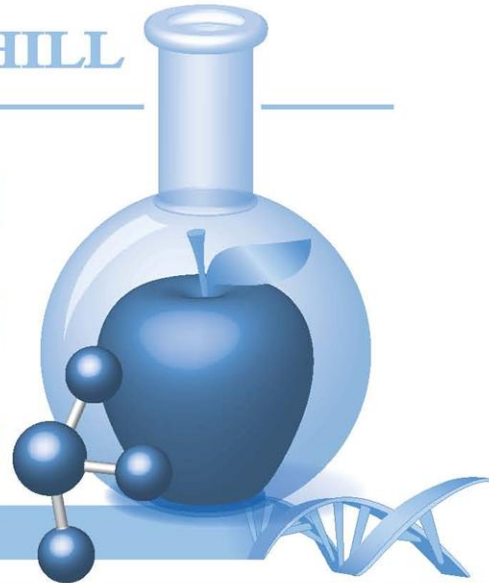


A faint, light blue molecular structure with spheres and connecting lines is visible in the background of the slide.

UNC-CHAPEL HILL

**Nutrition
Research
Institute**

K A N N A P O L I S



The Intersection of Nutrition and Genetics

Beverly K. Jordan, MPA
Director of Community Outreach

The Intersection of Nutrition and Genetics

Objectives

- Learn about the work happening at the new UNC-Chapel Hill Nutrition Research Institute (NRI) located on the North Carolina Research Campus in Kannapolis, NC.
- Share the NRI's vision for creating individualized nutrition recommendations to optimize health and wellness.
- Explore recent advances in science that provide insight into why individuals vary in their metabolism and nutrient requirements.
- Understand how discovery at the NRI is already being used to prevent disease and improve health.



Disclaimers:

1. Science = Complicated
2. Not a Scientist!
3. All scientific information provided courtesy of NRI Director.

The Scientist:



Dr. Steven H. Zeisel, MD, PhD

steven_zeisel@unc.edu

NRI Institute Director

Kenan Distinguished Professor of Nutrition and Pediatrics

UNC-Chapel Hill

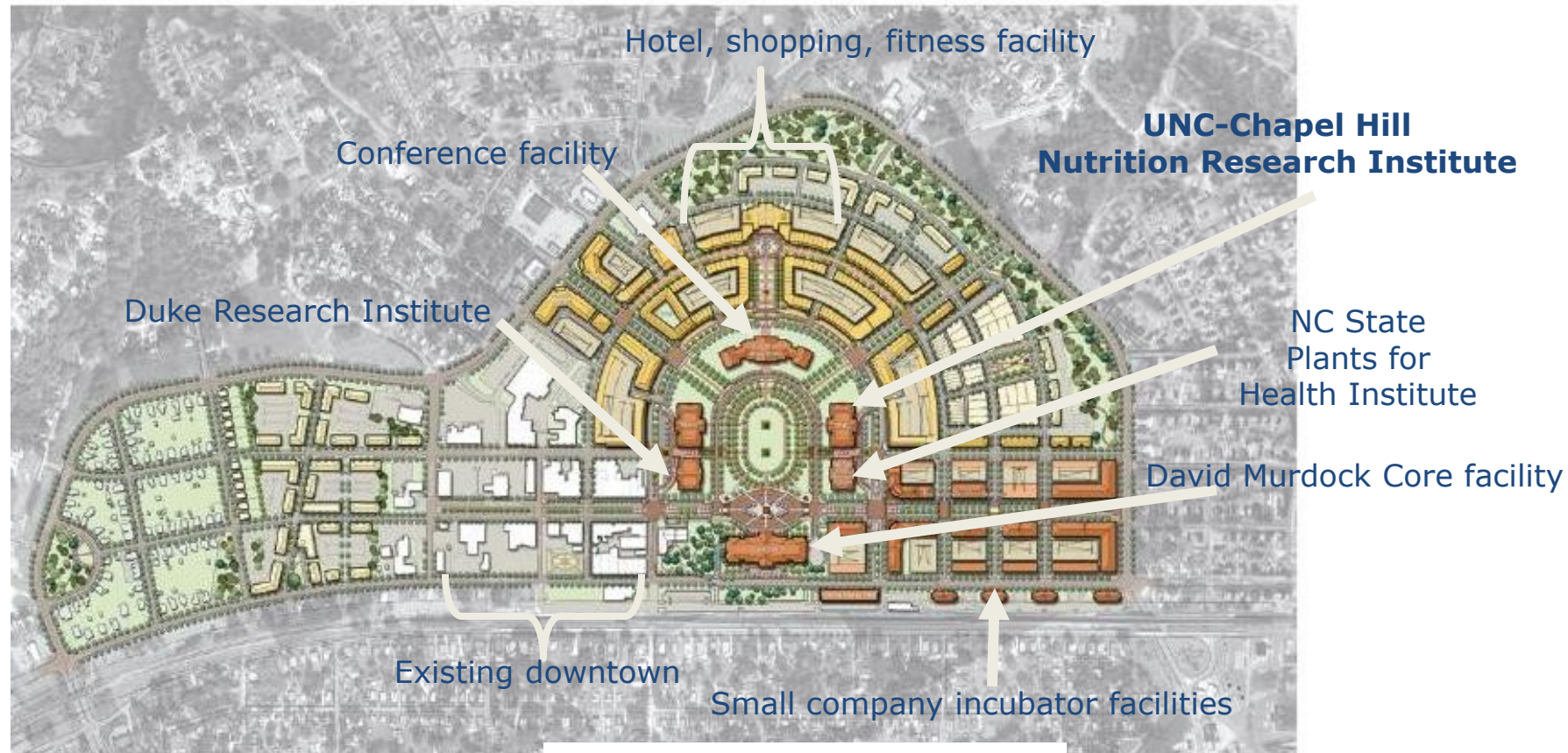


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North Carolina Research Campus



North Carolina Research Campus



350 acre campus



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RESEARCH INSTITUTE

NCRC Partners



UNCG

Inspire. Change.



