Health and aging: Scientists discover key to longevity in hypothalamus

Scientists at Albert Einstein College of Medicine of Yeshiva University may have found the “Fountain of Youth” or rather, the “fountain of aging”.

In a paper published on May 1st, 2013, in the online edition of Nature, Hypothalamic programming of systemic ageing involving IKK-β, NF-κB and GnRH, scientists pinpointed a protein complex in the hypothalamus that controls the aging process.

"Scientists have long wondered whether aging occurs independently in the body’s various tissues or if it could be actively regulated by an organ in the body," said senior author Dongsheng Cai, M.D., Ph.D., professor of molecular pharmacology at Einstein. "It’s clear from our study that many aspects of aging are controlled by the
hypothalamus. What's exciting is that it's possible — at least in mice — to alter signaling within the hypothalamus to slow down the aging process and increase longevity.”

The hypothalamus, an almond-sized structure located deep within the brain, is known to have fundamental roles in growth, development, reproduction, and metabolism.

Credits:
Albert Einstein College of Medicine

Dr Cai noticed that inflammation in the hypothalamus gives rise to some components of metabolic syndrome which can lead to heart disease and diabetes. He said that when people age, there are inflammatory changes in the tissues when age-related diseases of the cardiovascular system are present and in neurological disorders and some cancers.

The scientists studied a specific protein complex called NF-κB (nuclear factor kappa-light-chain-enhancer of activated B cells).

"Even though inflammation involves hundreds of molecules, NF-κB sits right at the center of that regulatory map," Dr Cai said.
When the team activated the NF-κB pathway in the hypothalamus of mice, they aged significantly faster, lost muscle strength, skin thickness and the ability to learn. On the contrary, when they blocked the NF-κB pathway in the hypothalamus of mouse brains, the aging process slowed and longevity increased by about 20 percent.

The researchers also found that when they activated the NF-κB pathway in the hypothalamus levels of gonadotropin-releasing hormone (GnRH), (which is synthesized in the hypothalamus) declined. GnRH in the blood is usually associated with reproduction.

The researchers injected the hormone into a hypothalamic ventricle (chamber) of aged mice and found it protected the mice and aided in the creation of new neurons in the brain.

“The according to Dr. Cai, preventing the hypothalamus from causing inflammation and increasing neurogenesis via GnRH therapy are two potential strategies for increasing lifespan and treating age-related diseases.”

Resources:

The title of the paper is "Hypothalamic Programming of Systemic Aging Involving IKKβ, NF-κB and GnRH." The other contributors are Guo Zhang, Ph.D.; Juxue Li, Ph.D.; Sudarshana Purkayastha, Ph.D.; Yizhe Tang, Ph.D.; Hai Zhang, Ph.D.; Ye Yin, Ph.D.; Bo Li, Ph.D. candidate; and Gang Liu, Ph.D.; all at Einstein.
Clearance of p16\textsuperscript{Ink4a}-positive senescent cells delays ageing-associated disorders

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Advanced age is the main risk factor for most chronic diseases and functional deficits in humans, but the fundamental mechanisms that drive ageing remain largely unknown, impeding the development of interventions that might delay or prevent age-related disorders and maximize healthy lifespan. Cellular senescence, which halts the proliferation of damaged or dysfunctional cells, is an important mechanism to constrain the malignant progression of tumour cells\textsuperscript{1,2}. Senescent cells accumulate in various tissues and organs with ageing\textsuperscript{3} and have been hypothesized to disrupt tissue structure and function because of the components they secrete\textsuperscript{4,5}. However, whether senescent cells are causally implicated in age-related dysfunction and whether their removal is beneficial has remained unknown.

To address these fundamental questions, we made use of a biomarker for senescence, p16\textsuperscript{Ink4a}, to design a novel transgene, \textit{INK-ATTAC}, for inducible elimination of p16\textsuperscript{Ink4a}-positive senescent cells upon administration of a drug. Here we show that in the \textit{bub1\textsuperscript{H1}} progeroid mouse background, \textit{INK-ATTAC} removes p16\textsuperscript{Ink4a}-positive senescent cells upon drug treatment. In tissues—such as adipose tissue, skeletal muscle and eye—in which p16\textsuperscript{Ink4a} contributes to the acquisition of age-related pathologies, life-long removal of p16\textsuperscript{Ink4a}-expressing cells delayed onset of these phenotypes. Furthermore, late-life clearance attenuated progression of already established age-related disorders. These data indicate that cellular senescence is causally implicated in generating age-related phenotypes and that removal of senescent cells can prevent or delay tissue dysfunction and extend healthspan.

