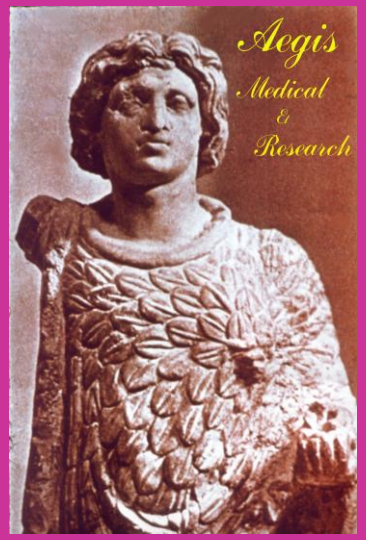
To Chris Akbar 2001

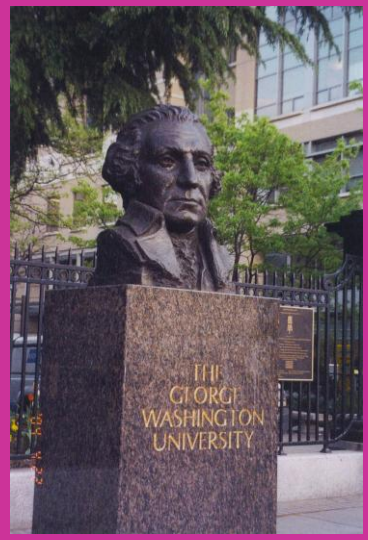
Why Does Cancer Regress Only to Come Back With Vengeance



George Yu

Kushi Conference

July 12, 2009



1999- You're Not One of Us

What You Will Learn Today

- Macrobiotics, Hippocrates, Optimum Health all Have a Common Denominator - Cr
- Cr Caloric Restriction on Cancer
- Short Term Cr and Long Term Cr
- Body Burdens Must Be Decreased
- You Must Know the Exact Stage of Disease
- Know How to Titrate Side Effects of Chemo and Conventional Treatments
- Sex Hormones Important for Long Term

Feb. 25, 2002 Best Case Series N.I.H., Maryland

What Did I Learn
Best Case Series+ 7 Years

- Remissions Occur Within 3 to 6 Months
- Everybody Loses Visceral Fat
- Recurrences if Dietary Abuses Start- Its Dynamic
- About 30% Will Have Complete Remissions

Ryoanji Rock Garden, Kyoto

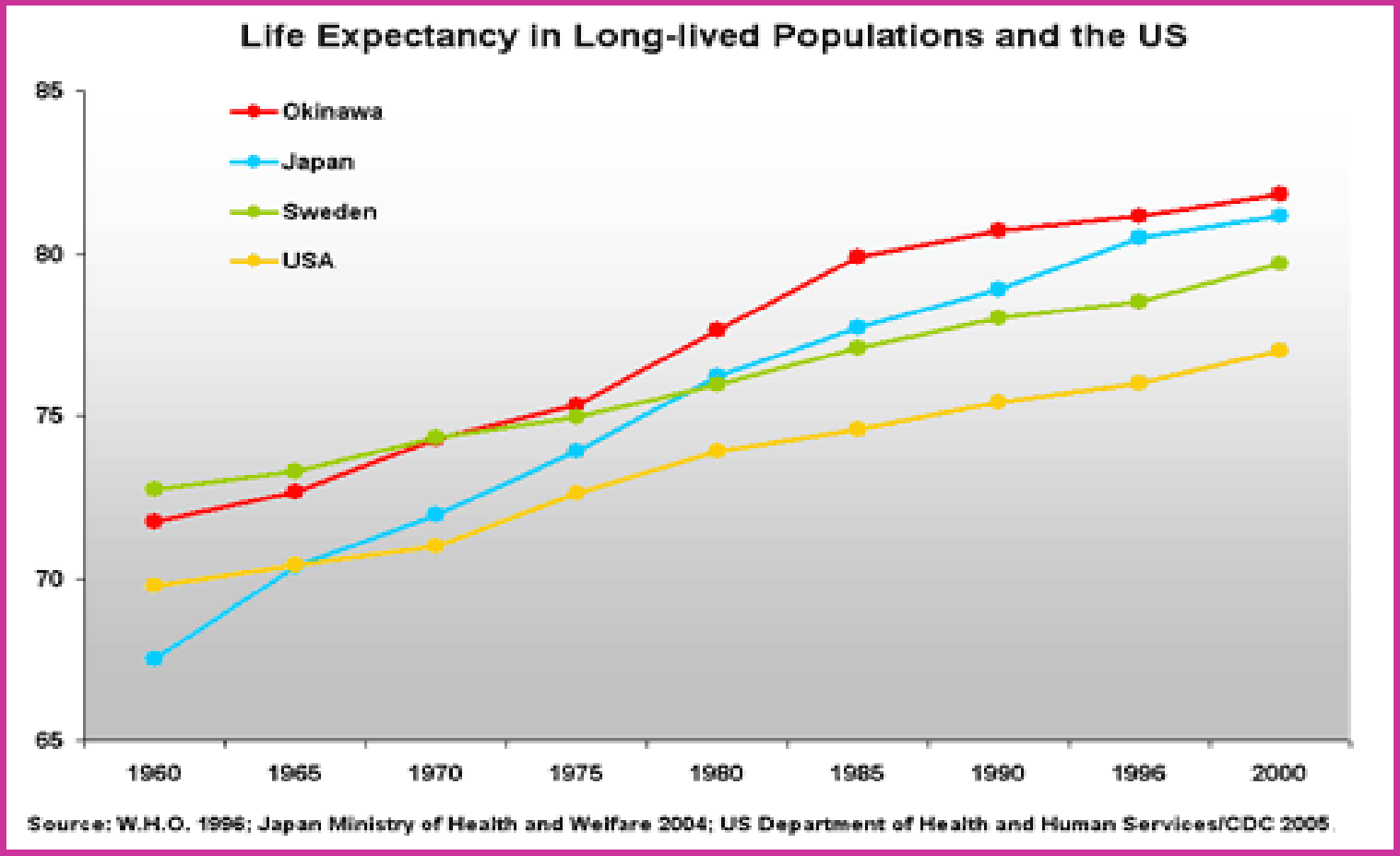
1999 Michio & Evaline Kushi Macrobiotics

Hippocrates Brian Clement 2004, 2008


26 11:43AM
27 11:28AM

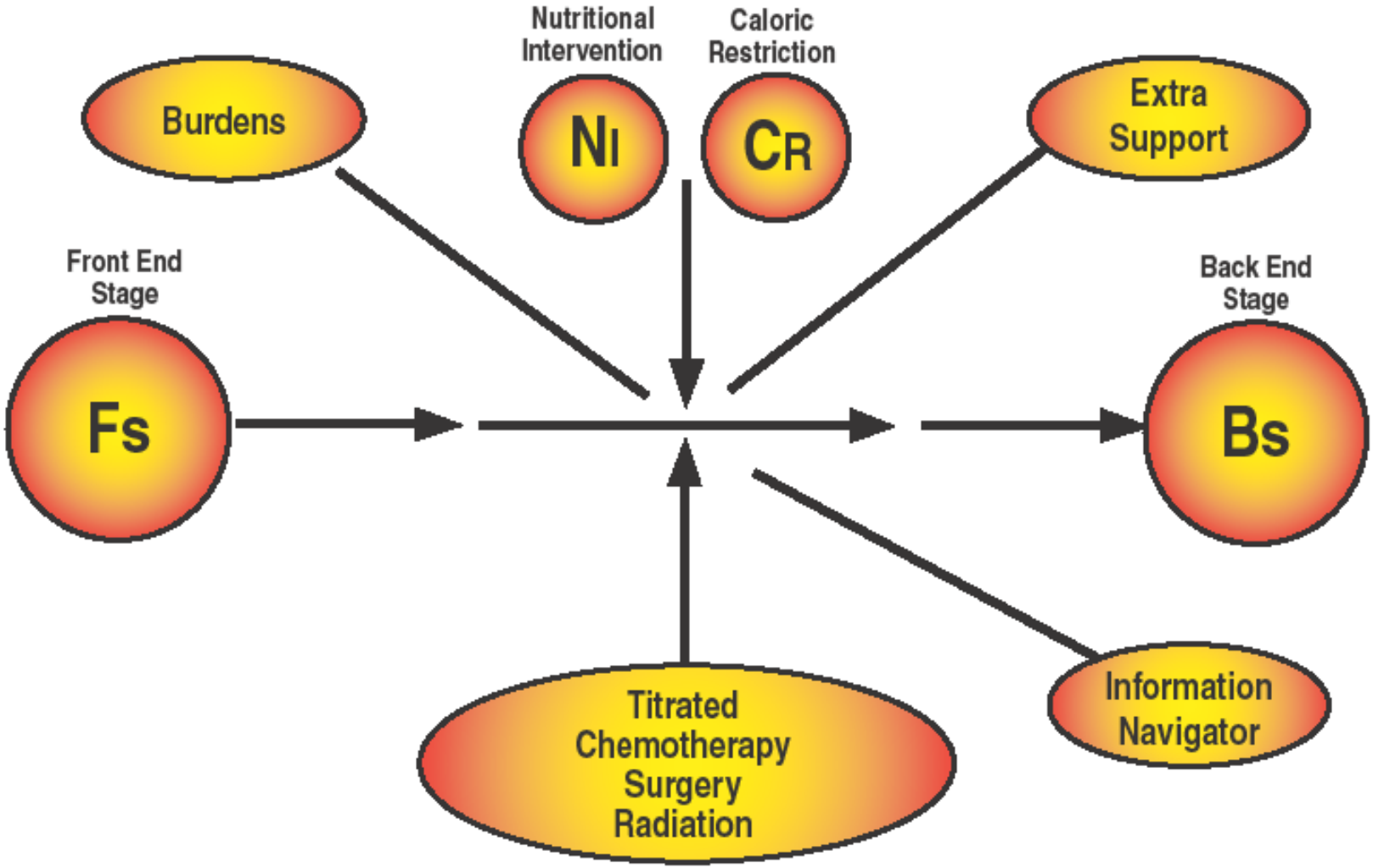
Nicholas Gonzalez, Columbia U. Pancreatic Cancer Study and Pamela McDougle, Cancer Nutritionist

Science From Aging Studies
Low Caloric intake
Okinawans In Japan



Our Philosophy & Practice

George Yu, M.D.



Though Each Group Has Different Philosophy & Foods for Health

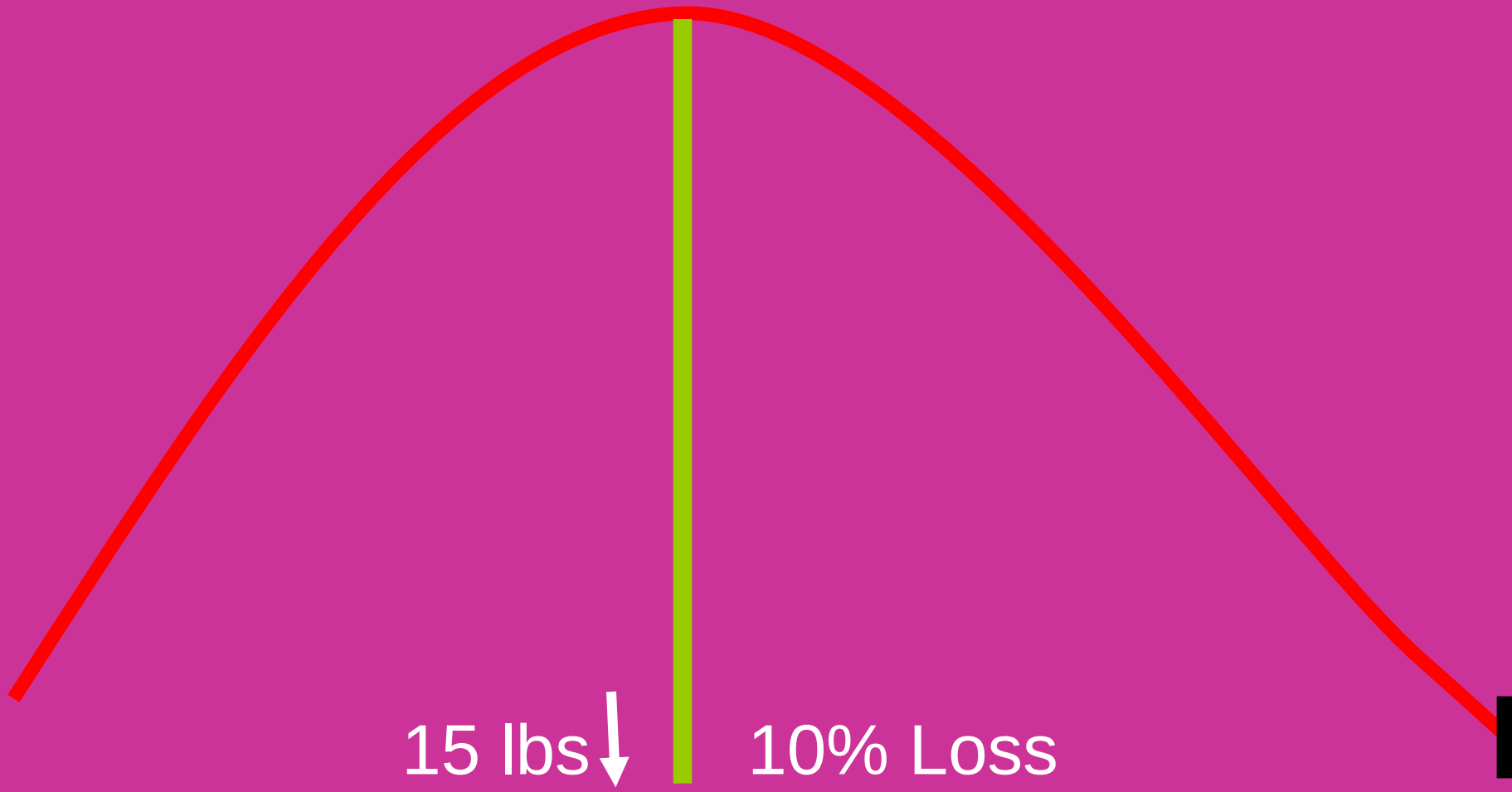
The Results Are Similar

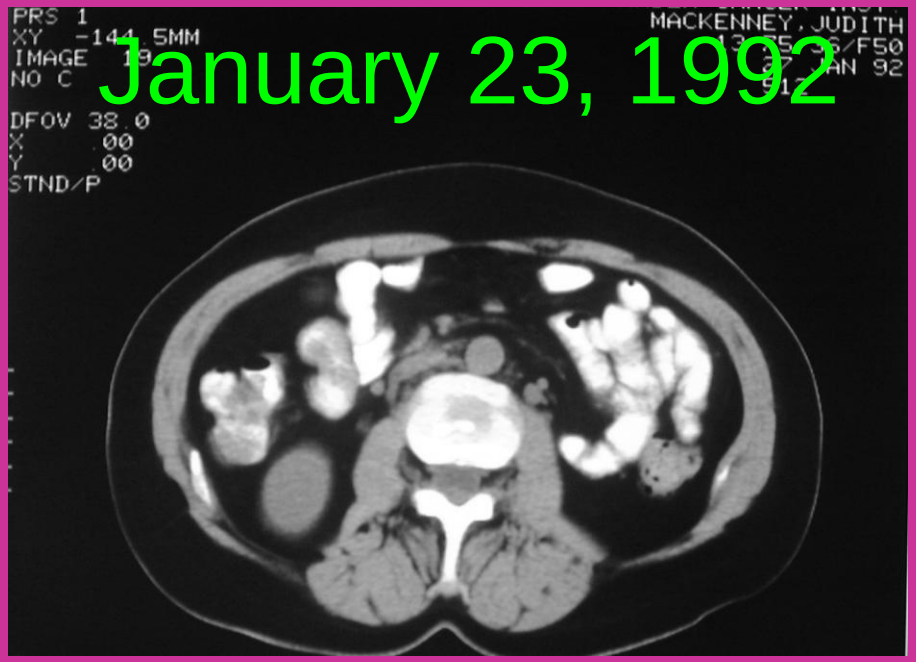
Common Denominator:
Nutritionally High

Caloric Low Foods

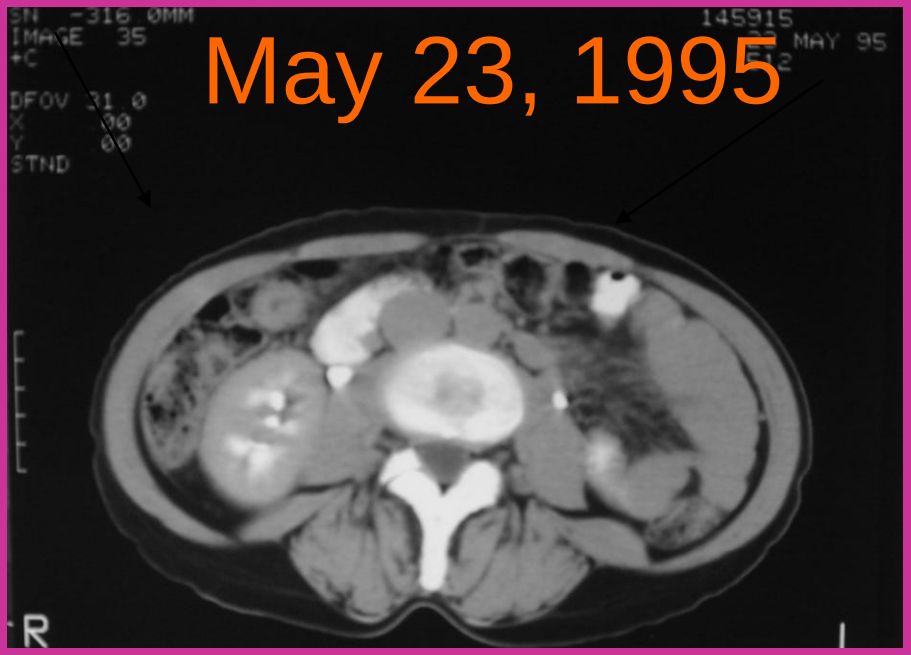
1500- 1800 Calories / Day

Normalgram of Wt. Loss with Macrobiotics, Hippocrates, Others 1500 -1800 Calories/ day





