


Headlines That Need to be Written

2010 - 2014: US Diabetes Rates Increases 4% Annually
 CDC: Right on target for 1 of 3 Americans with diagnosed as diabetic
 29 million Americans now affected



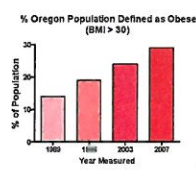
www.allenc.edu

2014: Banner Year
Breaking the 35% Obesity Barrier:
 CDC: Mississippi and West Virginia lead the way

USA: Uncontrolled Hypertension Creep:
 In spite of pharmaceutical advances in the control of hypertension,
 increasing numbers of people do not have their blood pressure under control

The Worsening Health of the American Population

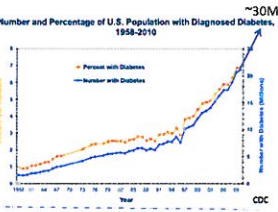
% Oregon Population Defined as Obese (BMI > 30)



CDC

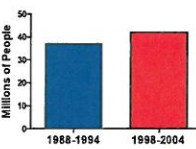
Number and Percentage of U.S. Population with Diagnosed Diabetes, 1958-2010

~30M



CDC

Uncontrolled Hypertension, USA




Chobanian et al. JAMA 2002;287:828-37

Obesity, Type 2 Diabetes and Hypertension are all risk factors for coronary heart disease and stroke.


--Heart disease costs \$1.3 x 10⁹ per day
 --Costs will double within a decade

Age-Adjusted Prevalence of Obesity and Diagnosed Diabetes Among U.S. Adults 1994

Obesity (BMI ≥ 30 kg/m²)




Diabetes

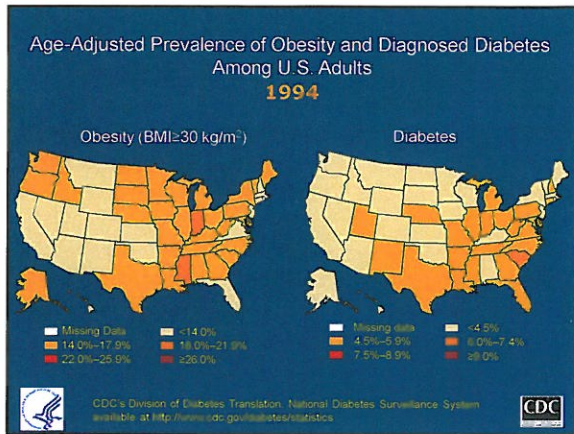


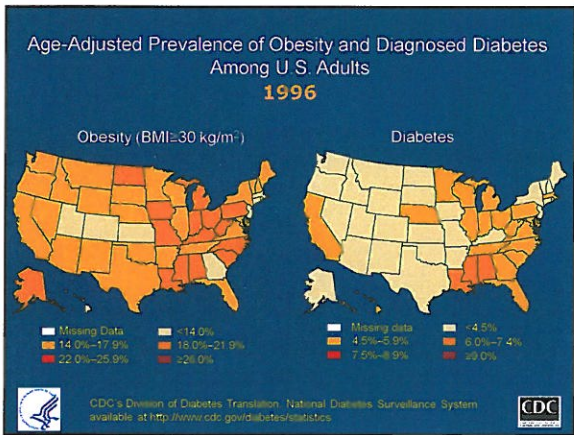
Missing Data	≤ 14.0%
14.0%–17.9%	18.0%–21.9%
22.0%–25.9%	≥ 26.0%

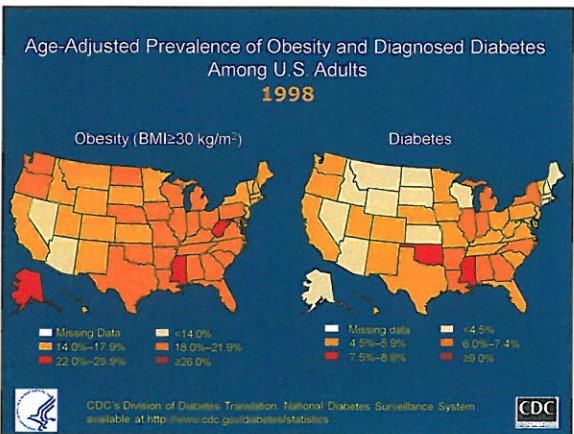
Missing Data	≤ 4.5%
4.5%–5.9%	6.0%–7.4%
7.5%–8.9%	≥ 9.0%