Subject terms: Cell biology • Organismal biology • Physiology • Health and medicine
The Telomere in Aging

a Brief Review and Towards an QED SCIO Stimulation

ANTI AGING Therapy

A we have made a treatise for the construct of biology to of a Quantic nature. Life is organized not random or entropic. Thermodynamic describes the laws of death, whereas Quantum theory more fully describes the construct of life. Aging is a decay of the Quantum organization and an acelleration of thermodynamic entropy. This decay of the organization decay makes cellular metabolism more entropic or random. This is aging.

Aging cells are not clueless about their life span: Recent studies show they have a "clock" that reminds them of passing time to alert them to the Quantic decay. Normal human cells replicate a limited number of times before they reach "replicative senescence" and stop dividing. At this point the cells are still alive, breathing and metabolizing food, sometimes for months, until they die. The "molecular clock" that informs the cell of its limited life span is the telomere, a structure at the end of each chromosome that shortens with each cell division. Research shows the mechanism by which a human cell keeps track of its division, by the length of bits of DNA at the end of the chromosome, and their proximity to specific genes. The telomere is at the end of the DNA molecule and thus is susceptible to decay. This decay is similar to the unraveling of a piece of rope. As a organism ages the telomere unravels and thus some of the Quantic organization is lost.

The unraveling could be treated with an Quantum Energetic Dynamic electrical stimulation as in Nelson Biofeedback. A trivector pulse has been developed for stimulating the reconstruct of the unraveled telomere.

A study reported in Science magazine found that in human cells, as in yeast cells, there exists a "telomere position effect" (TPE). TPE is dependent on telomere length and the position of the gene in relation to the telomere. It enables a cell to keep track of its number of divisions, and provides a way to modify gene expression during the lifetime of the cell. According to Dr. Woodring Wright, a senior co-author of the study with Dr. Jerry Shay and colleagues, the telomere position effect suggests that it can "let a cell know how old it is so that it could change its behavior before it became senescent."

Telomeres, telomerase and aging
The hallmark of aging is a gradual loss of functioning cells in the body. But not all cells age at the same rate, even in the same organ. When tested for their ability to divide, normal cells taken from a particular organ, such as the skin, are happily dividing. Others are incrementally slowing and dividing at a more gradual pace. And then there are those that have reached cell senescence ("old age") and no longer divide or function. On the whole, as tested in cell culture, normal human cells reach senescence after dividing around 60 to 80 times.

**The telomere, p53 and senescence**

As there are 46 chromosomes in each cell, each with double strands, there are 92 telomeres that dictate its life span. Cells in most growing human tissues and organs gradually slow in growth, in proportion to the shortening of their telomeres.

The telomere is a kind of molecular cap, made of DNA, that protects the ends of the chromosome from damage. Telomere DNA has over 1000 bases (building blocks), with the sequence TTAGG, that repeats over and over. In order to divide, a normal cell has to replicate all the DNA in its chromosomes. But normal cells have difficulty in copying the last few bases on the telomere. As a result, the telomere shortens with each round of DNA replication and cell division. As a cell ages, the telomere keeps shortening until it reaches a finite length. At that point cells stop dividing. This halt in growth is triggered by a gene called p53 that is activated in response to DNA damage. A telomere that has become too short no longer protects the chromosome from DNA damage. When the damage takes place, p53 responds by stopping cell replication and forcing it into senescence. As a telomere gets too short, the finite cell growth prevents DNA-damaged cell growth that could lead to abnormal cells and to cancer.

**Telomerase and longevity**

As there are 46 chromosomes in each cell, each with double strands, there are 92 telomeres that dictate its life span. Cells in most growing human tissues and organs gradually slow in growth, in proportion to the shortening of their telomeres. Studies have shown that normal cells from old people lose their
Anti-aging Articles

ability to divide at a faster rate than cells from the young, and that senescent cells increase in the body, with age.

While telomere shortening provides replicative history-a clock that reminds a cell how many times it has divided and how long it yet has to live-elongation of the telomere adds longevity to a cell. This occurs naturally in cancer cells, where a complex protein called telomerase, which has an enzyme component, helps build up and elongate the telomere with each cell division. This allows the cells to continue growing and become effectively "immortal," the hallmark of cancer cells. If one blocks the action of telomerase in a cancer cell by genetic manipulation, the telomere will begin to shorten with each division, as in normal cells, and the cancer cells will stop dividing and die.

In normal cells that are not germ cells, telomerase is switched off at an early stage of development. Telomeres do not elongate and cells must yield to a fate of a limited number of divisions. If one introduces a telomerase gene into normal cells by genetic manipulation, the cell can extend its life span. This has been shown in several studies, including experiments by a team that included Drs. Wright and Shay.

