

# COMPLEMENTARY ALTERNATIVE MEDICINE (CAM)

**An overview of CAM including  
history, paradigm and research.**

**Dr Christine Rose  
Fri 17 September 2010**

# SCHEDULE OF CAM TEACHING COURSE

- ▣ Acupuncture
- ▣ Homoeopathy
- ▣ Chiropractic
- ▣ Psychotherapy
- ▣ Reiki
- ▣ Herbalism
- ▣ Nutrition

# Health Belief Model

## *Becker and Maiman*

- ❑ The Individual 's general interest in health matters, which might correlate with personality, social class, ethnic group
- ❑ How vulnerable the patient feels himself to be to a particular disease, and how severe a threat the disease is believed to pose
- ❑ The individual's estimate of the benefits of treatment weighed against the costs, risks or inconvenience of treatment
- ❑ Factors that prompt the individual to take action, such as the development of alarming symptoms, advice from family or friends, or items in the mass media

# DEFINITION OF CAM BY THE COCHRANE COLLABORATION

**CAM is a broad domain of healing resources that encompasses all health systems, modalities, and practices and their accompanying theories and beliefs, other than those intrinsic to the politically dominant health systems of a particular society or culture in a given historical period.**

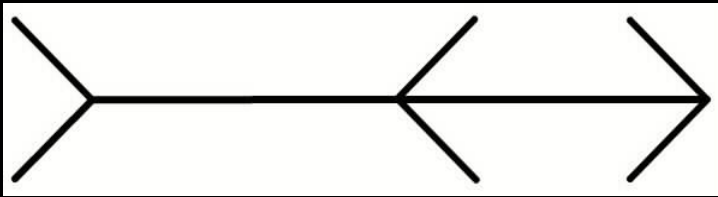
**COMPLEMENTARY  
ALTERNATIVE MEDICINE  
(CAM)**

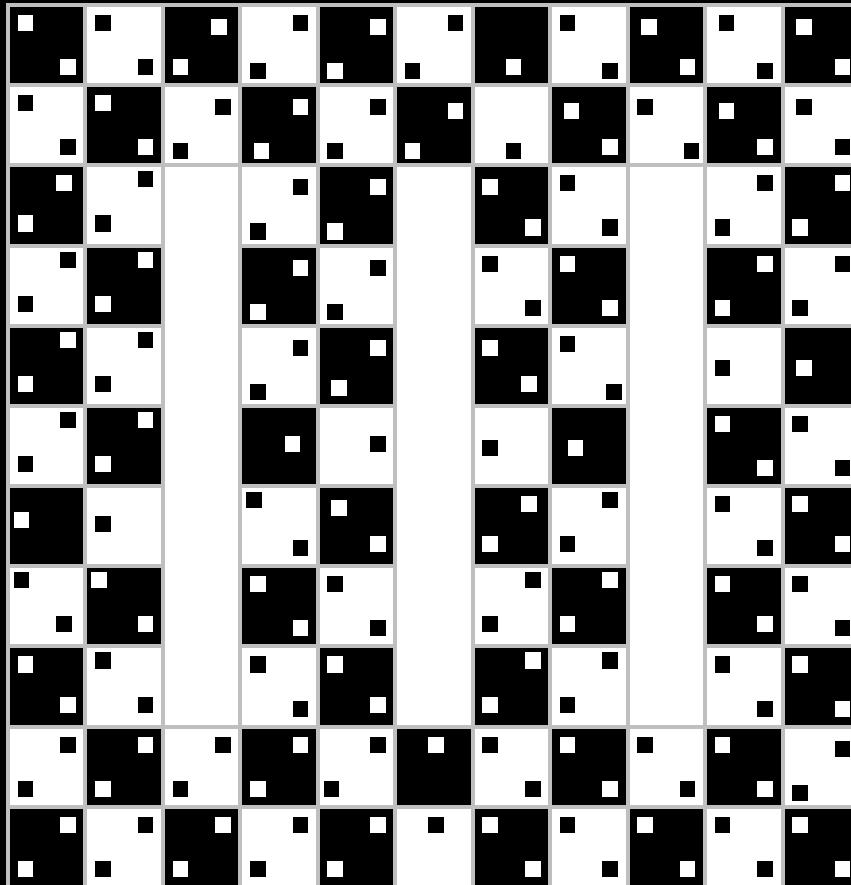
**Are we ready for a  
paradigmshift????**

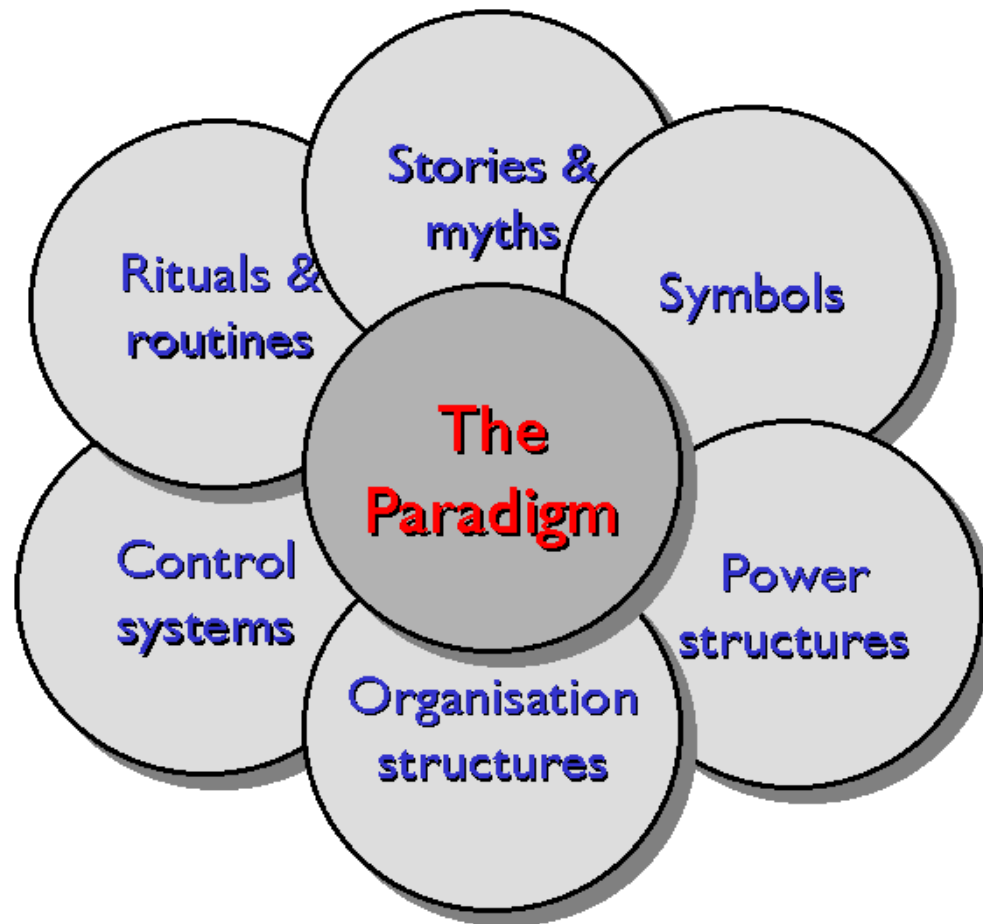
# Definition of Paradigm

generally accepted model for making sense of phenomena in a given discipline at a particular time.

When one paradigm is replaced by another, it is called a paradigm shift.







# Thomas Samuel Kuhn (1922–1996)

Kuhn defines a scientific paradigm as:

- ▣ *what* is to be observed and scrutinized
- ▣ the kind of *questions* that are supposed to be asked and probed for answers in relation to this subject
- ▣ *how* these questions are to be structured
- ▣ *how* the results of scientific investigations should be interpreted

# Paradigmshift????

“Animals, which move, have limbs and muscles; the earth has no limbs and muscles, hence it does not move.”

Scipio Chiaramonti, Professor of Philosophy and Mathematics at the University of Pisa, 1633:

“Men might as well project a voyage to the Moon as attempt to employ steam navigation against the stormy North Atlantic Ocean.”

Dionysus Lardner, Professor of Natural Philosophy and Astronomy at University College, London , 1838

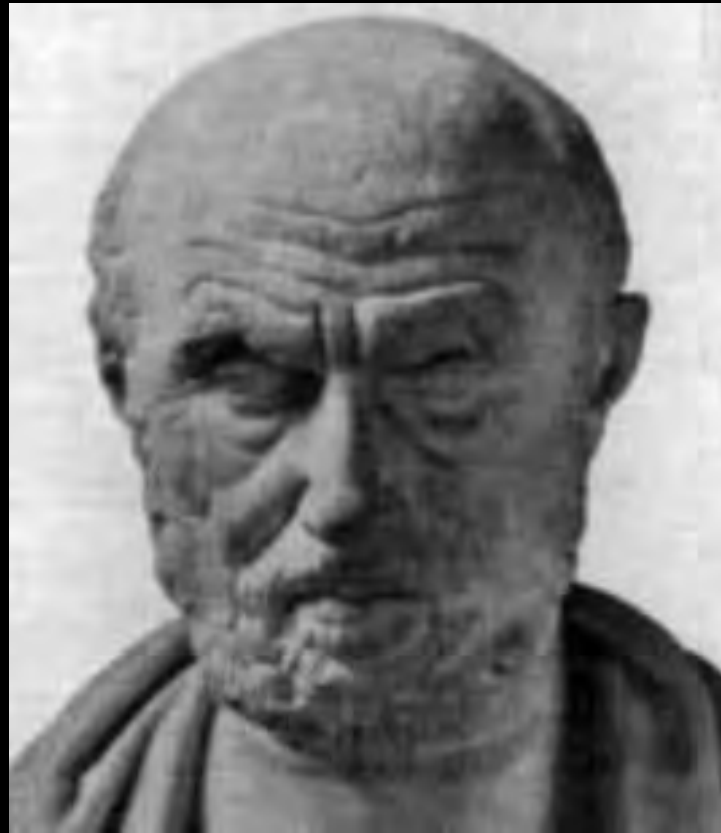
“Airplanes are interesting toys but of no military value.”

