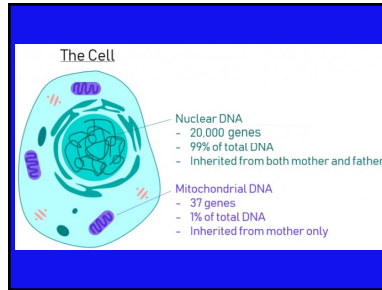
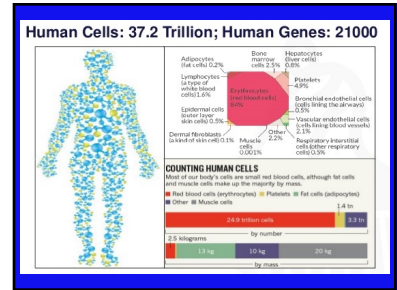


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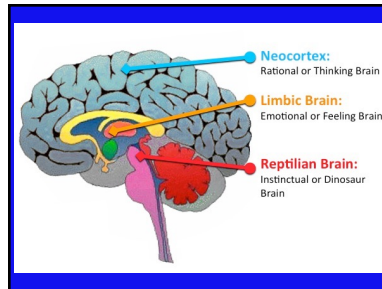
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How many chemical reactions happen in our body?

Since we have about 200 trillion cells and each one performs millions of chemical reactions, the total number of chemical reactions in the human body is about 400 billion per second every second of your life.

That's 4 times the amount of stars in our galaxy which is a mere 100 billion

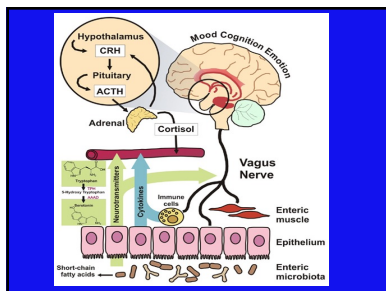
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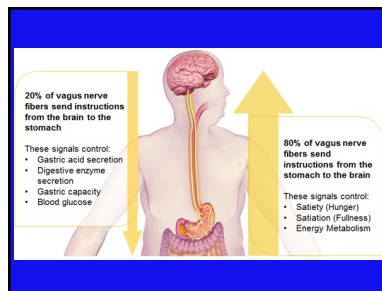
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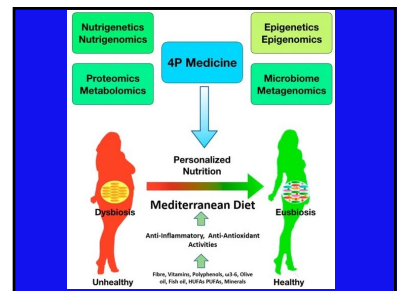
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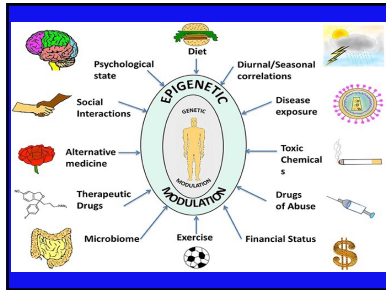
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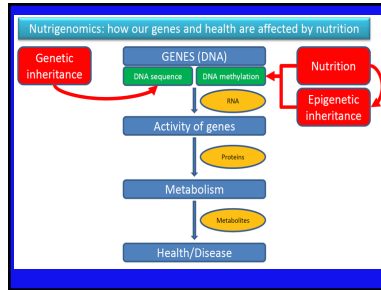
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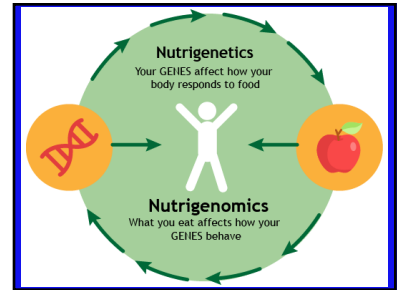
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13