UNC CHARLOTTE



NCRC Partners





“Jim, this is Ms. Hurdle, Mr. Obstacle, and Ms. Brick-Wall. They’re interested in your big idea.”

/yr to

UNC –CHAPEL HILL'S PART



UNC NUTRITION RESEARCH BUILDING



- 125,000 Square Feet
- UNC-Chapel Hill to operate 101,000 square feet



Vision for UNC Nutrition Research Institute

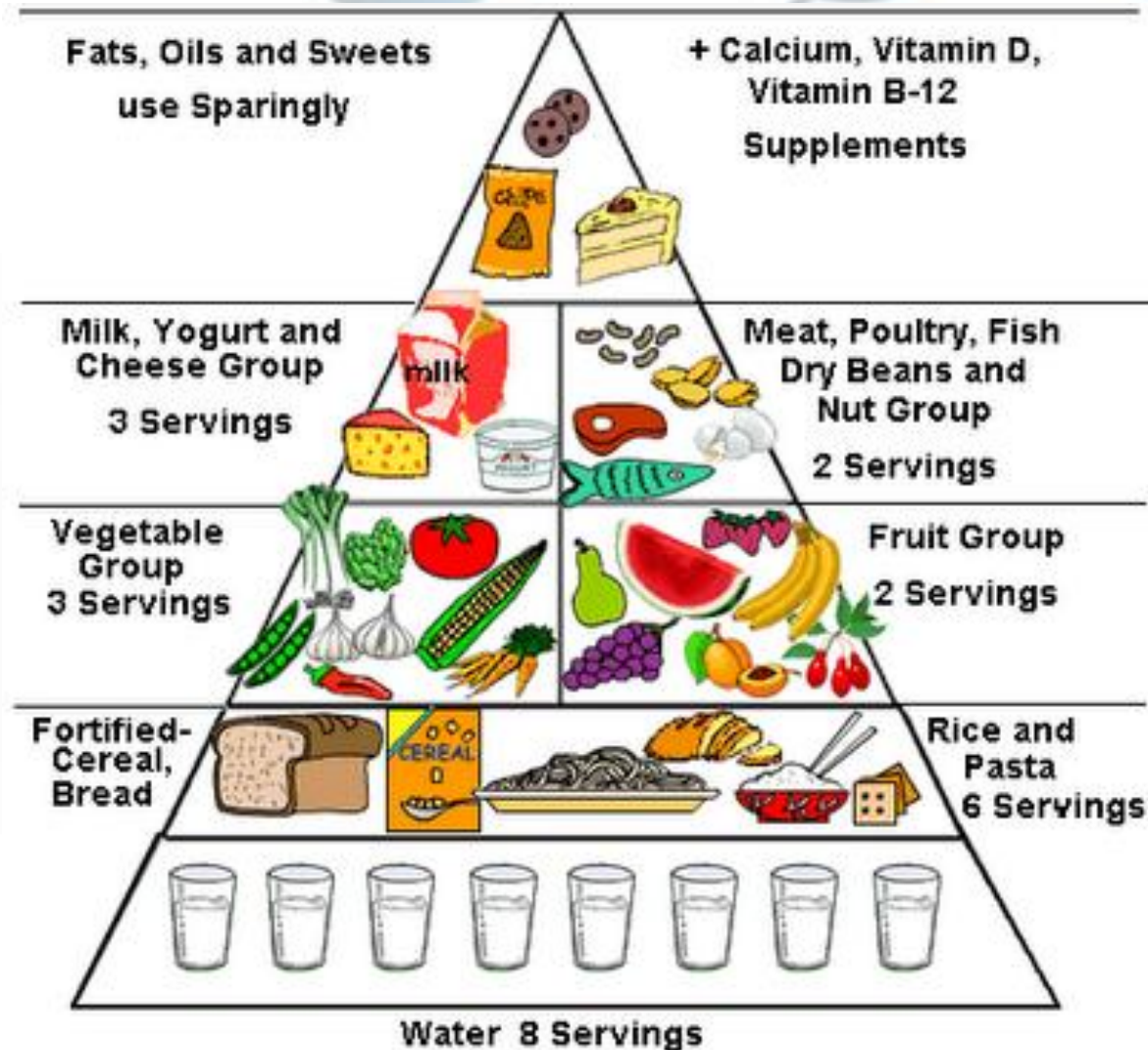
Enhance human health by using individual genetic & metabolic variations to develop nutrition solutions that target individual susceptibilities and differences.



We evolved to eat so differently...