Marechal Ferdinand Foch, the World War I French General, credited with having the most original and subtle mind in the French Army, 1924

# Paradigmshift??????

- ▣ Can Pomegranate Juice Reverse Heart Disease?
- ▣ Can you improve your genetic make up by having better sex?
- ▣ Can Meditation reduce the PSA in men with prostate cancer?

# HIPPOCRATES



Free women: Chaucer's Wife of Bath (here in a 15th-century manuscript) was not constrained by spiritual or legal considerations from enjoying the road to Canterbury. (Below) 13th-century pilgrims, both male and female, seek cures at the shrine of St Edward the Confessor in Westminster Abbey.



en mes: nll nest card **G**rant poyle gantz sen pare **E**t i voit haraude cu saint e bair

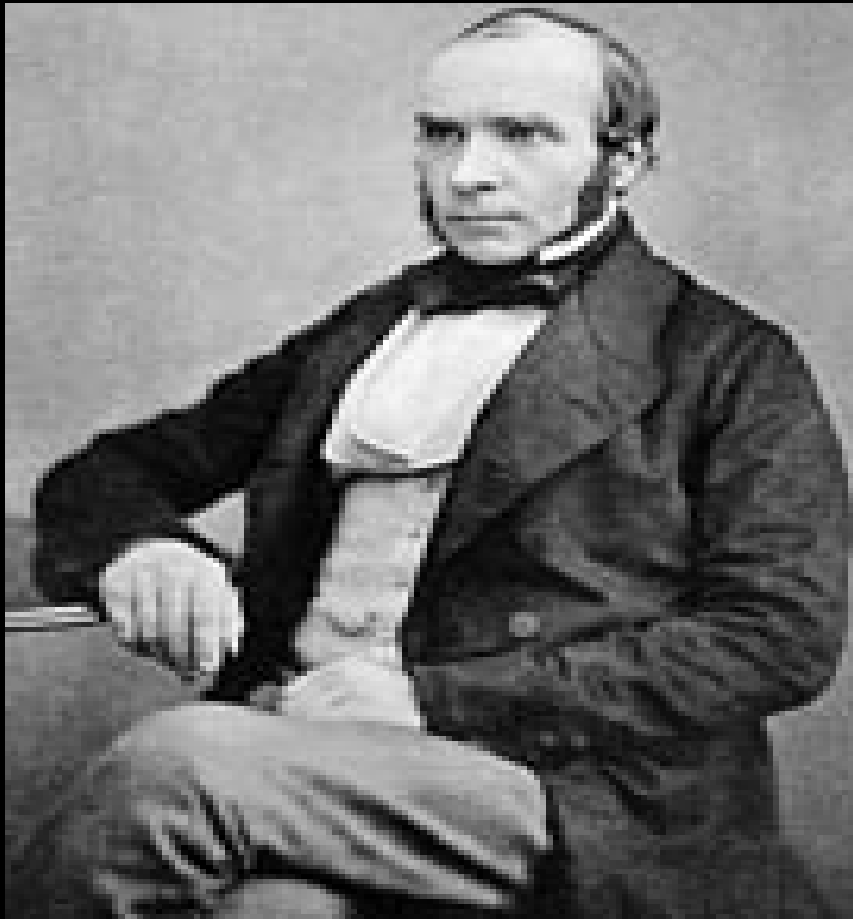
# WILLIAM HARVEY



© MPG 5115

# EDWARD JENNER





JOHN SNOW

# John Snow's Map of Cholera Outbreak Broad Street Pump, London





RUDOLF  
VIRCHOW

ROBERT  
KOCH



# EVIDENCE-BASED MEDICINE

Evidence-based Medicine  
is the process of systematically  
reviewing, appraising and using  
clinical research findings to aid the  
delivery of optimum clinical care to  
patients.

# Paradigmshift!!!!

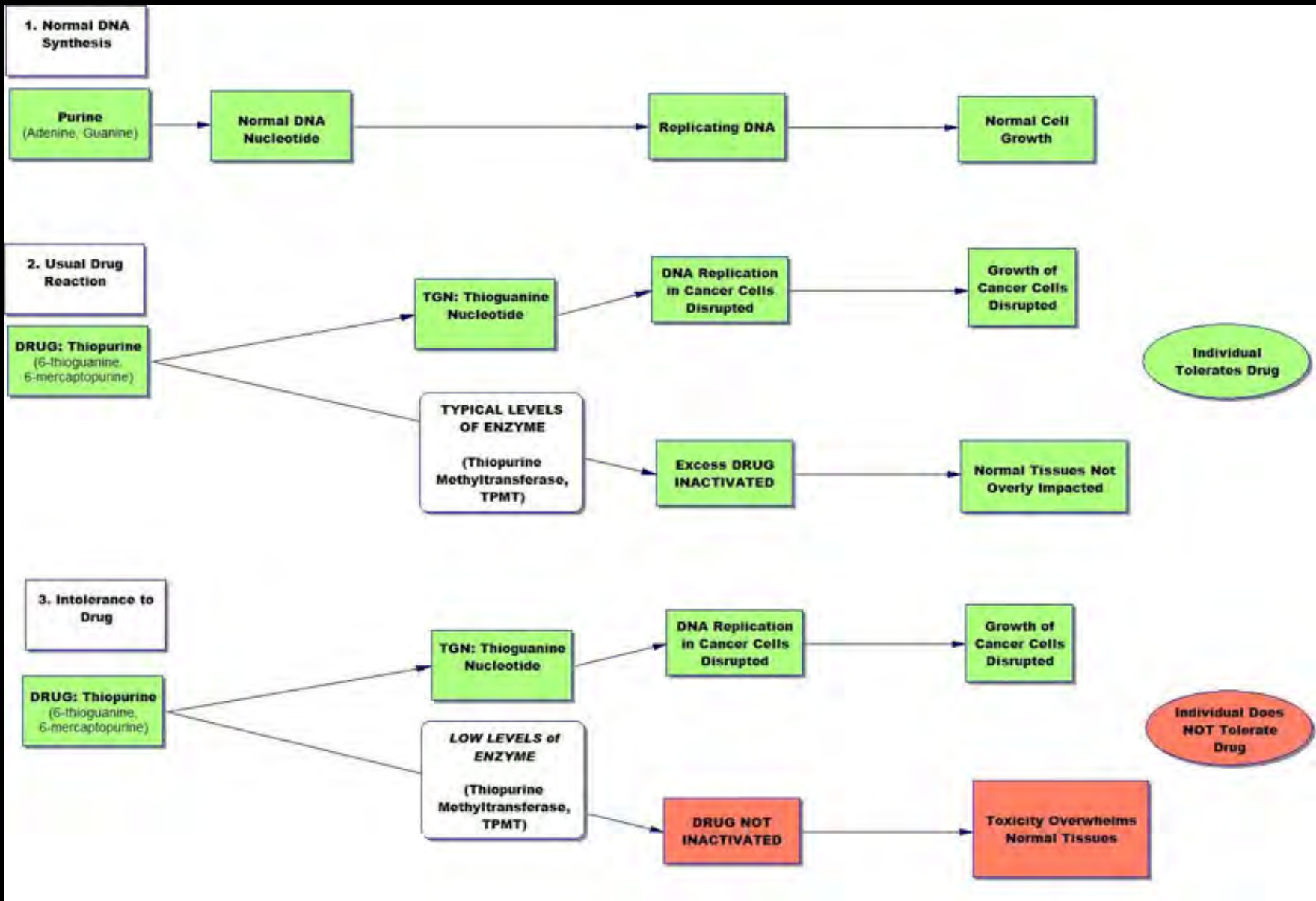
- ▣ Is there space for Interaction and Individuality in our current paradigm?
- ▣ Are we ready for a new paradigm?
- ▣ Is there a place for CAM ?

# Pharmakogenetic

The discipline of pharmacogenetics examines how genetic variations in an individual correlate with their responses to a specific medication. The ultimate goal of pharmacogenetics is to develop medical treatments tailored to the individual.

Information about a patient's genetic profile may allow for an individualized assessment of patient risk and customized design and delivery of therapies.

