

# **Nutrition Strategies for Coping with Illness and Ageing**

**Charlie Smigelski, RD**

# Where Nutrition Impacts Disease ....

Diabetes

Heart Disease

Arthritis

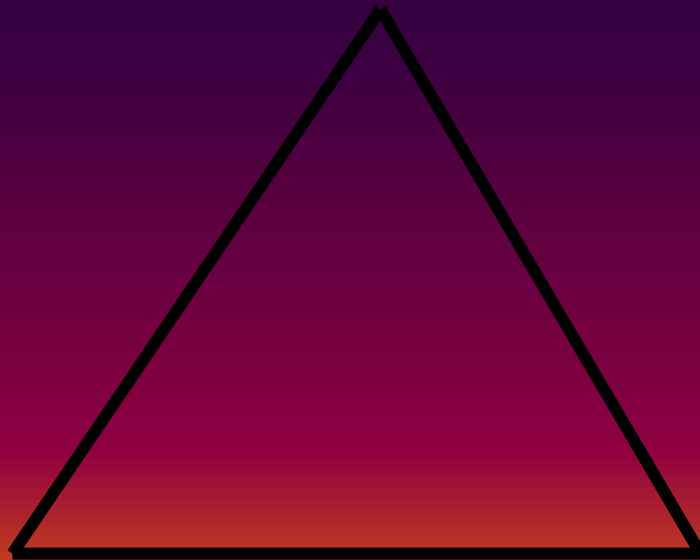
Cancer

AIDS

Hepatitis

**1. What is the totally best diet for health ?**

# The Food Guide Pyramid ?



# The Food Guide Pyramid ...

“the best diet advice you can  
buy in Congress ....”