January 23, 1992



May 23, 1995

Visceral Defatting

September 14, 1998

Caloric Restriction

1500 -2000 Calories

It Does Not Mean Starvation

It Means High Nutrition

It Means High Volume of Food

It Means Flavor & Texture Variations

You Will Loose 10% of Weight

Caloric Restriction (1 degree lower) Cachexia

Table 2. **Nutritional Alterations in Starvation and Cachexia***

Variable	Starvation	Cachexia
Body weight	−	0/−
Body cell mass	−	−−−
Body fat	−−−	−−
Caloric intake	−−−	−−−
Total energy expenditure	−−	−
Resting energy expenditure	−−−	++
Protein synthesis	−−−	+/−
Protein degradation	−−−	+++
Serum insulin	−−−	+++
Serum cortisol	0	++

* Minus sign = decrease; plus sign = increase; 0 = no change.

Kotler,Ann Int Med 2000.133,622

Cachexia is Very Stressful

Table 3. **Metabolic Alterations in Cachexia**

Protein
Increased urinary nitrogen loss
Increased protein turnover
Decreased skeletal muscle protein synthesis
Increased skeletal muscle protein breakdown
Increased hepatic (acute-phase) protein synthesis
Decreased plasma levels of branched-chain amino acids
Lipid
Increased lipolysis
Decreased lipogenesis
Hyperlipidemia
Increased free fatty acid turnover
Decreased serum lipoprotein lipase activity
Increased de novo fatty acid synthesis
Carbohydrate
Glucose intolerance
Hyperinsulinemia
Insulin resistance
Increased glucose turnover
Increased gluconeogenesis

needs of muscle are met by oxidation of nonessential amino acids, which contributes to negative nitrogen balance.

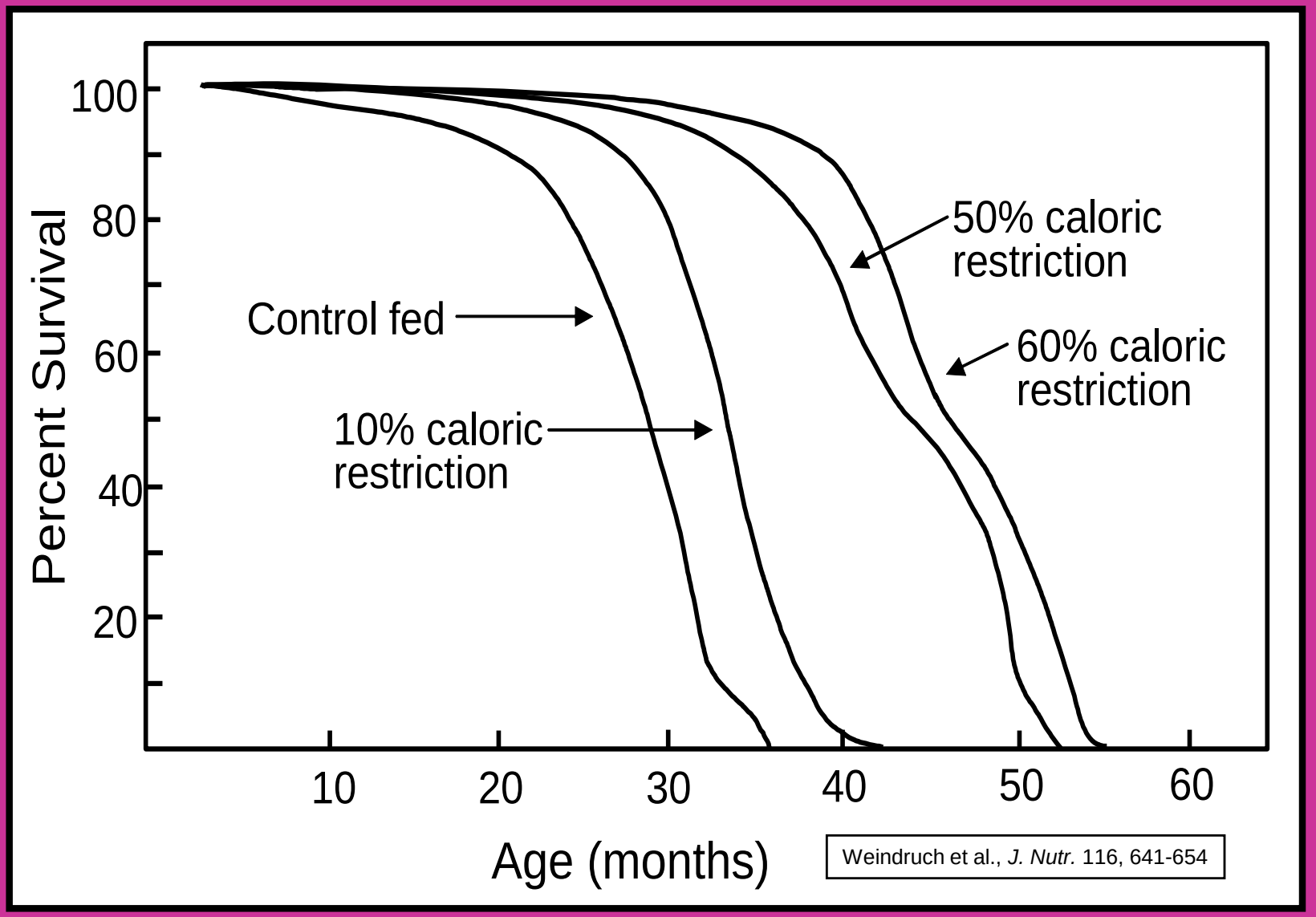
Cachexia in Terminal Cancer

Table 1. **Adaptations Associated with Proinflammatory Cytokines**

Behavioral/conscious
Anorexia
Fatigue
Malaise
Altered sleep pattern
Altered level of consciousness
Physiologic
Increased body temperature
Increased resting energy expenditure
Stress hormone response (cortisol, epinephrine, glucagon)
Skeletal muscle wasting
Increased hepatic acute-phase response
Trace mineral sequestration
Decreased gastric emptying, intestinal transit
Bone marrow suppression
Diuresis
Nutritional
Weight loss
Negative nitrogen balance
Hypoalbuminemia
Hyperinsulinemia
Hypertriglyceridemia
Hypocholesterolemia, low levels of high-density lipoprotein cholesterol

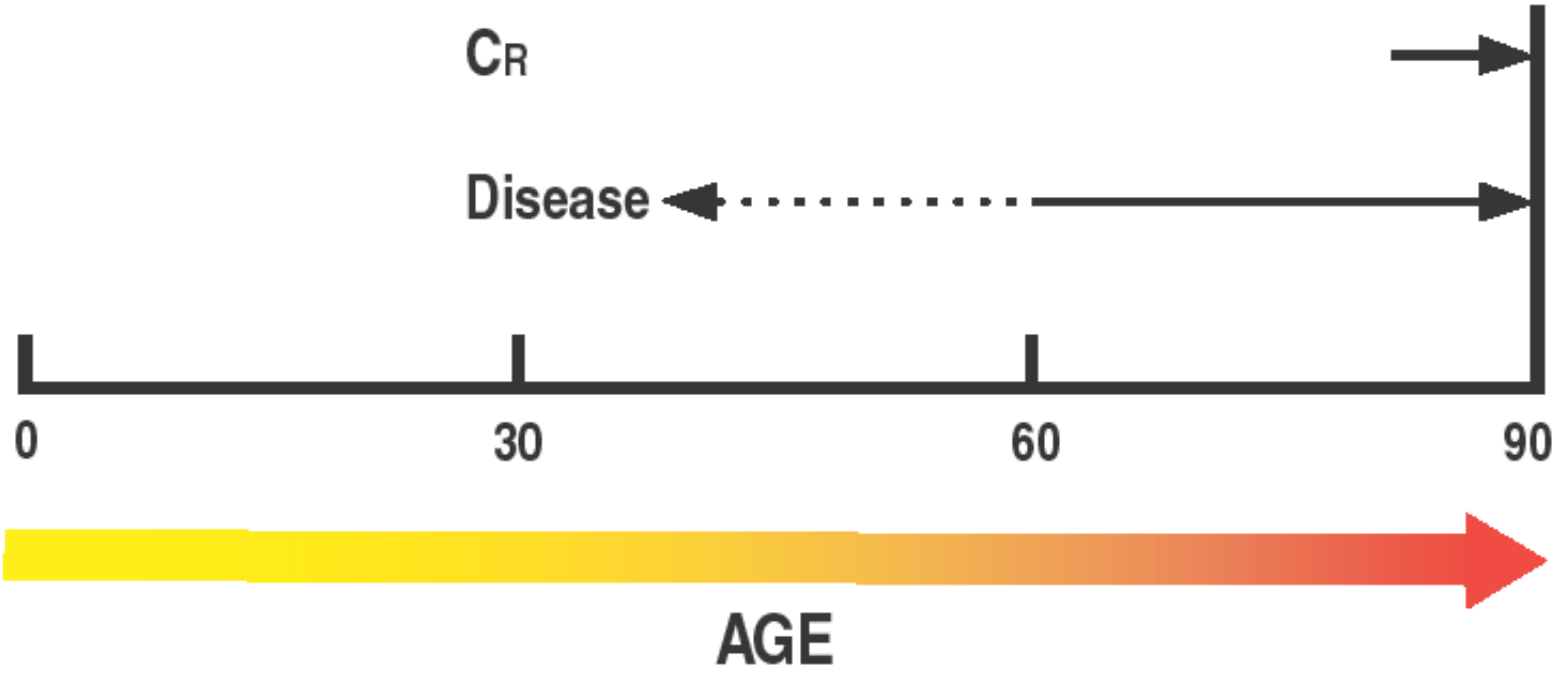
Caloric Restriction-70 yrs Research Retardation of Age & Cancer- Worms, Mice, Rats, Monkeys, Humans- N.Y. Times Yesterday

Caloric restriction extends maximum life span of species (here mice)



Caloric Restriction - 70 Years of Research-Disease & Age Delay

George Yu, M.D.



Caloric Restriction Changes Gene Expression from 14 days to 3 months

- Inflammation response
- Apoptosis or cell death
- Cell DNA replication or aging
- Stress response
- Xenobiotic metabolism
- Energy metabolism or Gluconeogenesis
- Chaperone expression
- Others

1998,Biosphere 2 NIH Grant AG 00424

Table 4.1 CHANGES IN BIOMARKERS FOLLOWING SIX MONTHS ON ANTI-AGING-TYPE DIET IN BIOSPHERE 2 (adapted from Walford et al., Proceedings of the National Academy of Sciences, 1992)

	Body Weight		Blood Sugar		Cholesterol		Blood Pressure	
	Pre	6 mo.	Pre	6 mo.	Pre	6 mo.	Pre	6 mo.
Month								
1.	208	158	105	82	215	129	100/70	80/50
2.	148	135	81	77	145	100	100/70	90/60
3.	148	126	89	60	196	107	110/72	70/40
4.	150	127	99	72	190	125	135/90	110/70
5.	165	142	101	69	209	122	110/80	100/60
6.	130	115	77	68	146	83	00/60	80/40
7.	123	111	101	68	231	168	110/80	90/60
8.	116	100	8	73	199	119	110/70	85/50
Avg.	148	126	92	70	191	119	109/77	76/57
% chng.	15%		20%		38%		30%/27%	

	White Blood Cell Count	
	pre.	6 mo.
1.	6,500	4,100
2.	6,400	5,600
3.	7,200	5,700
4.	5,600	4,900
5.	5,600	4,700
6.	7,200	5,000
7.	7,200	5,500
8.	7,800	4,800
average	6,600	5,000
% change	24%	

Dr.Roy Walford
Biosphere 2
119 vs 150 Pounds

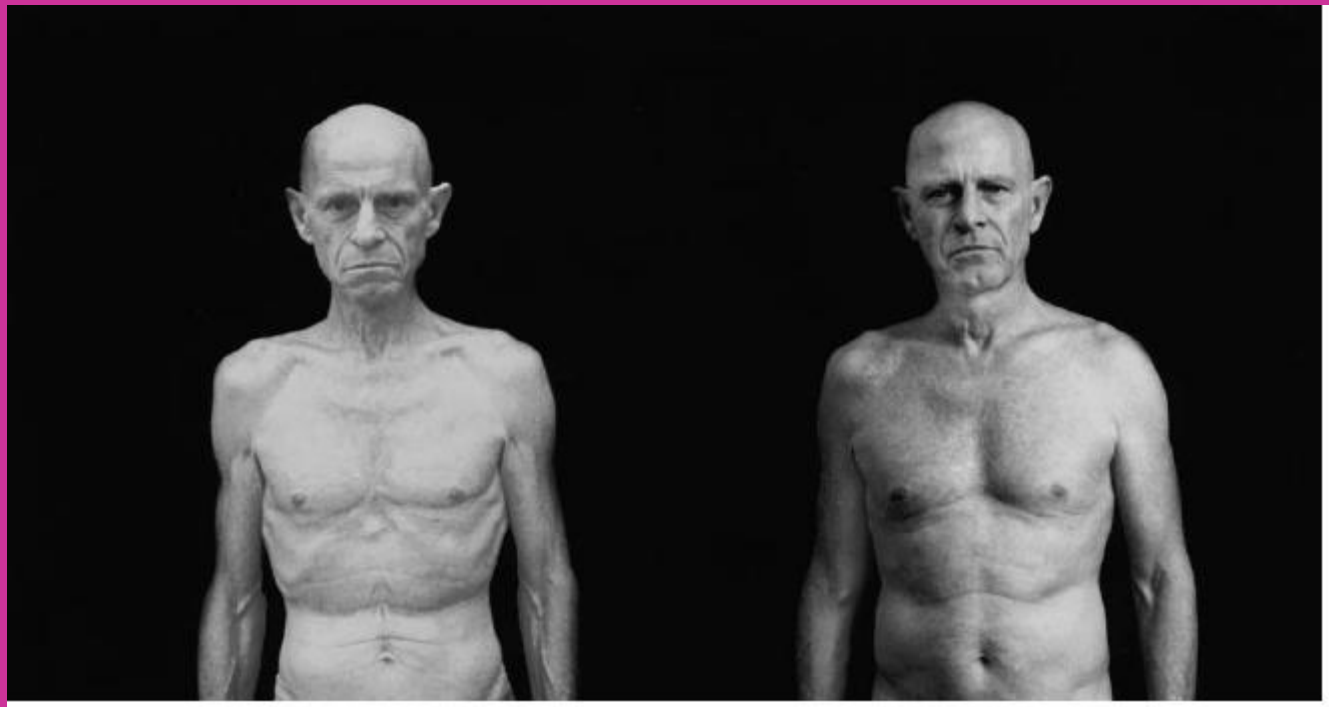


Figure 5. Composite photograph of the senior author (R. Walford) after 15 months residence inside Biosphere 2 (on the left: weight 119 lb or ~54 kg), and 18 months after exiting Biosphere 2 (on the right: weight 150 lb, or ~68 kg; normal weight when on an ad libitum diet).