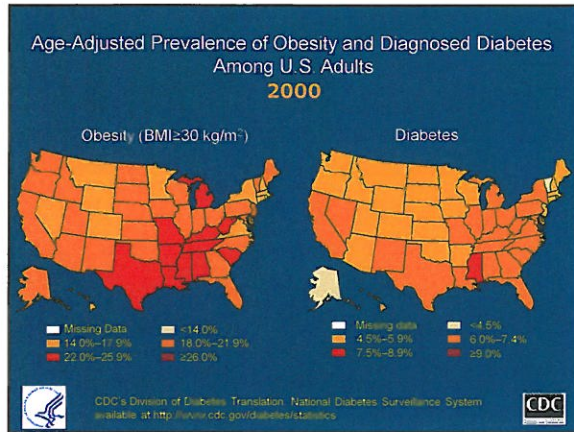
CDC's Division of Diabetes Translation, National Diabetes Surveillance System available at <http://www.cdc.gov/diabetes/statistics>

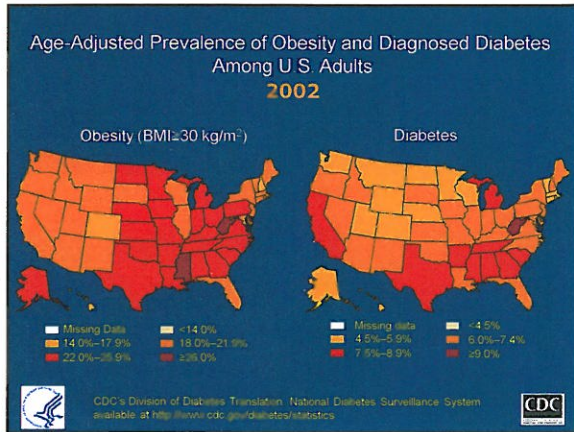


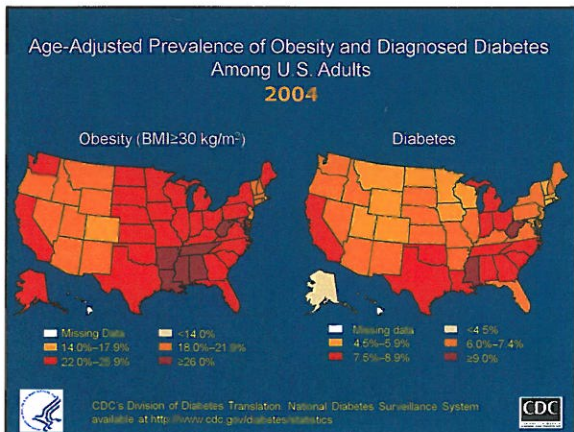


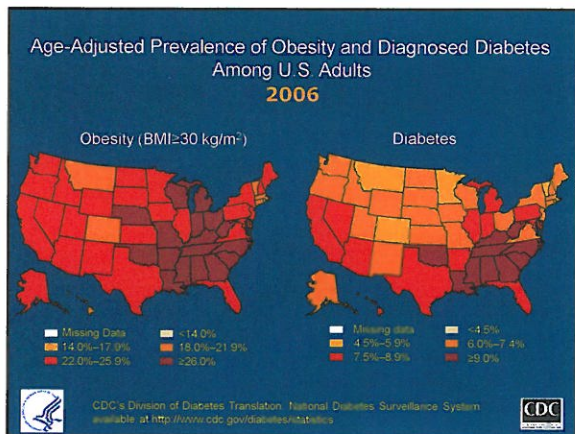


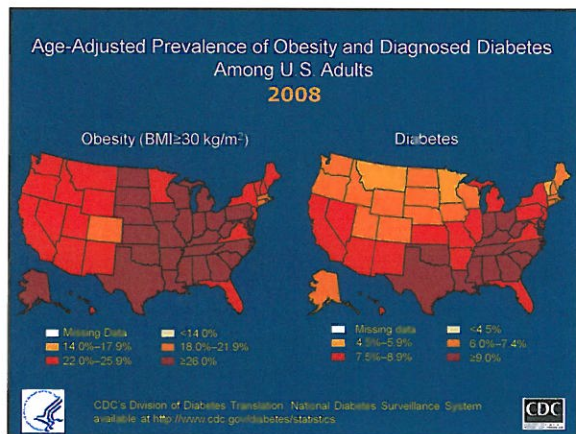