In these experiments telomerase was introduced into telomerase-negative human retina and foreskin cells. The cells began to express telomerase, as actively as cancer cells. Their telomere elongated, and the cells divided vigorously and did not express a cell marker for senescence (beta galactosidase). Furthermore, the cells showed an increased number of cell divisions and a longer life span, compared to the cells that were not treated with telomerase, whose telomere shortened with each division, leading to senescence. Another important observation was that the introduction of telomerase into the cells and their continuous rapid division and longer life span did not make them cancerous. They remained with a normal appearance and normal number of chromosomes.

**Telomere position effect and gene silencing**

Position effect is a term used to describe an event in which a gene's behavior is affected by its location on the chromosome. The changes in behavior can be expressed in various ways, such as differences in the appearance and functions of cells (phenotype), relay of instructions from the gene, and in doubling time of the dividing cells. Position effects have been reported in insects, plants, yeast and mice, and more recently in human cells.

**TPE in yeast cells**

In 1990, Gottschling and colleagues showed in yeast cells that by inserting a gene next to a telomere, it was silenced. The experiments used marker gene ADE2 that produces changes in the color of colonies, depending on whether the gene is expressed (white colonies) or silenced (red colonies). Insertion of ADE2 next to the telomere produced red colonies, (silenced gene). But the red cell colonies had sectors of white colonies, showing the gene was switched back on. Within the white sectors, in the largely red
colonies, red sectors appeared. This shows gene reversal; the ADE2 gene was first silenced (red colony), then switched on (white sector), and then silenced again (red within white). The switches may be due in part to neighboring genes influencing the ADE2 gene. This means that while silencing depends on the gene's proximity to the telomere, competing regulatory factors produced by neighboring genes may modify a gene's behavior.

**TPE in human cells**

The findings that TPE exists in human cells is novel; they show a similarity between TPE in human cells and yeast, and offer clues to cellular aging. In the experiments reported in Science, investigators used a human cancer cell line called HeLa to investigate TPE and the relation between gene activity and telomere length. HeLa cells, which are "immortal," contain telomerase that lengthens the telomere, enabling the cells to keep dividing.

In the experiments, investigators introduced into the cell a gene called luciferase (the gene that makes fire flies glow), linked to DNA. Luciferase, called a reporter gene whose location is identified in the cell by its luminescence, was inserted near a telomere. Its luminescence compared to that of the reporter inserted at internal sites of the chromosome. To test if telomere length influences gene silencing, the investigators then elongated the telomere by telomerase, and examined telomere positional effect on luciferase.

The results showed that luciferase near the telomere produced 10 times less luminescence than luciferase located at internal sites in the chromosome. Increasing the length of the telomere further increased TPE, resulting in an additional two- to 10-fold decrease in luminescence. These experiments showed that the proximity of a telomere to a gene silences the gene: when the telomere is lengthened, and the gene is located further away from the critical end of the telomere, it is silenced even more.

**Telomere position effects and cellular aging**

Telomere position effect sheds light on the role of telomere in cellular aging. According to a simple and older telomere hypothesis of cellular aging, senescent cells have lost an essential gene that allows them to divide. By contrast, immortal cells, including cancer cells, have avoided this loss because they have regained telomerase activity. They continue to maintain their telomeres and press on with cell division.

The existence of telomere positioning effect in human cells offers a different scenario, where there is no need for the loss of a gene to push cells into senescence. It is speculated that, for example, when the cell is young and the telomere long, TPE silences "aging genes" that are located near the telomere, but far away from its end. As the cell divides and the telomere shortens, an "aging gene" would be more affected by its position on the telomere, as it increases its proximity to the end of the telomere. In an
old cell where the telomere has shortened to its final length, the "aging genes" are no longer repressed. Silencing is switched off and the "aging genes" activated.

According to Drs. Shay, Woodring and their colleagues, J. Bauer and Dr. Ying Zou, once TPE has been discovered in human cells, there will be a challenge: to identify genes on chromosomes "whose expression is influenced by telomere length, in order to determine whether TPE actually influences the physiology of aging or cancer."

It is known that certain proteins (gene products), affect cell behavior in different ways, depending on the age of the cell. The genes that regulate these proteins may be important for programming presenescence changes in a cell, before telomeres reach their final length.

Take, for example, a cell that needs to alter its energy metabolism to allow for changes in old age. TPE, which keeps track of the "aging gene" in relation to telomere length, will cause mobilization of regulatory genes to help make the needed change before the telomere is too short.