Food Diversity
 Mammals - 5,500 species
 Cows 800+ breeds (22,000 genes) - 2000 varieties of cheese
 Sheep 600+ breeds
 Pigs 400+ breeds
 Fish 25,000 species (25,000-50,000 genes)
 Poultry 3,000 varieties (17,000 to 23,000 genes)
 Apple 7,500 varieties (57,000 genes)
 Tomato 7,500 varieties (35,000 genes)
 Maize/Corn 20,000 varieties (32,500 genes)
 Rice 40,000 varieties (32,000 to 56,000 genes)
 Potatoes 5,000 varieties (40,000 genes)
 Beans 40,000 varieties (30,000 genes)
 Wheat 10,000+ varieties (96,000 genes)

14



15

Portion Distortion		
20 YEARS AGO	TODAY	DIFFERENCE
333 Calories	598 Calories	265 MORE CALORIES
45 Calories	358 Calories	313 MORE CALORIES
143 Calories	418 Calories	275 MORE CALORIES
55 Calories	275 Calories	220 MORE CALORIES
188 Calories	413 Calories	225 MORE CALORIES

16



17

How Does Food Affect Our Brain?

- The foods you eat can effect the chemical composition of your brain because **the nutrients in foods are precursors to neurotransmitters.**
- Neurotransmitters are chemical messengers that tell our body what to do and how to feel.
 - Dopamine
 - Serotonin
 - Endorphins
 - Choline (precursor to acetylcholine)

18

Essential	Conditionally Non-Essential	Non-Essential
Histidine	Arginine	Alanine
Isoleucine	Asparagine	Aspartate
Leucine	Glutamine	Cysteine
Methionine	Glycine	Glutamate
Phenylalanine	Proline	
Threonine	Serine	
Tryptophan	Tyrosine	
Valine		
Lysine		

19

NEUROTRANSMITTERS

ADRENALINE fight or flight produced in stressful situations, increases heart rate and blood flow, leading to physical boost and heightened awareness.	GABA calming Calm firing nerves in the central nervous system. High levels improve focus, low levels cause anxiety. Also contributes to motor control and vision.
NORADRENALINE concentration affects attention and responding actions in the brain. Contracts blood vessels, increasing blood flow.	ACETYLCHOLINE learning Involved in thought, learning and memory. Activates muscle action in the body. Also associated with attention and awakening.
DOPAMINE pleasure feelings of pleasure, also addiction, movement and motivation. Triggers repeat behaviors that lead to dopamine release.	GLUTAMATE memory Most common neurotransmitter. Involved in learning and memory, regulates development and creation of nerve contacts.
SEROTONIN mood contributes to well-being and happiness. Helps sleep cycle and digestive system regulation. Affected by exercise and light exposure.	ENDORPHINS euphoria Released during exercise, excitement and sex, producing well-being and euphoria, reducing pain.

20

Getting to know your gut microbiota

A huge quantity (hundreds of trillions) of bacteria and other microorganisms inhabit your intestines fulfilling key functions for your health and wellbeing.

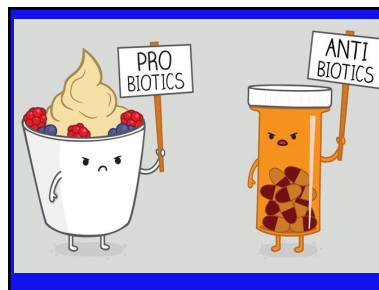
- Gut microbiota's weight can reach up to 1 to 2 kg
- 95% of our bacteria located in the gastrointestinal GI tract
- The GI tract surface is as big as 4 tennis courts
- 400 m²
- Bacteria are 10 to 50 times smaller than human cells
- In our body, microbes outnumber human cells by 10:1
- Laid end to end, our body's bacteria would circle the Earth 2,5 times