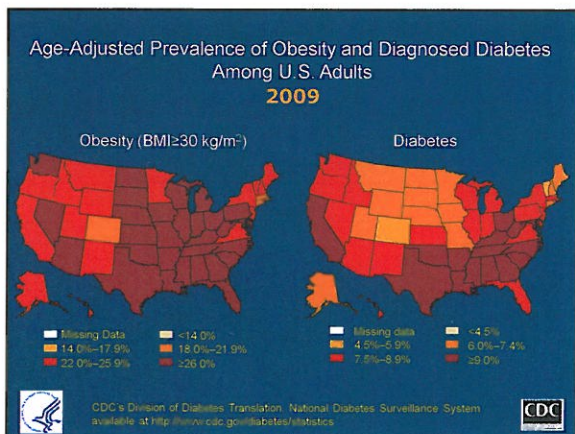


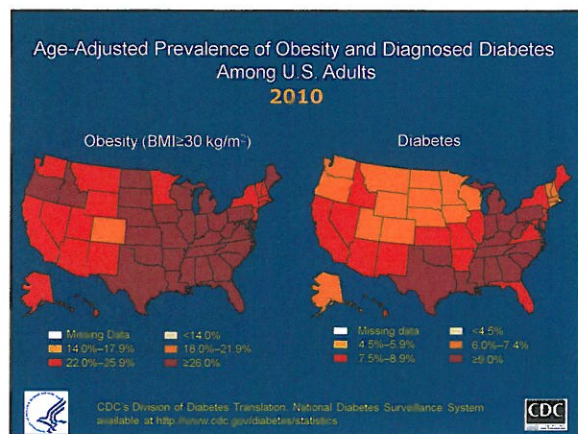


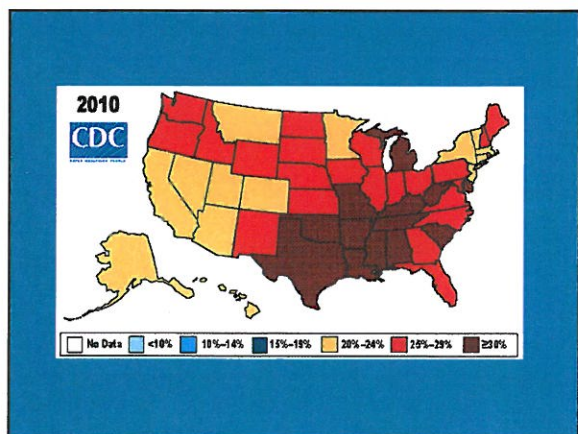


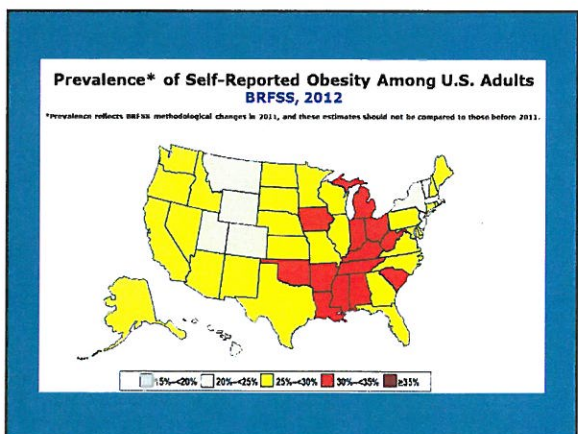


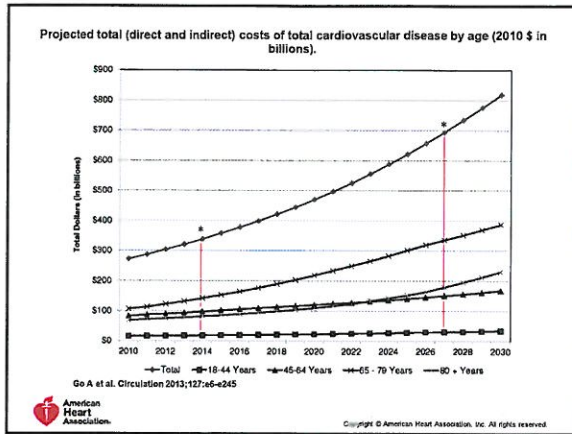


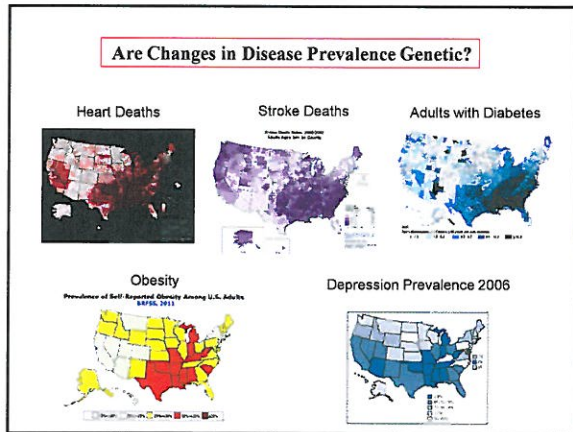




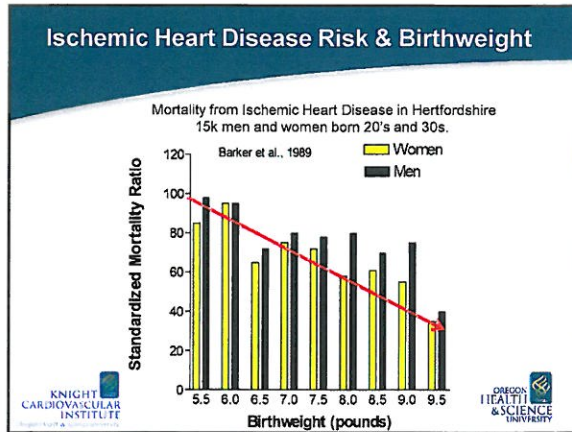


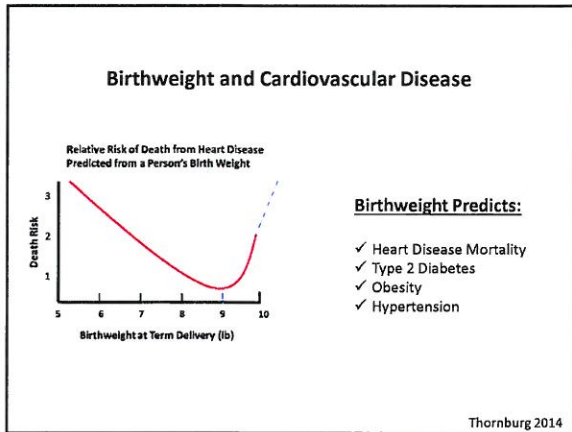