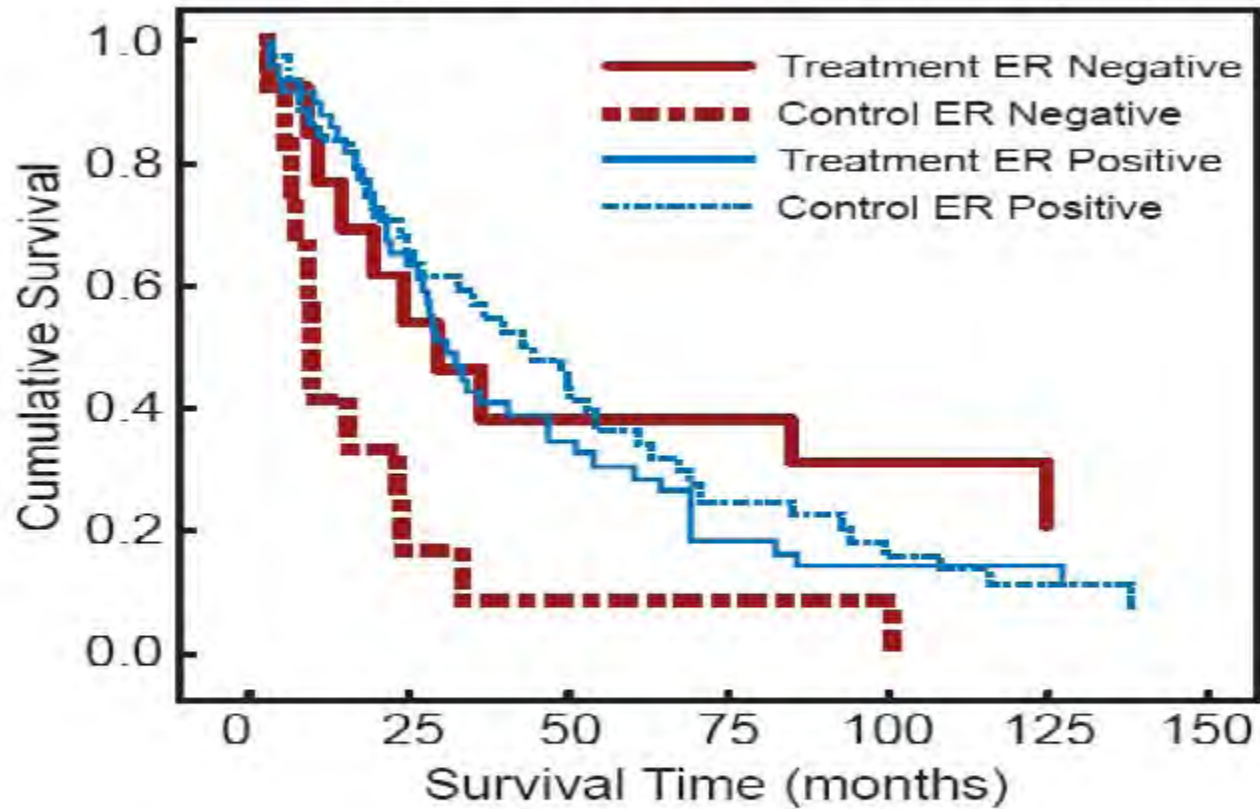
Genetic information and environmental factors interact to produce disease states, influence treatments, and impact medical outcomes.



# Effect of diet on survival rates of breast cancer

Changing diet reduced the risk of breast cancer recurrence and improves survival rates more among ER-negative than ER-positive women.

## Treatment vs. Control Survival by ER Status



Spiegel et al., Cancer 2007;110:1130-7.

Synergy is Important:

A reductionistic approach often misses the interactions, thereby increasing type 2 error

Most biologically active ingredient of the Indian spice turmeric

- Used in Ayurvedic medicine for more than 4,000 years
- Antitumor: induces apoptosis in cancer cells and suppresses MDM2, an oncogene
- Free radical scavenger, inhibits oxidative DNA damage
- Anti-inflammatory: inhibits glutathione S-transferase
- Inhibits beta-amyloid, reducing risk of Alzheimer's

After 2 grams of curcumin, serum levels were undetectable or very low

When given with 20 mg of piperine (black pepper), as in Ayurveda, bioavailability was increased by 2,000%

Shoba G et al, *Planta Med.* 1998 May;64(4):353-6.

Dietary consumption of fruits and vegetables rich in carotenoids lowers risk of lung cancer, CHD, cataracts, and age-related macular degeneration

However, intervention trials of supplemental beta-carotene increased the risk of lung cancer

Smoking induces inflammatory neutrophils into airways

Beta-carotene supplements inhibit myeloperoxidase, which increases formation of hydroxyl free radicals

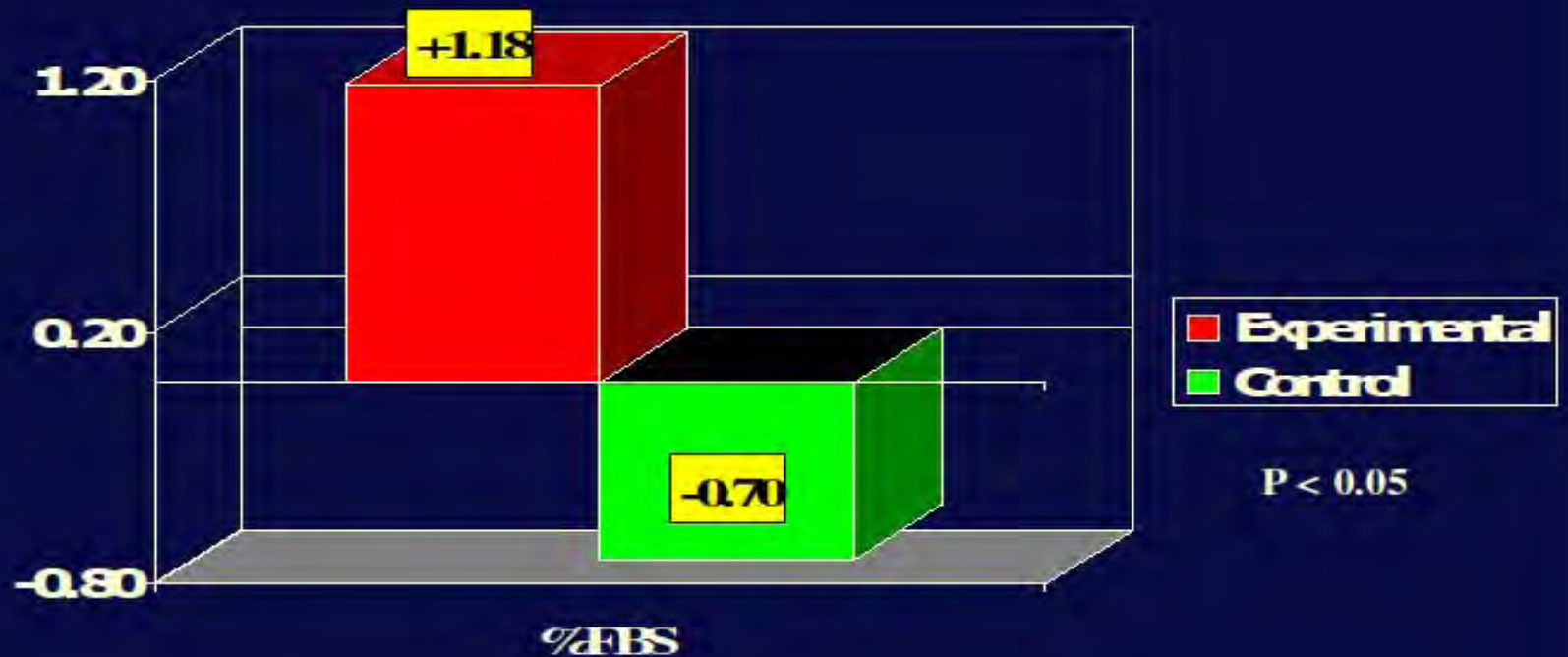
Thus, dietary beta-carotene inhibits inflammation whereas supplements increase it

van Helden et al, Free Radic Biol Med. 2009 Jan 15;46(2):299-304.

Therefore:

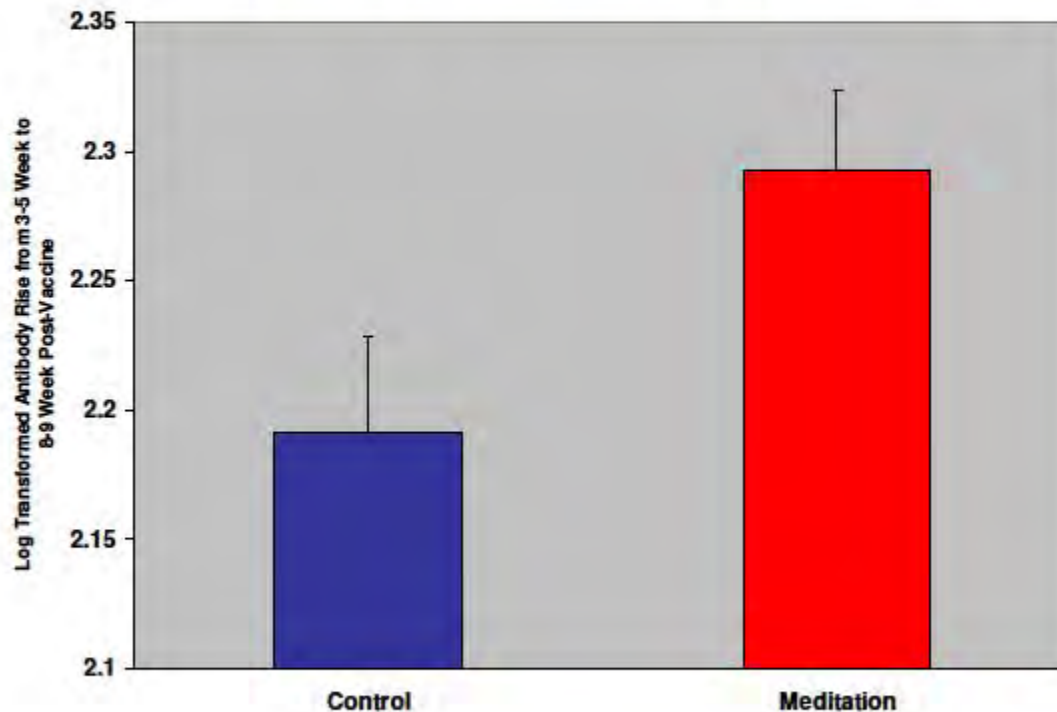
Have a vegetable curry  
Tonight!!!

