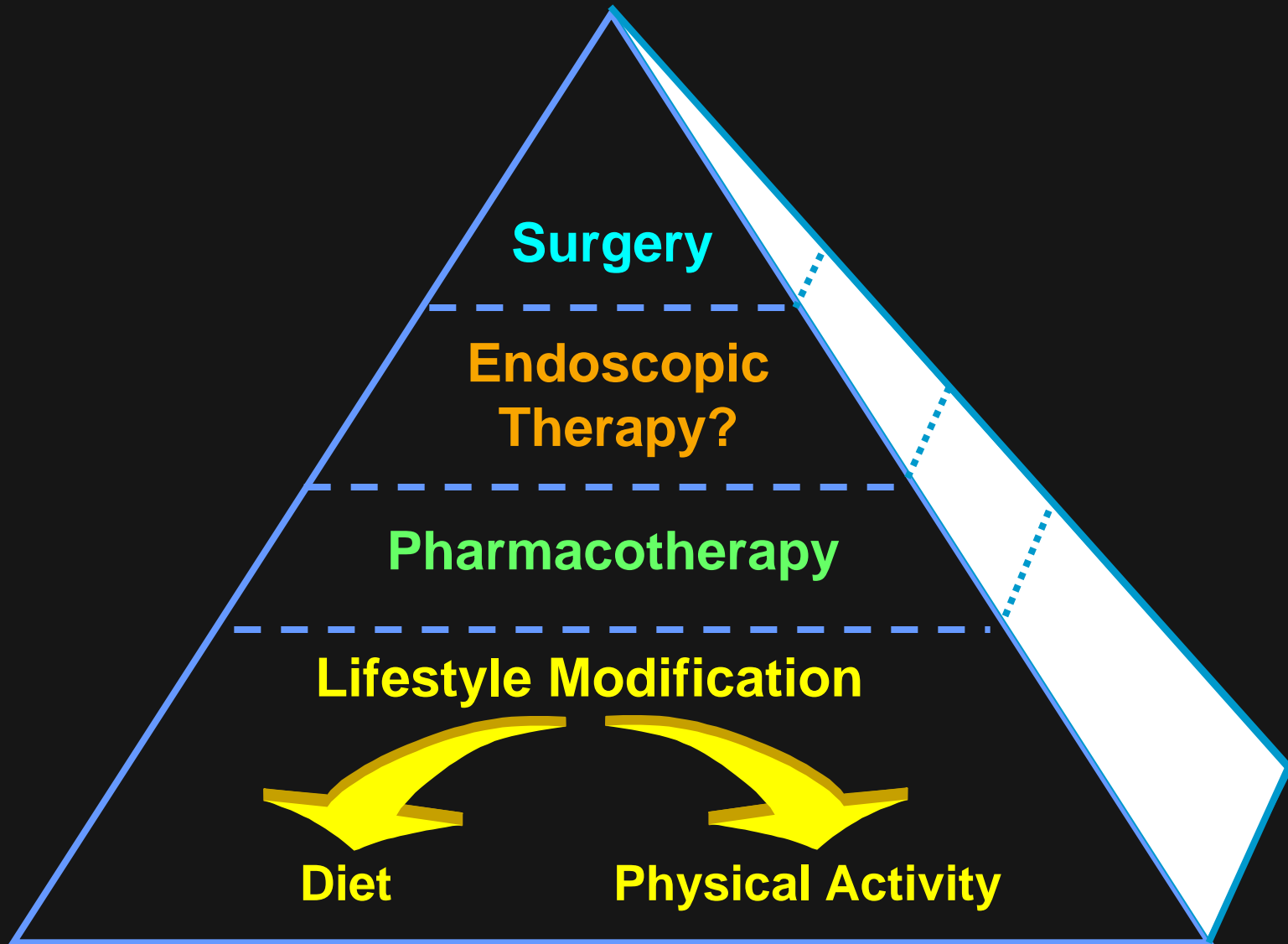
**Food intake**  
 (type/amount)



# Effect of Weight Loss in Type 2 Diabetes (Look AHEAD)



# Obesity Treatment Pyramid





# KOSHERLAND

A Jewish child's first game



**NAM**

APPLE AND HONEY MARSH

STICK IN THE HONEY MATZ 2 TURNS

CHECKED FOOD FOR KOSHER GO AHEAD 4 SPACES

**OOPS!**

FORGOT TO CHECK IF ITS KOSHER GO BACK 4 SPACES

NO BREAD OR MILK HERE

SHARBS CANDY LIGHTHOUSE

KIDDUSH WINE OCEAN

FOLLOW THE SHARBS CANDY LIGHTHOUSE ACROSS

ALL MATZ GO FORWARD 4 SPACES

WENT TO SHOP & BUY MATZ 1 TURN

HAMENTASHEN HOUSE

ALL LATKE ON CHANUKA GO AHEAD 3 SPACES

LITTLE LATKE MEN

MILK

MEAT PARS

SHORT CUT

MIXED MEAT WITH MILK IS ACCORDANT DON'T TAKE 10 MATZ 1 TURN



**START**

KOSHER YUMMIES TREASURE

SAID BLESSING OF ANIMOTZ BEFORE EATING BREAD GO AHEAD 8 SPACES

CHALLAH MOUNTAINS