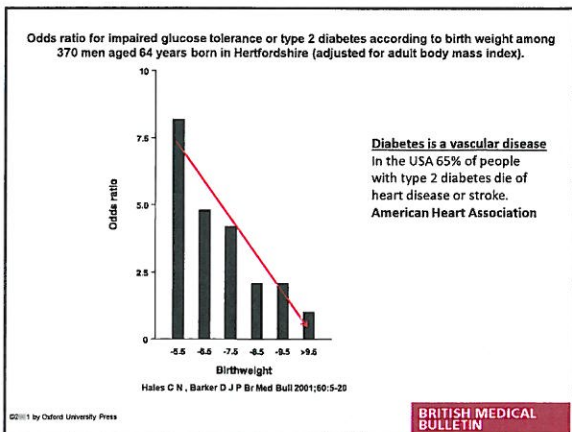


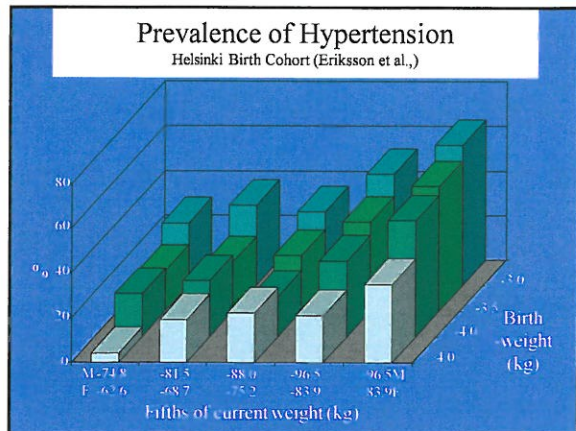


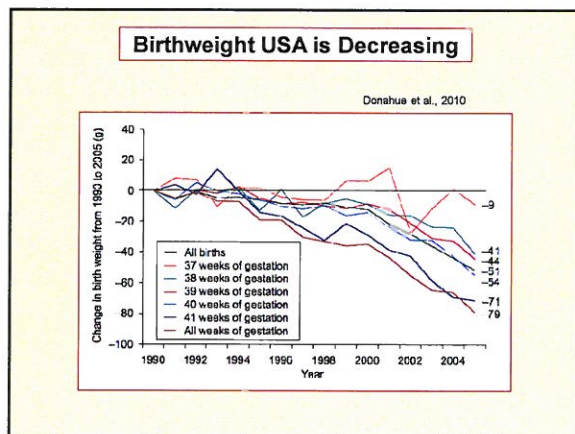
"Birthweight is a powerful predictor of adult-onset chronic disease"
Professor David Barker













Beyond Birthweight

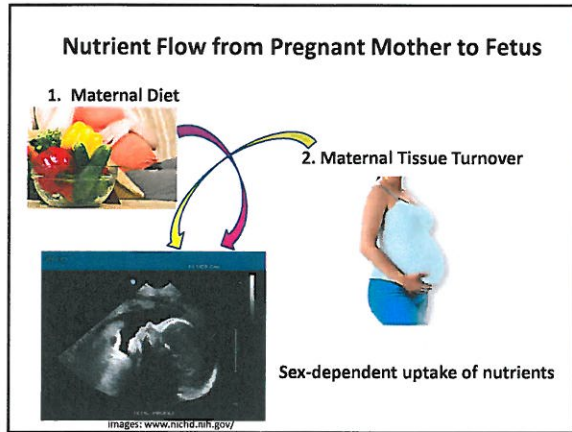


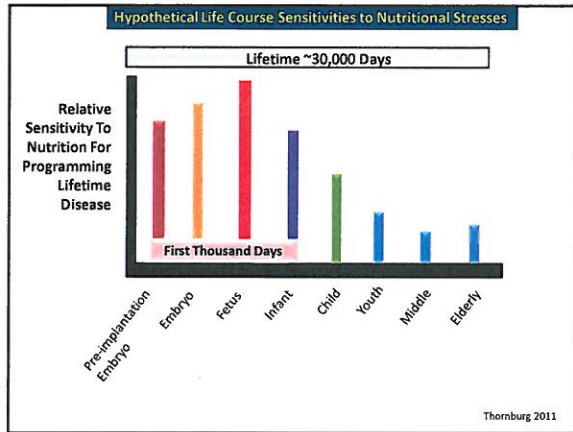
Maternal Phenotype
Height, weight, muscle mass, fat mass, skeletal dimensions
hormone profile, blood lipids.

Therefore, a woman's nutritional history affects the health of her offspring.



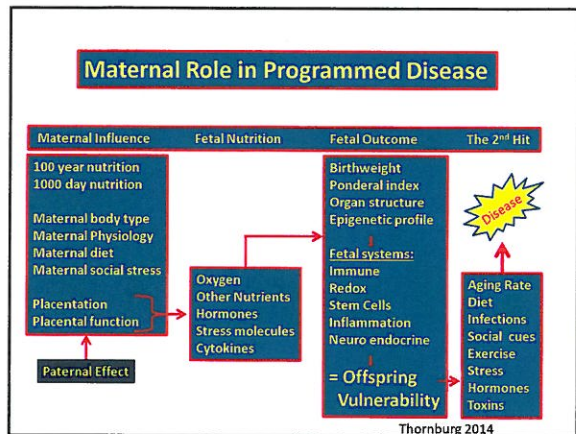
Placental Phenotype
Weight, width, length, thickness, number of cotyledons,
cord insertion and length