Walt Willett MD

Eat Drink and Be Healthy

**What is the healthiest diet  
as we understand it ?.**

**When in doubt,**

**eat Caveman Cuisine**

**You crawled out of your hut  
this morning, and you ..**

**... clobbered a fish, grabbed  
some mussels, and nibbled  
nuts and seeds and berries, ...**

**... out of your hut this  
morning, you ..**

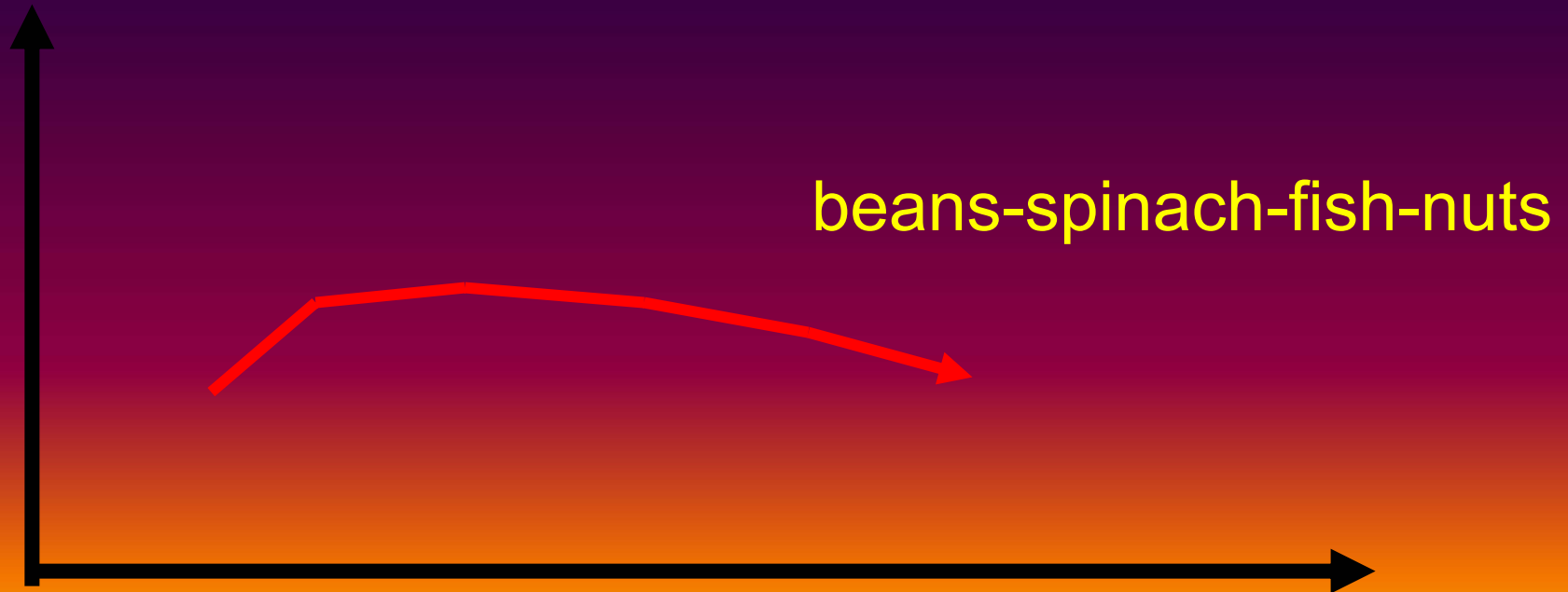
**... protein ... fruit ... nuts ....**

**.... add leaves and roots ...**

**(nice weather)**

# High Protein, Medium Fat Medium Carb. Diet

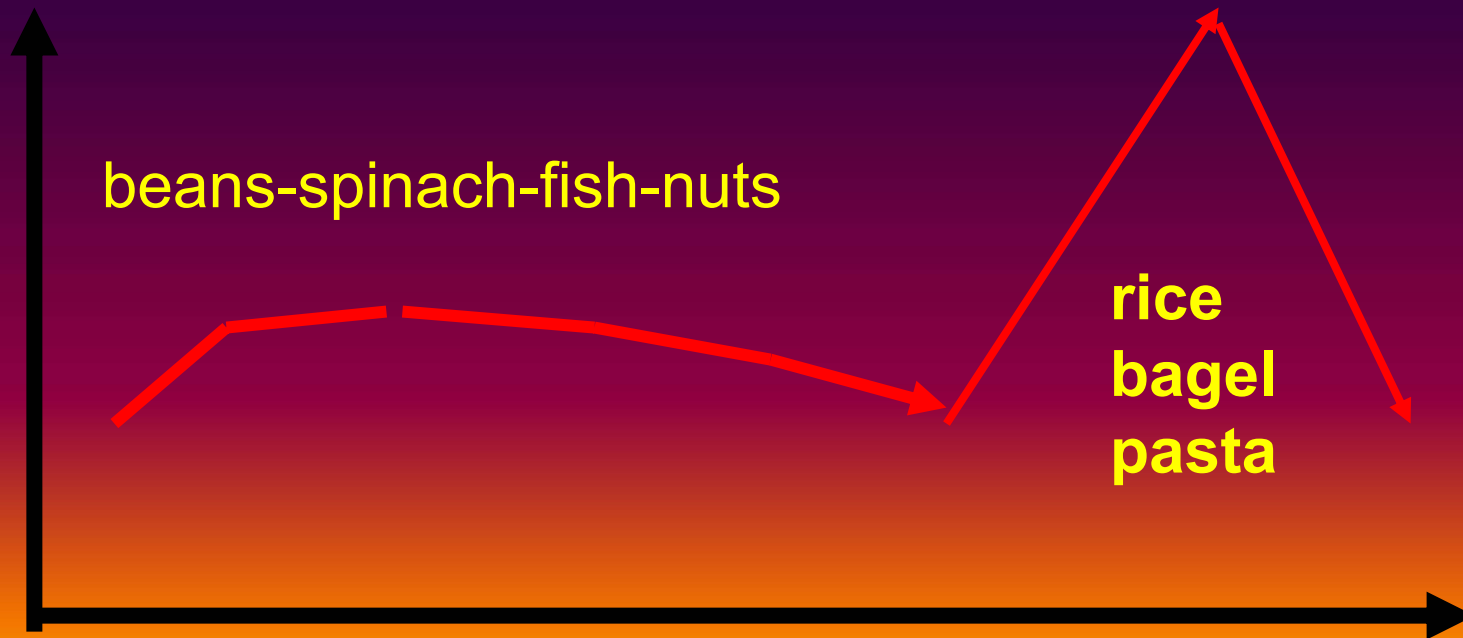
modest blood sugar curves



**... out of ....your condo,  
your palace, you shelter ....  
and snarfed down some ...**

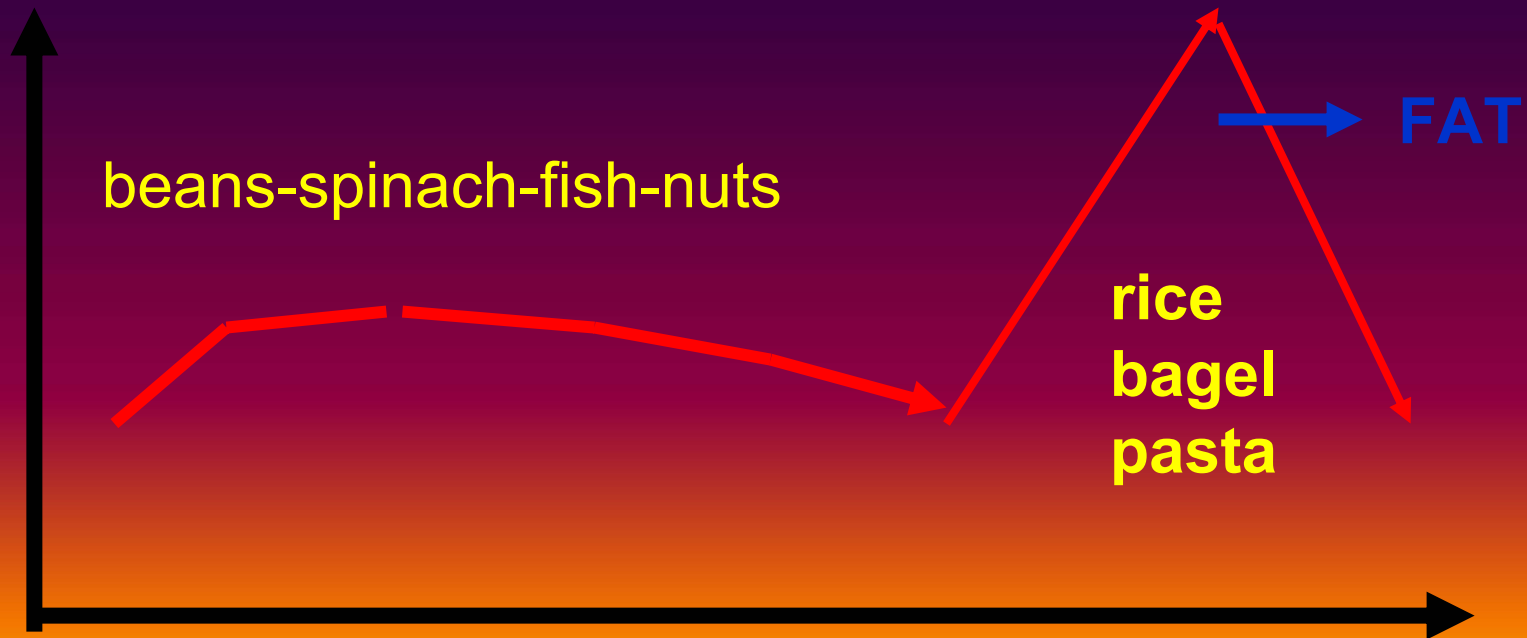
# Cereal Toast Poptart Bagel or Cinnabun

& spiked & crashed your blood sugar



# Cereal Toast Poptart Bagel or Cinnabun

& spiked & crashed your blood sugar



# Paleolithic Diet

Genes expect a blend of foods in the diet.

Balanced intake of  $n 6$ :  $n 3$  fats.

Higher amounts of calcium & potassium

Many fruits & veges: vit C & vit E

Low in sodium.

Simopolous:

# Paleolithic Diet

	Paleo	Now
Cholesterol	520mg	300mg
Protein	33%	12%
Fat	21%	30%
P:S ratio	1.4:1	20:1
Fiber	100gm	30gm
Simopolous:		

# Caveman Breakfast

Fish/mussels

moldy fruit/berries

Walnuts

Sunflower seeds

leaves/shoots

Soy/Whey Protein

& banana smoothie

Walnuts

Sunflower seeds

(juice)

# Cavewoman Lunch

Tuna White beans Romaine Olives  
an orange and some yogurt

Cottage Cheese Humus Raw veges  
red grapes and cashews

# Caveperson Supper

Salmon Green Peas Carrots Pignolis

Chicken Sw. Potato Gr. beans Almonds

Pork loin Black beans Spinach Walnuts

# Caveman Cuisine

Grains are a modern invention ....

stressed metabolism does not cope with  
some foods as well .....

# **Where Nutrition Impacts Disease/Infection: practical**

**Regular body function: keep  
muscles, liver, intestines well.**

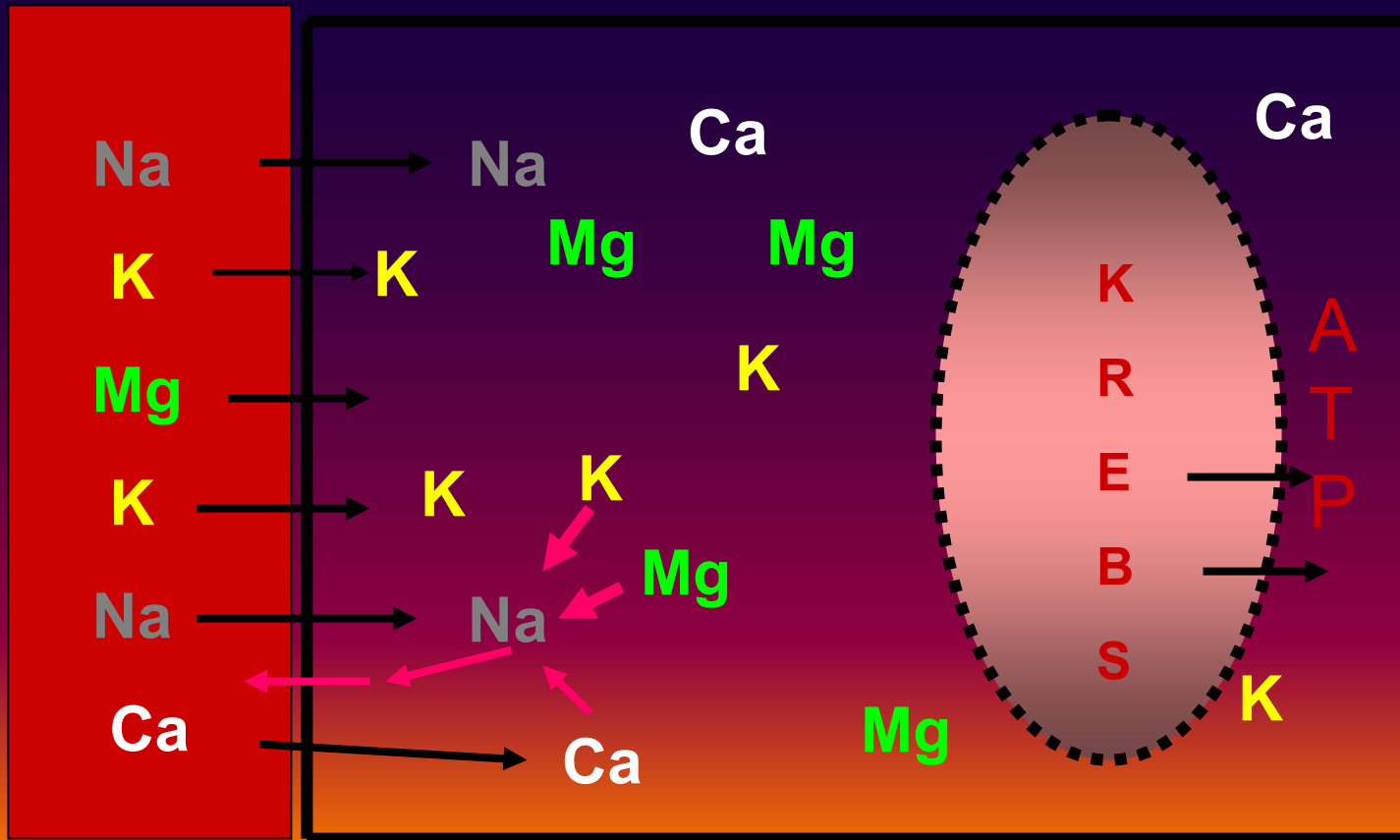
**Reduce morbidity and mortality  
from physiological problems.**