## Blood Flow to the Heart



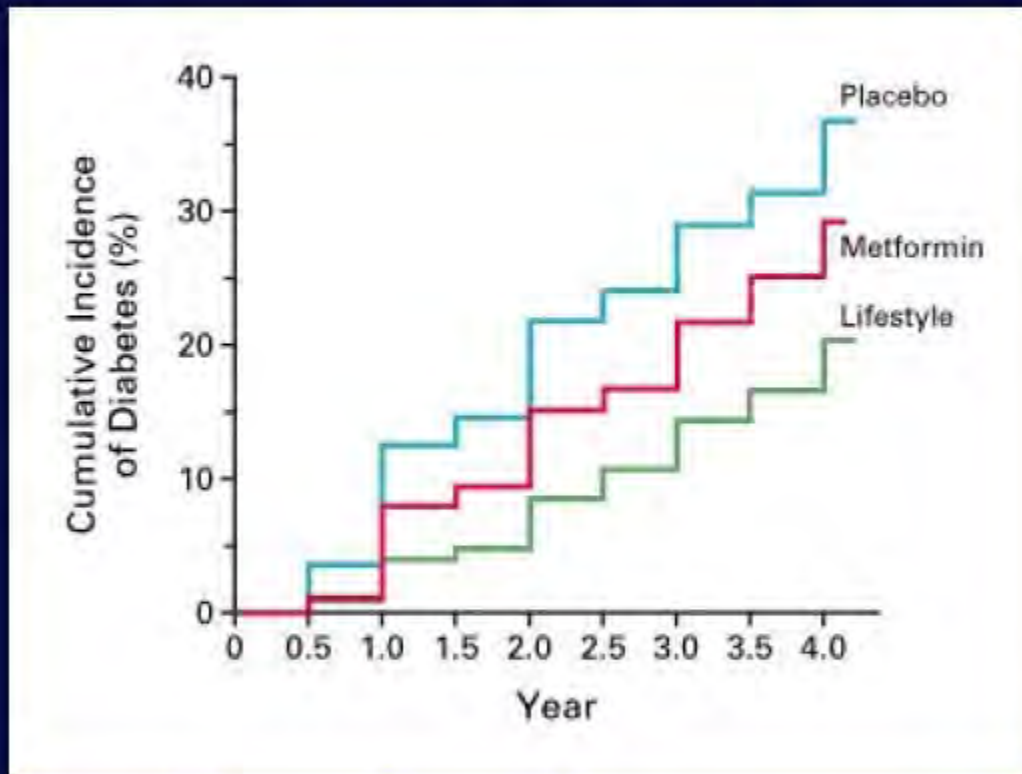
Sumner M, Eller M, Weidner G, Daubenmier J, Chew MH, Marlin R, Raisin CJ, Ornish D. Am J Cardiol. 2005;96:810-14.

## Meditation effects on antibody titers to influenza vaccine



Davidson RJ, Kabat-Zinn J, et al. Psychosomatic Medicine 2003;65:564–570.

# Cumulative Incidence of Diabetes



Diabetes Prevention Program Research Group,  
N Engl J Med 2002;346:393-403



THE NEW ENGLAND  
JOURNAL OF MEDICINE

- Volunteers were given nasal drops containing rhinovirus. All were infected but not everyone developed a cold.

- Those reporting only 1-3 types of relationships had more than four times the risk of developing a cold as those reporting 6 or more types of relationships.

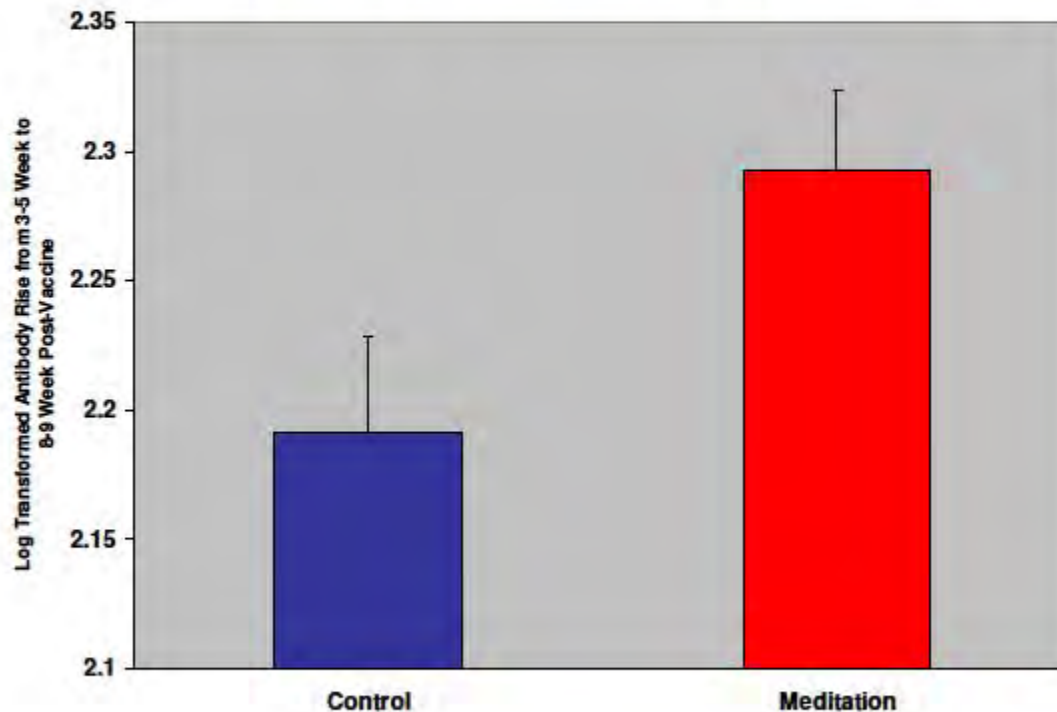
Cohen S et al. JAMA. 1997; 277:1940-1944.

- Patients who were HIV positive that were depressed had more than double the mortality rate of those who had a more positive outlook.
- Depression predicted a significantly more rapid decline in CD4 lymphocyte counts.

Burack JH et al. JAMA. 1993 Dec 1;270(21):2568-73.

Mayne TJ et al. Arch Intern Med. 1996 Oct 28;156(19):2233-8.

## Meditation effects on antibody titers to influenza vaccine



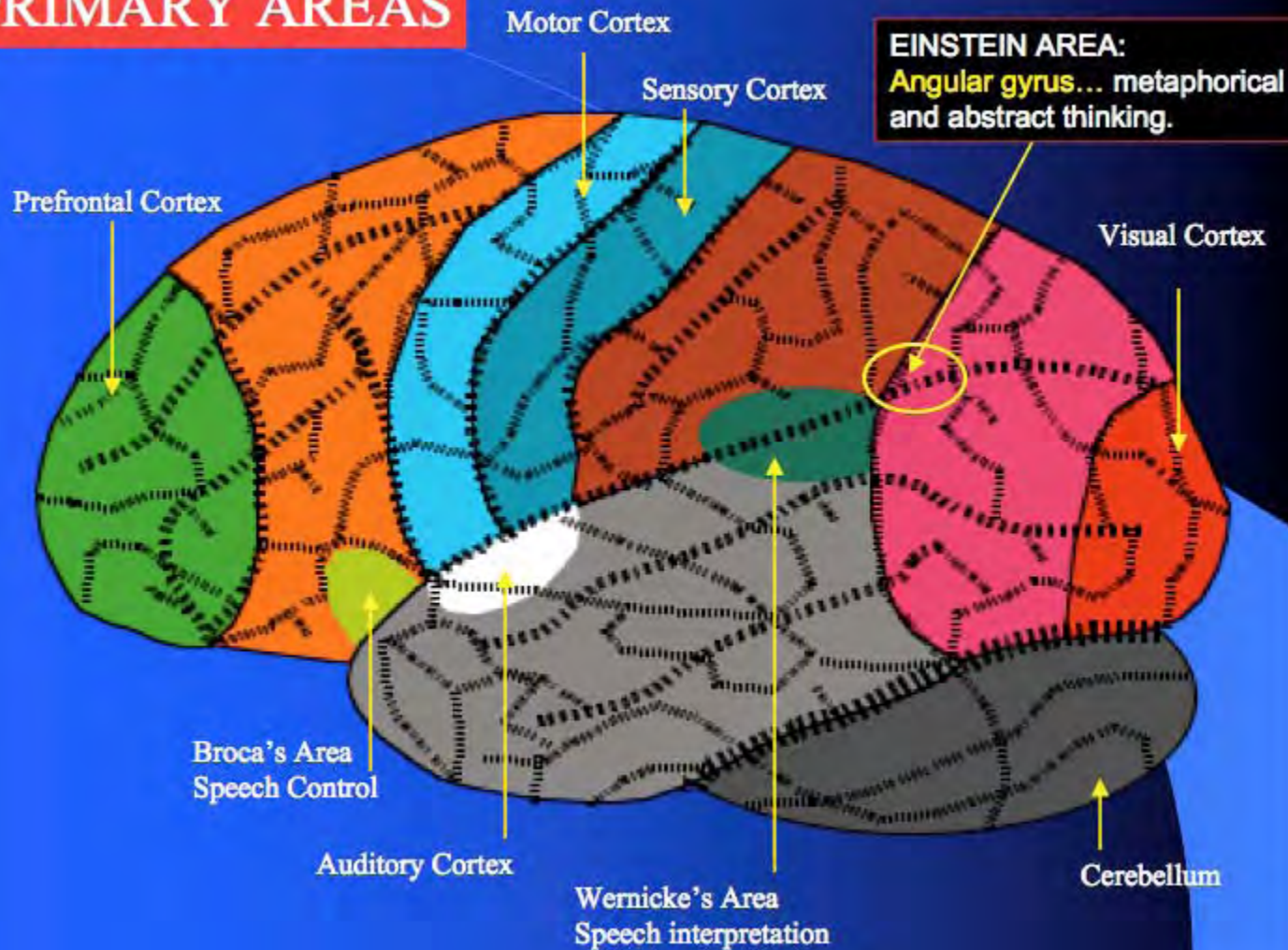
Davidson RJ, Kabat-Zinn J, et al. Psychosomatic Medicine 2003;65:564–570.