21

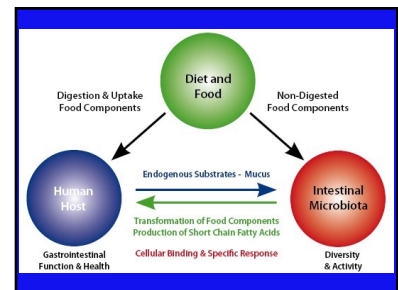
Prebiotics vs Probiotics

Prebiotics	Probiotics
Prebiotics are defined as nonliving non-digestible special form of fiber or carbohydrates.	Probiotics are referred to as live active microorganisms that when administered in adequate amount will have beneficial effects to its host.
The powder form of prebiotics can survive heat, cold, acid.	<ul style="list-style-type: none"> more fragile. vulnerable to heat. may be killed over time.
Prebiotics perform their role by nourishing the bacteria that live in the intestines.	Probiotics fight the harmful bacterial species present in the gut.

22



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24

Spinach 49% protein	Kale 45% protein	Broccoli 45% protein
Cauliflower 40% protein	Mushrooms 38% protein	Parsley 34% protein
Cucumbers 24% protein	Green Pepper 22% protein	Cabbage 22% protein
Tomatoes 18% protein	Beef 25.8% protein	Chicken 23% protein
		Eggs 12% protein

Protein in Meat:

25

Do you really need meat to get Protein?

Beef 6.4 grams of protein per 100 calories

Broccoli 11.1 grams of protein per 100 calories

Plants have all the protein you need with none of the violence.

26

IS THAT REALLY IN MY MEAT?

ANTIBIOTIC-RESISTANT BACTERIA CONTAMINATION

SALMONELLA & CAMPYLOBACTER BACTERIA FOUND IN:

- 81% of chicken
- 69% of beef
- 59% of pork
- 38% of turkey

Salmonella and Campylobacter bacteria cause millions of cases of food poisoning a year.

Of the chicken found, 53% was infected with antibiotic-resistant forms of E. coli.

Certain strains of E. coli cause urinary tract infections, pneumonia and other illnesses.

29.9 million pounds of antibiotics were sold in 2011 for meat and poultry production.

77 million pounds sold for human use.

27



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HOW MUCH FIBER DO WE NEED?

The Institute of Medicine has established a recommended daily amount (RDA) for fiber intake:

Gender	Age Group	Recommended Daily Amount (RDA)
MEN	ages 50 and younger	38 grams of fiber per day
	ages 51 and older	30 grams of fiber per day
WOMEN	ages 50 and younger	25 grams of fiber per day
	ages 51 and older	21 grams of fiber per day

29

RESISTANT STARCH

RS is a type of starch that resists being digested in the stomach & small intestine & makes it through to the large intestine intact. Here it becomes food for your gut bacteria.

Mechanism of resistant starch for gut health

- You eat a source of resistant starch
- It slowly ferments in the large intestine (prebiotic effects)
- Resists digestion in the small intestine
- Unlike other carbs, it produces short-chain fatty acids

30

BENEFITS OF A DIET HIGHER IN RESISTANT STARCH

GUT HEALTH

- Improved Microbial Metabolism
- Enhanced Short-Chain Fatty Acids
- Increased Population of Beneficial Bacteria
- Increased Insulin Sensitivity

31

World Health Organization Warns Against Using Artificial Sweeteners

Continued consumption doesn't reduce weight and could increase the risk of Type 2 diabetes, cardiovascular diseases and mortality in adults, the WHO, said on Monday.

32

IS EATING EGG YOLKS GOOD OR BAD?

33

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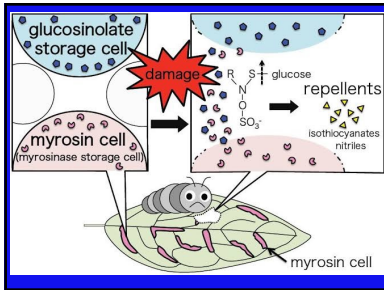
Cruciferous Vegetables

Cruciferous vegetables are non-starchy vegetables that contain dietary fiber, folate, carotenoids, glucosinolate (sulfur-containing chemicals) and vitamin C.