# **Where Nutrition Impacts Disease/Infection: practical**

**Managing blood pressure:**

**Low sodium diet, AND ?????**

# Electrolytes Activities



# LS Diet & **Forest Foods**

Magnesium   Potassium   Calcium

Black beans   Potato   Yogurt

Lentils   Sweet potato   Spinach

Humus   Banana   Poppy seeds

# Treatment of Essential Htn with Coenzyme Q10

n=109 avg. f/u 13 mo

HTN diag x avg 9.2 yrs

Age 62.1 yrs (27-89)

NYHA class II 56%

NYHA class III 39%

# Coenzyme Q10

Dose 100mg – 200 mg/day (1-2 mg/kg)

NHHA Class improvement 2.40 – 1.36

19% by 1 class, 66% by two

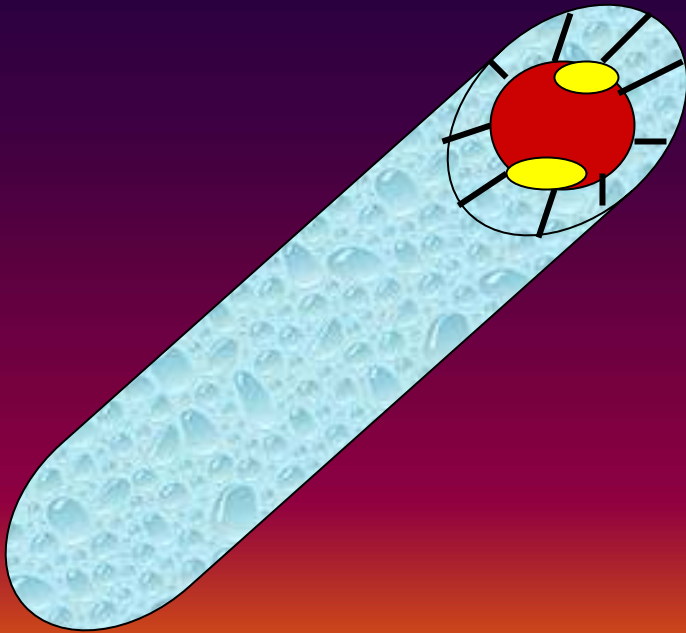
Mean systolic BP improved 159 to 147

Mean diastolic BP improved 94 to 85

37% of Pts. d/c'd 1 antihypertensive drug

Langsjoen Mol Aspects Med 1994;15:s265-s272.

# Health of Blood Vessels



# Dietary intake of *a*-linolenic acid and risk of fatal ischemic heart disease among women

## Contributors of *a*-linolenic acid

Mayonnaise and creamy dressings	16.7%
Oil & vinegar / Italian dressings	12.2%
Margarine	6.8%

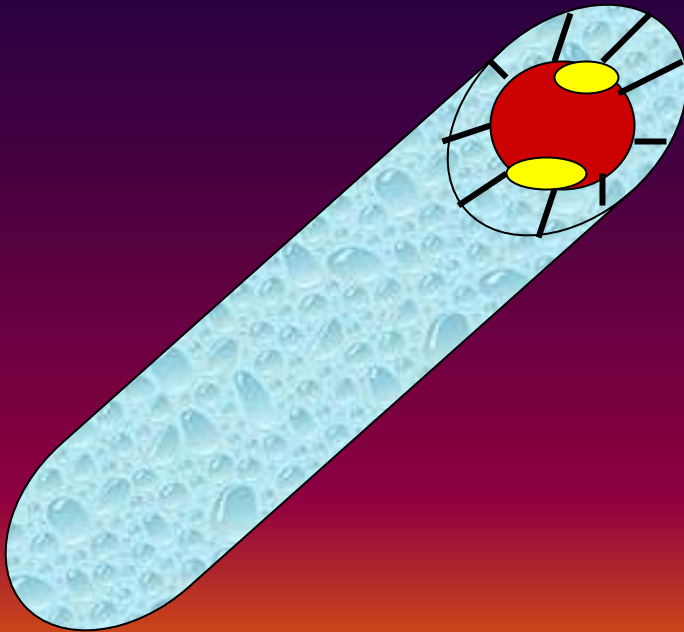
Hu / Willett Am J Clin Nutr 1999; 69:890-7.

# Beyond Lipids--the role of the endothelium in coronary artery disease.

NO dilation, anti-clotting, LPL activity

Aengevaeren WR. *Atherosclerosis* 1999; 147  
Suppl.S11-S16.