**Scientists studied 119 men and 40 women who were undergoing coronary angiography. The more people felt loved and supported, the less coronary heart disease they had at angiography, independent of other factors.**

Seeman TE, Syme SL. *Psychosom. Med.* 1987; 49(4): 341-54.

# Neuroplasticity

## PRIMARY AREAS



When you eat  
healthier, manage  
to exercise,  
and have better sex...

...you may grow so  
many new brain  
neurons your brain  
gets measurably  
bigger....

# Neurogenesis

## Increase Neurogenesis

- Chocolate
- Tea
- Blueberries
- Alcohol (moderate)
- Stress management
- Moderate exercise
- Cannabinoids

## Decrease Neurogenesis

- Saturated fat
- Sugar
- Nicotine
- Alcohol (excessive)
- Chronic stress
- Sedentary lifestyle
- Opiates & cocaine

## Chronic Stress

- Reduces overall hippocampal volume in animal models
- **Changes dendrite morphology in CA3 area**
- Impairs HPA axis regulation
- Affects hippocampal-dependent memory

Conrad (2006) *Behav Cogn Neurosci Rev* 5: 41-60

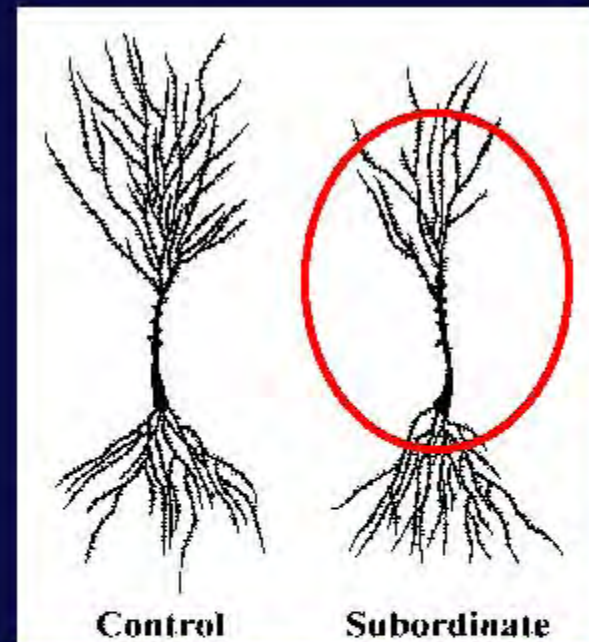
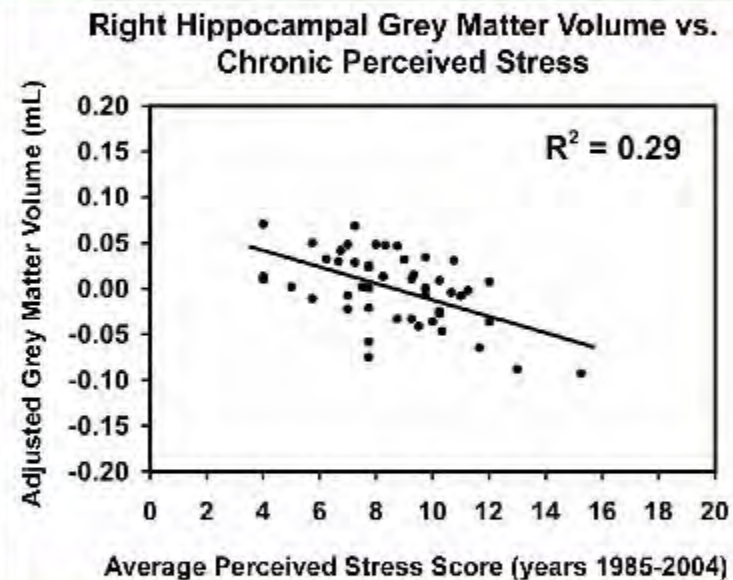
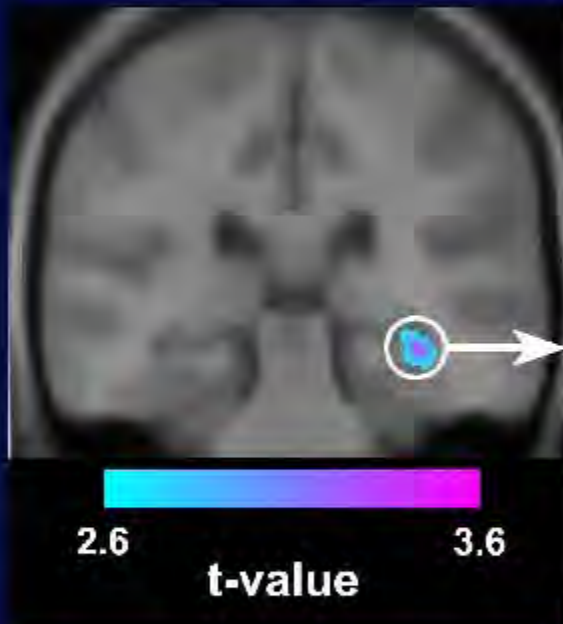


Figure 2. Camera lucida drawings of representative Golgi-impregnated CA3 pyramidal neurons from control (not subjected to stress) and subordinate tree shrews (after 28 d of psychosocial stress).

Magariños et al. (1996) *J Neuro*

## Chronic Stress Decreases Hippocampal Volume



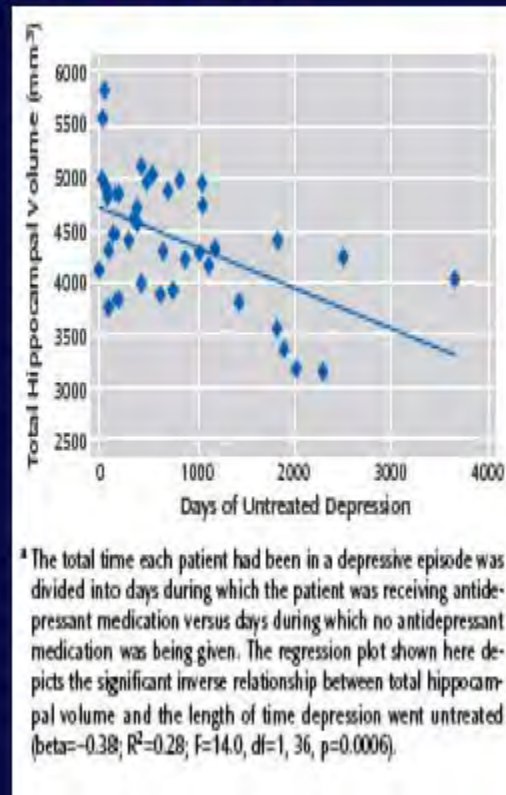
MNI coordinates for peak correlation:

$x = 35, y = -34, z = -9, t = 3.18, p = 0.025$  FWE-corrected

## Depression Decreases Hippocampal Volume

- Associated with ↓ hippocampal volume on MRI
- ↓ volume correlates with ↑ symptom severity and ↑ illness duration
- Assumed to reflect, in part, the effects of chronic stress

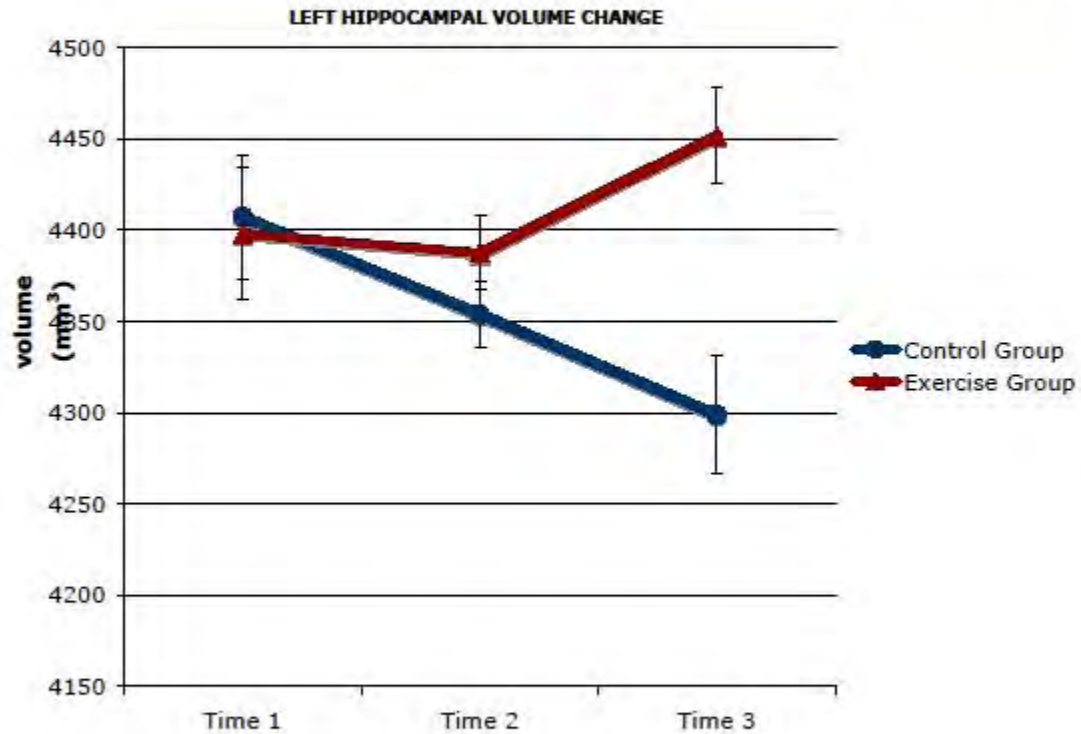
Campbell (2004) *Am J Psychiatry*  
161: 598-607



<sup>a</sup> The total time each patient had been in a depressive episode was divided into days during which the patient was receiving antidepressant medication versus days during which no antidepressant medication was being given. The regression plot shown here depicts the significant inverse relationship between total hippocampal volume and the length of time depression went untreated (beta=-0.38; R<sup>2</sup>=0.28; F=14.0, df=1, 36, p=0.0006).