Cr & Cancer

1976, Caloric Restriction Arrests Malignant Cancers But Does not Cure It

[CANCER RESEARCH 44, 3174–3177, August 1984]

Dietary Fat *versus* Caloric Content in Initiation and Promotion of 7,12-Dimethylbenz(*a*)anthracene-induced Mammary Tumorigenesis in Rats[1]

David Kritchevsky,[2] Maxine M. Weber, and David M. Klurfeld

The Wistar Institute of Anatomy and Biology, Philadelphia, Pennsylvania 19104

Kritchevsky Finding in 1976 published in 1984

Table 2

Effects of dietary treatments on DMBA-induced mammary tumorigenesis

Group	Regimen	Tumor incidence	%	Total no. of tumors	Tumors/ tumor-bearing rat
Isocaloric diets					
A	LF[a] → LF	8/15	53	15	1.9 ± 0.5[b]
B	LF → HF	5/15	33	11	2.2 ± 1.0
C	HF → LF	7/15	47	33[c]	4.7 ± 1.3
D	HF → HF	8/15	53	27[c]	3.4 ± 0.9
Low-fat, high-calorie, high-fat, low-calorie diets					
E	LF-HC → LF-HC	10/15	67	29[c]	2.9 ± 0.9
F	LF-HC → HF-LC	5/15	33	13	2.6 ± 1.4
G	HF-LC → LF-HC	7/14	50	13	1.9 ± 0.3
H	HF-LC → HF-LC	6/15	40	12	2.0 ± 0.4
Pair-fed diets					
I	*Ad libitum*	14/24	58	39	2.8 ± 0.5
J	Restricted	0/23	0[c]	0[c]	0[d]

[a] LF, low fat; HF, high fat.
[b] Mean ± S.E.
[c] Significantly different from other groups in study by χ^2 test ($p < 0.01$).
[d] Significantly different from other group in study by Student's *t* test ($p < 0.001$).

Cr Is Dose Responsive

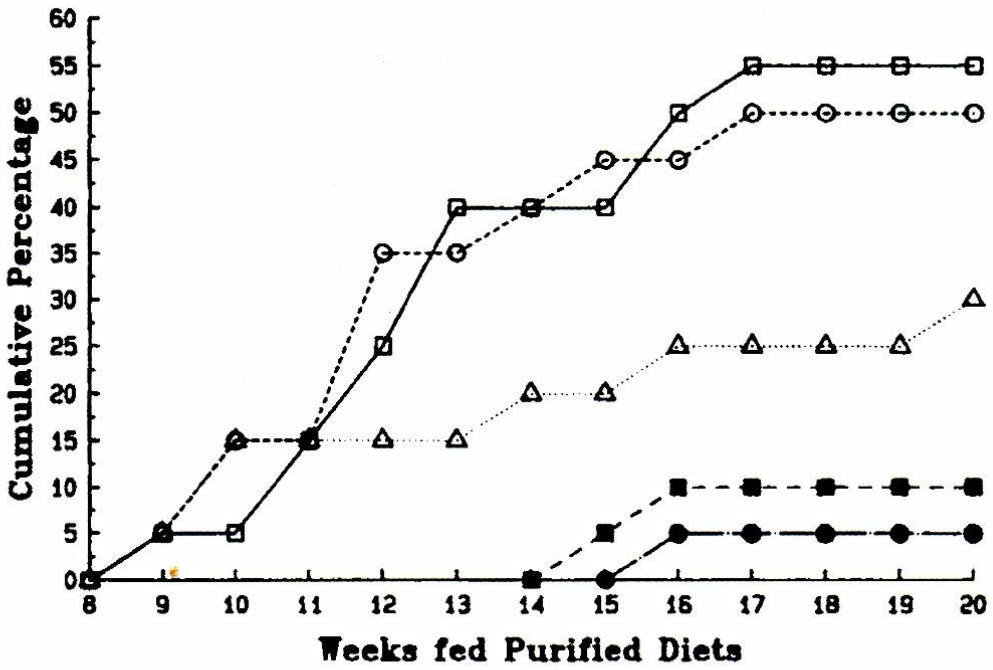


FIGURE 2 Cumulative percentage incidence of palpable mammary tumors in rats subjected to graded energy restriction. Symbols are: - □ - ad libitum; - ○ - 10% restricted; - △ - 20% restricted; - ■ - 30% restricted; and - ● - 40% restricted.

Insulin Goes Down

TABLE 3

***Fasting serum glucose, insulin, and β-Hydroxybutyrate*[1]**

Group	Glucose	Insulin	β-Hydroxybutyrate
	mg/dl	*μU/ml*	*mg/dl*
Ad libitum	151 ± 7	122 ± 16	18 ± 1
Restricted: 10%	212 ± 7*	191 ± 10*	14 ± 2
20%	194 ± 9*	109 ± 13	14 ± 6
30%	135 ± 7*	42 ± 5*	11 ± 3
40%	120 ± 8*	41 ± 8*	10 ± 2
	$P < 0.001$[2]	$P < 0.001$	NS

[1]Values are means ± SEM for $n = 20$. Means followed by an asterisk (*) are significantly different from ad libitum value; NS = not significant.

[2]Significance level for multigroup comparison. See Materials and Methods section for nature of statistical tests used.

If Adrenal Gland is Gone
Cr on Cancer is Gone Also

L.L.Pashko and A.G.Schwartz

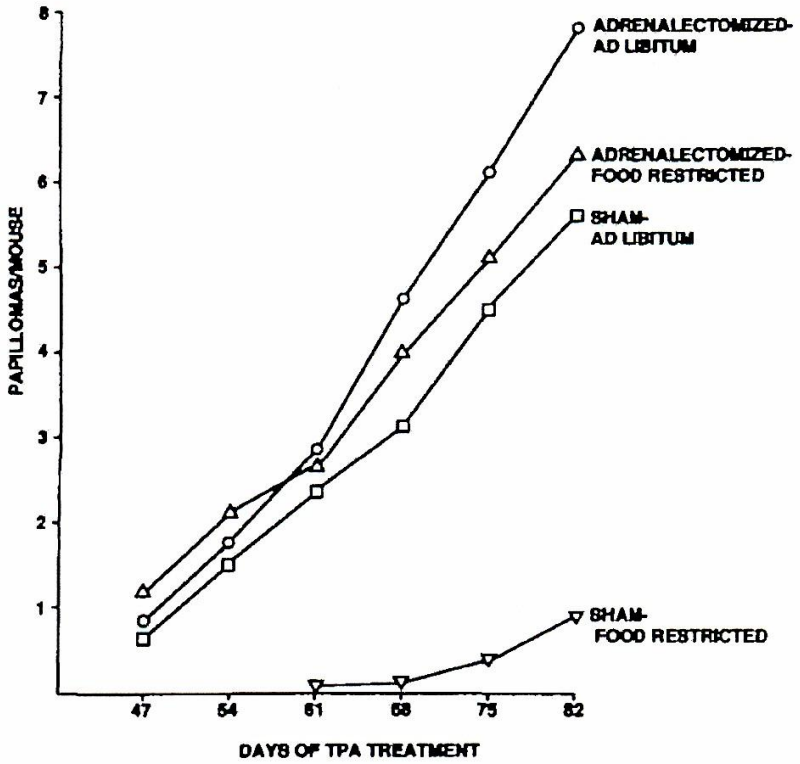
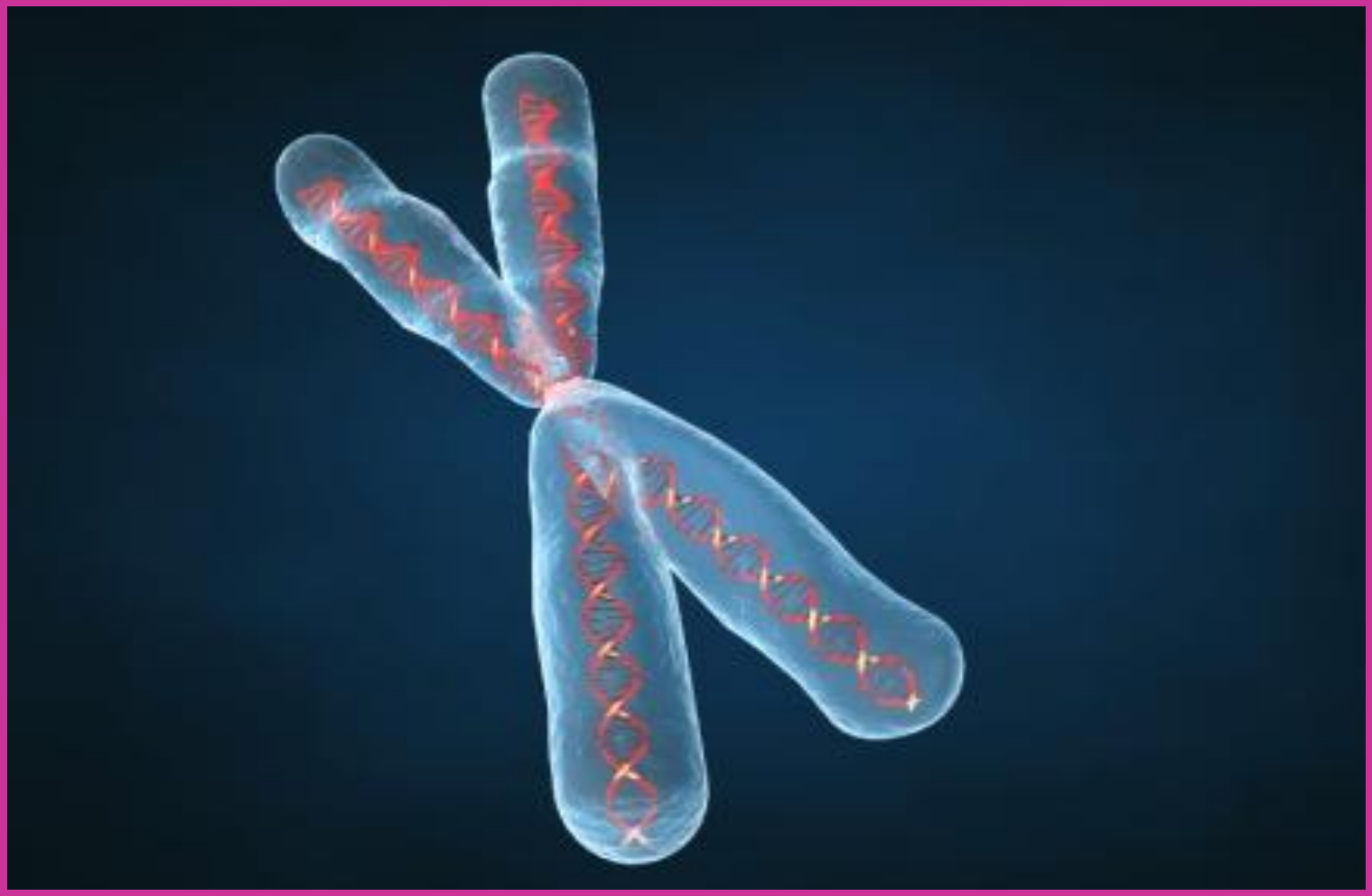


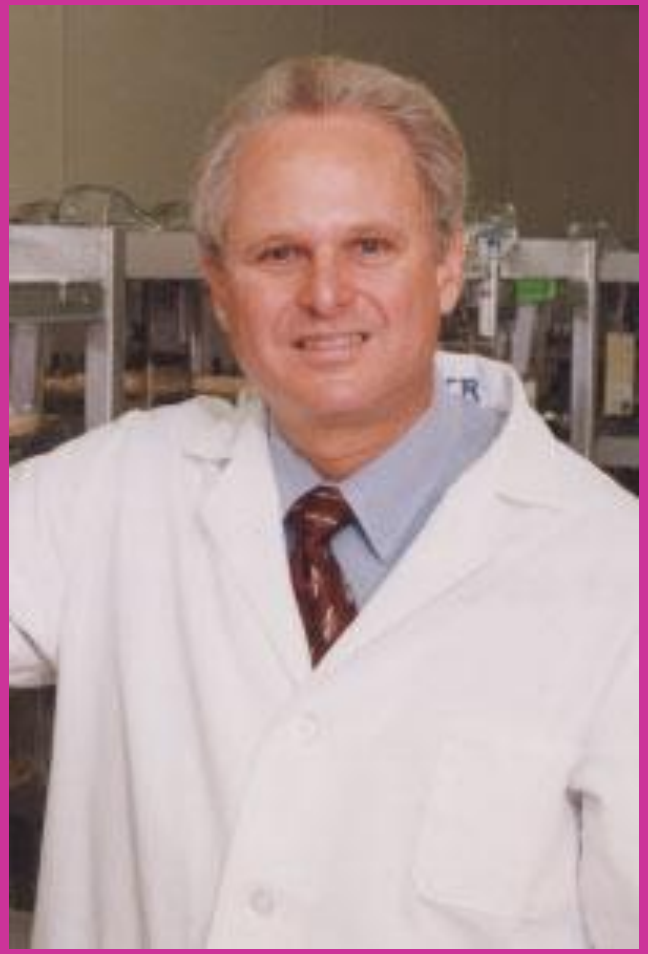
Fig. 1. Inhibition of papilloma development by food restriction and its reversal by adrenalectomy.