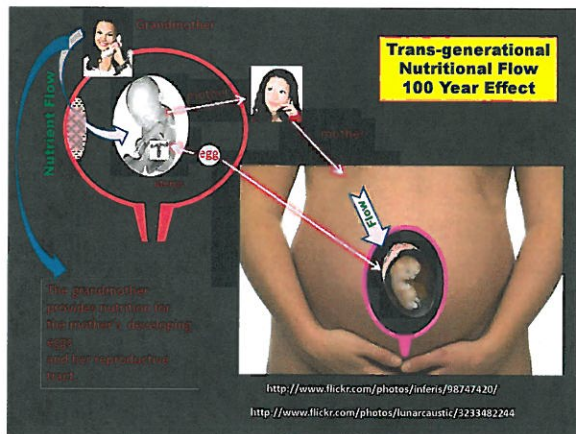


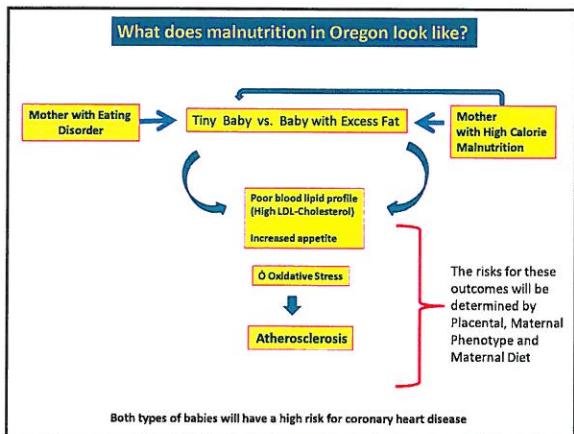


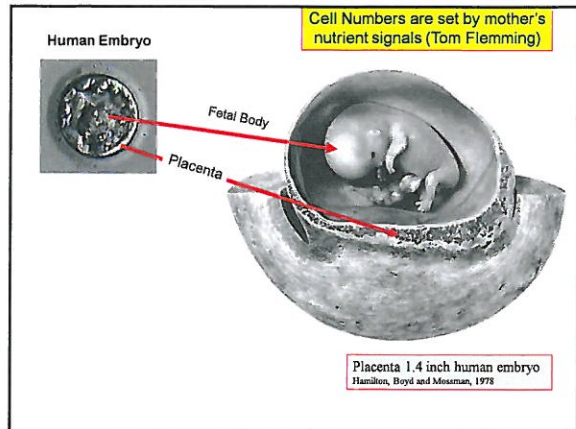
The maternal and paternal trans-generational effect

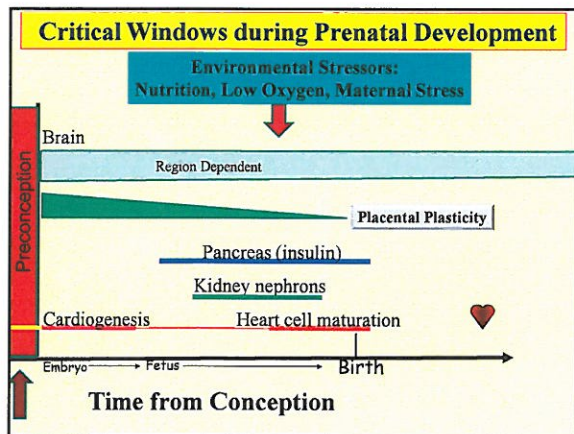
“Transgenerational Nutritional Flow”