Guidelines for Proper Nutrition



Guidelines for Proper Nutrition



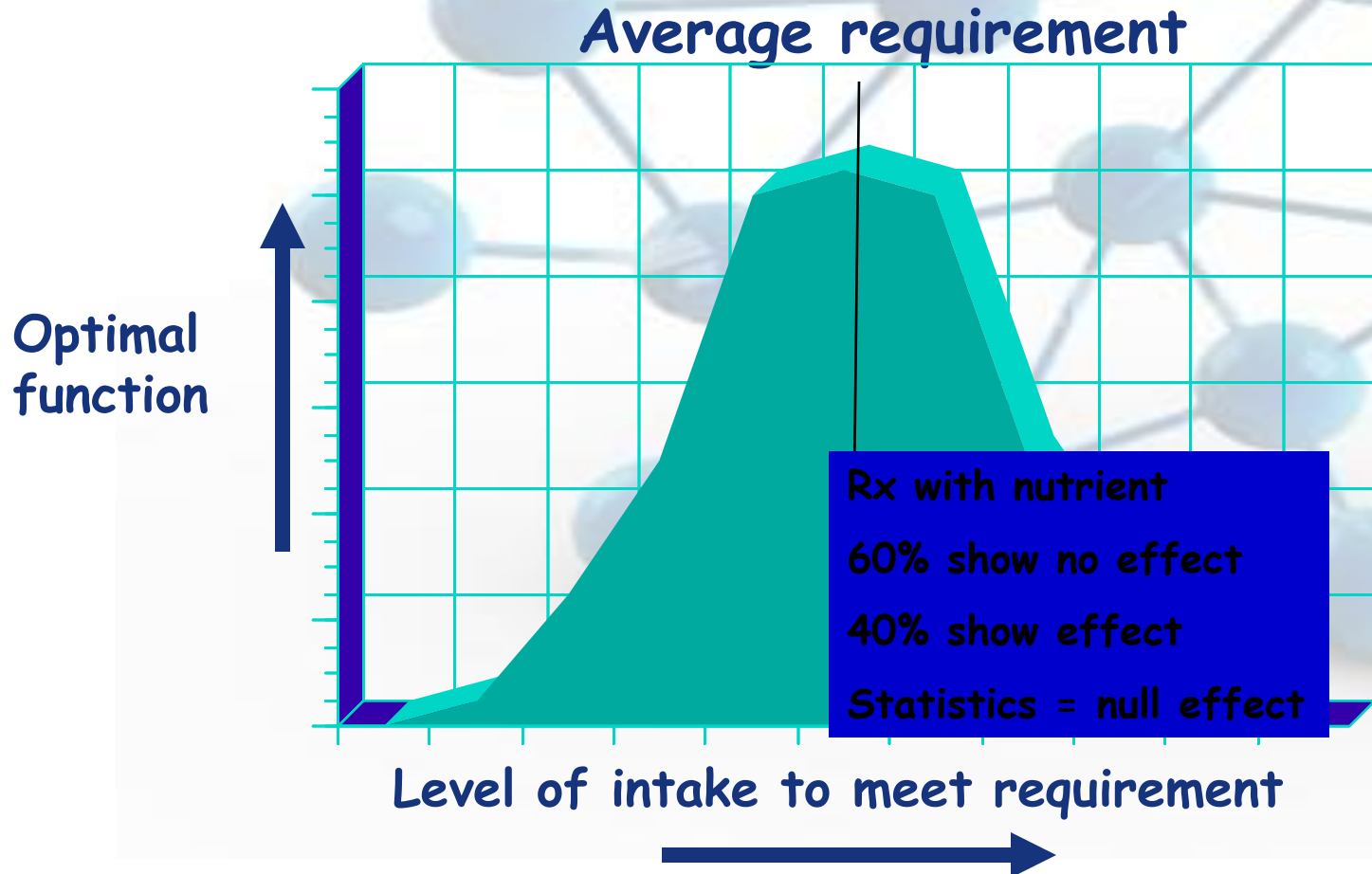
“I must be eating right. I’m narrow at the top and wide at the bottom, just like the food pyramid.”