# Health of Blood Vessels



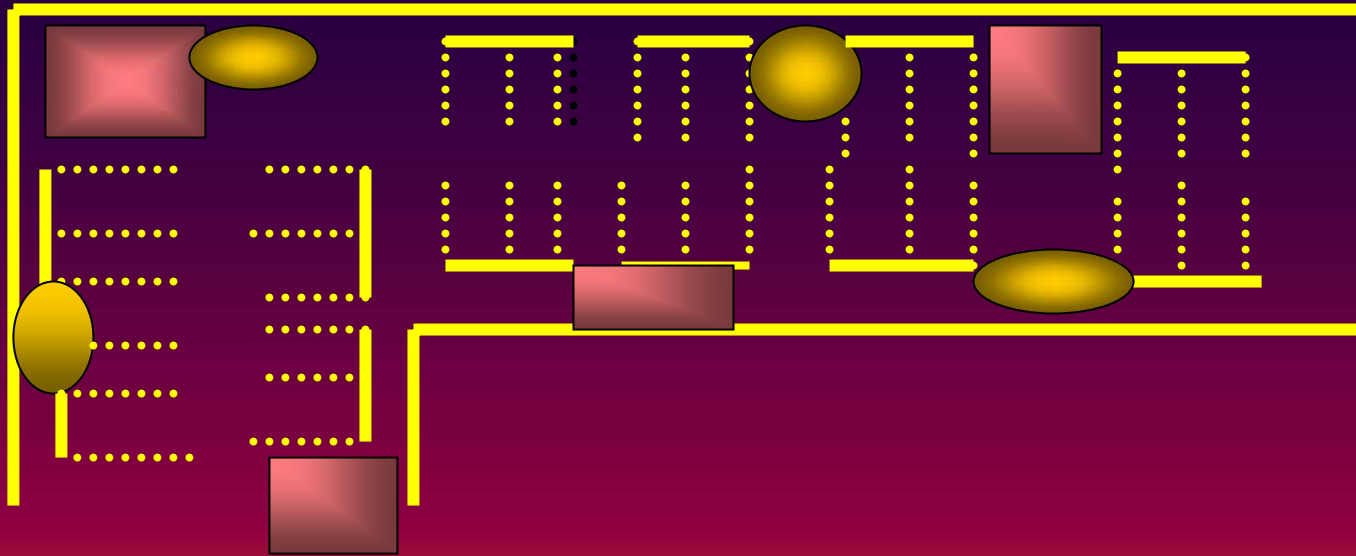
**C-reactive protein**

**Homocysteine**

**Oxidants**

# You are what you eat

## Lipid Bi-layer and dietary fats



Aging: *N* 6 fats & cholesterol change cells

# Lyon Diet Heart Study

Cretan - Mediterranean Diet vs NCEP1  
(fruits-veges-mono fat/olive oil)

ALA: leafy veges, purslane, nuts, legumes  
& margarine w/ 4.8% ALA

At 27 months, 76% reduction relative risk  
of in fatal and non-fatal MI's

No differences in Chol TG HDL !!

Circulation 1999; 99:779-785.

# Lyon Diet Heart Study

Cretan - Mediterranean Diet vs NCEP1

Fatal MI	3	16
Non-fatal MI	5	17

(70% drop in death rate)

(4 yr data )... 56% drop in cardiac deaths

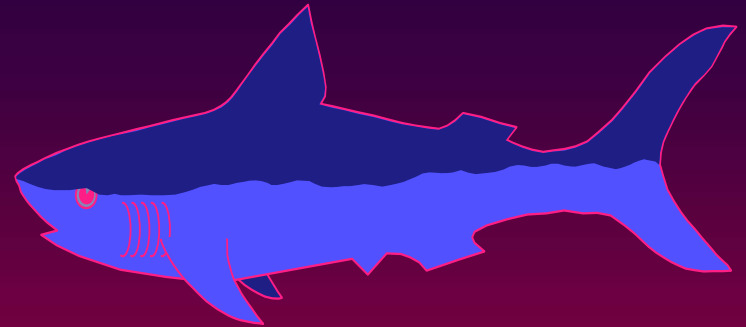
61% drop in cancer deaths

Circulation 1999; 99:779-785.

# Omega 3 Fatty Acids

- Fish Oils
- 10% Flax Seeds
- Wheat Germ
- Walnuts
- Purslane
- (Borage Oil)

Rx 2-3 gms/d



# GISSI - Prevenzione Trial

- n=11,324 s/p MI
  - 1 arm *n* 3; 1 vit E, 1 both, 1 nothing
- 1 gm/day fish oil ... 850mg EPA/DHA
- 20% reduction in MI, nf-MI, stroke.
- Likely more benefit in US diet ...

Lancet 1999; 354:447-455.

# Essential Fatty Acid Deficiency

**Plasma Lipids changes:**

- + free fatty acids**
- ++ triglyceride**
- + total cholesterol**
- + phospholipids**
- extrahepatic LPL**