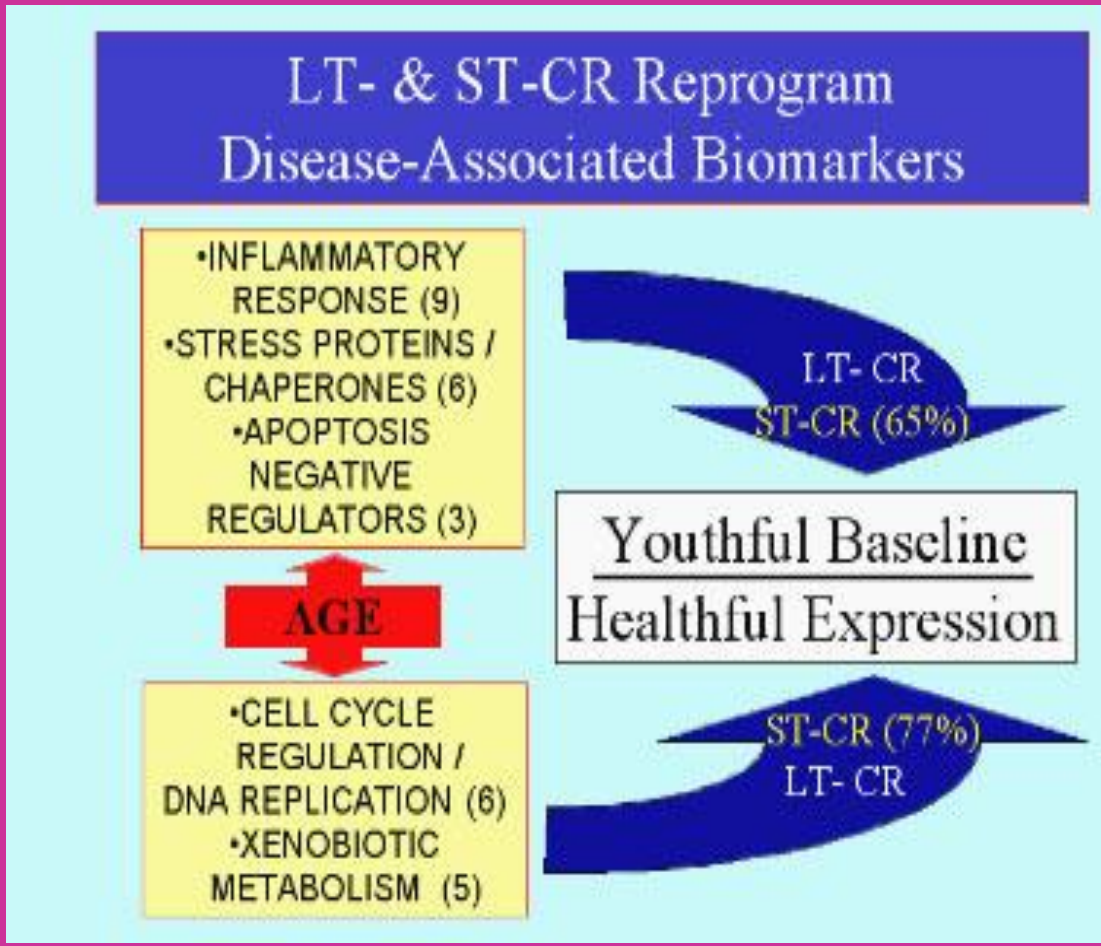
Pasko,Carcinog.Vol13,10,1925,1992

Genome Project Success Led the Way- DNA Microarray, Mass Parallel Sequence



S. Spindler- Rapid 3 to 6 Months Gene Expression Change (St Cr)

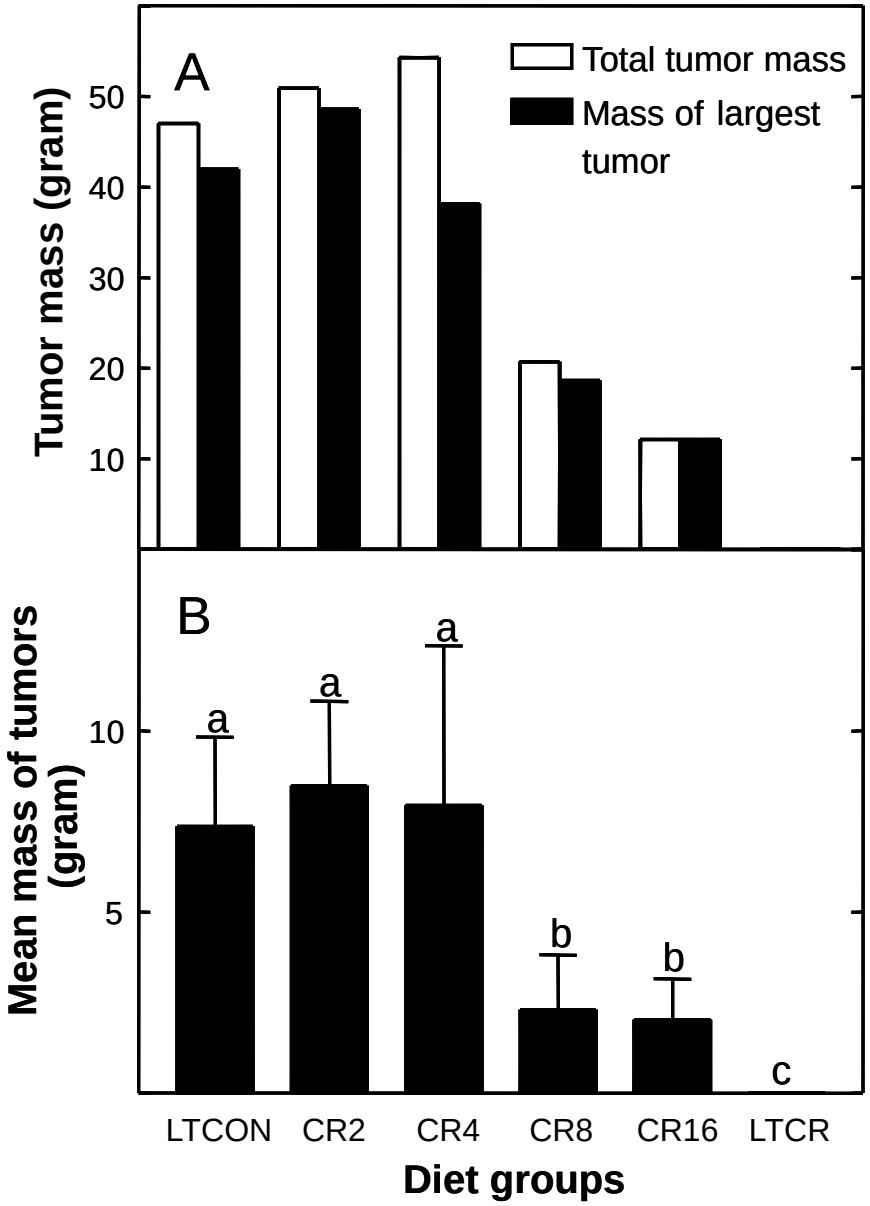




Short Term Cr Replicate Long Term Cr -12,422 Genes

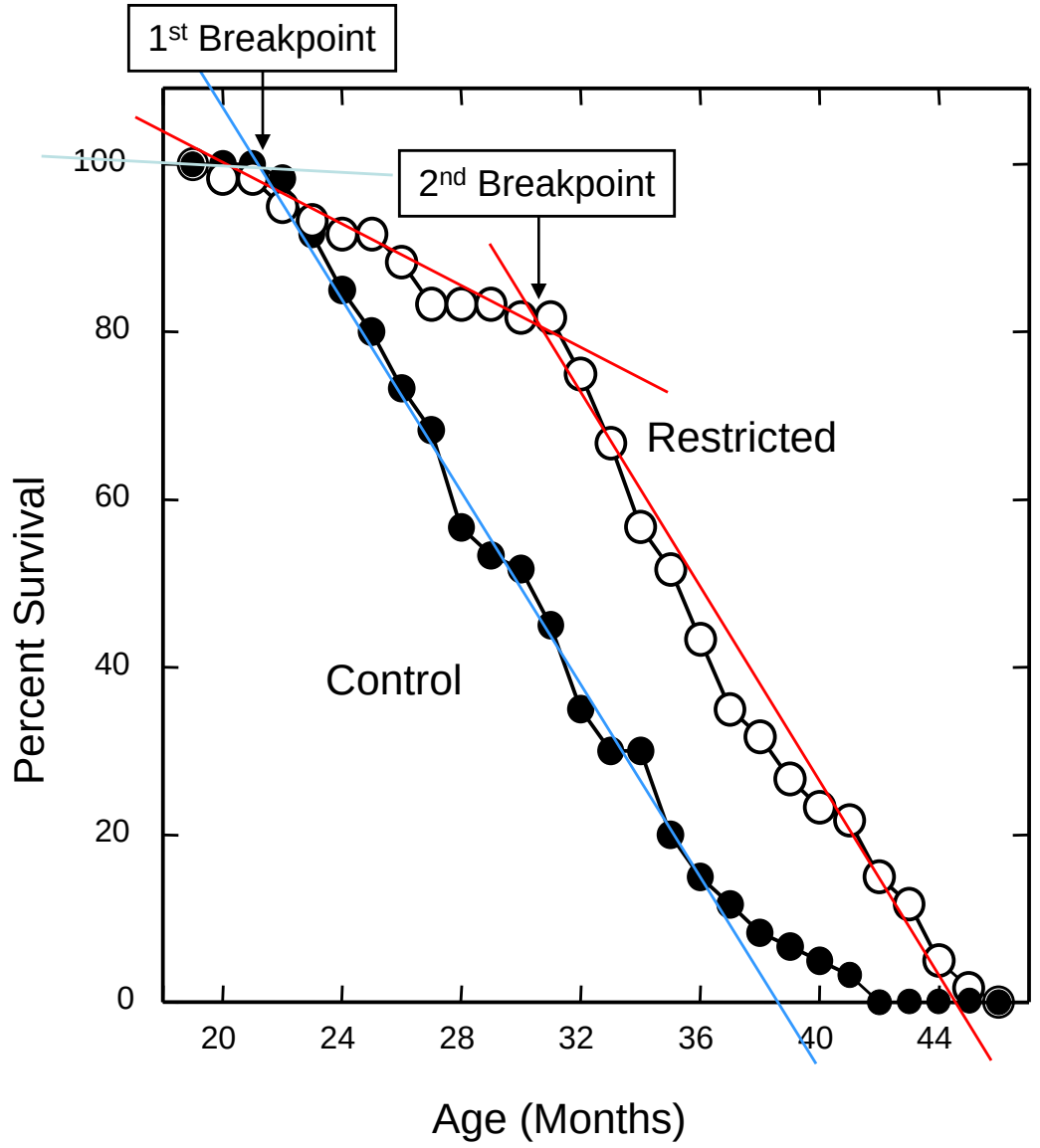
- Cr show within 2 months
- Cr decelerate mortality and incidence of cancers as cause for death
- STCr shows up within 8 wks
- STCr replicate LTCr 72% within 4wks
- STCr works replicate 55% within 2wks

CR rapidly shrinks tumor size



All mice 27 mo old when killed

Late-life CR rapidly reduces cancer mortality in old mice



- 1st to 2nd breakpoints 3.1-fold decrease in age-associated mortality (*P*<0.001)
- Decrease in tumors as a cause of death [from 80% of control to 67% of CR (*P*=0.01)]
- Increase in mean time to death 42% (*P*<0.001)
- Increase in mean life span of 4.7 months (*P*<0.001)
- Increase in maximum life span of 6.0 months (*P*<0.001)

Dhahbi et al., PNAS USA 101: 5524-5529 (2004)

Can We Exterpolate?

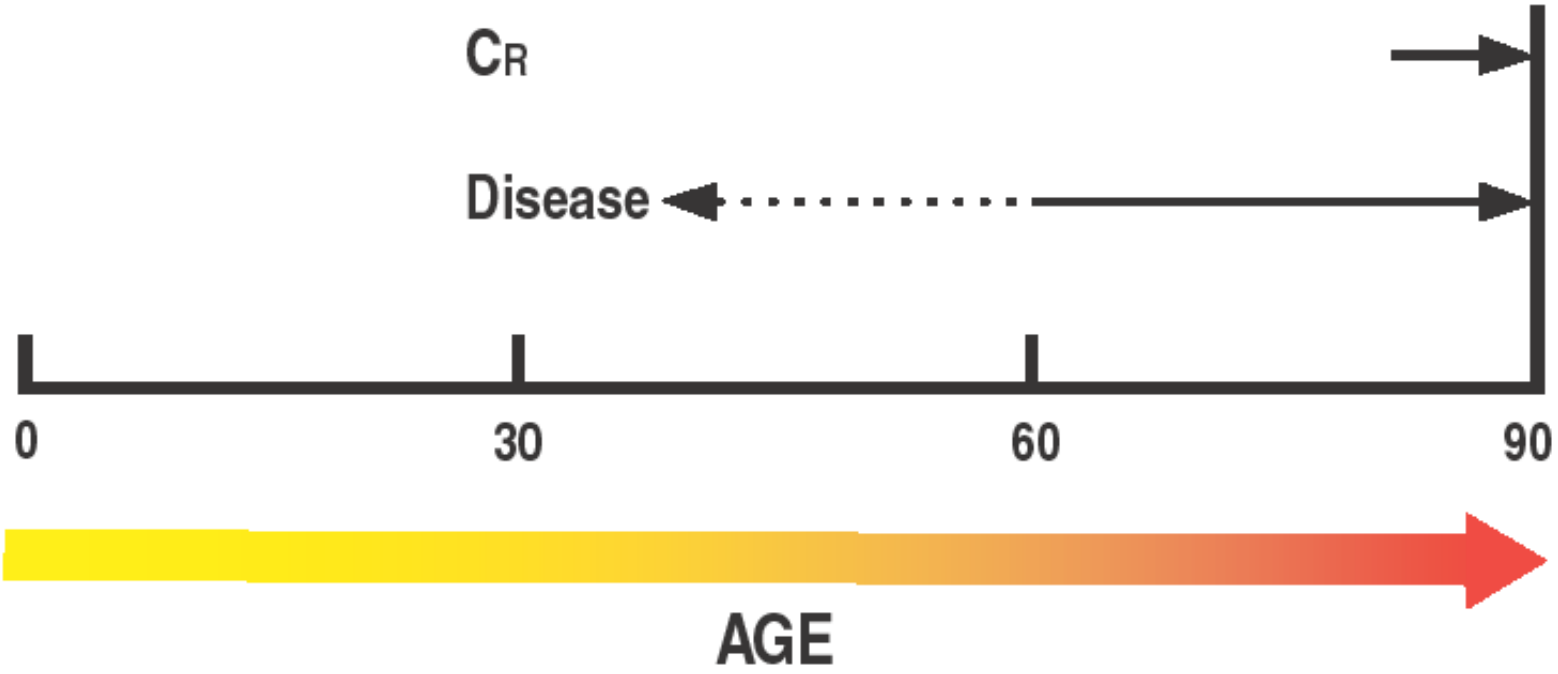
Mice are Not Men

Rats Show Similar Results

But Rats Gene are Similar to Man

Caloric Restriction - 70 Years of Research-Disease & Age Delay

George Yu, M.D.



CR in humans- We Need More Subjects to Study

- **Kagawa / Willcox Okinawan studies**
  - School children and adults: 62% and 20% below **rest of Japan**
  - Death rates from stroke 59%; Malignancy 69%; Heart Disease 59%
  - Half the mortality of 60-64 yrs olds elsewhere
  - Centenarians two to forty times greater number
- **Walford Biosphere CR study**
  - Physiologic, hematologic, hormonal, and biochemical changes resembled CR rodents and monkeys
- **Vallejo nursing home study**
  - 60 healthy volunteers over 65 years old
  - 3 years average 1400 calories per day
  - Less time in the infirmary (123 versus 219 days; $p < 0.001$)
  - Fewer deaths (6 versus 13)
- **Roth Baltimore Longitudinal Study of Aging analysis**
  - Longevity in Humans associated with Rodent and Primate CR Biomarkers
- **Fontana-Holloszy studies of human CR practitioners**
  - CR reduces risk factors for atherosclerosis
  - Ameliorates the decline in diastolic function
- **Ravussin studies of 6 mo of CR**
  - Reduced fasting insulin, body temperature & metabolic rate (pro-longevity)
- **January 2005 issue of Mayo Clinic Health Letter: 5-10% weight loss**
  - Reduced or eliminated need for blood pressure medications
  - 58% percent reduced risk of diabetes
  - 4% reduction in lifetime risk of heart disease

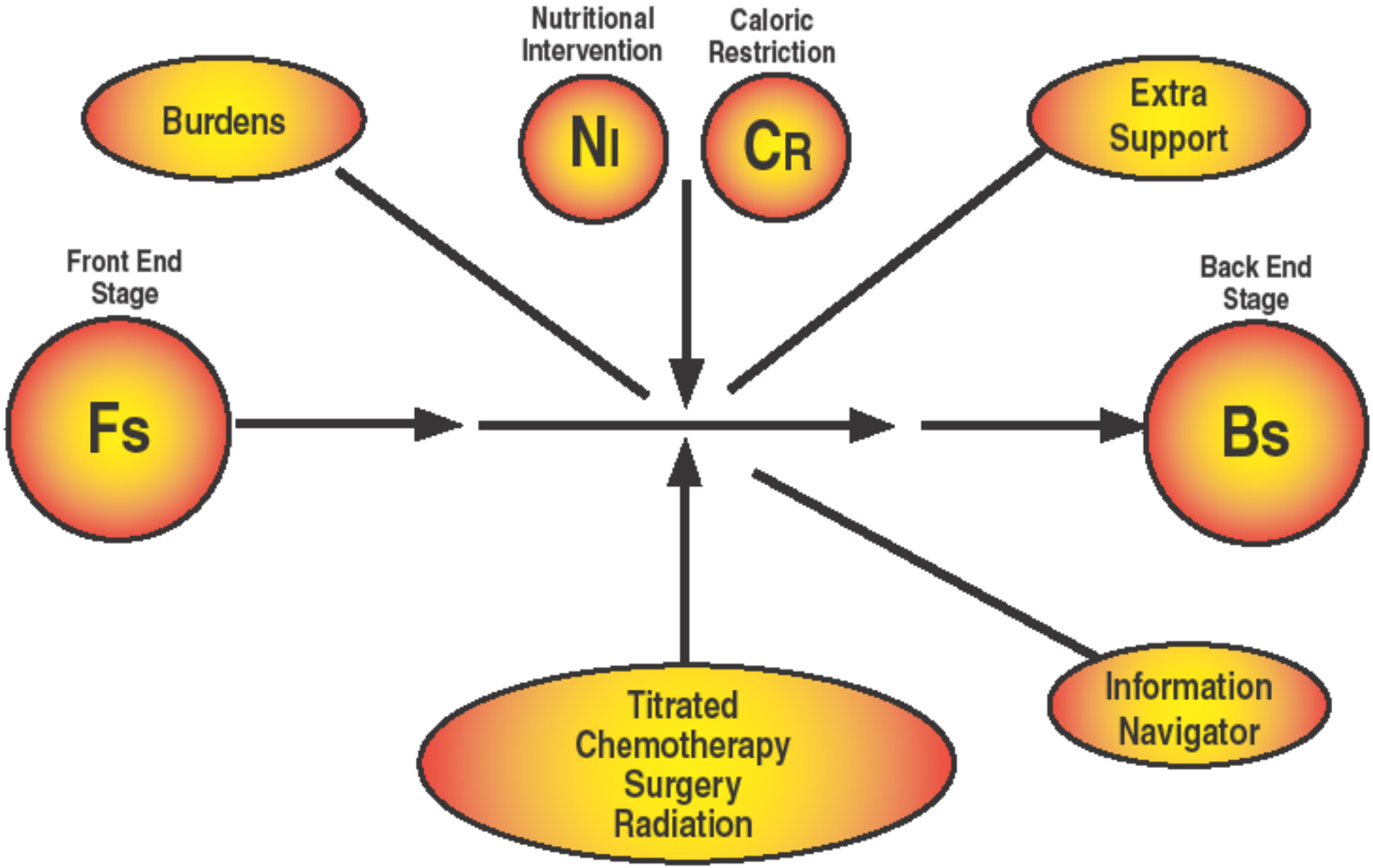
Instead of Bringing Science To Macrobiotics, Lets Bring Macrobiotics To Science