And we know that people
are very different

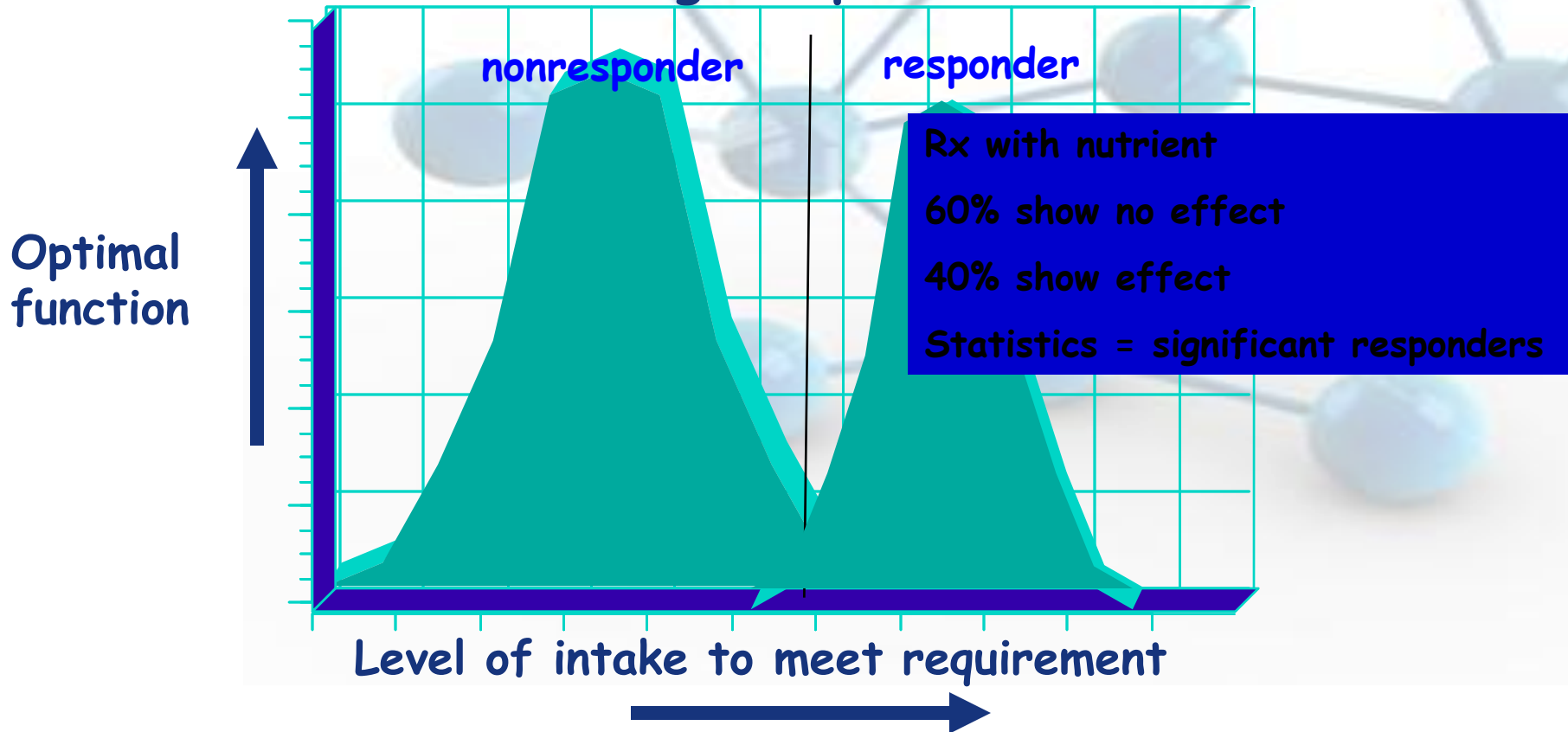


Still, we assume people are average



Advantage of identifying metabolic individuality

Average requirement



New Biotechnology

Nutrigenomics



Metabolomics



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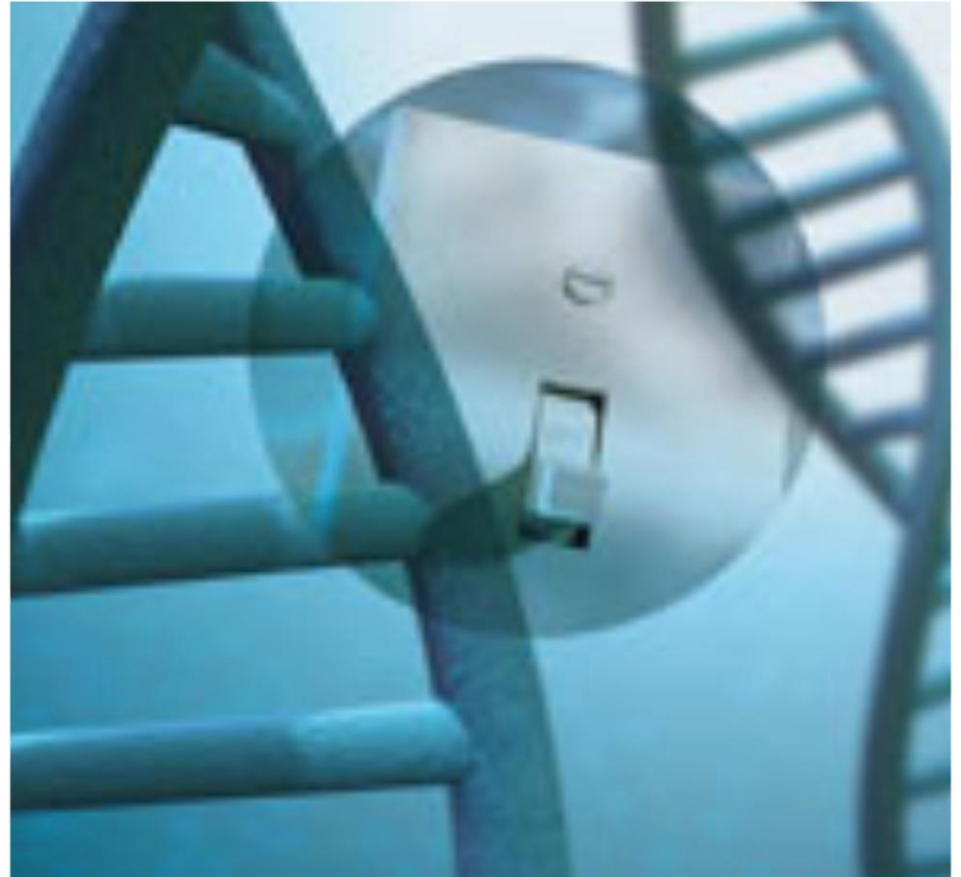
Nutrigenomics



- Identical genes, different ex



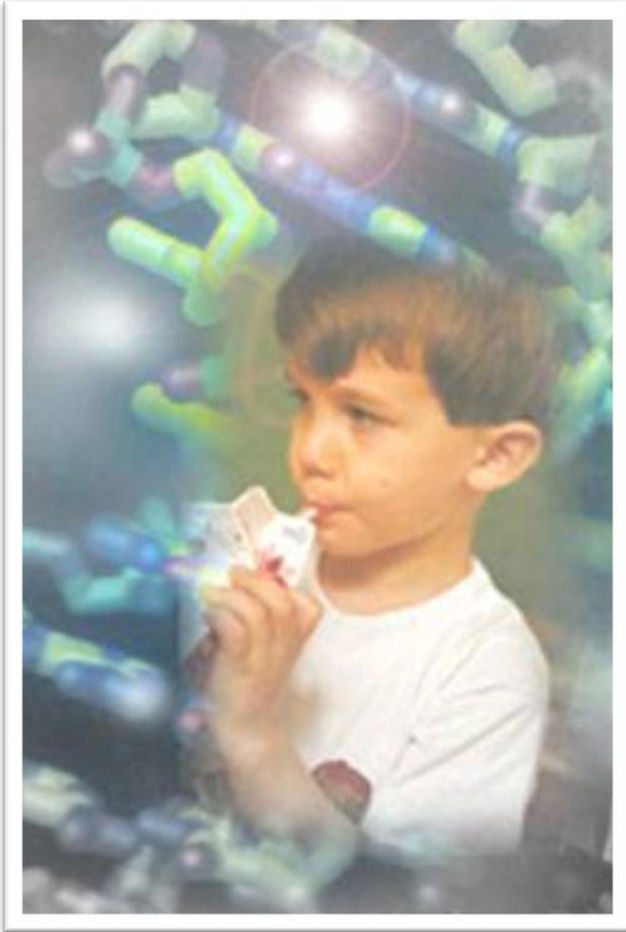
Ever the genealogist, Keith brings his family tree to class.



