

The Practice of the Science of Calorie Restriction

What's to be Gained? What's to be Learned?



Happiness: the Essential Component

Diet that increases happiness makes eating fewer calories easy

- Serotonin (Zoloft and Prozac SRUI) increases
- BDNF increases – antidepressant effect
- Great taste
- Visually appealing
- Pleasing aroma

Other Happiness Lifestyle Aspects

- Personal support
- Social network
- Friends
- Pets
- Exercise → endorphins
- Laughing → endorphins
- Smiling → your brain: All's well
- Sleeping well



Life-Transforming Benefits

- Easy to maintain healthful weight – and easy to lose weight, if needed
- More energy
- Beautiful skin
- Better eyesight
- Longer enjoyment of sexuality
- Lower body fat – reducing disease risk
- Disease protection: cardiovascular disease, cancer & diabetes
- Lower blood pressure – both systolic and diastolic
- Lower LDL, cholesterol, and triglycerides
- Less arterial plaque and reversal of plaque accumulation
- Less inflammation
- Reduced severity of autoimmune diseases
- More effective DNA repair and maintenance
- Preservation and healthful activation of adult stem cells

Calorie Restriction for a Better Brain!



Statistics predict that of those in this audience who reach age 85, nearly half will have Alzheimer's disease.*

But what if you could beat those odds with a lifestyle that improves cognitive capabilities as you get older?

**Alzheimer's Association 2013 Alzheimer's Disease Facts and Figures*

A Better, more Alzheimer's-Resistant Brain may be Possible!



Why CR ? It's the
World's Healthiest, Happiest Lifestyle.
You can do the things you want to do!



What is Calorie Restriction? Just about Limiting Calories?