The Alternative Strategy to Ensure That Macrobiotics Has a Place in Medical Science

Why Nutritional Intervention Is Not Enough for Everybody

Our Philosophy & Practice

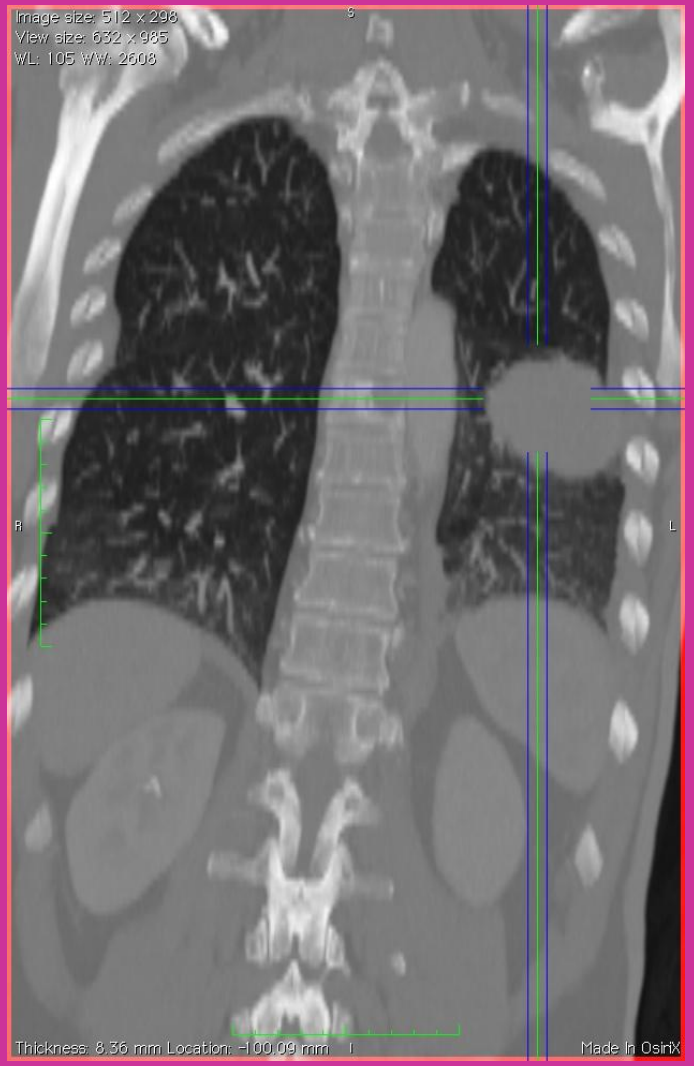
George Yu, M.D.



Why Front End Back End Staging, 410-897-0540

- Feeling good is not enough
- Did the treatment decrease disease
- Did the Nutritional Intervention decrease disease (Ni)
- How much tumor is left
- Is there a new lesion to be treated-time
- Use Ni , Rx Treatments, or Caloric Restriction Modified

5/15/09 M. Hood From England



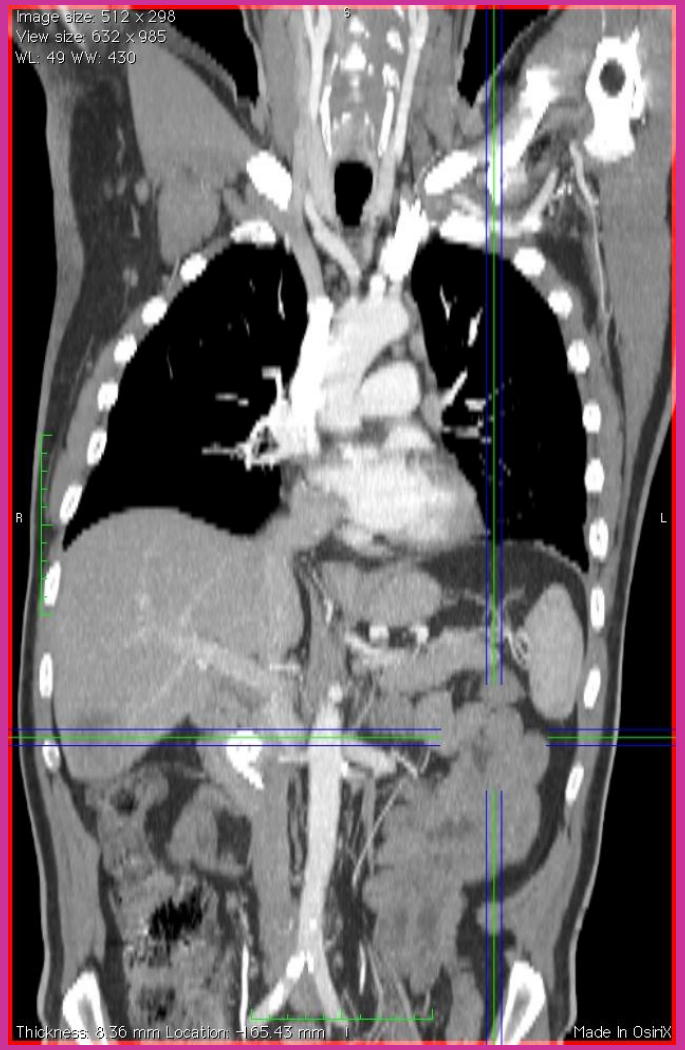



Image size: 512 x 298
View size: 825 x 944
WL: 388 WW: 2581
S
HOOD WILLIAM 20043714 (64 y , 63 y)
CAP_WC
1
2
Arrow 1
Arrow 2
R
1678
388
-902
P
Zoom: 104% Angle: 0
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Thickness: 8.36 mm Location: 25.06 mm
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Made In OsiriX

We Believe In:

- Using Every Tool To Enhance Survival
- Selection of Nuritional Approaches
- Surgery for Debulking To Decrease Tumor Burden, Release Obstruction & Stop Bleeding
- Effective Chemotherapy For Specific Cancers
- Radiotherapy for Emergency Nerve Decompression
- Decrease the Side Effects of Treatments

Importance to Time White Blood Cell Protection

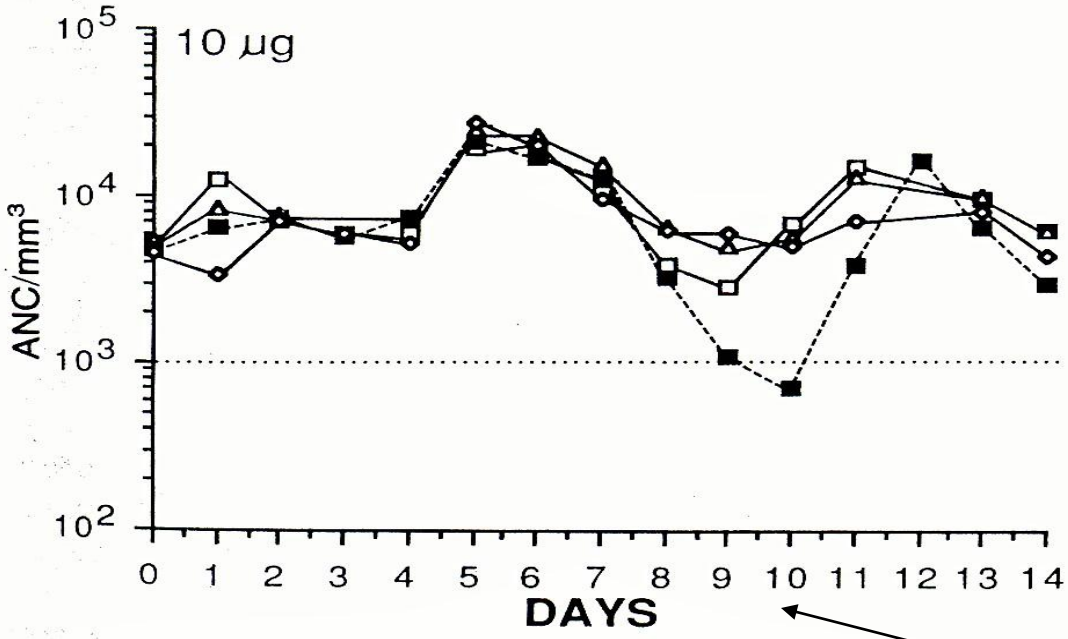


Figure 2. Absolute Neutrophil Counts (ANC) in 23 Patients through Day 14 of the First Cycle of M-VAC, According to the Daily Dose of rhG-CSF (per Kilogram).

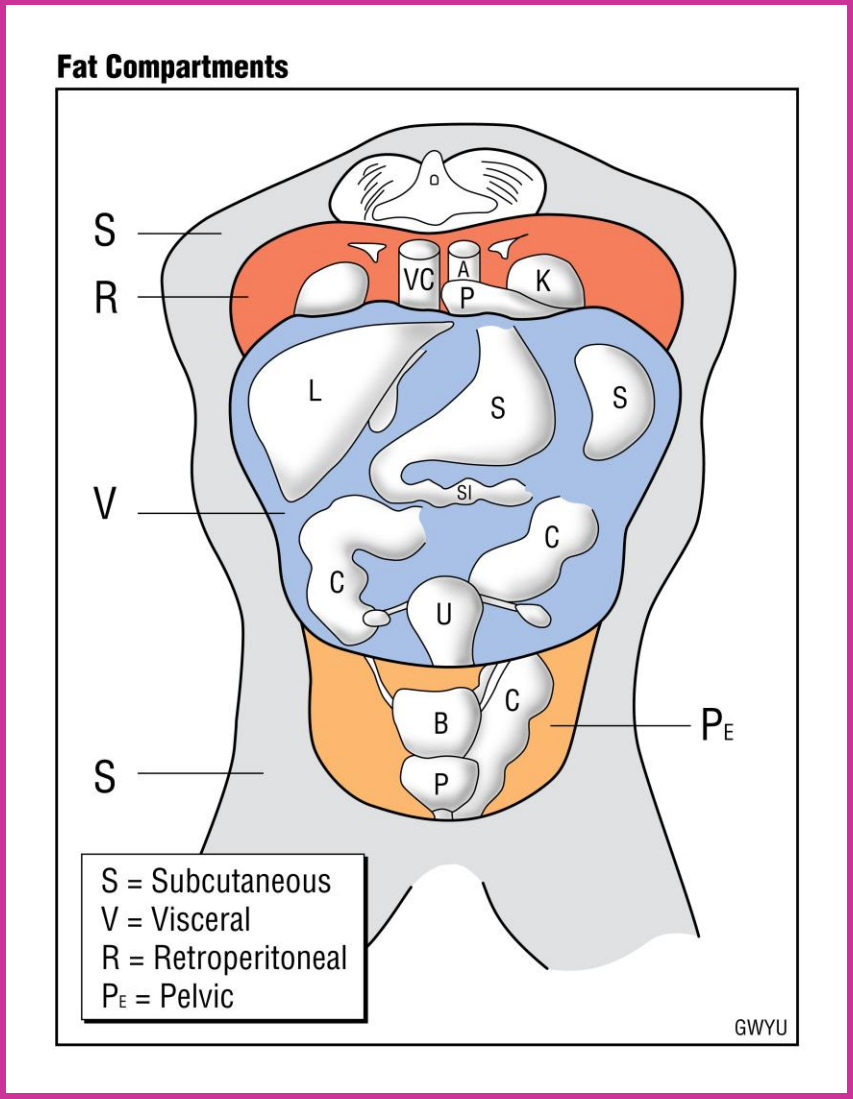
The rhG-CSF was administered on days 4 through 11. Values for patients who had had pelvic radiation are connected by dashed lines. The threshold value (neutrophil count) of 1000 is denoted by a dotted line. The count on day 15 in Patient 16 (solid circles in dose level of 60 µg) is represented as the value for day 14.

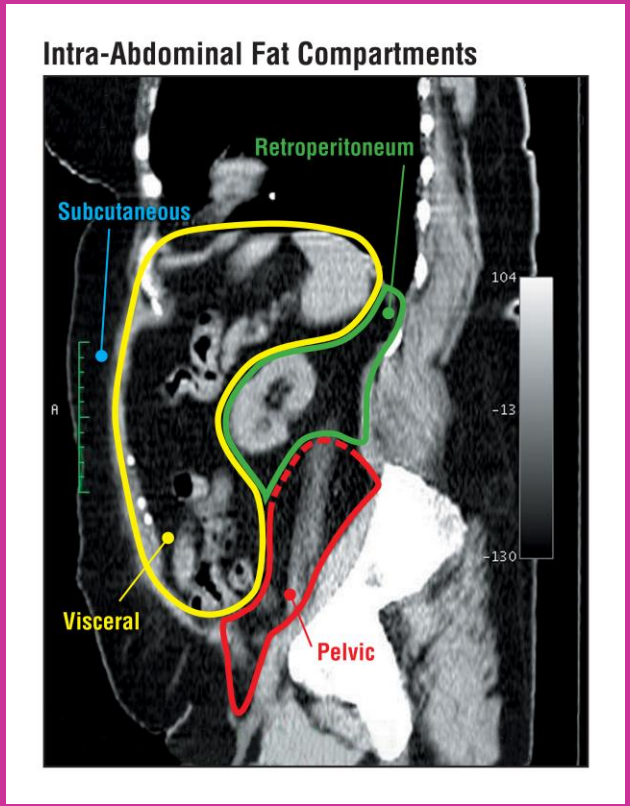
t

Cancer Remission is Greater by Decreasing Body Burdens

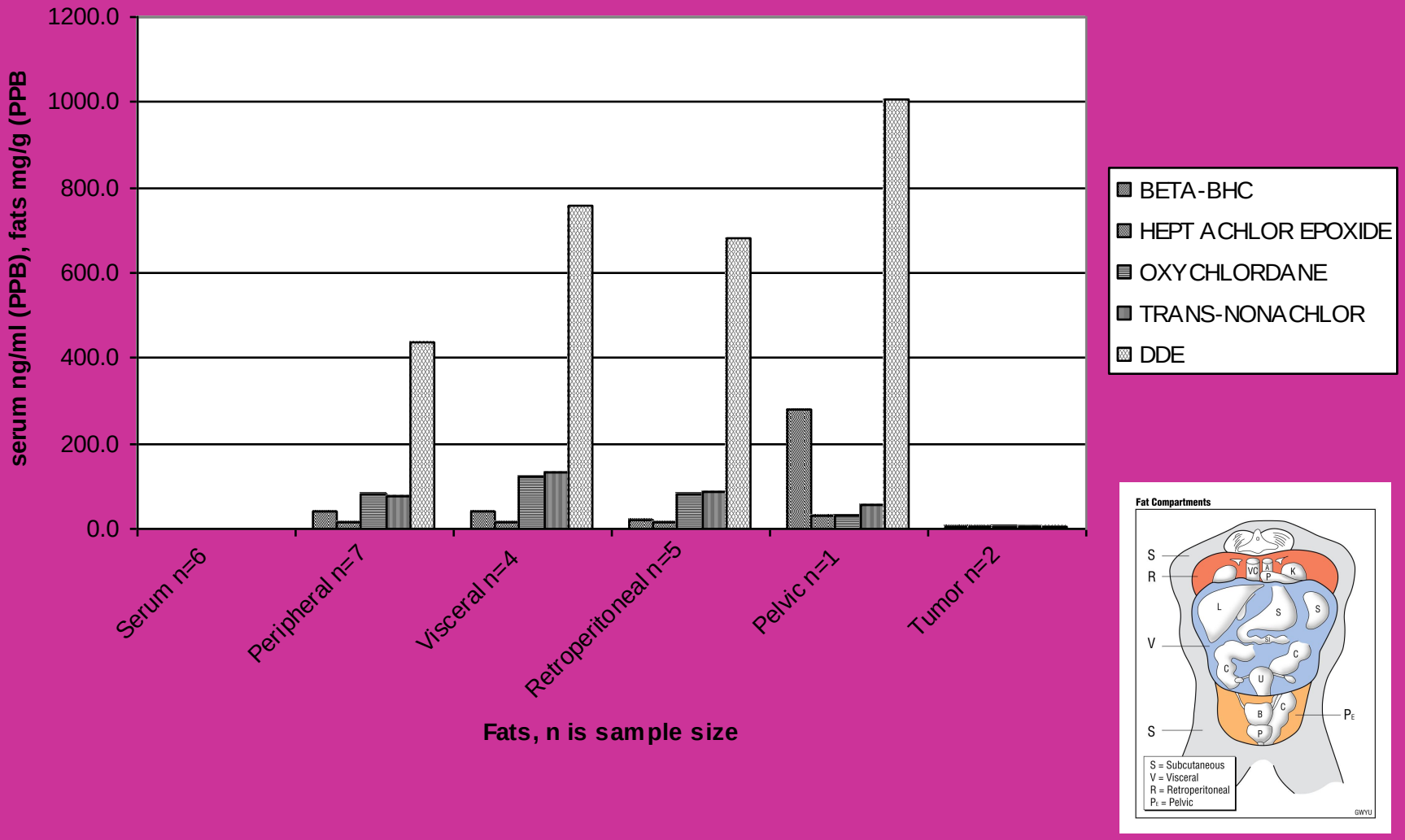
Manganese Detox After Sauna, Manganese Toxicity Mimics Parkinson-like Symp.