**(J Lipid Res 1990 31(11):2009.)**

# Omega 6 Fatty Acids

## Gamma Linolenic

- **Evening Primrose Oil**
- **(Borage Oil)**
- **(Black Currant Oil)**

Raise HDL's

Rx Dry Skin

2 grams/day



**What's in here that  
boosts repair or immunity ?**



# Practical Nutrition: Think about systems ...

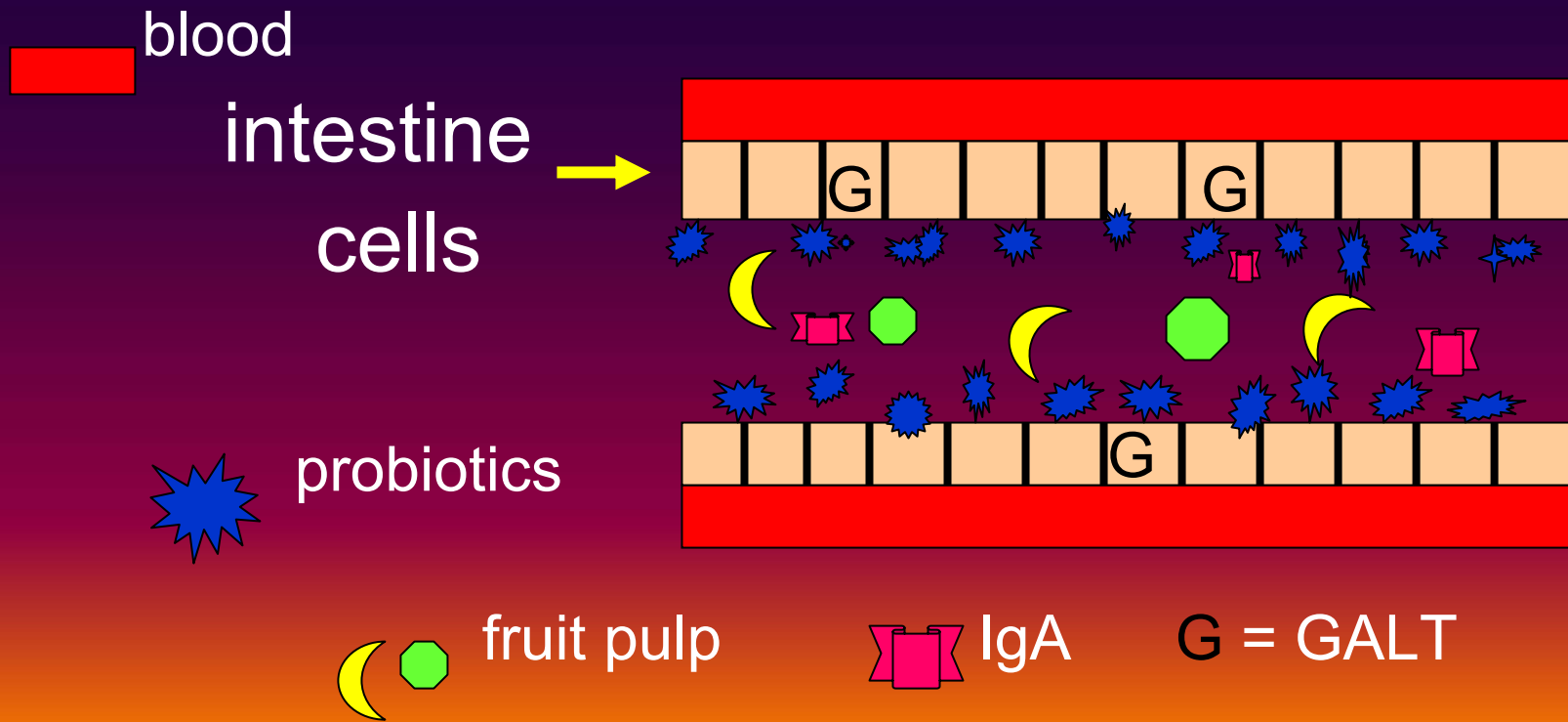
Intestines

Muscles

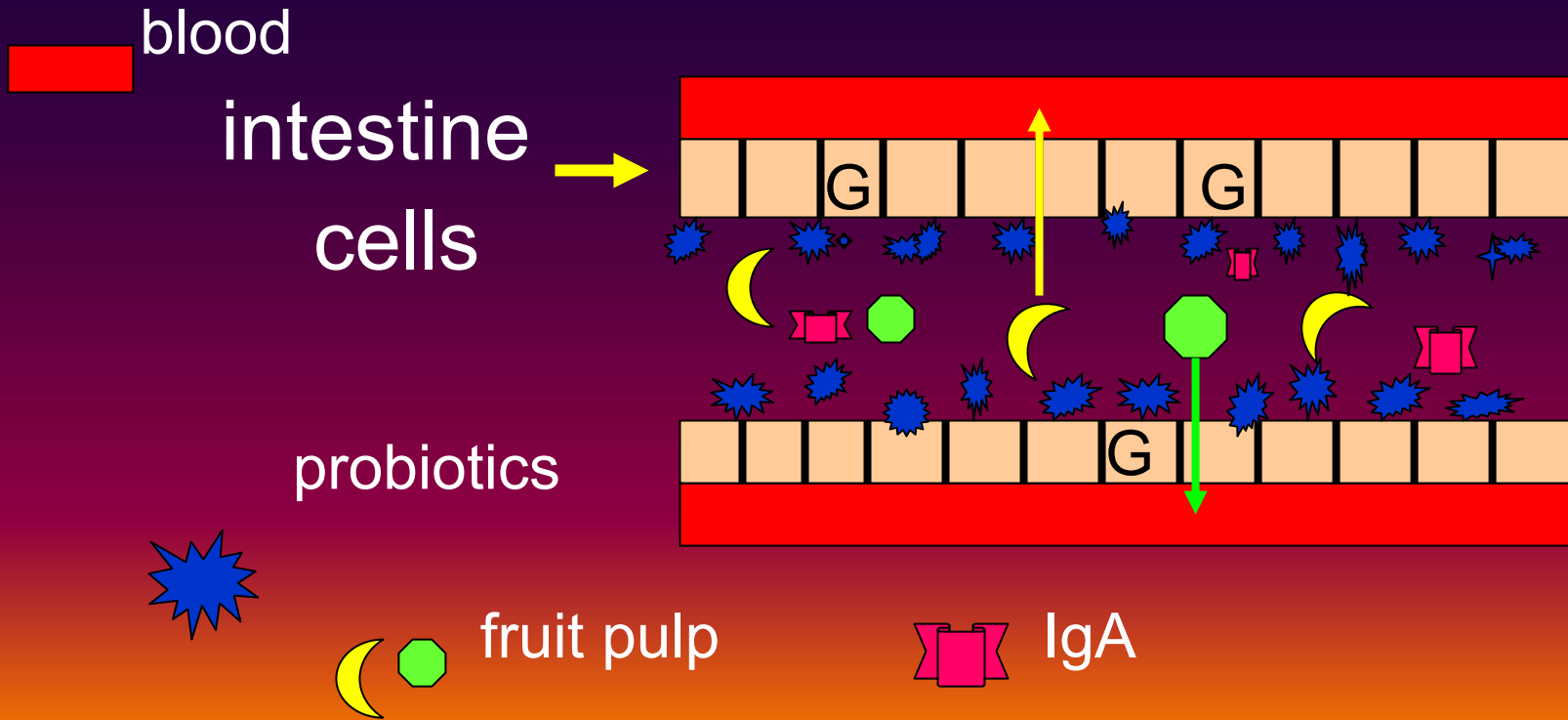
Lymphocytes

Organs

# Practical Nutrition: Think about Gut ecology ...



# Leaky gut .....



# Gut Ecology S. Bengmark



**Lactobacillus GG**  
**“Culturelle” @ cvs**

S. Gorbach

# Diarrhea

Muscles >> L-glutamine >> Gut Repair

# **Diarrhea / IBS: practical**

**Glutamine powder 5-10 grams/day**

**Acidophilus pills 1-2 /day**

**Fiber pill: Fibercon or Citrucel**

**Imodium: 1/day**

**(? no wheat: pasta, bagels, bread)**

# Caveman Fats & Hormones

**N-6**

**LA- corn oil**

**GLA-primrose**

**AA arachidonic**

**(COX/Vioxx)**

**Prostaglandins/PGE<sub>2</sub>**

**D-6\***

**D-5**

**D-4**

**N-3**

**ALA -flax walnuts**

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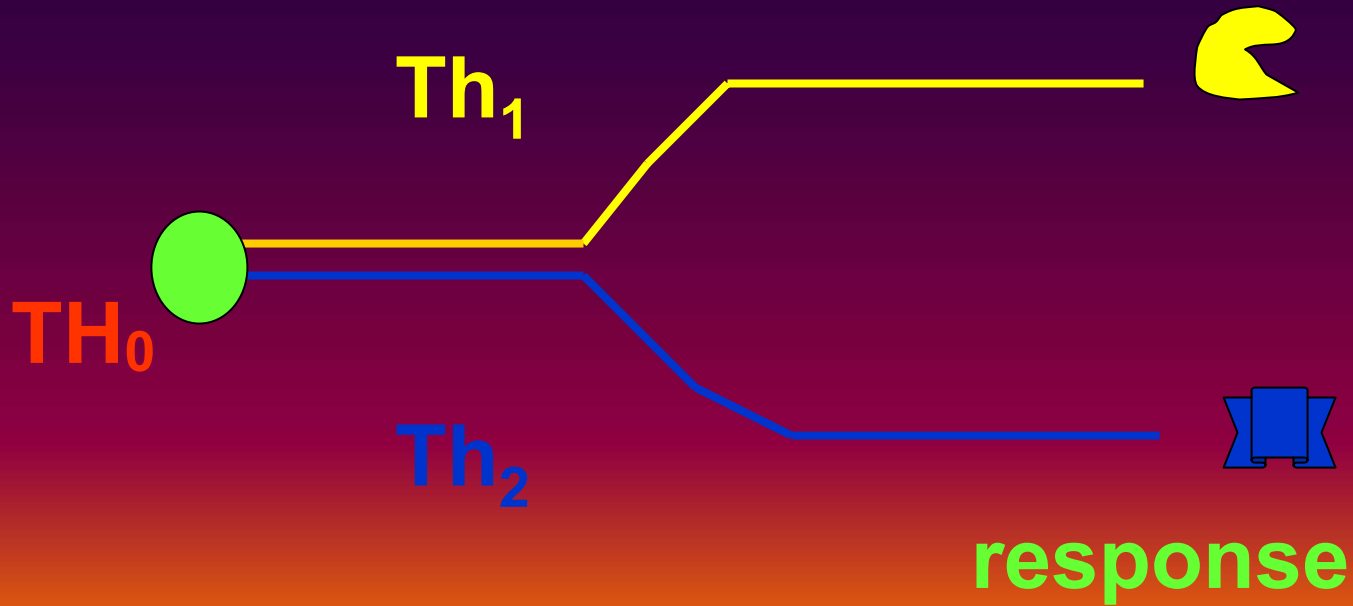
**EPA**

**DHA fish oils**

**\*Delta 6 Delta 5 Delta 4 desaturase enzyme**

# Immunology

Immune cells differentiate to:



# Oxidative Stress

Random Oxygen Species ROS

**Stray Electrons** ( Rust Corrosion )

Induce cytokines: IL<sub>1</sub> IL<sub>2</sub> IFN (Th1)

IL<sub>4</sub> IL<sub>5</sub> IL<sub>6</sub> (Th2)

**TNF<sub>a</sub>** **wasting**

NF<sub>k</sub>B grow HIV

# Fish Oil vs Olive Oil in UC

18 gm/day 18 Maxepa Pills vs Olive Oil

20 ppl ..... Age 32 – 79

15-30 mg prednisolone 0-20 after

PGE<sub>2</sub> 25.1 (4.7 SEM) 10.8 (2.6) ng/mg prot

TxB<sub>2</sub> 10.3 (1.4 SEM) 6.4 (1.0) ng/mg prot

Hillier 1991 *Gut* 32:1151-1155.