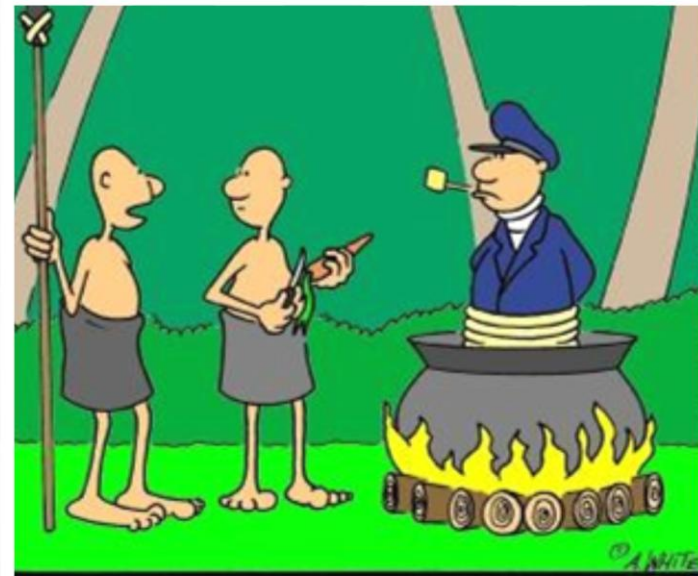
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(s).

Nutrigenomics

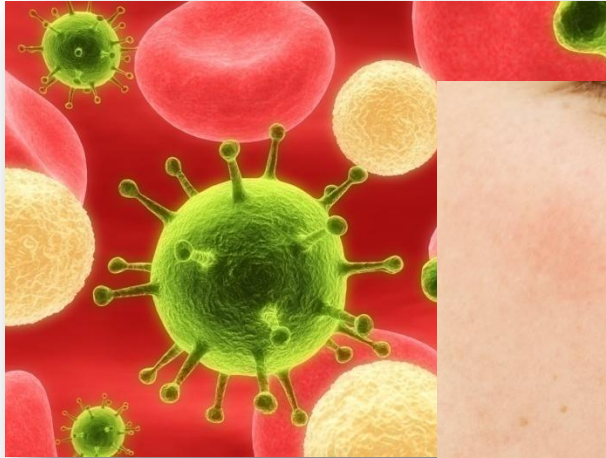


- Intersection of nutrition and genetics
- Explores how food we eat turn on and off light switches of genetic expression.
- Salt

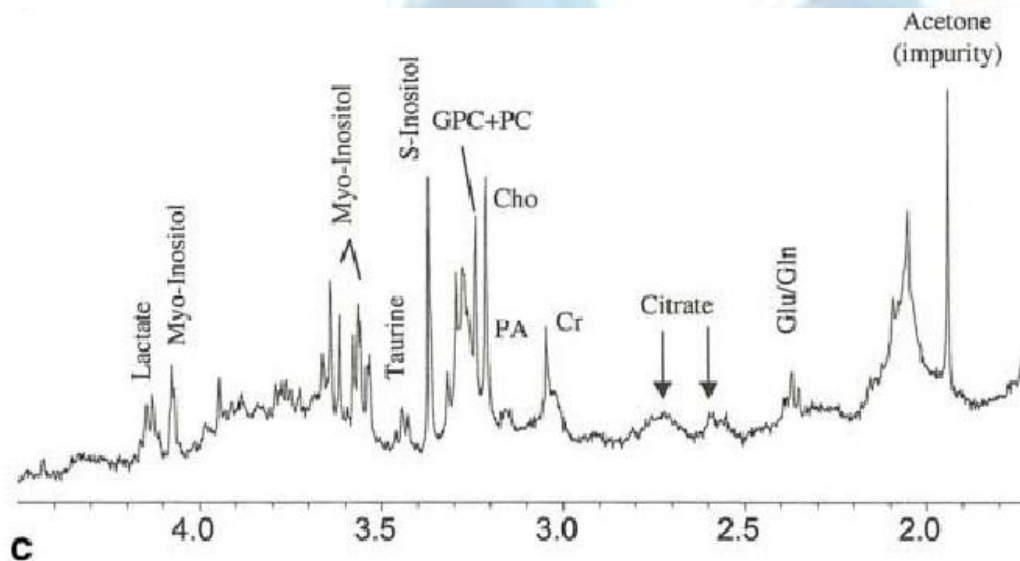


"Didn't the medicine man tell you to avoid salty snacks?"

Metabolomics



Metabolomics



Swanson MG, et al. MRM 50:944, 2003



Single measures may not provide full picture

Thousands of metabolites and thousands of genes, functional markers, behaviors.



Individualized Nutrition Possible



➤ Layering nutrigenomics tools to make it possible.

➤ We will be able to custom tailor diet for optimal health and wellness.