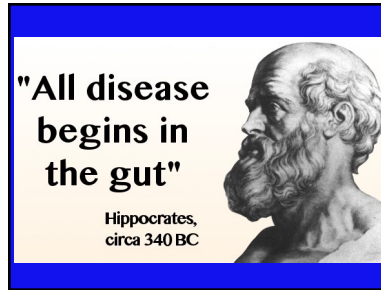
- Arugula
- Bok choy
- Broccoli
- Brussels sprouts
- Cabbage
- Cauliflower
- Collard greens
- Horseradish
- Kale
- Radishes
- Rutabaga
- Turnips
- Watercress
- Wasabi

Laboratory studies have shown these compounds decrease inflammation, a risk factor for cancer.

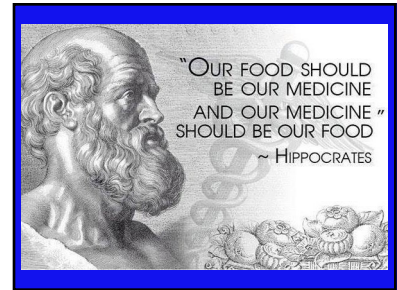
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Bite Size Clinical Pearls

- Preload with water, soup
- Select low calorie high nutrient density foods
- Plant based diet, salad including bright colors with each meal
- Avoid red meat, processed, or char-broiled foods
- Eat whole fruits, not juices
- Chew foods well, enjoy meal without rush
- Record weight daily
- Time window for eating, Intermittent fasting
- Avoid artificial sweeteners, reduce salt, oil, sugar (S.O.S.)
- Prebiotic fiber, fermented foods to support gut microbiome
- Avoid antibiotic over use
- Mindful eating without distractions
- High-quality sleep

40

The human brain has 100 billion neurons, each neuron connected to 10 thousand other neurons. Sitting on your shoulders is the most complicated object in the known universe.

~ Michio Kaku

41



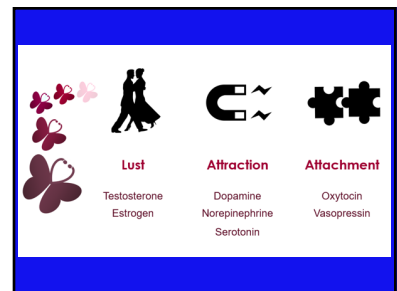
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43

Love is the soul of the soul of the soul of the universe.
 Love is the beginning and the end.
 Love is eternal, infinite and everlasting.
 Love is the energizing elixir of the universe.
 Love is the cause and effect of all harmonies.
 Love is the alchemy of transformation.
 Love is the cure.
 Love is the power. Love is the magic of changes.
 Love is the life-giving garden of this world.

44



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UNDERSTANDING THE BASICS OF HAPPY HORMONES

Dopamine: The Reward Hormone, Considered the "Feel Good Hormone"
Oxytocin: The Love Hormone Known to Increase Trust
Serotonin: The Calm Hormone Well Being and Happiness
Endorphins: "Runner's High" Feelings of Euphoria and Pleasure

<p>SEROTONIN</p> <ul style="list-style-type: none"> Mood Sense of Well-Being Social Behavior Appetite Sleep Memory 	<p>DOPAMINE</p> <ul style="list-style-type: none"> Excitement Bliss Motivation Concentration Movement Learning
<p>OXYTOCIN</p> <ul style="list-style-type: none"> Bonding Arousal Trust Communication Skills Anti-Stress Self-Esteem 	<p>ENDORPHINS</p> <ul style="list-style-type: none"> Relieves Stress Relieves Pain Feeling of Euphoria Pleasure

46

Oxytocin-the "Love Hormone"

- Increases generosity, empathy & trust
- Reduces fear, stress, depression, & physical pain
- Lowers blood pressure
- Improves sleep
- Helps us bond with others
- May even decrease our tolerance for addictive drugs

47

Oxytocin and dopamine, the "love hormones", have an effect on pupil size.