Sheline et al. (2003) *Am J Psychiatry*

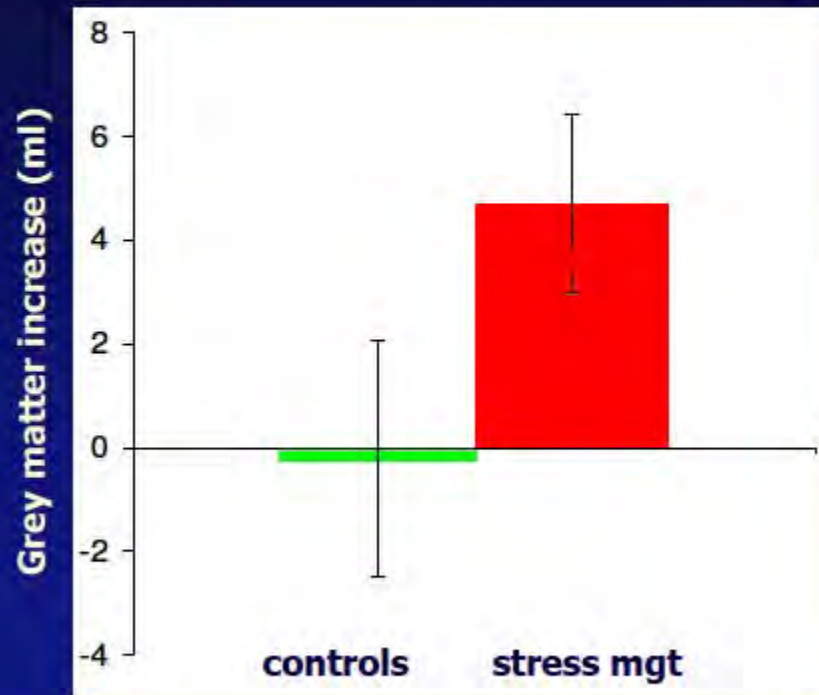
# Hippocampus volume change



Erickson KI et al, *Br. J. Sports Med.* 2009;43;22-24

# Cognitive therapy increases brain size

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de Lange et al. Brain 2008

# Gene Expression Modulation by Intervention with Nutrition and Lifestyle Study (GEMINAL)

Gene expression in over 500 genes was beneficially affected.

Ornith D et al., Proc Nat Acad Scii 2008; 105: 8369.

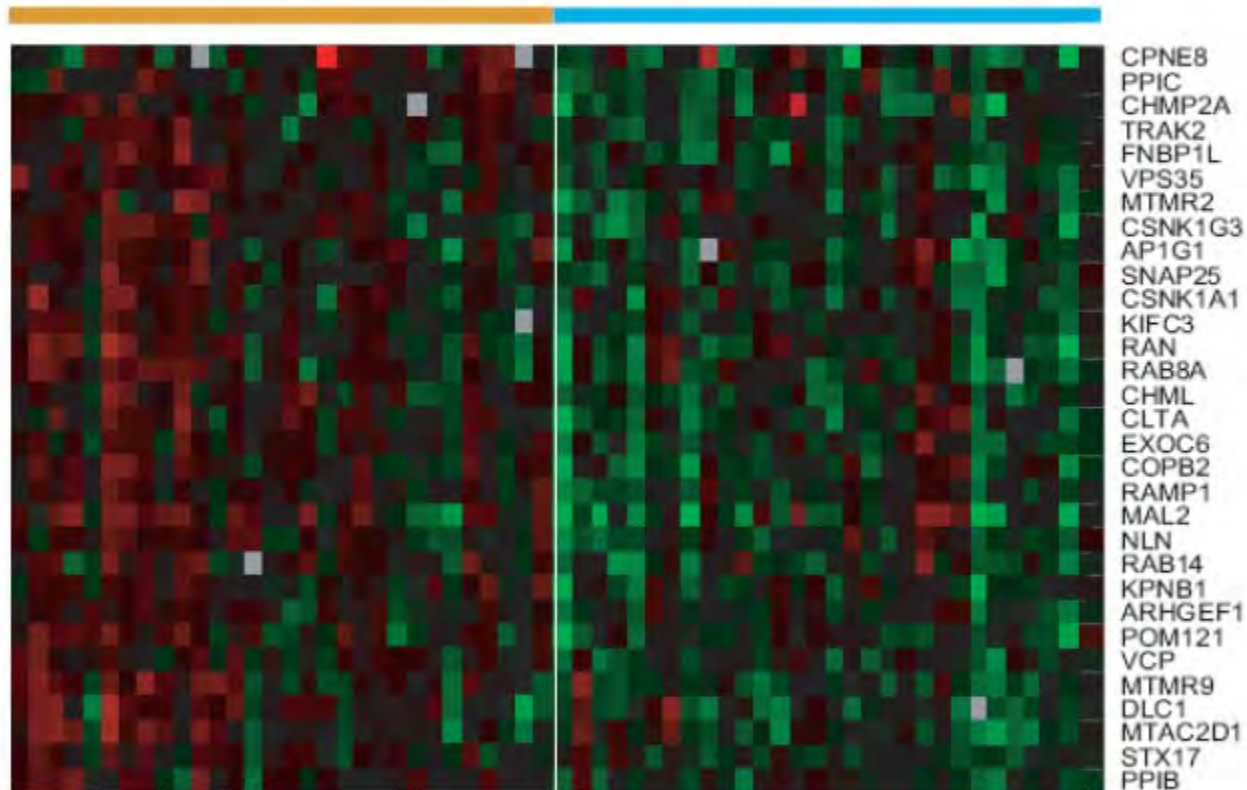
Genes controlling tumor formation, oxidative stress, and inflammation were downregulated.

a set of RAS family oncogenes (RAN, RAB14, RAB8A) were downregulated.

Heatmap of the gene ontology group "Intracellular Protein Traffic" illustrating downregulation of these 31 genes.