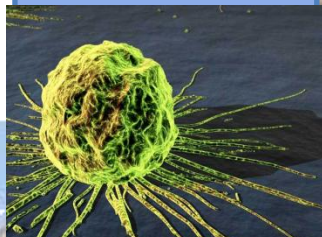


NRI Research Teams and Infrastructure

Brain Development



Cancer



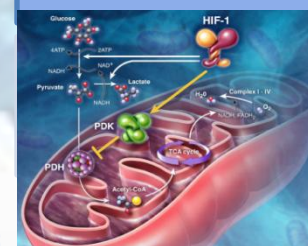
Obesity/Eating Disorders



Nutrigenetics



Metabolism



NRI RESEARCH TEAMS

18 FACULTY MEMBERS AND THEIR STAFF

Supporting Staff Positions

Jobs in Community (office supplies, scientific supplies, food, maintenance, grounds keeping, information technology, etc.)

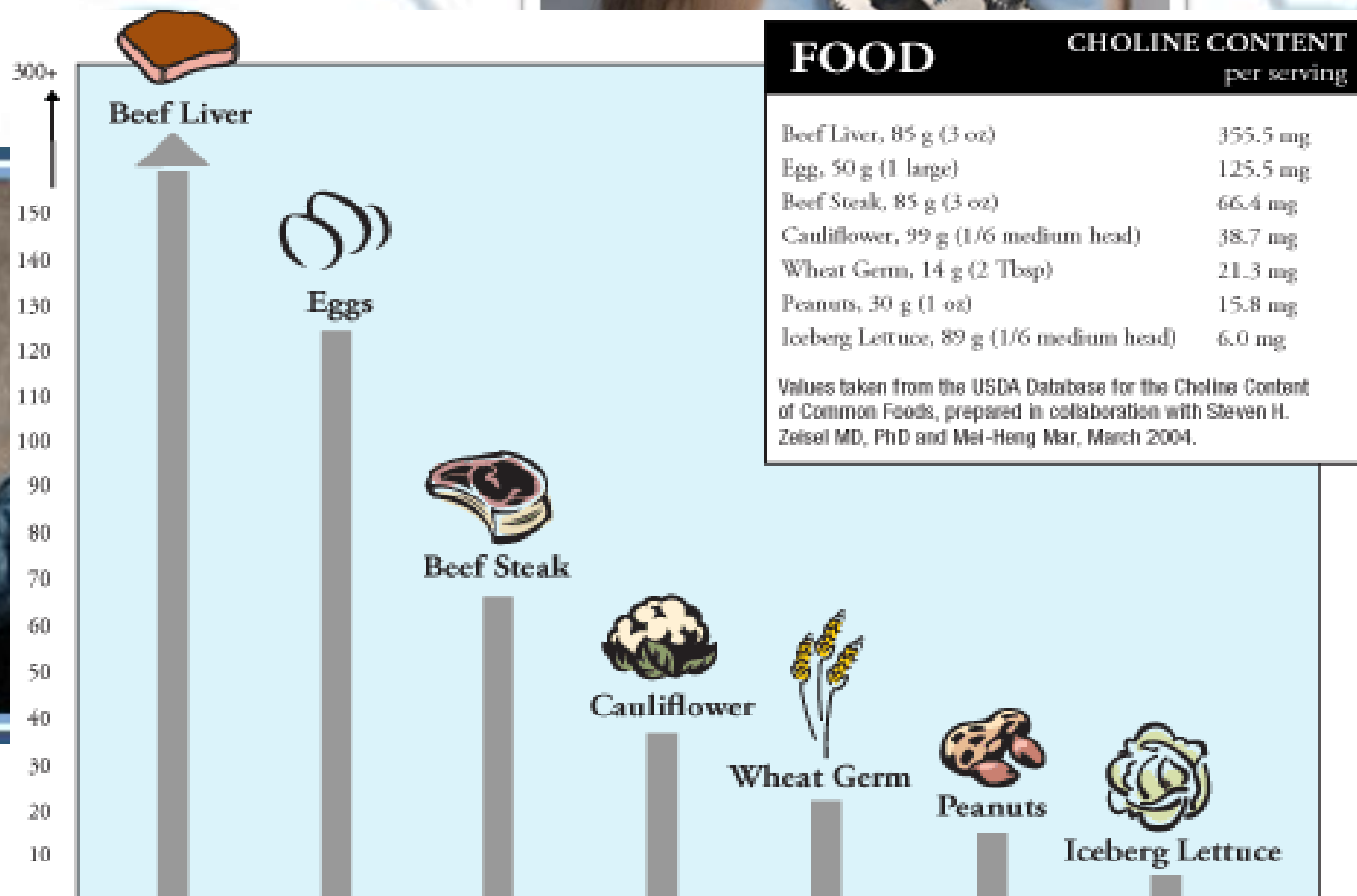


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NRI Faculty and Staff at full capacity: **250 people**

NRI Discovery in Nutrition Science

(proof that it IS your Mother's fault)



Discovery in Nutrition Science

(proof that it IS your Mother's fault)