# **Modulation of cytokine production in vivo by dietary essential fatty acids in patients with colorectal cancer - Horrobin**

“no significant alteration in total cytokine concentrations in the first 2 months, but reaching minimum levels at 6 months.

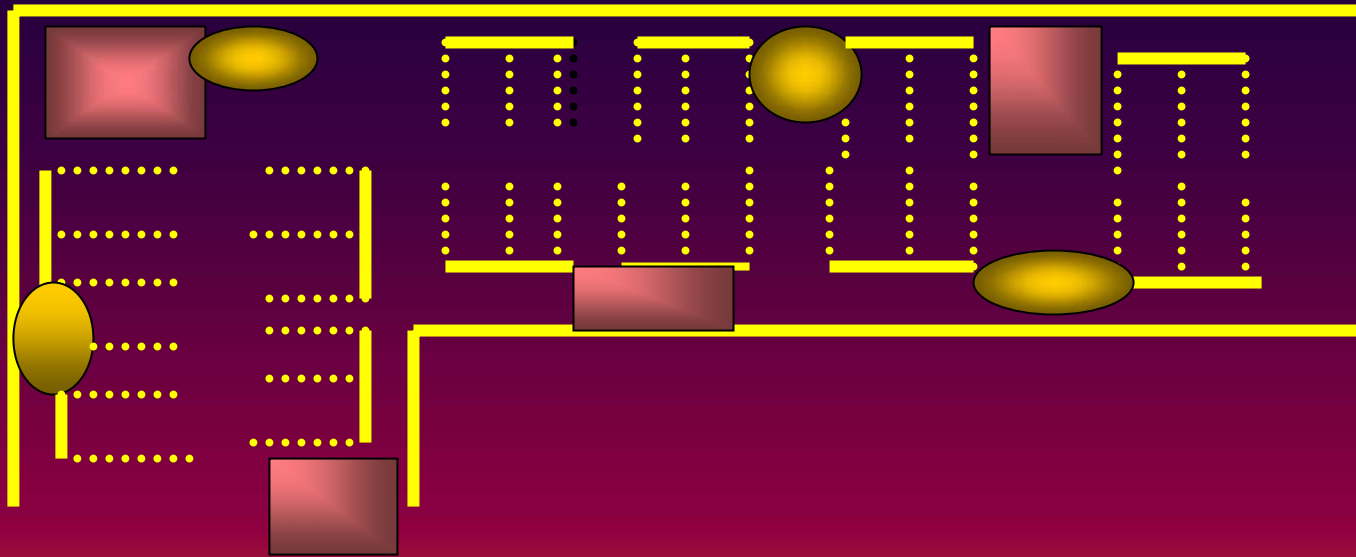
# Fatty acids, triglycerides and syndromes of insulin resistance

“strong relationships between the fatty acid composition of structural membrane lipids and insulin action.... Good insulin action is associated with increased proportion of *n*-3 fatty acids”