**Telomere, telomerase and age related disease**

Cellular aging contributes to many conditions in the elderly. The skin wrinkles through loss of collagen production by skin cells that have lost function, partly through free radical damage to DNA (sun damage), and senescence. Atherosclerosis is caused by a loss of division-capacity in cells that line blood vessels (endothelial cells). This, in turn, results in overloading of cell factors that increase the risk of atherosclerotic plaques and blood clots. Active cell division is also important in response to injury. For instance, a damaged liver resulting from excess alcohol intake can lead to liver cirrhosis. In this condition, rapid cell division of the normal healthy liver cells, in response to the injury, could replace damaged tissue by supplying functioning liver cells. The shortening of telomeres, however, would limit liver cell replication and prevent tissue renewal. Introducing telomerase into the dividing liver cells, to elongate the telomere, would exert TPE and a silencing of the "aging gene," allowing continuous division that may offer treatment. This was shown experimentally, in a mouse model of chronic liver injury, where inserting the telomerase gene into the injured liver of the mouse prevented cirrhosis.

**Possible therapies**

It is thought that in normal human organs with a capacity for cell replacement, the telomere clock allows enough divisions for normal growth, repair and maintenance. This setting point is not enough, however, to enable additional cell replications needed during chronic disease. Under these conditions, a potential remedy may be found by increasing the life span of tissue cells, by telomerase. Another possibility may involve QED electrical stimulation of cells from an individual, thus extending the life span of the cells in vitro by telomerase, and further re-introducing the QED stimulus into the sarcodal trivector signal of the organ that requires help.
The discovery of TPE trivector pattern in human cells provides a mechanism to silence critical genes and change the pattern of cell behavior.

The unraveling of the telomere could be treated with an Quantum Energetic Dynamic electrical stimulation as in Nelson Biofeedback. A trivector pulse has been developed for stimulating the reconstruct of the unraveled telomere.

This finding may lead to further research that uncovers the secrets of cellular aging

Aging and Inflammation

• Causes of Age-Related Inflammation

Chronic systemic inflammation is an underlying cause of many seemingly unrelated, age-related diseases. As humans grow older, systemic inflammation can inflict devastating degenerative effects throughout the body (Ward 1995; McCarty 1999; Brod 2000). This fact is often overlooked by the medical establishment, yet persuasive scientific evidence exists that correcting a chronic inflammatory disorder will enable many of the infirmities of aging to be prevented or reversed.

The pathological consequences of inflammation are well-documented in the medical literature (Willard et al. 1999; Hogan et al. 2001). Regrettably, the dangers of systemic inflammation continue to be ignored, even though proven ways exist to reverse this process. By following specific prevention protocols suggested by the Life Extension Foundation, the inflammatory cascade can be significantly reduced.

The Causes of Age-Related Inflammation

Aging results in an increase of inflammatory cytokines (destructive cell-signaling chemicals) that contribute to the progression of many degenerative diseases (Van der Meide et al. 1996; Licinio et al. 1999). Rheumatoid arthritis is a classic autoimmune disorder in which excess levels of cytokines such as tumor necrosis factor-alpha (TNF-a), interleukin-6 (IL-6), interleukin 1b [IL-1(b)], and/or interleukin-8 (IL-8) are known to cause or contribute to the inflammatory syndrome (Deon et al. 2001).

Chronic inflammation is also involved in diseases as diverse as atherosclerosis, cancer, heart valve dysfunction, obesity, diabetes, congestive heart failure, digestive system diseases, and Alzheimer's disease (Brouqui et al. 1994; Devaux et al. 1997; De Keyser et al. 1998). In aged people with multiple degenerative diseases, the inflammatory marker, C-reactive protein, is often sharply elevated, indicating the presence of an underlying inflammatory disorder (Invitti 2002; Lee et al. 2002; Santoro et al. 2002; Sitzer et al. 2002). When a cytokine blood profile is conducted on people in a weakened condition, an excess level of one or more of the inflammatory cytokines, e.g., TNF-a, IL-6, IL-1(b), or IL-8, is usually found (Santor et al. 2002). (See the Suggested Reading reference list for additional citations.)
Protecting Against Inflammatory-Related Disease

The New England Journal of Medicine published several studies in the year 2000 showing that the blood indicators of inflammation are strong predictive factors for determining who will suffer a heart attack (Lindahl et al. 2000; Packard et al. 2000; Rader 2000). The January 2001 issue of Life Extension Magazine described these studies and explained how individuals could protect themselves against these inflammatory markers (such as C-reactive protein, homocysteine, and fibrinogen).

A growing consensus among scientists is that common disorders such as atherosclerosis, colon cancer, and Alzheimer's disease are all caused in part by a chronic inflammatory syndrome.