77% of men

80% of postmenopausal women,

44% of premenopausal women

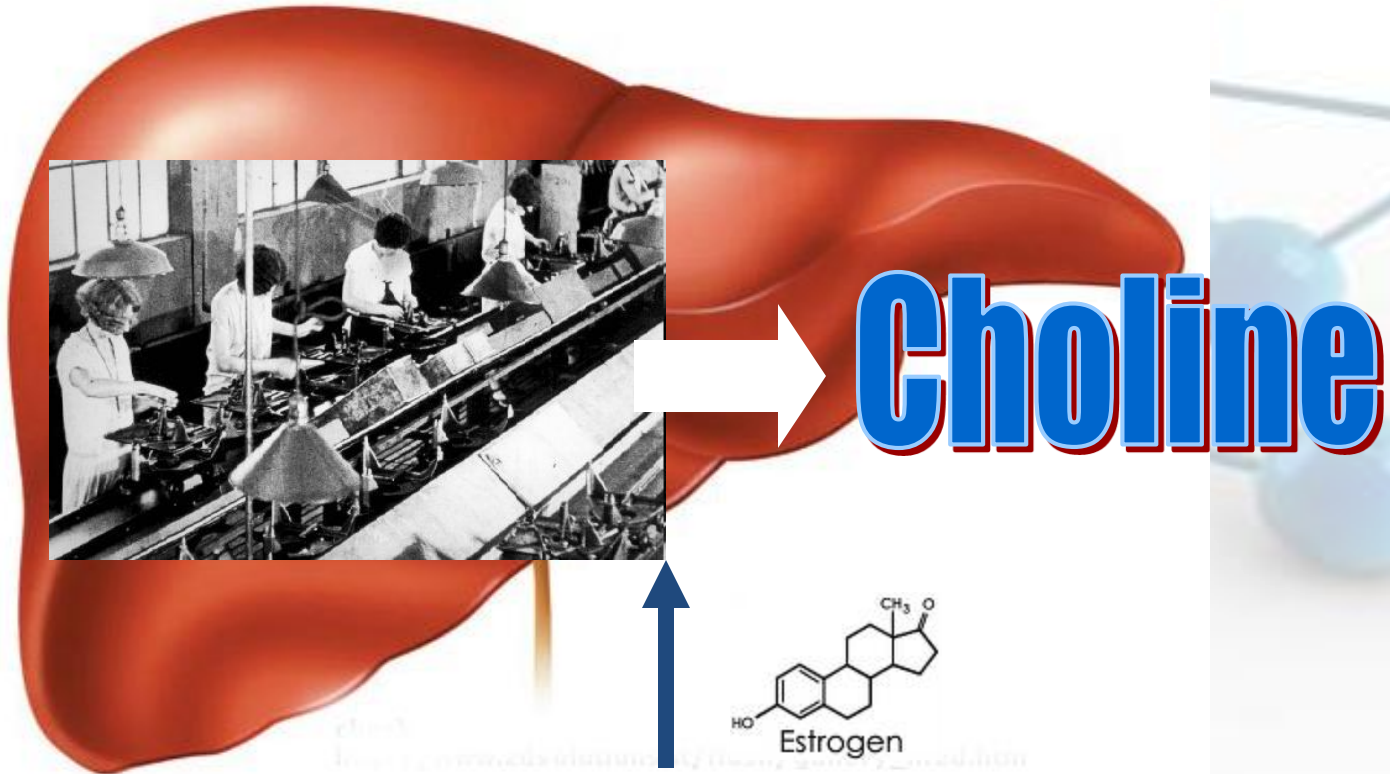
Need to eat choline.

Why do some premenopausal women have a decreased dietary requirement for choline?



NRI Discovery in Nutrition Science

(proof that it IS your Mother's fault)

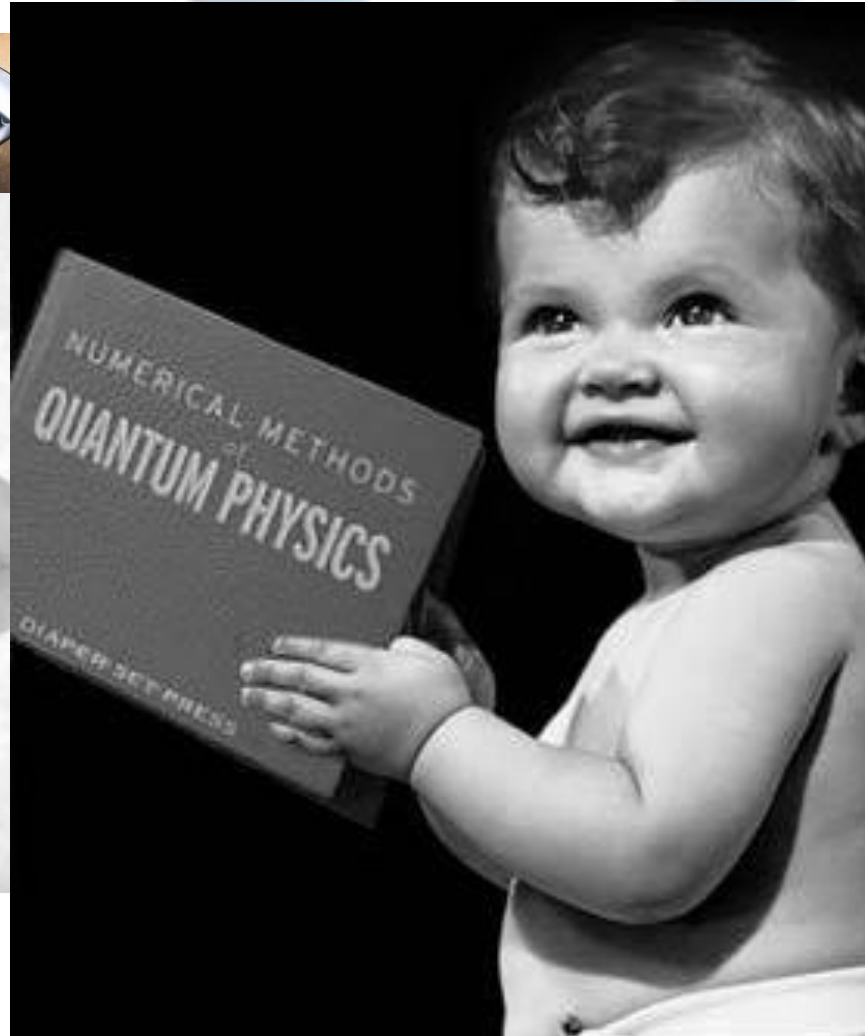


Discovered that ability to make choline in the liver is induced by estrogen.