4 Fat Body Compartments To Store Toxic Chemicals





Average levels of elevated Chlorinated Pesticides found in serum and fat

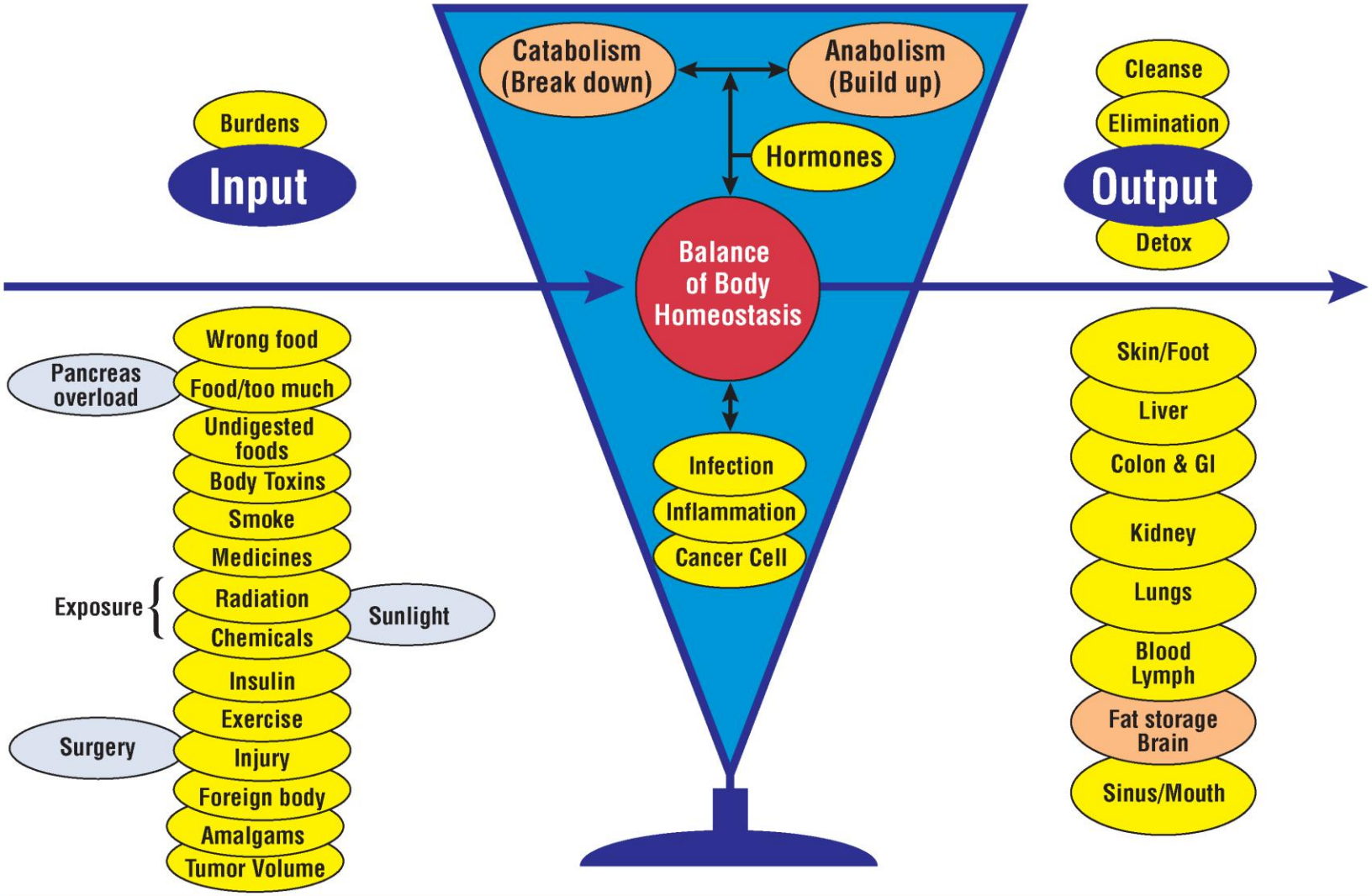


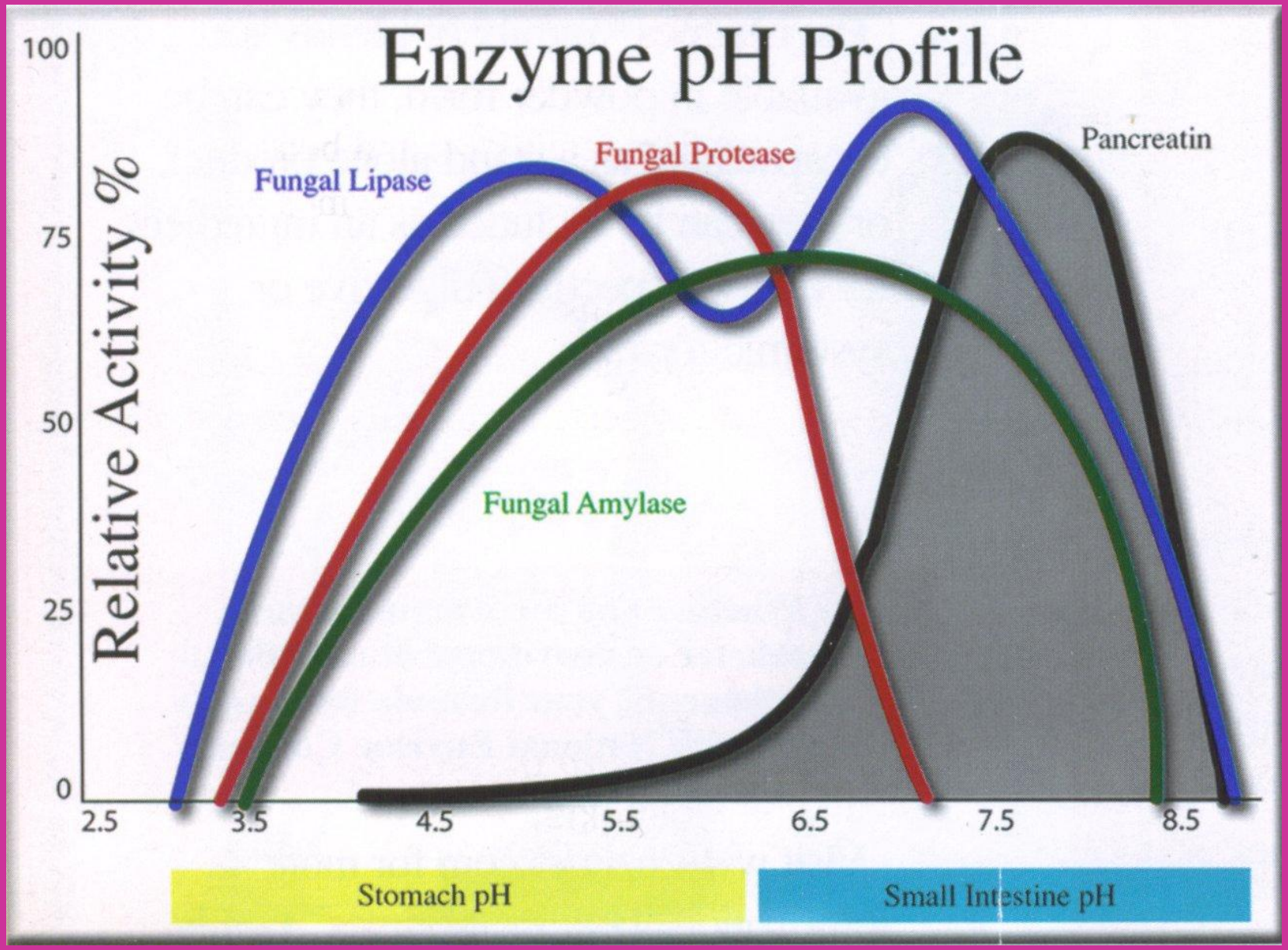
Michio Kushi Said to Me Once That Smoking Alone Can Be Compensated by The Body Homeostasis But Add More Burdens Plus Not Eating Right Will Kill You

Washington DC 2003

Homeostasis

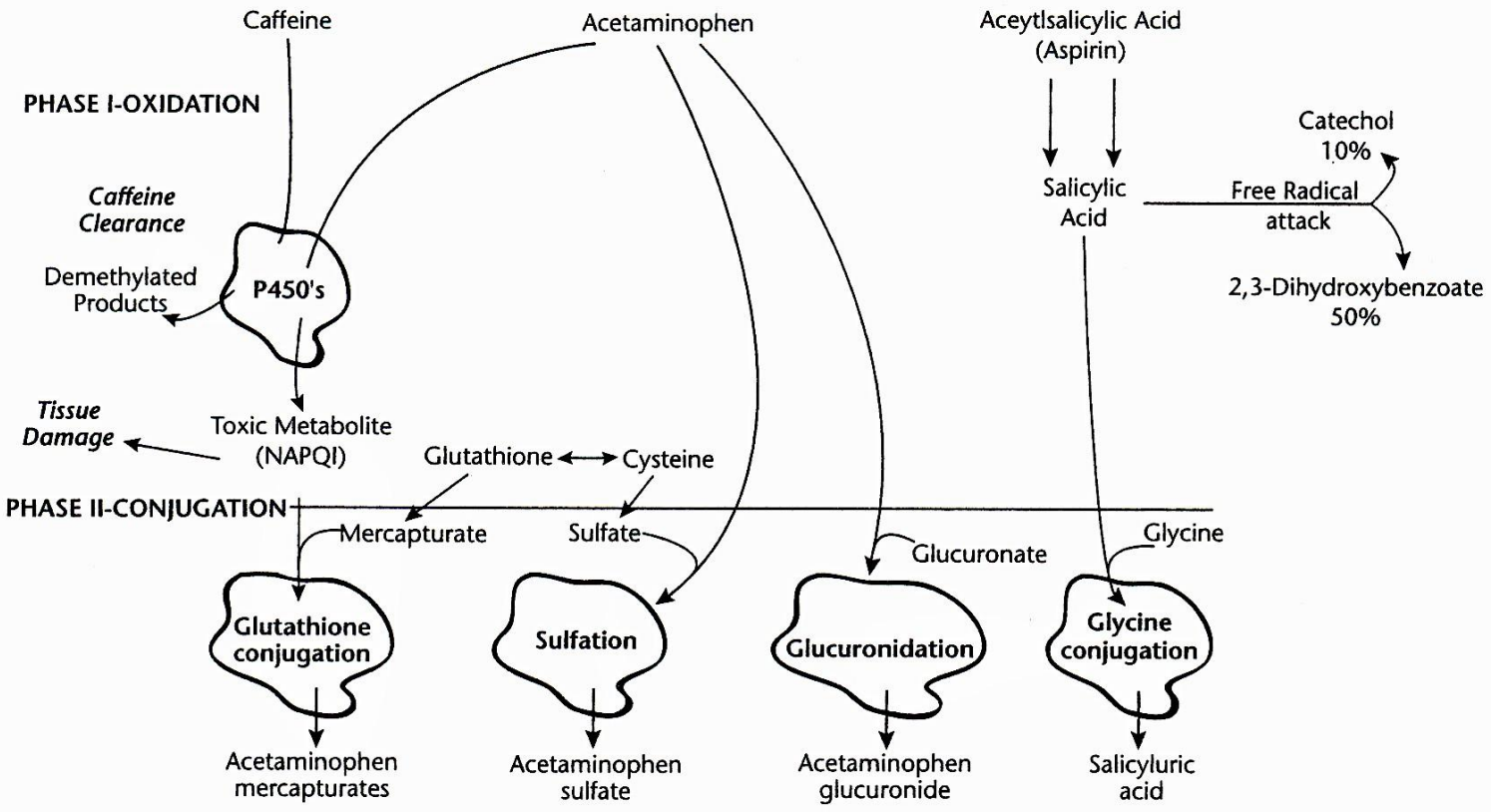
George Yu, M.D.




Enzyme pH Profile
Relative Activity %
100
75
50
25
0
Fungal Lipase
Fungal Protease
Pancreatin
Fungal Amylase
2.5
3.5
4.5
5.5
6.5
7.5
8.5
Stomach pH
Small Intestine pH

Liver – Biggest Incinerator

FIGURE 8-1. Use of Challenge Compounds to Evalutate Phases of Detoxification



Why We Need Oils on The Long Term

Robert Pirello, The Athlete Who had Osteoporosis, Stress Fractures on Strict Macrobiotic Diet Corrected With Olive Oil

PNALD - Soy Oil (Omega 6) Lead to Liver Failure
Fish Oil Omega 3 Corrected

Keira and Evan Kuznar, 1 year
Delivered by C-section two months early, the twins were in intensive care for weeks. Evan (right) had emergency surgery. Now all is well.