Seemingly unrelated diseases have a common link. People who have multiple degenerative disorders often exhibit excess levels of pro-inflammatory markers in their blood. Here is a partial list of common medical conditions that are associated with chronic inflammation:

<table>
<thead>
<tr>
<th>Disease</th>
<th>Mechanism</th>
</tr>
</thead>
<tbody>
<tr>
<td>Allergy</td>
<td>Inflammatory cytokines induce autoimmune reactions</td>
</tr>
<tr>
<td>Alzheimer's</td>
<td>Chronic inflammation destroys brain cells</td>
</tr>
<tr>
<td>Anemia</td>
<td>Inflammatory cytokines attack erythropoietin production</td>
</tr>
<tr>
<td>Aortic valve stenosis</td>
<td>Chronic inflammation damages heart valves</td>
</tr>
<tr>
<td>Arthritis</td>
<td>Inflammatory cytokines destroy joint cartilage and synovial fluid</td>
</tr>
<tr>
<td>Cancer</td>
<td>Chronic inflammation causes many cancers</td>
</tr>
<tr>
<td>Congestive heart failure</td>
<td>Chronic inflammation contributes to heart muscle wasting</td>
</tr>
<tr>
<td>Fibromyalgia</td>
<td>Inflammatory cytokines are elevated</td>
</tr>
<tr>
<td>Fibrosis</td>
<td>Inflammatory cytokines attack traumatized tissue</td>
</tr>
<tr>
<td>Heart attack</td>
<td>Chronic inflammation contributes to coronary atherosclerosis</td>
</tr>
<tr>
<td>Kidney failure</td>
<td>Inflammatory cytokines restrict circulation and damage nephrons</td>
</tr>
<tr>
<td>Lupus</td>
<td>Inflammatory cytokines induce an autoimmune attack</td>
</tr>
<tr>
<td>Pancreatitis</td>
<td>Inflammatory cytokines induce pancreatic cell injury</td>
</tr>
<tr>
<td>Psoriasis</td>
<td>Inflammatory cytokines induce dermatitis</td>
</tr>
<tr>
<td>Stroke</td>
<td>Chronic inflammation promoted thromboembolic events</td>
</tr>
<tr>
<td>Surgical complications</td>
<td>Inflammatory cytokines prevent healing</td>
</tr>
</tbody>
</table>

A critical inflammatory marker is C-reactive protein. This marker indicates an increased risk for destabilized atherosclerotic plaque and abnormal arterial clotting. When arterial plaque becomes destabilized, it can burst open and block the flow of blood through a coronary artery, resulting in an acute heart attack. One of the New England Journal of Medicine studies showed that people with high levels of C-reactive protein were almost three times as likely to die from a heart attack (Ridker et al. 1997).

The Life Extension Foundation long ago advised members to have an annual C-reactive protein blood test to detect systemic inflammation that could increase the risk of heart attack, stroke, cancer and a host of age-related diseases. In fact, on January 28, 2003, the American Heart
Association and Centers for Disease Control & Prevention (CDC) jointly endorsed the C-reactive protein test to screen for coronary-artery \textit{inflammation} to identify those at risk for heart attack.

What Causes Elevated C-reactive Protein?

- \textbf{Elevated C-Reactive Protein and Interleukin-6 Predict Type II Diabetes}

While some doctors are finally catching on to the fact that elevated C-reactive protein increases heart attack and stroke risk, they still know little about its other dangers. Even fewer practicing physicians understand that pro-inflammatory cytokines are an underlying cause of systemic \textit{inflammation} that is indicated by excess C-reactive protein in the blood.

In an abstract published in the March 6, 2002 issue of the Journal of the American College of Cardiology (JACC), tumor necrosis factor-alpha (TNF-a) levels were measured in a group of people with high blood pressure and a group with normal blood pressure (Verdecchia et al. 2002). The objective of this study was to ascertain if arterial flow mediated dilation was affected by hypertension and chronic \textit{inflammation} as evidenced by high levels of the pro-inflammatory cytokine TNF-a.

The hypertensive subjects taking anti-hypertensive medications had about the same blood pressure as the healthy test subjects. Arterial flow medicated dilation, however, was significantly impaired in the hypertensives and this group also showed higher levels of TNF-a, indicating persistent \textit{inflammation} despite blood pressure control. This study showed that even when blood pressure is under control, hypertensives still suffer from continuous damage to the inner lining of the arterial wall (endothelial dysfunction) caused by a chronic inflammatory insult. The doctors who conducted this study concluded by stating:

"Antihypertensive therapy alone may be insufficient to improve endothelial dysfunction in hypertensives with high plasma levels of inflammatory markers. Additional therapy to target \textit{inflammation} may be necessary to improve endothelial function and to prevent progression of coronary atherosclerosis in high-risk hypertensives with subclinical inflammations."