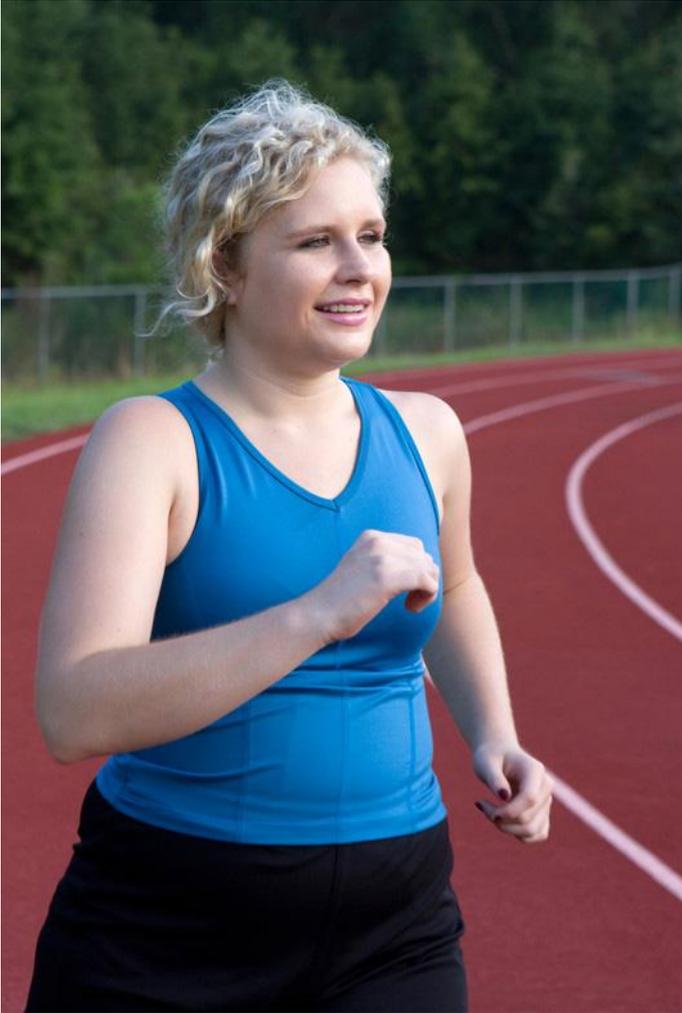
Paul 1850

NIH Estimated Calorie Requirements – Sex, Age, and Activity Level*

		Activity Level		
Sex	Age (years)	Sedentary	Moderately Active	Active
Female	19-30	2,000	2,000-2,200	2,400
	31-50	1,800	2,000	2,200
	51+	1,600	1,800	2,000-2,200
Male	19-30	2,400	2,600-2,800	3,000
	31-50	2,200	2,400-2,600	2,800-3,000
	51+	2,000	2,200-2,400	2,400-2,800

* Based on Estimated Energy Requirements (EER) from the Institute of Medicine Dietary Reference Intakes macronutrients report, 2002, calculated by sex, age, and activity level for reference-sized individuals. "Reference size," as determined by IOM, is based on median height and weight for ages up to age 18 years of age and median height and weight for that height to give a BMI of 21.5 for adult females and 22.5. for adult males.

Does any Low Calorie Diet Work?



- ~~Increased metabolic rate~~
- ~~High GI foods~~
- ~~High protein intake~~

Important Pathways Emerge

Moderate Protein, Low Calorie, Low GI Diet



mTOR Insulin-IGF-1



AMP Kinase

Growth Downregulation

Upregulation Energy Production

Histone deacetylases

DNA Methyltransferases

DNA Integrity / Adult Stem Cell Preservation / Activation

Successful Calorie Restriction = Extraordinary Living!

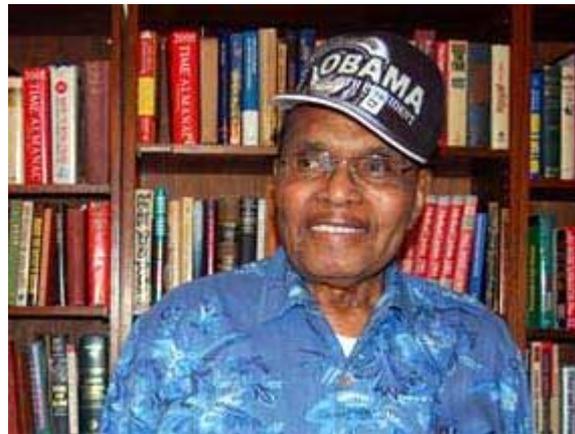
Ralph Cornell, 104

BMI 22, CR 50 years



Bernando LaPallo, 111

CR 106 years



Walter Breuning, 114

BMI-19, CR 36 years



"I think you should push back from the table when you start to feel full."

Why are they so Successful?

- High BMI with low calorie intake
- Slow metabolic rate
- Happy – Duchenne smile
- Supportive social network
- Moderate exercise
- Fully functional up to age 100 and beyond



“Do not complain about old age. It is a privilege denied to many!”

How many of you would like to
Extend Healthspan Longer than Ever?