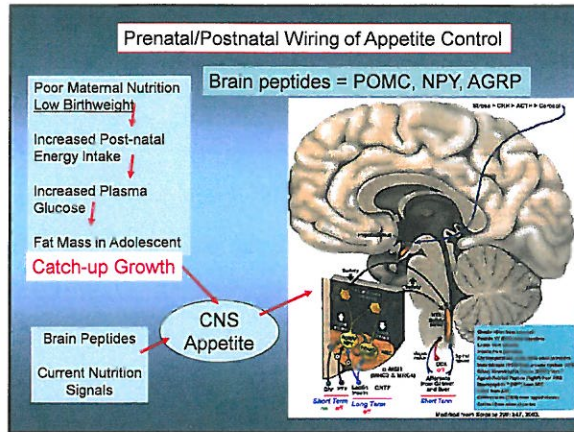


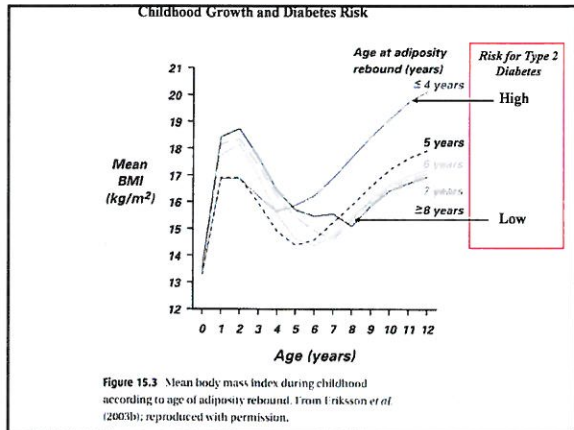


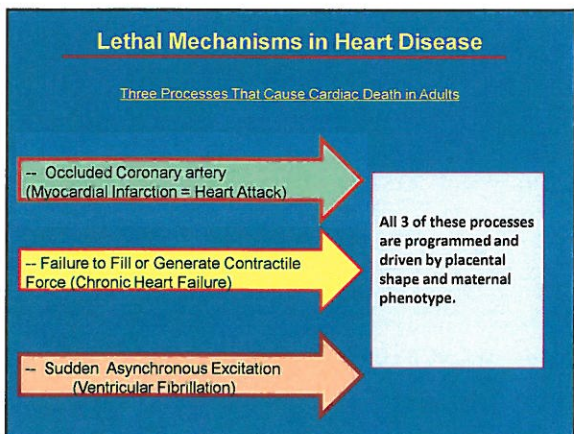


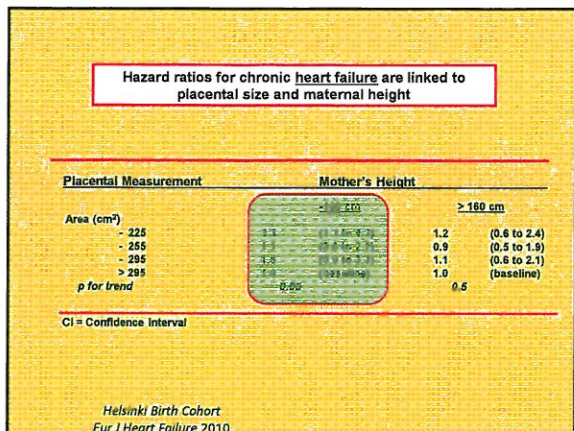


Early Life Nutrition Drives Risk for Later Disease Through Altered Systems Structure, Physiology and Epigenetics










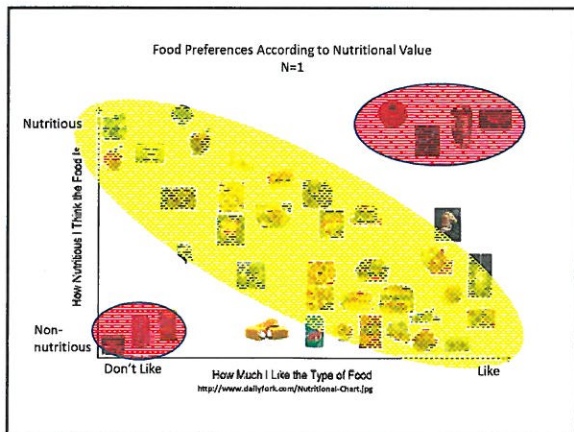
Risk of Stroke	Risk of Cardiovascular Disease
Low Birthweight	Low Birthweight
Slow Growth in Childhood	Getting fat in early Childhood
Poor childhood growth of mother	Abnormal placental size