A sensitive index to evaluate how much endothelial damage is occurring is the measurement of TPA (tissue-type plasminogen activator), a clot-dissolving enzyme found in the blood. This same study showed elevated TPA levels in hypertensives, indicating continued endothelial damage despite blood pressure reduction. These findings indicate that hypertensives should have their blood tested for both TNF-a and TPA to assess how much inner wall (endothelial) arterial damage is occurring (Verdecchia et al. 2002). If TNF-a and/or TPA levels are high, aggressive therapies to suppress the inflammatory cascade should be considered.

\textbf{Elevated C-Reactive Protein and Interleukin-6 Predict Type II Diabetes}

In a study published in the July 18, 2001 issue of the Journal of the American Medical Association, a group from the famous Women's Health Study was evaluated to ascertain what risk factors could predict future development of Type II diabetes (Pradhan et al. 2001). The findings showed that baseline levels of C-reactive protein and interleukin-6 (IL-6) were significantly higher among those who subsequently developed diabetes compared to those who did not.
When comparing the highest versus lowest quartile, women with the higher IL-6 levels were 7.5 times more likely to develop diabetes while those in the higher C-reactive protein ranges were 15.7 times more likely to become diabetic. After adjusting for all other known risk factors, women with the highest IL-6 levels were 2.3 times at greater risk, while those with the highest C-reactive protein levels were 4.2 times more likely to become diabetic. It should be noted that these other diabetic risk factors (such as obesity, estrogen replacement therapy and smoking) all sharply increase inflammatory markers in the blood. The doctors who conducted this study concluded by stating:

"Elevated C-reactive protein and IL-6 predict the development of Type II diabetes mellitus. These data support a possible role for inflammation in diabetogenesis."

**C-Reactive Protein and IL-6 Predict Death**

- **Frailty in Elderly Linked to Inflammation**

It is well established the elevated C-reactive protein, IL-6 and other inflammatory cytokines indicate significantly greater risks of contracting or dying from specific diseases (heart attack, stroke, Alzheimer's disease, etc.).

A group of doctors wanted to ascertain if C-reactive protein and IL-6 could also predict the risks of all-cause mortality. In a study published in the American Journal of Medicine, a sample of 1,293 healthy elderly people were was followed for a period of 4.6 years (Harris et al. 1999). Higher IL-6 levels were associated with a twofold greater risk of death. Higher C-reactive protein was also associated with a greater risk of death, but to a lesser extent than elevated IL-6. Subjects with both high C-reactive protein and IL-6 were 2.6 times more likely to die during follow up than those with low levels of both of these measurements of inflammation. These results were independent of all other mortality risk factors. The doctors concluded by stating:

"These measurements (C-reactive protein and IL-6) may be useful for identification of high-risk subgroups for anti-inflammatory interventions."

Frailty in Elderly Linked to Inflammation

In a study of almost 5,000 elderly people, scientists discovered that frail seniors were more likely to have signs of increased inflammation than their more active counterparts. This study was published in the Archives of Internal Medicine (Walston et al. 2002) and showed that these frail seniors with elevated blood inflammatory markers also tended to show more clotting activity, muscle weakness, fatigue and disability than active elderly people.

Findings from these studies should motivate every health conscious individual to have their blood tested for C-reactive protein. If it is elevated, then the Inflammatory Cytokine Test Panel is highly recommended. Those who suffer from any type of chronic disease may also consider the Inflammatory Cytokine Test Panel in order to identify the specific inflammatory mediator that is causing or contributing to their problem.

**Glycation's Role in Inflammation**

- **Cooking and Aging Have Similar Biological Properties**
Eating high temperature cooked food is another contributor in the production of inflammatory cytokines. In fact, it has been shown that eating high temperature cooked food leads to the formation of advanced glycation end (AGE) products. Glycation can be described as the binding of a protein molecule to a glucose molecule resulting in the formation of damaged protein structures. Many age-related diseases such as arterial stiffening, cataract and neurological impairment are at least partially attributable to glycation. These destructive glycation reactions render proteins in the body cross-linked and barely functional. As these degraded proteins accumulate, they cause cells to emit signals that induce the production of inflammatory cytokines.

The glycation process is presently irreversible, though an important study indicates a drug in clinical trials may be partially effective. According to a Proceedings of the National Academy of Sciences study, consuming foods cooked at high temperature accelerates the glycation process, and the subsequent formation of advanced glycation end products.

A more succinct descriptive term for "advanced glycation end products" is "glycotoxin," since "advanced glycation end products" are toxic to the body. We will use the word "glycotoxin" from here on to describe the term "advanced glycation end products."

**Inflammation: Chronic**

**Cooking and Aging Have Similar Biological Properties**
Cooking foods at high temperatures results in a "browning" effect, where sugars and certain oxidized fats react with proteins to form glycotoxins in the food. Normal aging can also be regarded as a slow cooking process, since these same glycotoxins form in the skin, arteries, eye lenses, joints, cartilage, etc. of our body.