LivingTheCRWay.com and The CR Society International

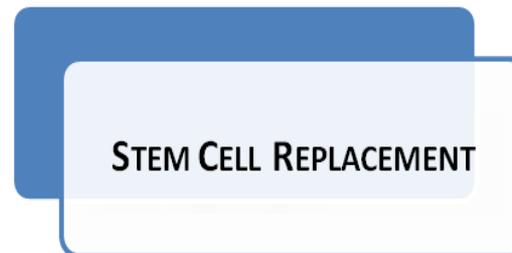
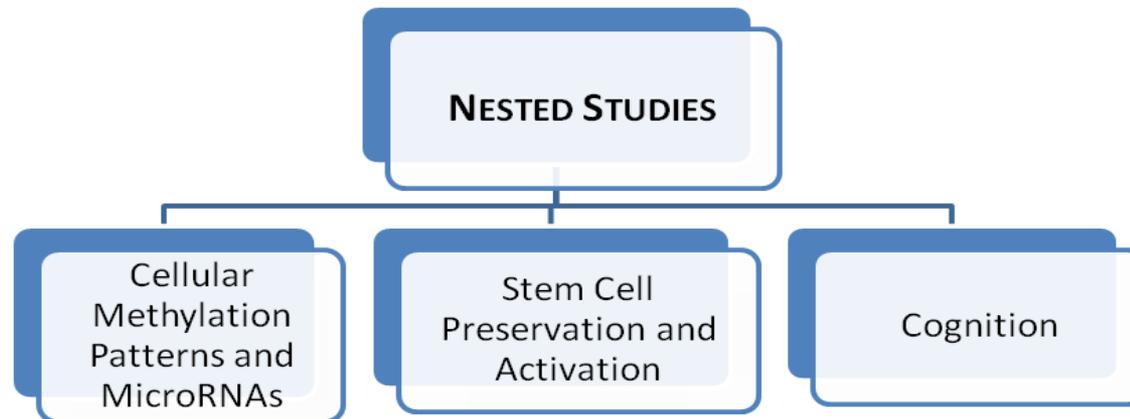
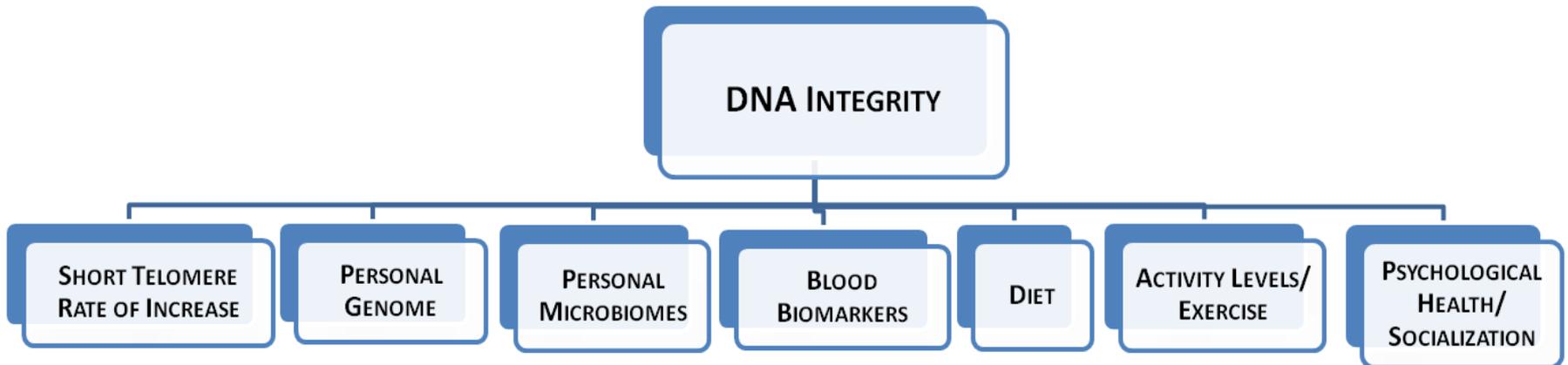
Introduce

DNA, Healthy Aging and Calorie Restriction

DNA HACR

A study for life!

DNA HACR Evaluations



The Rate of Increase of Short Telomeres Predicts Longevity in Mammals

Vera E, Bernardes de Jesus B, Foronda M, Flores JM, **Blasco MA.**

Cell Reports. 2012 Sep 26. pii: S2211-1247(12)00263-X.

Aberrantly short telomeres result in decreased longevity in both humans and mice with defective telomere maintenance. Normal populations of humans and mice present high interindividual variation in telomere length, but it is unknown whether this is associated with their lifespan potential.