Pre-intervention

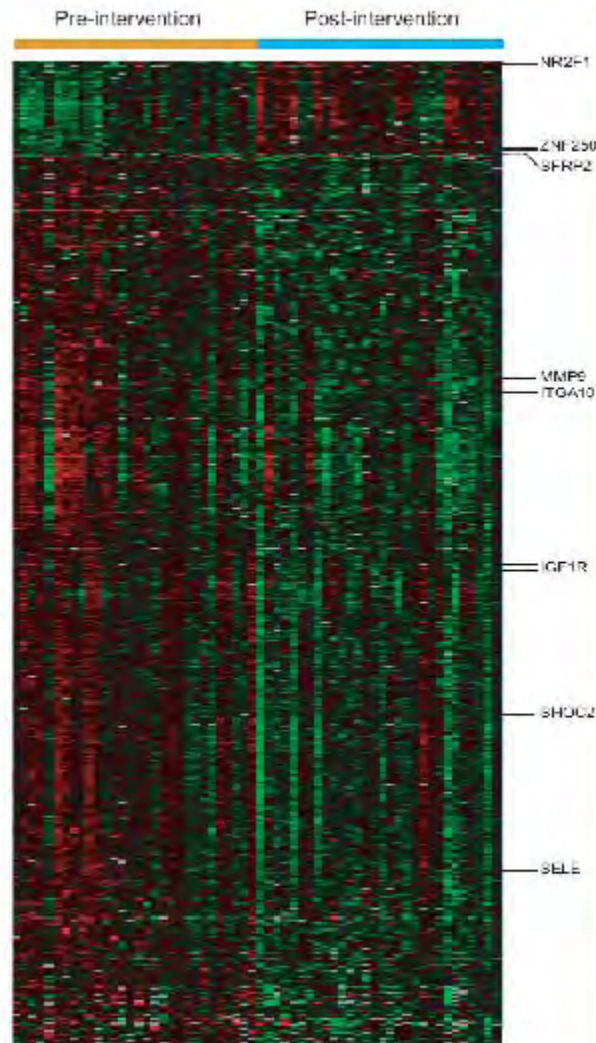
Post-intervention

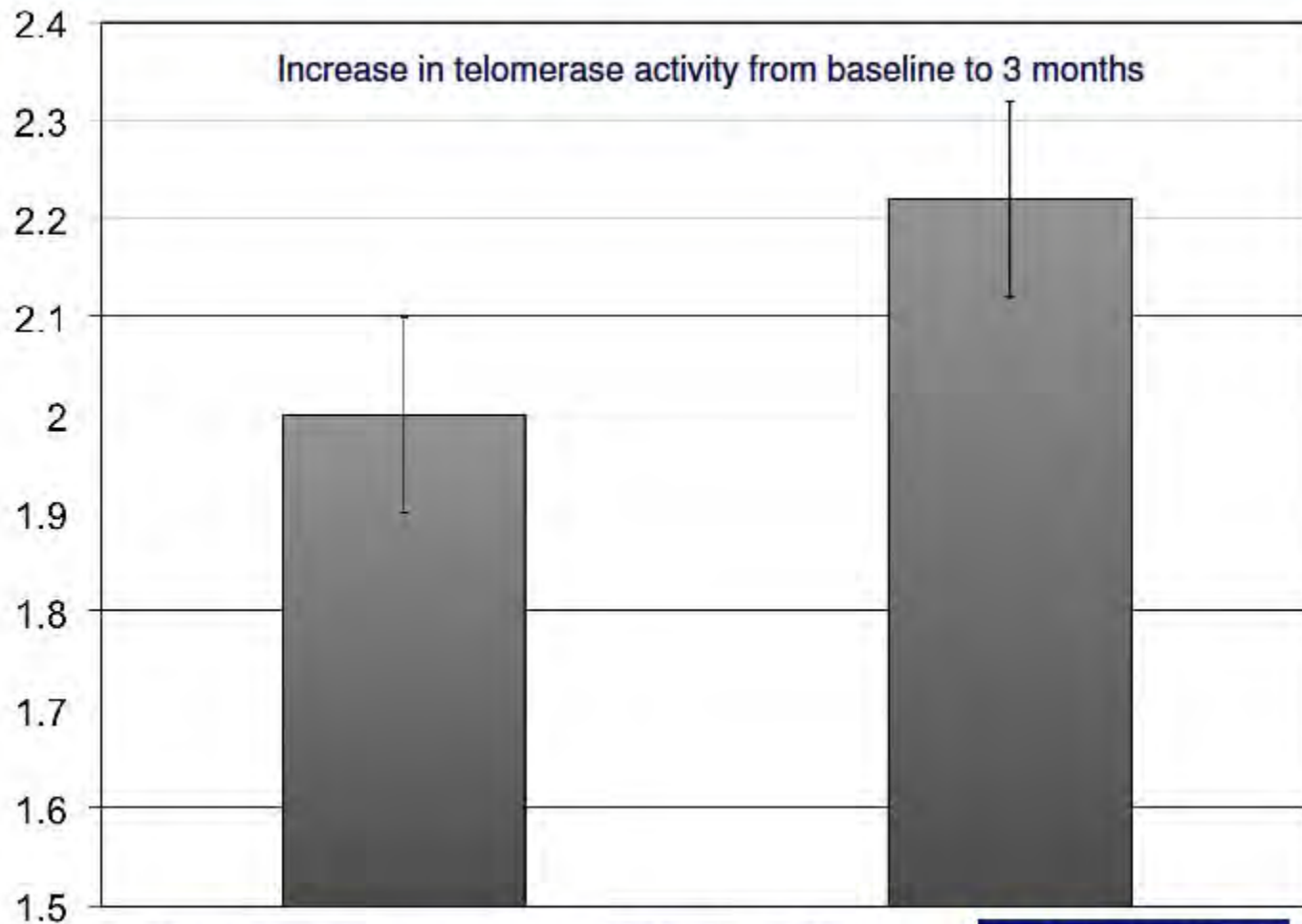


**Ornish et al. *Proc Nat Acad Sci USA* 2008; 105: 8369.**

**Heatmap showing  
48 upregulated genes  
(red) and  
453 downregulated  
genes (green)  
pre- and post-  
intervention**

**Ornish et al.  
*Proc Nat Acad  
Sci USA 2008;*  
*105: 8369.***

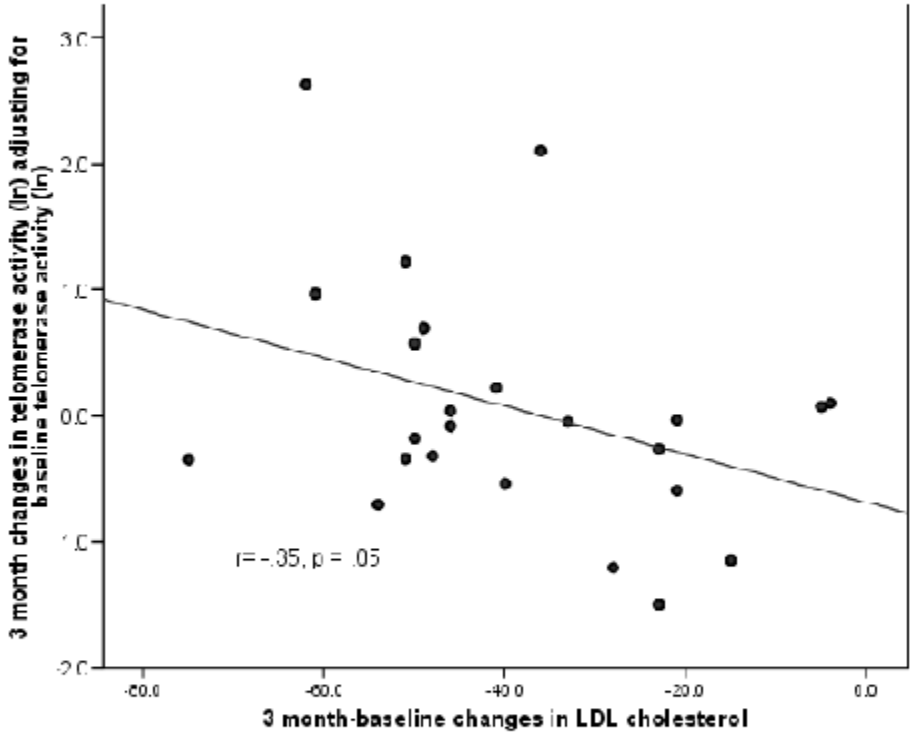




Ornish D et al. *Lancet Oncol.* 2008; 9: 1048–57.

$p < 0.05$  (two-tailed)

Figure 1: Association of changes in telomerase with changes in LDL-cholesterol

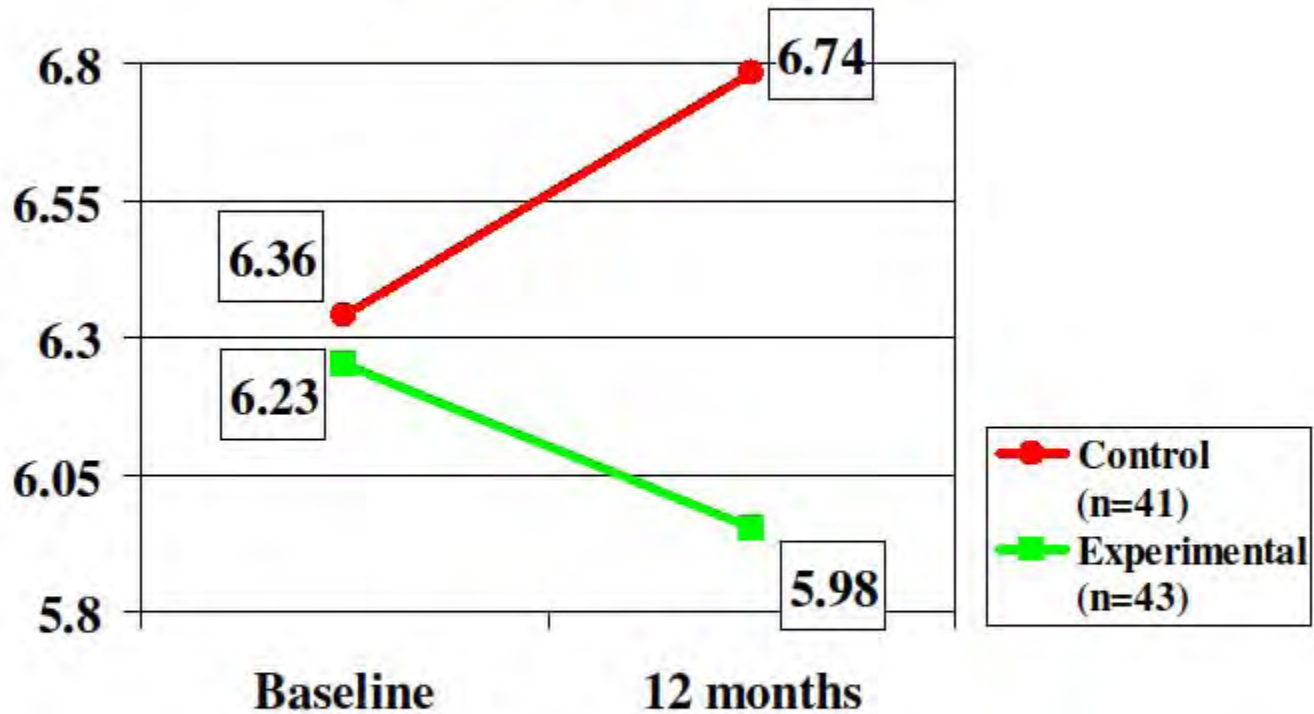


# PSA and Life style modification

## Patient Selection Criteria

- 93 men with biopsy-proven prostate cancer, PSA 4-10, Gleason <7
- All patients chose to do active surveillance for reasons unrelated to this study
- Randomly assigned to comprehensive lifestyle changes or usual care