The Proceedings of the National Academy of Sciences study shows that consuming foods high in glycotoxins might be responsible for the induction of a low-grade, but chronic state of inflammation. In addition, the glycotoxins in food cooked at high temperatures also promote the formation of glycotoxins in our living tissues. The implication of these findings is profound.

What one eats plays a major role in chronic inflammatory processes. Consuming low glycemic foods prevents the insulin surge that contributes to chronic inflammatory processes. It is also important to avoid over consumption of foods high in arachidonic acid (beef, egg yolk, dairy, etc.).

We now know that eating too much over-cooked food causes an increase in inflammatory cytokines. Since most "junk" foods are cooked at extremely high temperatures, it makes sense to avoid French fries, hamburgers, potato chips, fried food and other snacks. These foods not only contain lots of glycotoxins, they also create other metabolic disorders that can induce degenerative disease.

Consuming at least 1000 mg a day of carnosine, and/or 300 mg of the European drug aminoguanidine can inhibit pathological glycation reactions in the body. Eating high temperature cooked foods also induces the formation of glycotoxins. Avoiding foods cooked at high temperature not only reduces pathological glycation processes, but also
prevents the formation of numerous gene-mutating toxins that are known carcinogens. Food is cooked to destroy bacteria and other pathogens that could cause a serious illness. It is important not to eat undercooked food, but avoiding food unnecessarily cooked at higher temperatures is desirable. Certain foods (like fried foods) have to cook at high temperatures. Health conscious people are increasingly avoiding fried foods because they are associated with many health risks.

With the availability of cytokine blood profile tests, it is now possible to ascertain the underlying cause of chronic inflammatory disease. The appropriate drugs, nutrients, dietary change(s) and/or hormones can then be used to suppress the specific cytokines (such as IL-6 or TNF-a) that are promoting the inflammatory cascade.

The Detrimental Effects of Sleep Deprivation

On June 22, 2002, researchers at the annual meeting of the Endocrine Society held in San Francisco reported that sleep deprivation markedly increases inflammatory cytokines. This finding helps explain why pain flare-up occurs in response to lack of sleep in a variety of disorders. According to the researchers, even modest sleep restriction adversely affects hormone and cytokine levels. In this carefully controlled study, sleep deprivation caused a 40% to 60% average increase in the inflammatory marker IL-6 in men and women, while men alone showed a 20% to 30% increase in TNF-a. Both IL-6 and TNF are potent pro-inflammatory cytokines that induce systemic inflammation (Vgontzas et al. 1999; Vgontzas et al. 2001).

The study results were presented by Dr. Alexandros Vgontzas, professor of psychiatry at The Pennsylvania State University in Hershey. Dr. Vgontzas stated that the findings indicate that getting a full night's rest of eight hours is not just a nice bonus, but a necessity. He stated that people who are missing even two to three hours of sleep function poorly the next day.

Dr. Vgontzas added that the finding that lack of sleep may stimulate an increase in chronic inflammatory response is worrisome because inflammation has been linked to the most common lethal conditions affecting humans today. Vgontzas warned: "Restriction of sleep a few hours is a major risk for public safety."

This study has significant implications for the treatment of chronic pain and inflammatory disorders. For many, following the recommendations in Life Extension's Insomnia Protocol could provide considerable relief from pain and other disorders by preventing the increase of pro-inflammatory cytokines.

The Dangerous Pro-Inflammatory Cytokines

- Reducing Inflammation
- Lowering Elevated C-Reactive Protein
- Blood Testing
- The Importance of Cytokine Testing
- Pentoxifylline Studies
The following acronyms represent the most dangerous pro-inflammatory cytokines. Health-conscious persons should become familiar with these terms because excess levels of these cytokines cause or contribute to many disease states:

- TNF-a: Tumor necrosis factor-alpha
- IL-6: Interleukin-6
- IL-1(b): Interleukin-1 beta
- IL-8: Interleukin-8

**Reducing Inflammation**

Scientists have identified dietary supplements and prescription drugs that can reduce levels of the pro-inflammatory cytokines. The docosahexaenoic acid (DHA) fraction of fish oil is the best documented supplement to suppress TNF-a, IL-6, IL-1(b), and IL-8 (Jeyarajah et al. 1999; James et al. 2000; Watanabe et al. 2000; Yano et al. 2000). A study on healthy humans and those with rheumatoid disease shows that fish oil suppresses these dangerous cytokines by up to 90% (James et al. 2000).

Other cytokine-lowering supplements are DHEA (Casson et al. 1993), vitamin K (Reddi et al. 1995; Weber 1997), GLA (gamma linolenic acid) (Purasiri et al. 1994), and nettle leaf extract (Teucher et al. 1996). Antioxidants, such as vitamin E (Devaraj et al. 2000) and N-acetyl-cysteine (Gosset et al. 1999), may also lower pro-inflammatory cytokines and protect against their toxic effects.