[To address this issue, we performed a] longitudinal telomere length study along the lifespan of wild-type and transgenic telomerase reverse transcriptase mice{. We} found that mouse telomeres shorten ~100 times faster than human telomeres. Importantly, the rate of increase in the percentage of short telomeres, rather than the rate of telomere shortening per month, was a significant predictor of lifespan in both mouse cohorts, and those individuals who showed a higher rate of increase in the percentage of short telomeres were also the ones with a shorter lifespan.

These findings demonstrate that short telomeres have a direct impact on longevity in mammals, and they highlight the importance of performing **longitudinal** telomere studies to predict longevity.

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Gut Microbiome

Cross-talk between *Akkermansia muciniphila* and intestinal epithelium controls diet-induced obesity. Everard A, Belzer C, Geurts L, Ouwerkerk JP, Druart C, *et al.* ***PNAS* 2013 May 13.** PMID: 23671105

Longevity in mice is promoted by probiotic-induced suppression of colonic senescence, dependent on upregulation of gut bacterial polyamine production.

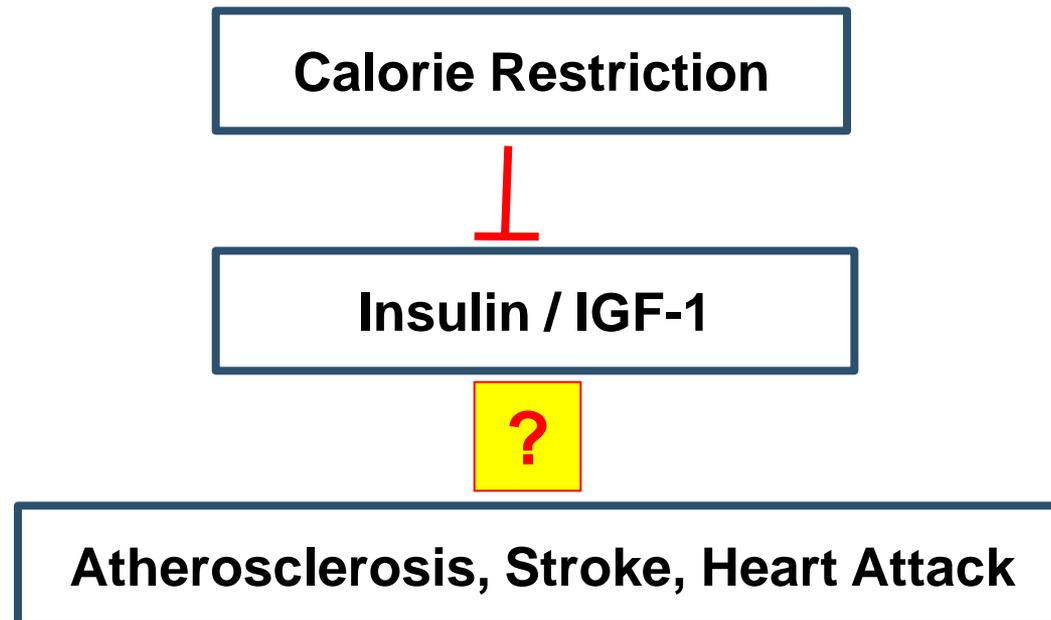
Matsumoto M, Kurihara S, Kibe R, Ashida H, Benno Y: ***PLoS One* 2011, 6:(8):e23652.** PMID: 21858192



Longevity Lifestyles Customized to Personal Genomics

Personal genomics may determine risk of many diseases such as, prostate cancer, breast cancer, diabetes, Alzheimer's disease, and the list goes on and on. For example, a polymorphism in the promoter region of the IGF-I gene influences IGF-I levels.

Low levels of insulin-like growth factor I (IGF-I) can predispose to atherosclerosis and may therefore increase the risk of stroke. Low levels have also been found to influence the outcome of cardiovascular and cerebrovascular disease.



Replace Stem Cells when Necessary



We are here to Extend Healthspan Longer than Ever. Please join us!