Prostaglandins Leucotrienes and Ess Fatty Acids 1997; 57:379-85

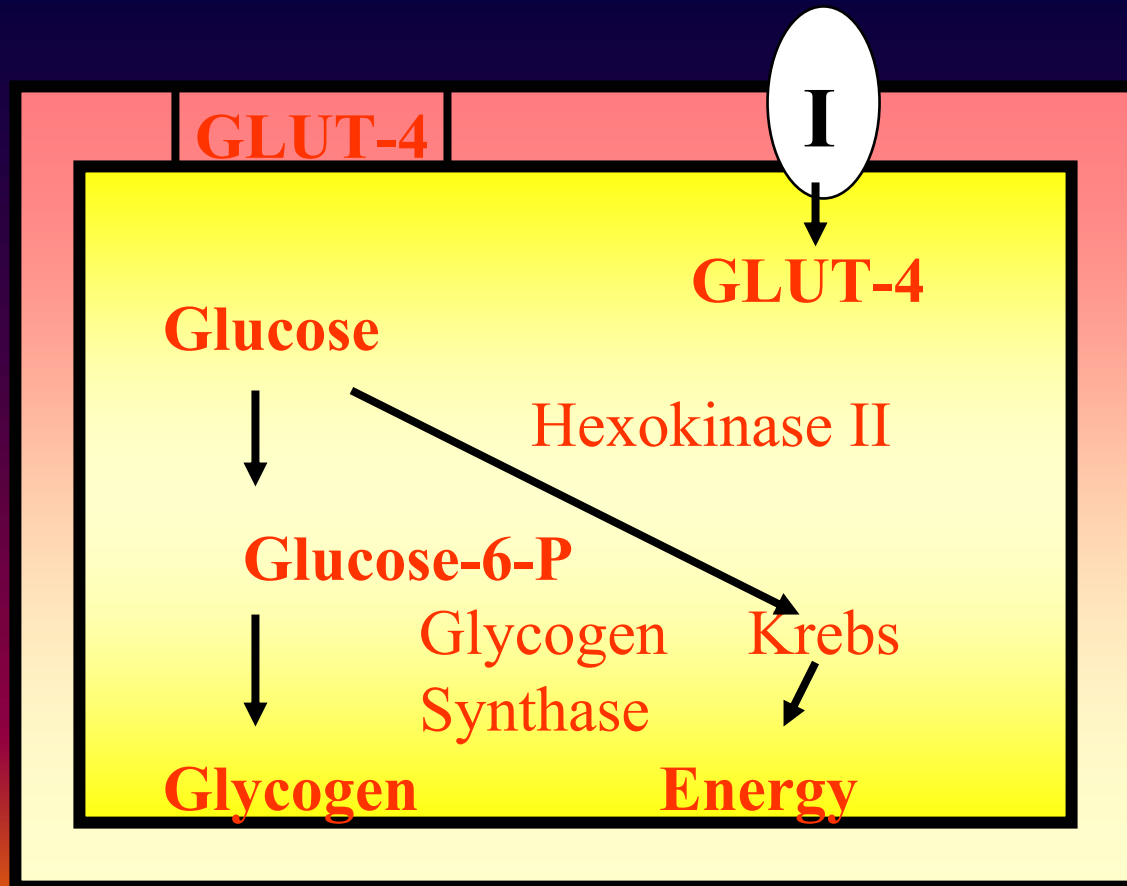
# You are what you eat

## Lipid Bi-layer and dietary fats



Aging: *N* 6 fats & cholesterol change cells

# Insulin Action on Cells



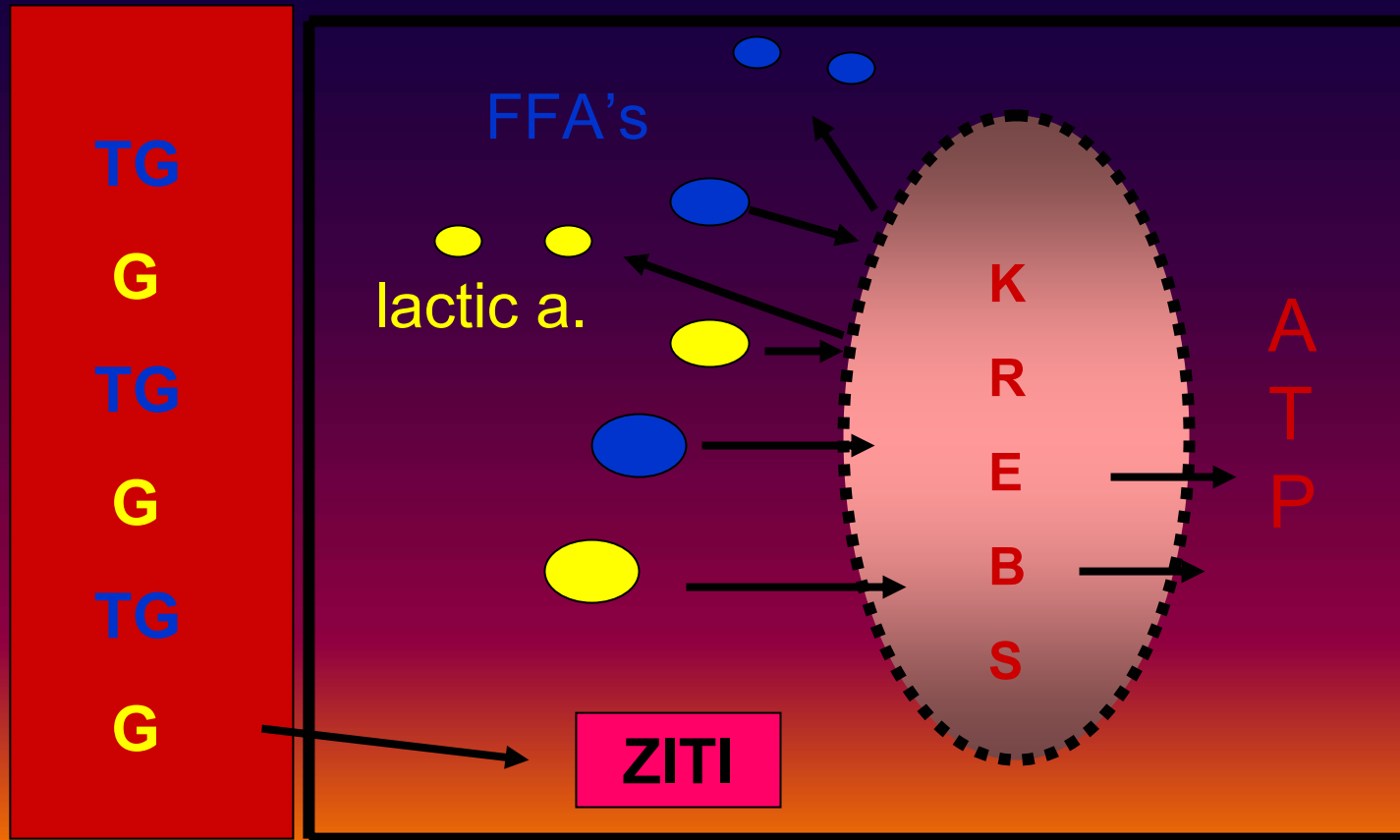
# Insulin Resistance .....

plasma  $\uparrow$  FFA's impairs insulin signal.

muscle  $\uparrow$  FFA's impairs insulin signal (Glucosamine path)

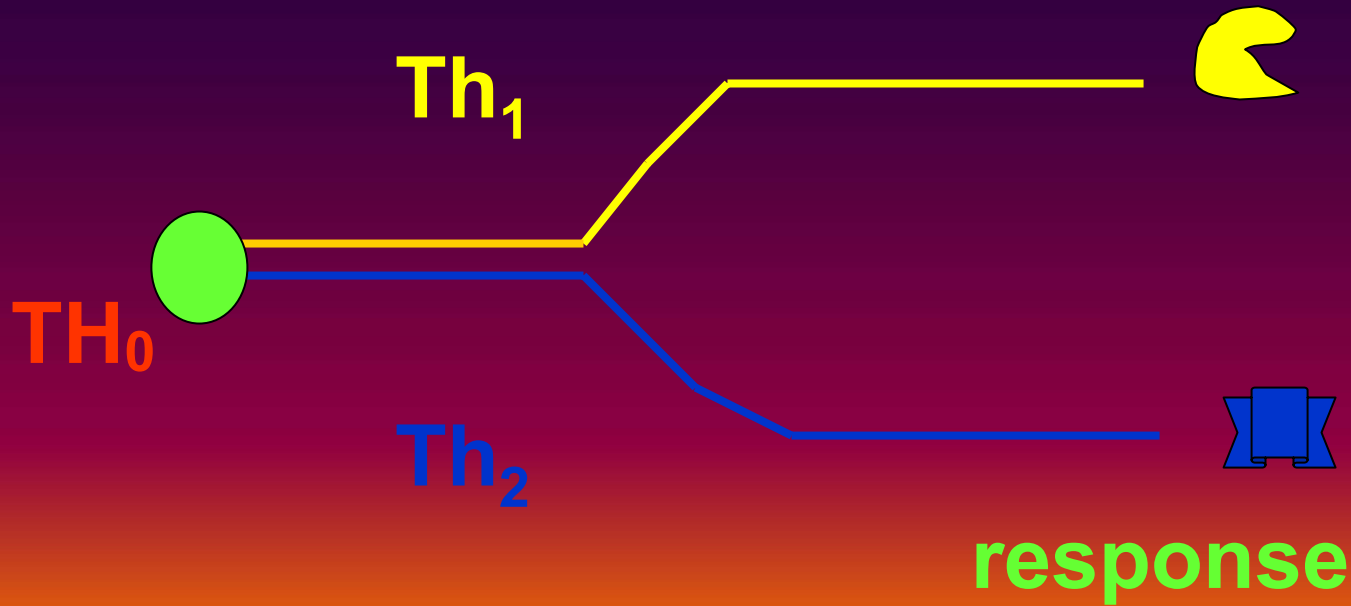
$\text{TNF}_\alpha$  reduces Insulin receptor phosphorylation