Our brains release a boost of these chemicals when we sexually or romantically attracted to someone. This surge in hormones appears to make our pupils dilate.

48

What is Oxytocin?

- Oxytocin is a hormone that produces a feeling of love, satisfaction, arousal, trust, empathy, stress, social bonding
- In Females: Oxytocin affects uterus and the breasts. This chemical communicates with the reproductive system during childbirth, lactation
- In Males: effects on testosterone production and the movement of sperm.
- FACT: It is the primary hormone released during an orgasm

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Staying Healthy Love Hormone for Your Heart

50

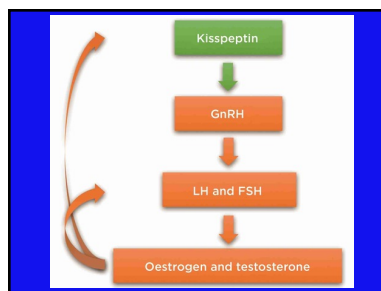
Love Hormone Offers Heart-Healing Properties

'Love hormone' oxytocin may heal your damaged heart after a heart attack

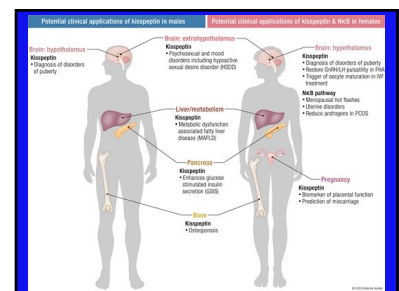
51

Staying Healthy Kisspeptin, The Sex Drive Drug

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53



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Stage 1: Lust/Romantic Feelings

Lust is driven by SEX hormones; Testosterone and Estrogen. During this stage of love, your partner seems "perfect" or ideal for you, because of endorphins soak your brain.

55

Testosterone:

Testosterone is a steroid hormone that starts the development of male and some female sexual characteristics/drive. Testosterone is produced in the testes, ovaries, and adrenal cortex.

56

Estrogen:

Estrogen is a steroid hormone that promotes the development and maintenance of female physical and sexual characteristics. Estrogen is an important factor for menstrual and estrous reproductive cycles. Estrogen is produced in the ovaries, adrenal cortex, placenta, and testes.

57

Stage 2: Physical Attraction:

Physical attraction is also known as the "love-sick" phase, and is controlled by three neurotransmitters; adrenaline, dopamine, and serotonin. During this stage you daydream about your partner all day, and they are the center of your attention, causing you to lose appetite, and need less sleep.

58

Adrenaline/Epinephrine:

Adrenaline activates stress responses, also increases blood and cortisol levels. Adrenaline creates a charming effect when you meet your partner, you start to sweat, your heart races, and your mouth goes dry. Once adrenaline is secreted by adrenal glands it prepares muscles for exertion, and your blood pressure sky rockets; creating a strong physical attraction to one another.

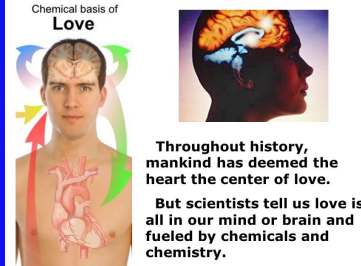
59

Dopamine:

Dopamine stimulates "desire and reward" by triggering intense rushes of pleasure; the same effect as snorting cocaine. Dopamine plays a huge role in cognition, mood, sleep and attention. Dopamine or the pleasure chemical is why you think about your partner all day, and lose sleep. Studies show that dopamine is a main cause of schizophrenia and Parkinson's disease.