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atment," says
the hospital."
been given

pocket betwe
began to fail.
it," says Zak.
But he pulled
er hospital,"
would be her
Rainbow c

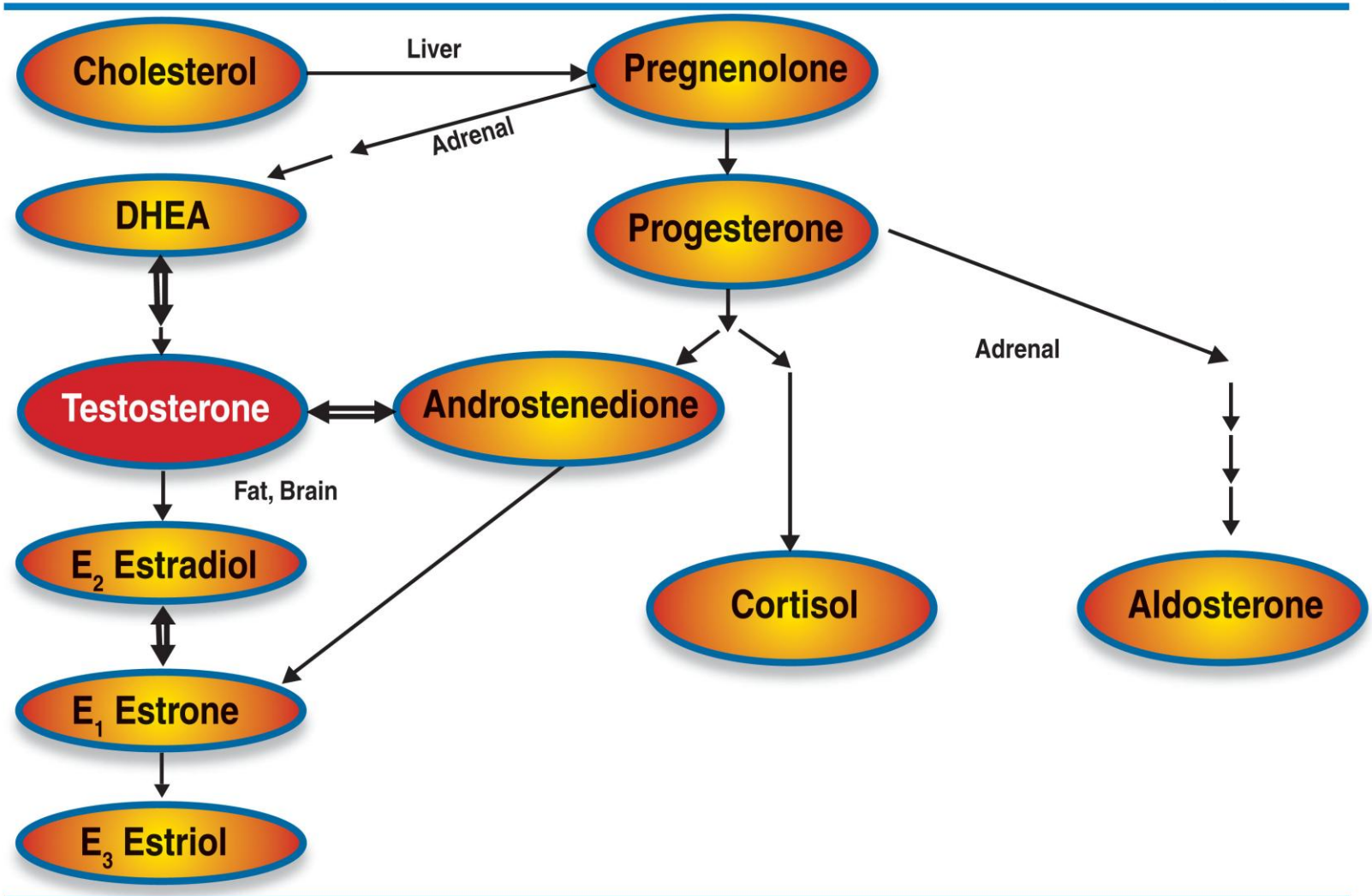
UsNew
June2008

Sunflower Sprouts & Wheat Grass Living Foods May Be Necessary

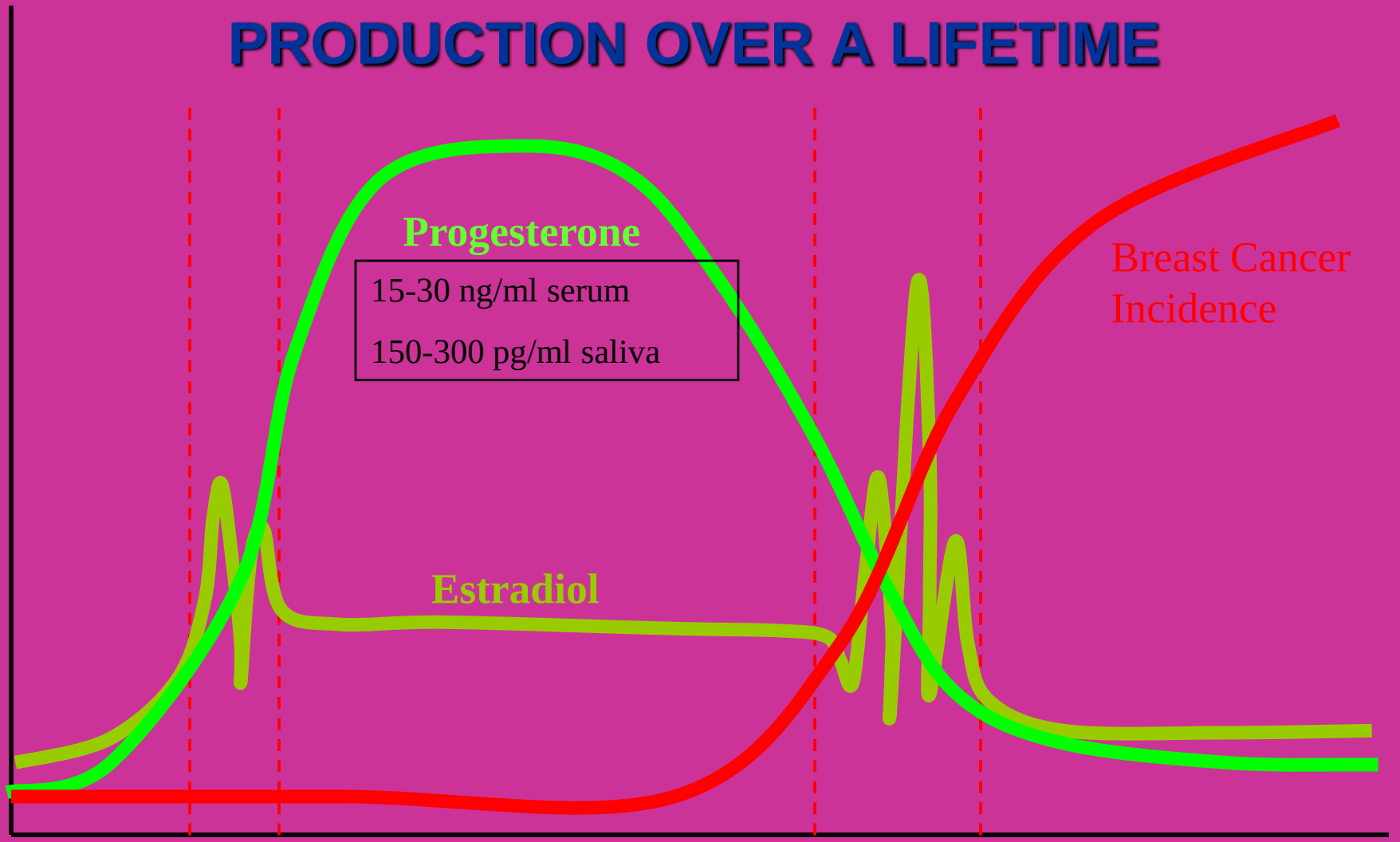
Hormones and Diet

Cholesterol and Hormones

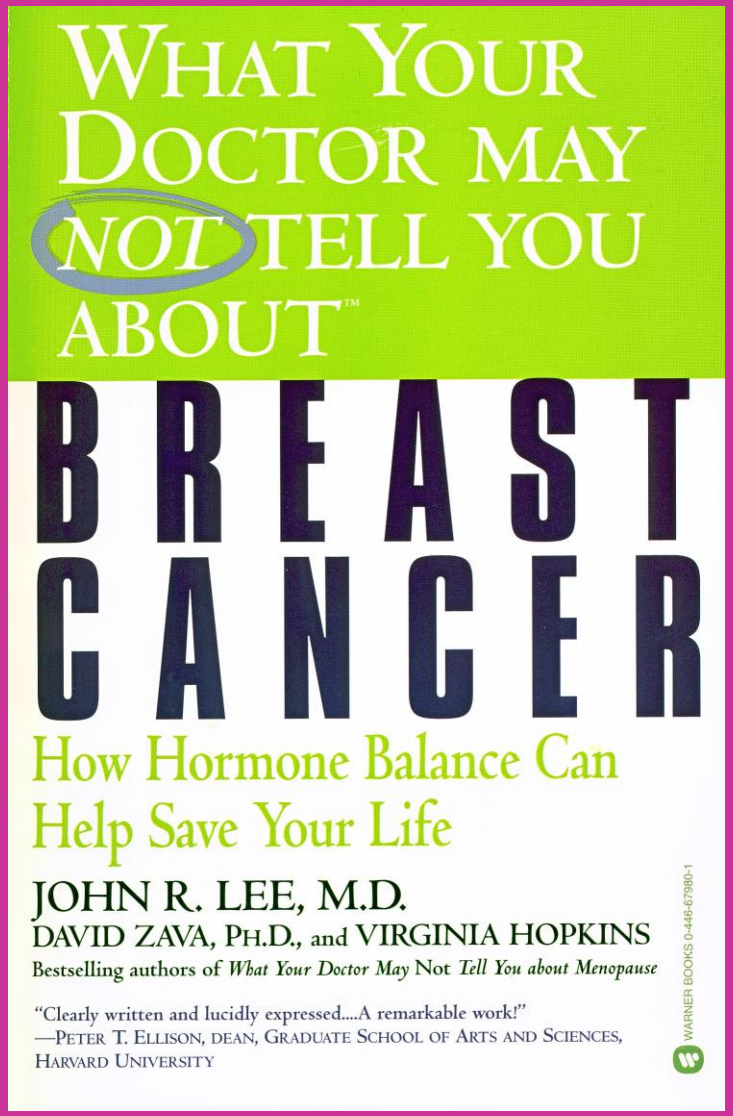
George Yu, M.D.

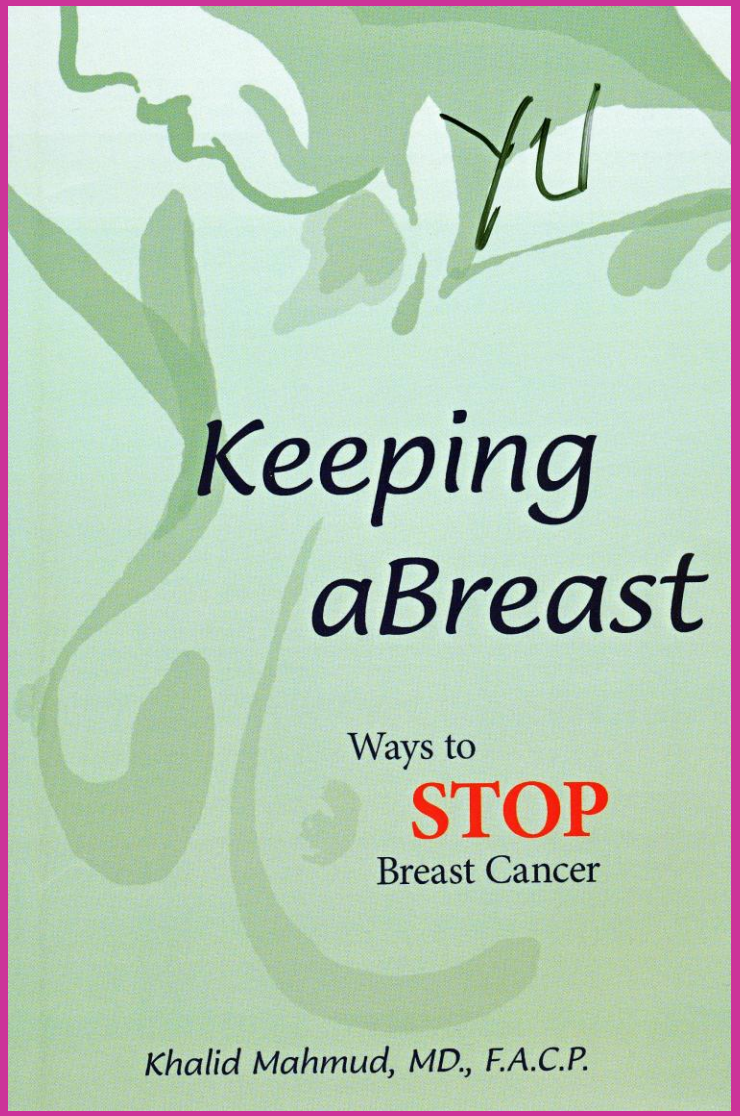


OVARIAN ESTRADIOL AND PROGESTERONE PRODUCTION OVER A LIFETIME



Balance of Estradiol- Progesterone Are Critical in Breast Cancers





Why Hormones Are Important

- For Female Breast Cancers –Critical to Maintain Progesterone (Natural Human)
- For Males all Nutritional Intervention long term will lead to Sex hormone decline
- Osteoblast Bone Formation Depends on Testosterone to Avoid Osteoporosis
- Profound Muscle Loss
- Affects Mood and Being

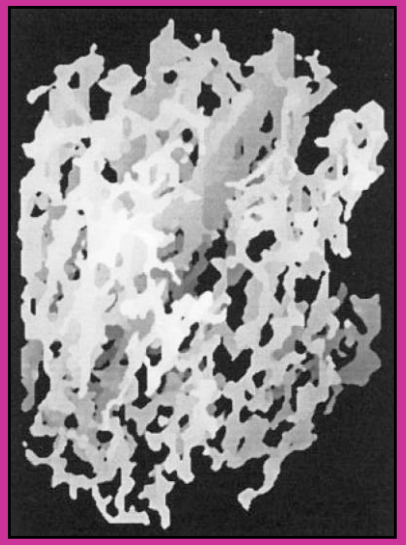
Loss of Sex Hormones in Hypogonadal Men Adversely Affects Bone Quality

MicroMRI of Tibia

Control

Well connected, predominantly platelike trabecular network of the control

Hypogonadal man



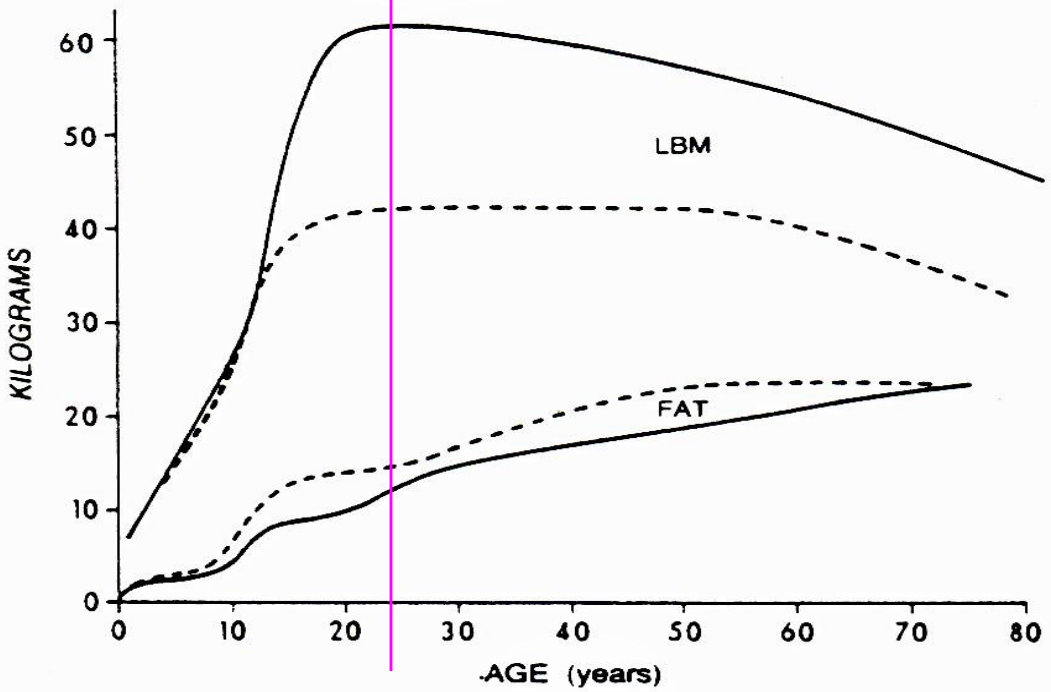
More disconnected, predominantly rodlike architecture of the hypogonadal man

Reprinted with permission from Benito M et al. ***J Clin Endocrinol Metab.*** **2003;88:1497-1502**

The Shape of Your Weight
Muscle, (Bone) Wasting
"Sarcopenia"

Anabolic Dominance Shift to Catabolic Dominance

Figure 1.6. Changes in average fat and lean body masses of men (—) and women (--) with age. [*Source:* Reprinted by permission from Forbes (1988).]