# Making Energy: ATP

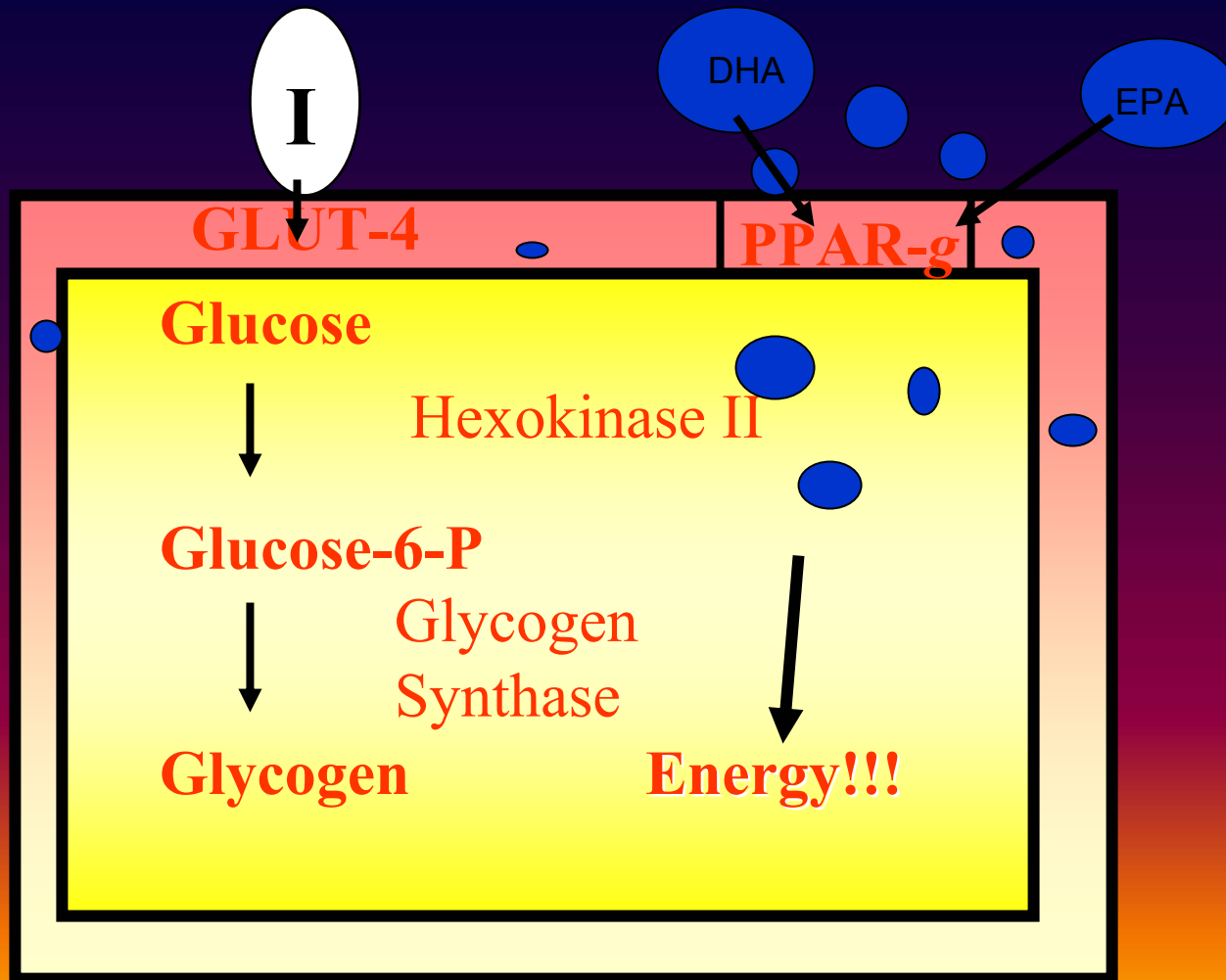


# Immunology

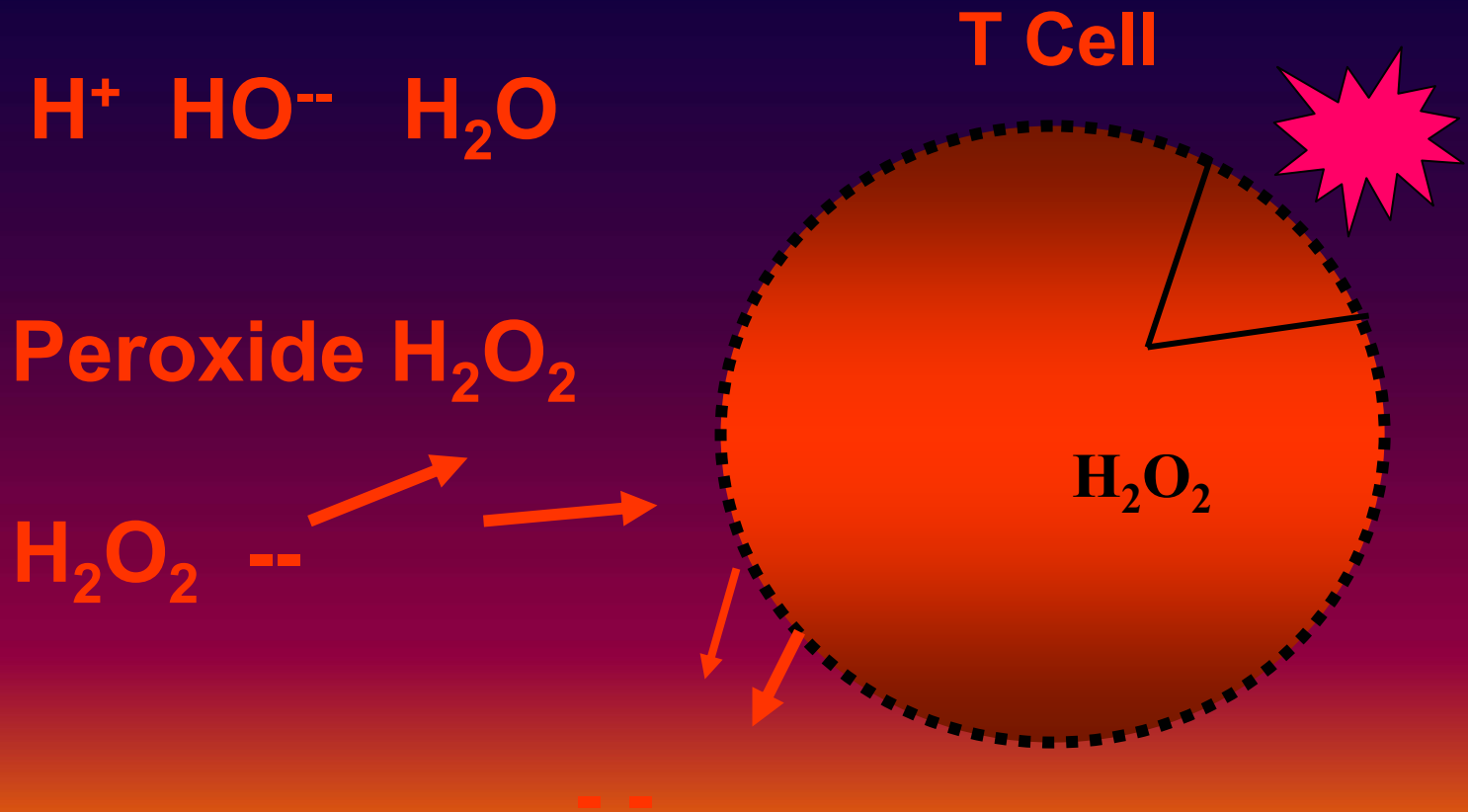
Immune cells differentiate to:



# EPA/DHA Action on Cells



# Oxidative Stress



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***N-3***

**ALA flax walnuts**

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**EPA**

**DHA fish oils**

**\*Delta 6 Delta 5 Delta 4 desaturase enzyme**

# Omega 6 Fatty Acids

## Gamma Linolenic Acid

- **Evening Primrose Oil**
- **480 mg GLA (3gm)**

**DM Neuropathy 111**

**DM Care 1993 16(1):8-15**



# GLA *n*-6 Supplement

**Impr. Muscle Strength**

**Impr. Tendon Reflexes**

**Impr. Sensation (arm/leg)**

**(Deterioration on placebo)**

**DM Care 1993 16(1):8-15**



# Where Nutrients Impact Disease: **practical**

- Food: help, not hassle the body
- Nutrients: support immune cells
- Supplements: fix metabolism

# Should I Take Vitamins ?

<b>Vitamin C 500mg</b>	<b>1/day</b>
<b>Vitamin E 400iu</b>	<b>1/day</b>
<b>B-complex 25+</b>	<b>1/day</b>
<b>Fish Oils 1000mg</b>	<b>2+/day</b>
<b>Magnesium 300 mg</b>	<b>1/day</b>
<b>Selenium 200 mg</b>	<b>1/day</b>

# Should I take vitamins ?

[www.Boston Buyers Club.com](http://www.BostonBuyersClub.com)

Perfect Blend, 2/day

Supernutrition

(fish oil 1 gm/day)

# What Color Is Your Diet ?

David Heber MD PhD



**Thanks for your attention**

Charlie Smigelski, RD

[www.eatupbooks.com](http://www.eatupbooks.com)