Foods That Matter

<p>Eat These Foods Every Day</p> <p>Whole Grains Vegetables Fruits Nuts Legumes Pulses</p>	<p>Eat Sparingly if at all:</p> <p>Refined flours Added Sugars Enriched Fructose Dairy Fat Red Meat Processed Food</p>
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These Rather Than





The New Frontier: Nutrient Regulation of Epigenetic Gene Regulation

My Pregnancy Plate

Courtesy: Christie Naze, RD, Dept Ob/Gyn, OHSU

Drives and Pleasures

<p>Drives = chemical balance (hypothalamus & brainstem)</p> <ul style="list-style-type: none"> > food (appetite) > water (thirst) > temperature (feel hot or cold) > carbon dioxide (required breaths) > sleep (tiredness and fatigue) 	<p>Pleasures = motivation to thrive (different brain regions)</p> <ul style="list-style-type: none"> > sex and procreational desires > senses (taste, smell, touch, vision, hearing) > receptors: plant derived chemicals in food > receptors: endorphins (exercise)
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Brain Receptors
dopamine (D1-D5)
opioid (δ, κ, μ, noc)
anandamide
endorphins

<http://www.teststudies.com/>

The Extraordinary Science of Addictive Junk Food

Feb 24, 2013
NY Times Magazine
Pulitzer Prize
Winner

Michael Moss
"Salt, Sugar & Fat"

"Bliss point" = the greatest amount of crave
"Sensory-specific satiety"
"People get addicted to salt"
The largest ingredient, after tomatoes, is sugar = Prego

Frito-Lay: \$30M/yr for 500 chemists, psychologists, technicians


**The Declining Quality of the American Diet
is the Primary Cause of
Increasing Vulnerability for Disease
Among Americans**

Epigenetics: Environment Regulating Genes

The genes you inherited from your parents are determined by a code in your DNA.

Epigenetic mechanisms do not change the code but change how genes are turned on and off.

The nutrition or stress environments before birth change the regulation of many genes before birth.



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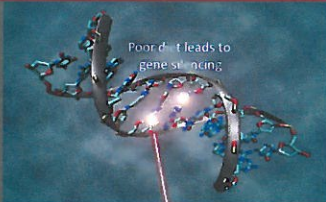
Epigenetics: Normal and Abnormal

Identical twins with different fingerprints

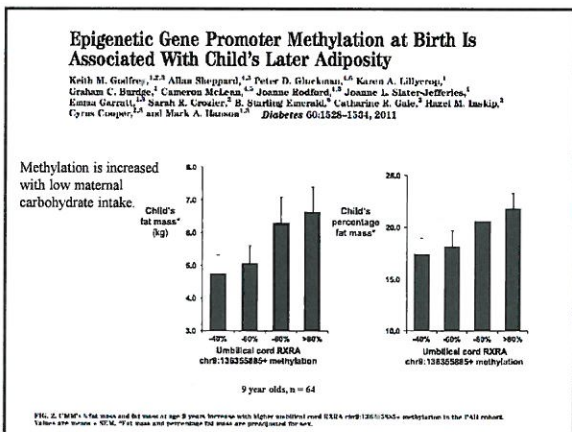
Genetically identical mice

Poor diet leads to gene silencing

Abnormal diet = stress-induced changes in normal adult gene expression



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**There is Strong Evidence
that Some Epigenetic
Effects can be Reversed**



Take Home Messages

The Health of the US population is in rapid decline

The nutritional quality of the American diet has deteriorated over the last three generations

Poor growth before birth imparts risk for chronic disease in adulthood.

The fetus acquires nutrients from the maternal diet and the mother's tissue turnover.

Healthy young men and women are required to have a healthy population

Maternal diet can contribute to the next generation through epigenetics

The US food culture is the culprit.
It must change to offer hope for a future healthy population

Headlines of Tomorrow

CRISIS Over: US Diabetes Rates Decreases 10% Annually
CDC missed its target for 1 in 3 Americans

Banner Year: 2016
National Obesity Rates Now Decreasing
CDC: Mississippi and West Virginia lead the way

USA Hypertension Finally Under Control
Billions of Dollars,
Millions of Lives
Saved