NRI Discovery in Nutrition Science

(proof that it IS your Mother's fault)

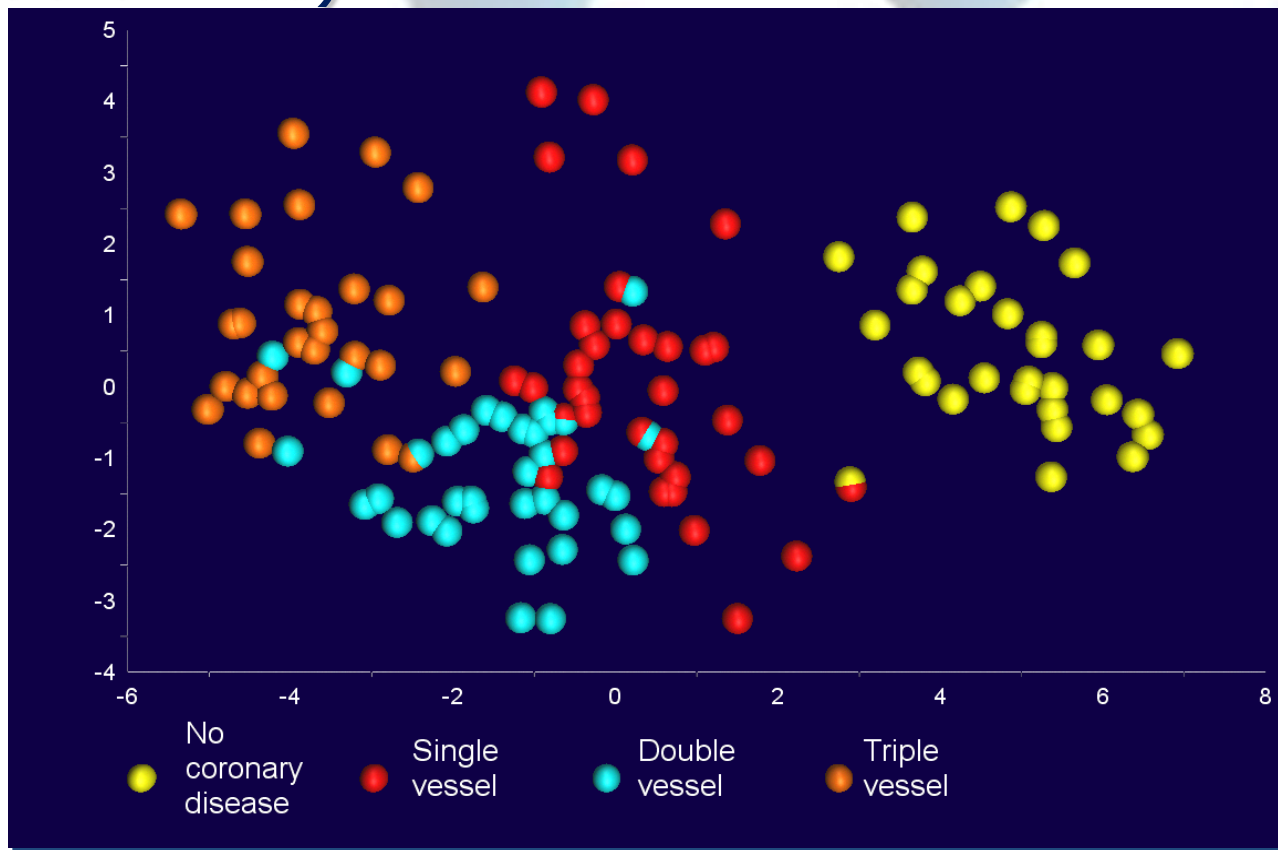


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Cutting Edge of Discovery: Cancer (Metabolomics)



Brindle JT et al., Nat Med. 8, 1439-45, 2002.

Pattern of metabolites predict the occurrence and severity of coronary artery disease using blood plasma.

Cutting Edge of Discovery: Obesity (Epigenetics)



Cutting Edge of Discovery: Obesity (Epigenetics)

Many reasons for epidemic:

- Flora activity and affect on metabolism
 - Bacteria vs. Human Cells
- Mother's diet during pregnancy
 - Epigenetic changes last up to 3 generations



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Optimizing Your Health, One Mouthful At a Time



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❖ Frontiers in Nutrition



❖ Community Outreach



❖ Cooking School



Help us navigate a course to the next frontier in nutrition



Visionaries Needed!

- ❖ **NRI Great Minds**
- ❖ **Faculty Recruitment Funds**
- ❖ **Lab Start Up Funds**
- ❖ **Endowed Fellowships**
- ❖ **Naming Opportunities**
- ❖ **Event Sponsorship**

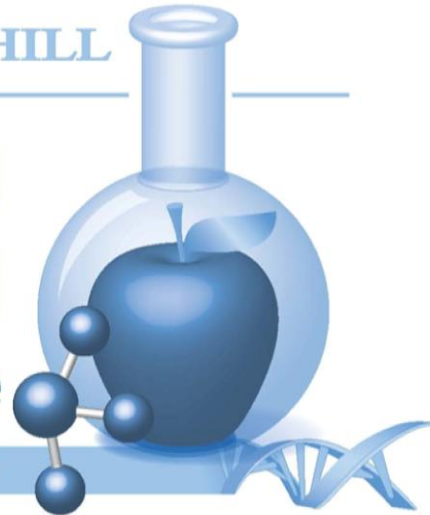


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www.uncnri.org