

Managing and Preventing Co-morbidities: Obesity

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O that this too too solid flesh
would melt.

Shakespeare,

Hamlet



If You Put a Bulldog on a Diet...



You Don't End Up With
a Greyhound



Why is it so hard to lose weight?

- Genetics
- Epigenetics
- Gut Bacteria
- Hormones
- Brain chemicals

Genetics

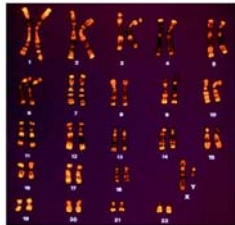
30- 70% of Weight is Genetic

- Twin studies
- Pima Indians
- Prisoner studies



Epigenetics, too!

The study of heritable changes caused by the activation and deactivation of genes without any change in DNA sequence.



You are what your mother ate.



Supplementing pregnant mice (from a genetically obese strain) with a cocktail of anti-oxidants prevents obesity and diabetes in their offspring.

You are what you eat?



You *are* what you eat!
The types of food you eat can cause epigenetic changes!

- FUNGENUT: rye versus wheat-oat-potato diet
 - Rye: down-regulated genes for insulin signaling.
 - Oat-wheat-pasta: up-regulated genes for inflammation.
- Bisphenol A
 - People with the highest levels of Bisphenol A in their urine had a 39% increased risk for the development of metabolic syndrome and heart disease.

And you are what your father, and grandfather ate, too.



Changes persist through two generations, if not more.

You are how much you exercised as a child.

DIO pups become obese on a high-fat diet, but:



- Even only 3 weeks of exercise can prevent obesity
- Calorie restricting the pups backfires
- Doesn't work for adults

The Microbiome

You are what your gut bacteria digest.

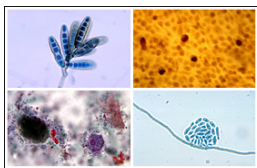


Photo courtesy of the Centers for Disease Control and Prevention.



Microbiome Project NIH

Is there an obese-ogenic microbiome?



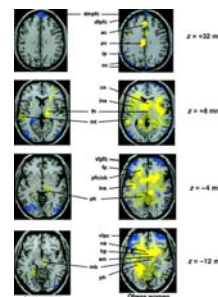
YES!

Microbiome-associated obesity is transmissible



We are how much our brain wants us to weigh.

- Dopamine D2 receptors are decreased in the obese, as in those suffering from addiction to drugs.
- brain circuits (reward, motivation, learning, inhibitory control) are disrupted in overeating behavior.
- R Brain Hypothesis



Where do we begin?

Crash Diet?

Lose **50** Pounds
in **50** Days!



Scott S. Pribyl

GET YOUR HEALTH IN SHAPE

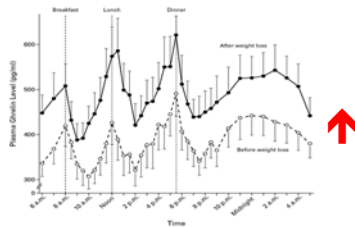
21
POUNDS
LOST
21
DAYS

The
Martha's Vineyard
Diet Detox

RONI DeLUZ, PH.D.
Founder of the Martha's Vineyard Diet Detox
with JAMES HESTER



The Body's Response to Weight Loss



17% decrease in body weight causes a 24% increase in levels of Ghrelin

Lifestyle Changes!



10 Steps



Put your body on a schedule.



Day 1	11:30 am	Sausage garlic bread
	1:00 pm	Pig's feet potato salad dumplings
	8:00 pm	Stewed chicken rice and beans

3 Meals, 2 Snacks (100 calories/hr)



No Soda



DON'T DRINK YOURSELF FAT.
Cut back on soda and other sugary beverages.
Go with water, seltzer or low-fat milk instead.

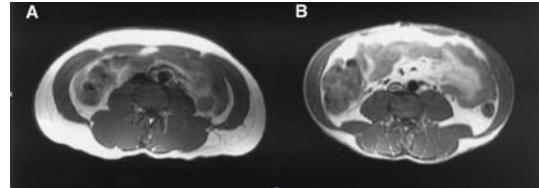


- ARIC cohort: 16,000 middle-aged adults
 - Over 9 Years, 40% developed MetSyn
 - Soda was not associated when adjusted for age and weight
 - Diet soda: 34% increased risk

Importance of Exercise



Visceral Fat



The Road to Obesity Starts at Your TV

- National Weight Control Registry
 - 1 hour/day of TV per week versus 4 hours/day
 - One hour moderate-intensity per day
 - Walking most common
- 30 minutes/day
- One hour, 5 days/wk



WHS: Exercise isn't enough to lose weight.

The fates may be against us, but



It is not in the stars to hold our destiny , but in ourselves.

Shakespeare, Julius Caesar