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Chemical basis of Love



Attachment:

- Oxytocin
- Vasopressin

Attraction: and loss of appetite and sleep

- Dopamine
- Norepinephrine
- Serotonin
- Nerve growth factor

Lust:

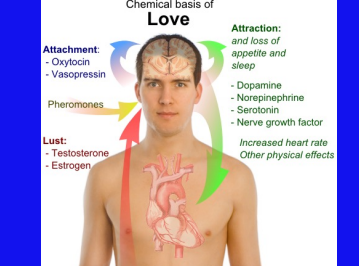
- Testosterone
- Estrogen

Increased heart rate
Other physical effects

Throughout history, mankind has deemed the heart the center of love. But scientists tell us love is all in our mind or brain and fueled by chemicals and chemistry.

61

Chemical basis of Love



Attachment:

- Oxytocin
- Vasopressin

Attraction: and loss of appetite and sleep

- Dopamine
- Norepinephrine
- Serotonin
- Nerve growth factor

Lust:

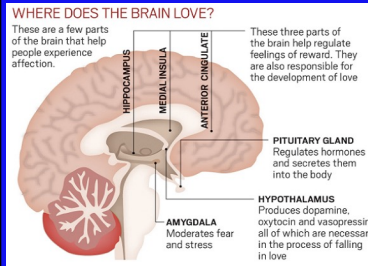
- Testosterone
- Estrogen

Increased heart rate
Other physical effects

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WHERE DOES THE BRAIN LOVE?

These are a few parts of the brain that help people experience affection.



HIPPOCAMPUS

MEDIAL INSULA

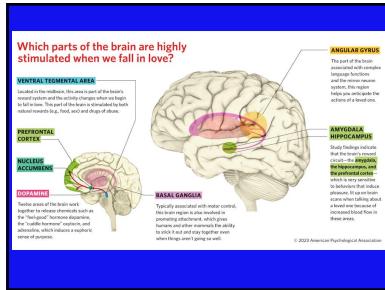
ANTERIOR CINGULATE

PITUITARY GLAND
Regulates hormones and secretes them into the body

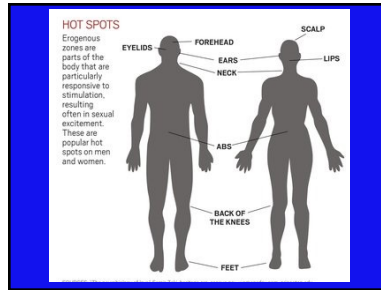
HYPOTHALAMUS
Produces dopamine, oxytocin and vasopressin, all of which are necessary in the process of falling in love.

AMYGDALA
Moderates fear and stress

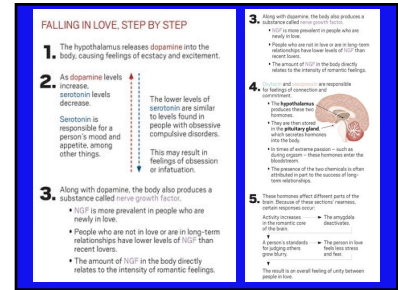
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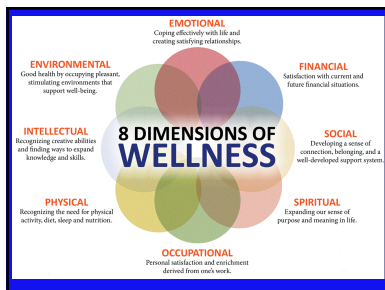
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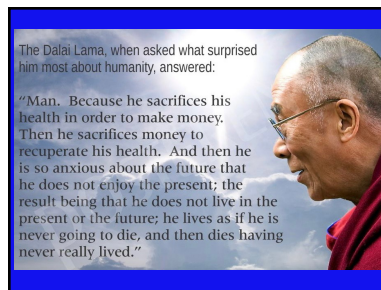
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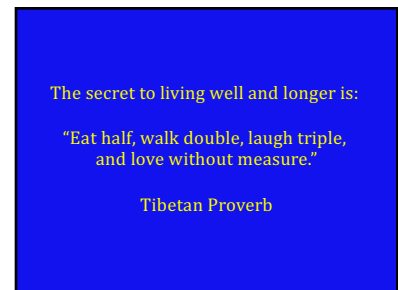
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