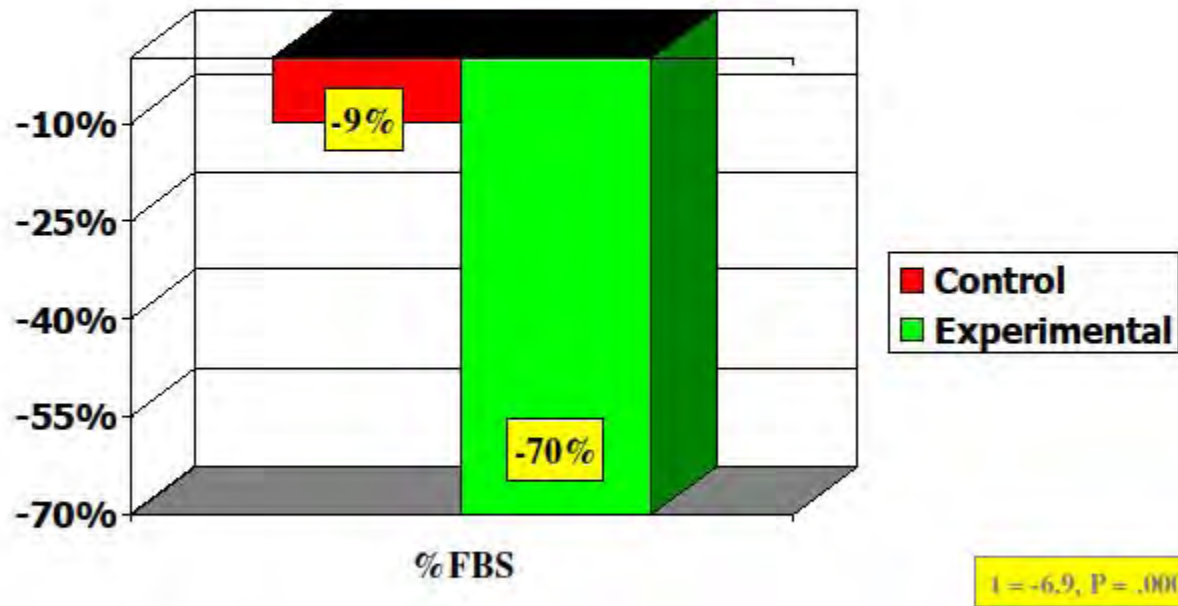
## Changes in PSA



P= 0.002

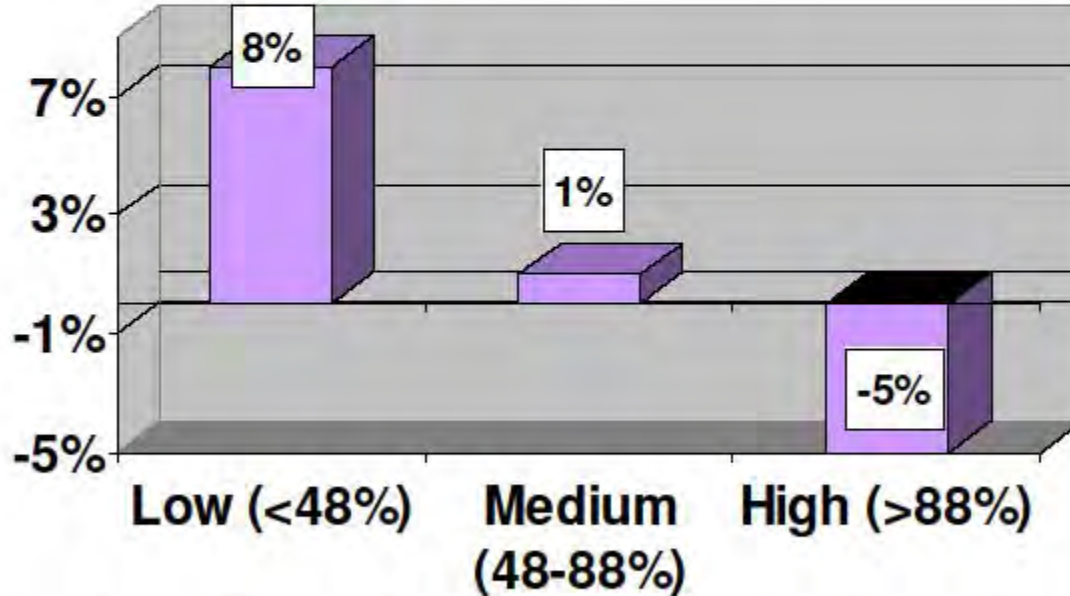
Ornish D et al. *Journal of Urology*. 2005;174:1065

## Change in Prostate Tumor Growth (LNCaP)



Ornish D et al. *Journal of Urology*. 2005;174:1065

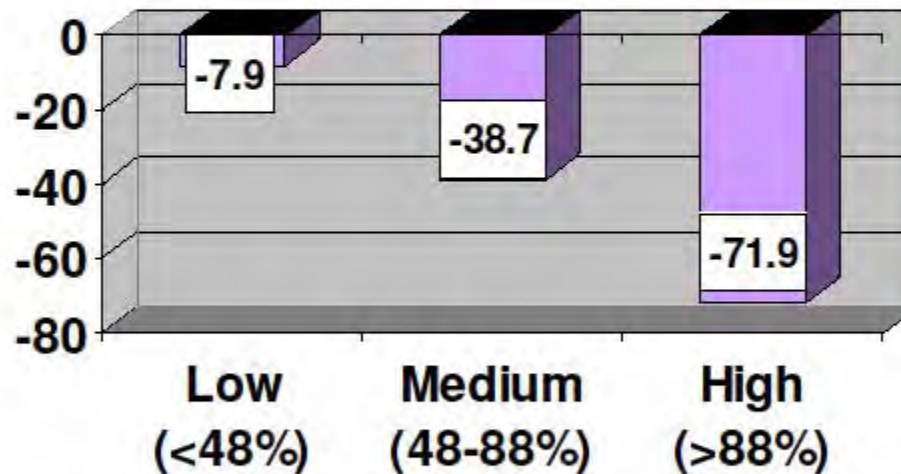
## Degree of Lifestyle Change and Changes in PSA



Ornish D et al. *Journal of Urology*. 2005;174:1065

P= 0.001

## Degree of Lifestyle Change and Inhibition of LNCaP Tumor Growth



■ Baseline-12m change in LNCaP cell growth

Ornish D et al. *Journal of Urology*. 2005;174:1065

P= 0.0001

# Prospective Medicine

Synderman & Hood

**Predictive:** using genome to determine probability of a disease

**Preventive:** motivating to know your individual risk profile

**Personalized:** tailor a lifestyle program, drug, or surgical intervention (Spectrum)

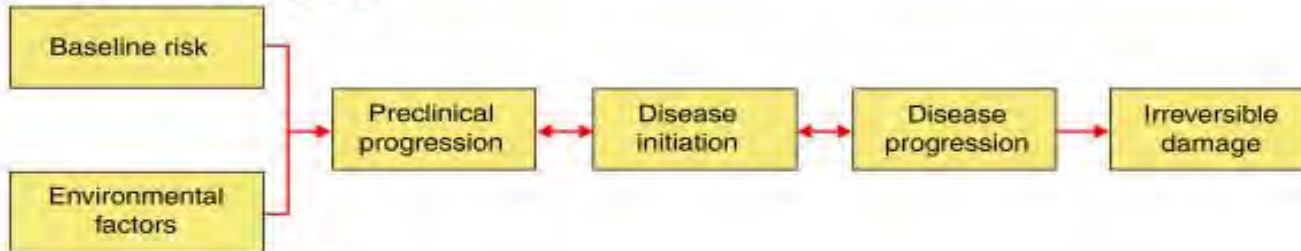
**Participatory:** empowering

(a)

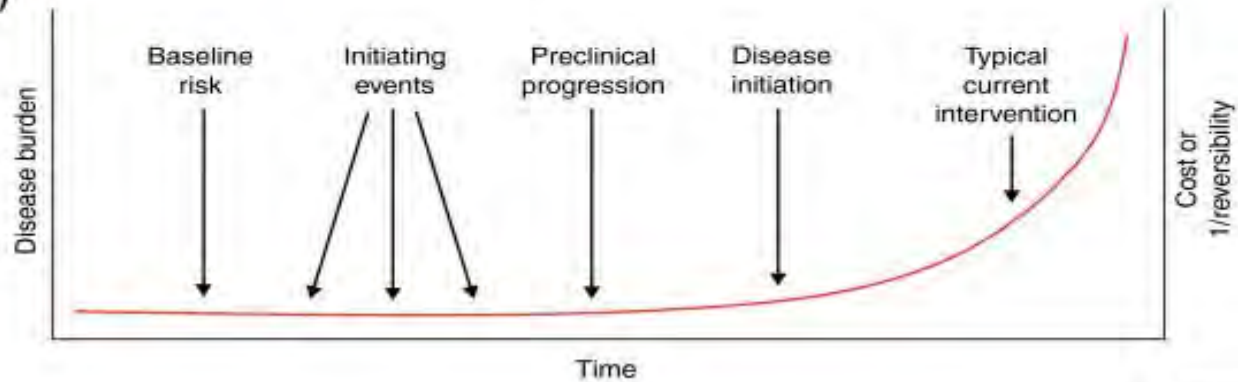
Reductionism: single factor



Emergence: multiple factors



(b)



<http://genomebiology.com/2006/7/2/104>

Emerging scientific technologies provide rich sources of predictive biomarkers, which could transform health care.

Identification of causal biomarkers will enable the development of tools to quantify risk and anticipate disease.

Accurate health risk analysis is rapidly becoming feasible, so health care can become rational, preventive and personalized.

**Prospective health care:  
the second transformation of medicine**

In addition to providing the best conventional care, integrative medicine focuses on preventive maintenance of health by attention to all relative components of lifestyle, including diet, exercise, stress management and emotional well being.

-Snyderman R, Weil A.

Arch Intern Med 2002: 162;395-7

Questions?