M. Linder,Nutritional Biochem.7 Metab.Appleto, 1991, Fig 1.6 . 7

44 Studies Confirm Linear Regression

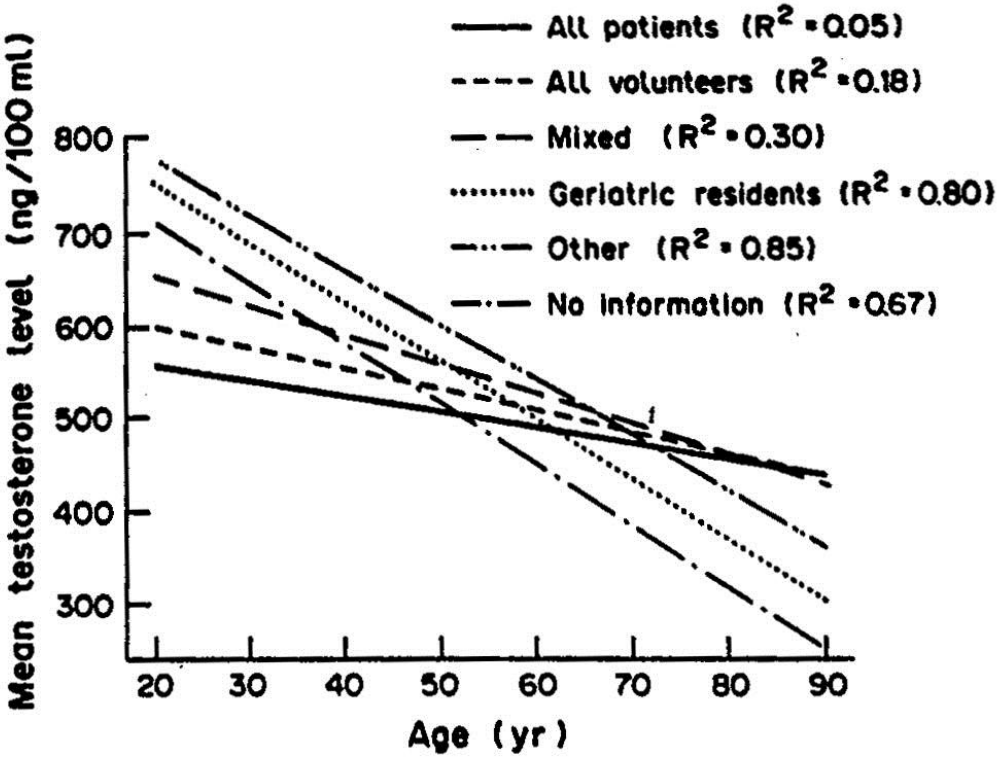
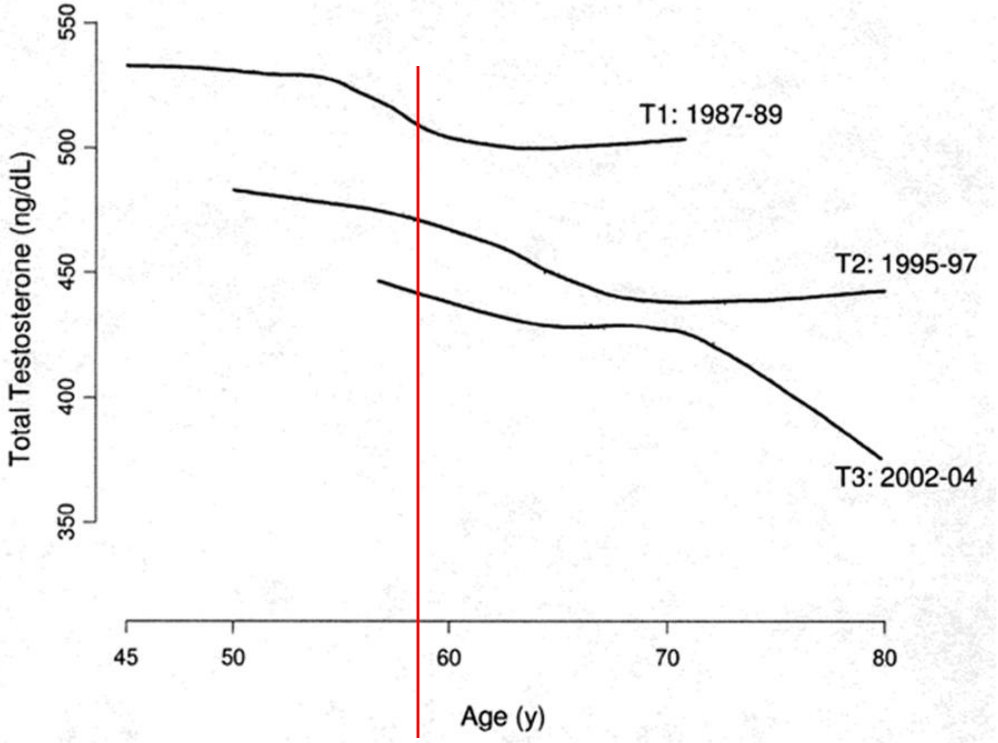


Fig. 6. Predicted relation between testosterone and aging by sample selection. Results from 44 studies reporting mean testosterone levels by age group. Values in parentheses indicate the amount of variance in testosterone explained by age.

Trans -Generational Decline in Testosterone?



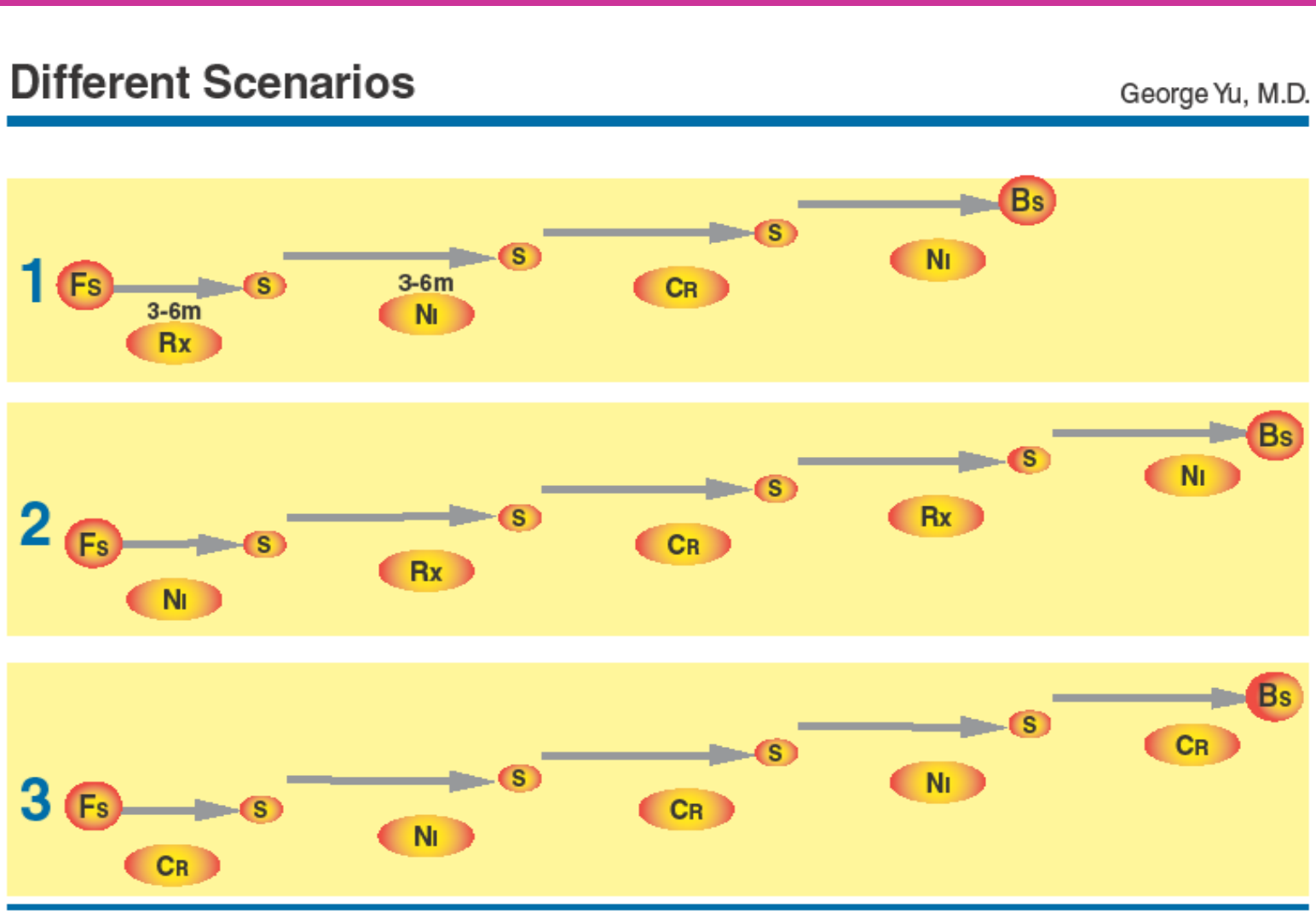
Travison et al. *A Population-Level Decline in Serum Testosterone Levels in American Men.* The Journal of Clinical Endocrinology & Metabolism 92(1):196-202

Long Term Problems with Severe Nutritional Intervention & Caloric Restriction

- Thyroid Function and body temperature
- Osteoporosis/ Bone Loss
- Hormonal Deficiency
- Muscle Loss

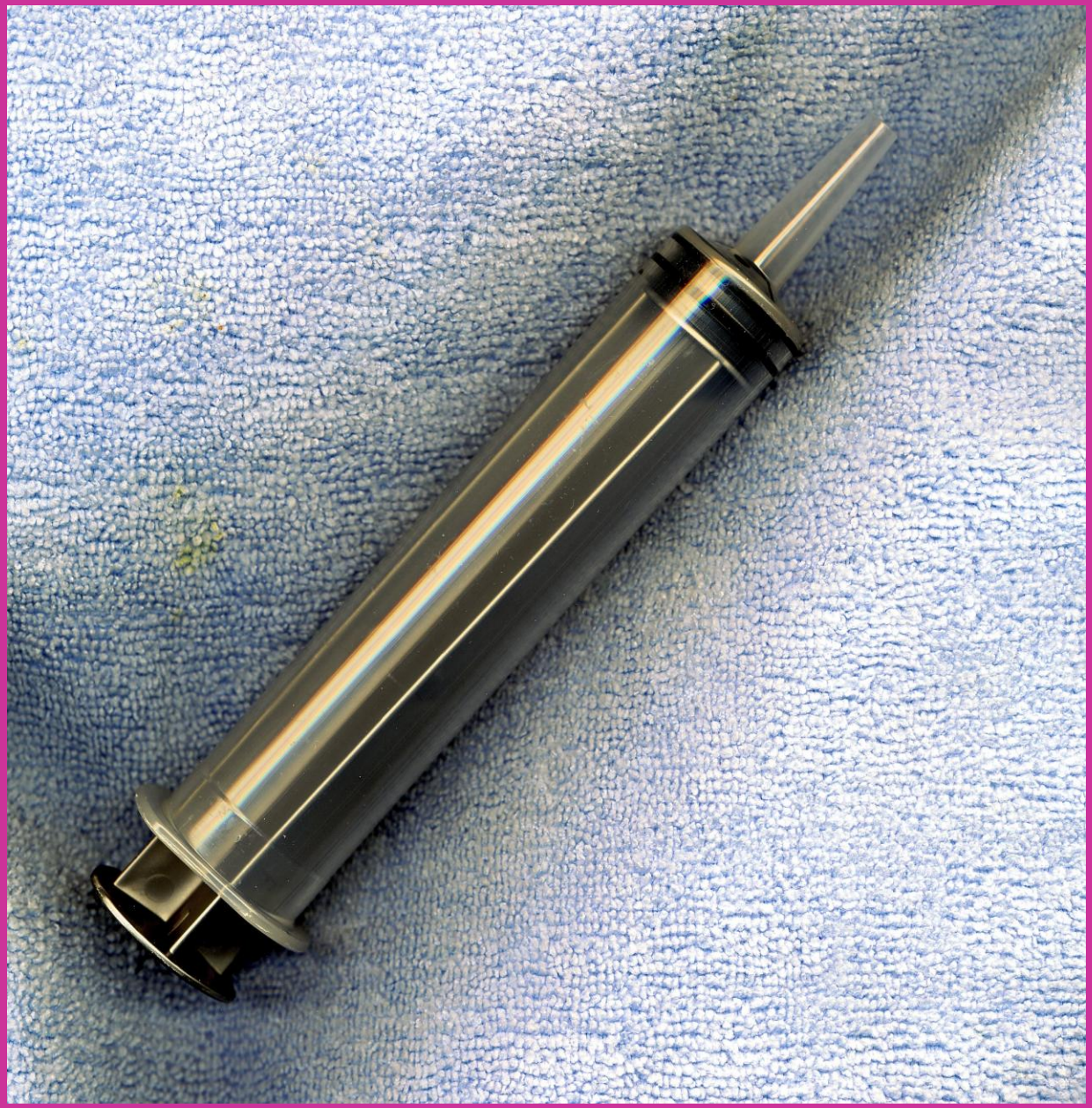
Aegis Medical Clinic Approach

3 Different Patients Seen



Custom Program for Patients

George Yu, M.D.



Caloric Restriction - 70 Years of Research-Disease & Age Delay

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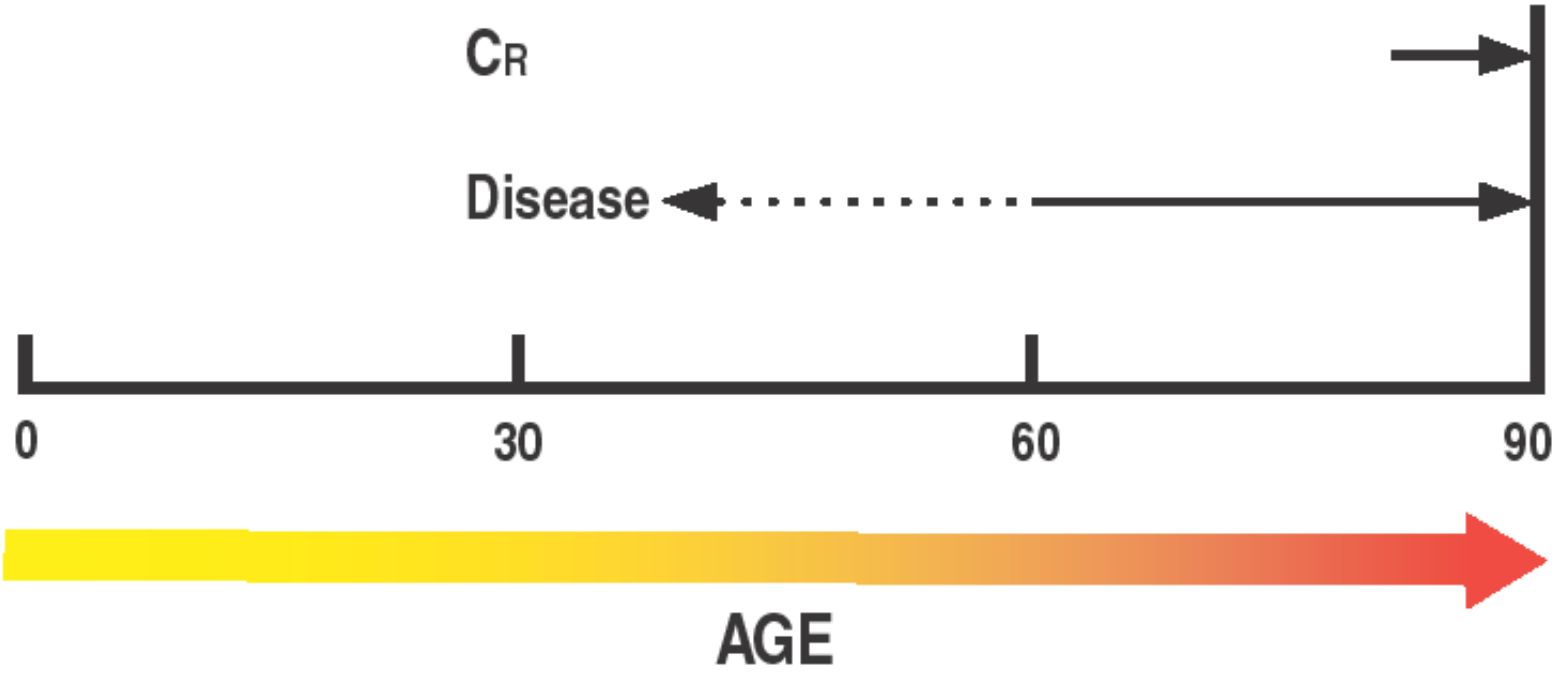

Thank You