Prescription drugs like Enbrel ($10,000 a year) directly bind to TNF-a and block its interaction with TNF cell surface receptors. Enbrel has demonstrated significant clinical improvement in rheumatoid arthritis patients, as have high-dose fish oil supplements (Kremer 2000). High levels of TNF-a may persist even in people receiving Enbrel drug therapy. Even if Enbrel brings TNF-a down to a safe range, other inflammatory cytokines such as IL-6 and IL-1(b) may continue to wreak havoc throughout the body. High levels of tumor necrosis factor (TNF-a) are destructive to many vital tissues such as joint cartilage (e.g., rheumatoid arthritis) and heart muscle (e.g., congestive heart failure).

Excess IL-6 and other inflammatory cytokines attack bone and promote the formation of fibrinogen that can induce a heart attack or stroke (Di Minno et al. 1992). To prevent and treat the multiple diseases of aging, it is critical to keep these destructive immune chemicals (cytokines) in safe ranges.

**Methods of Lowering Elevated C-Reactive Protein**

Those who are in relative good health, but have elevated C-reactive protein, can try to lower it using a variety of diet modifications, supplements and/or drugs. Supplements such as vitamin E, borage oil, fish oil, DHEA, vitamin K and nettle leaf extract can lower C-reactive protein. Diets low in arachidonic acid, omega-6 fatty acids, saturated fats, high-glycemic food and overcooked food can suppress inflammatory factors in the body.
If diet and supplements fail, drugs such as ibuprofen, aspirin, pentoxifylline or one of the statins (such as Pravachol®) should be tried. If the modified diet, nutrients and/or drugs lower C-reactive protein to below 1.3 (mg/L) of blood, then this is an indication that the underlying inflammatory fire has been extinguished. (The high-sensitivity C-reactive protein blood test is recommended to measure this indicator.)

For those whose blood tests reveal persistently high inflammatory cytokine levels despite taking the supplements mentioned above, a low-cost prescription drug may be of enormous benefit.

The generic name of this low-cost prescription drug is pentoxifylline (PTX); the brand name is Trental. This drug was first used in Europe in 1972 and long ago was removed from patent status (meaning it is not cost-prohibitive). PTX is prescribed to improve blood flow properties by decreasing its viscosity. It works by improving red blood cell flexibility, decreasing platelet aggregation, and reducing fibrinogen levels (de la Cruz et al 1993; Gara 1993; Gaur et al. 1993). PTX has fallen from favor because no drug company has the economic incentive to market it to physicians. PTX is primarily prescribed to patients with peripheral artery disease, although it may have potential efficacy in treating a wide range of diseases relating to chronic inflammation.

Numerous studies show that pentoxifylline (PTX) is a potent inhibitor of TNF-a, IL-1(b), IL-6, and other pro-inflammatory cytokines (Neuner et al. 1994; Noel et al. 2000; Pollice et al. 2001; Ventura et al. 2001). Similarly, studies also show that DHA fish oil suppresses these same cytokines (Das 2000; Yano et al. 2000). In people who have a chronic disease involving elevated levels of the inflammatory cytokines, the daily administration of 400-800 mg of PTX and/or 1000-2000 mg of DHA fish oil could be of enormous benefit.

Individuals with chronic disease sometimes find it difficult to suppress C-reactive protein. In these cases, it is important to identify the specific inflammatory cytokines that are responsible for the destructive inflammatory processes that is causing or contributing to the underlying disease state. This enables a custom tailored program to be implemented, and its success measured by suppressing the pro-inflammatory cytokine culprits. For instance, if levels of TNF-a levels are elevated, and natural approaches fail to lower it, the prescription drug Enbrel should be considered.

**Inflammatory Cytokine Blood Testing**

People suffering from chronic disease often have elevated levels of C-reactive protein in their blood. C-reactive protein indicates an inflammatory process is going on in the body, but does not identify the specific pro-inflammatory cytokine that may be the underlying cause.

Testing for pro-inflammatory cytokines has been prohibitively expensive because there has been so little demand for it. The Life Extension Foundation offers an inflammatory cytokine profile at an affordable price. Below is the cytokine panel for this test along with the optimal anti-inflammatory ranges:

<table>
<thead>
<tr>
<th>Pro-Inflammatory Cytokine</th>
<th>Optimal Anti-Inflammatory Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quest</td>
<td>LabCorp</td>
</tr>
</tbody>
</table>
Tumor necrosis factor alpha (TNF-α) 0-25 pg/mL <8.1 pg/mL
Interleukin-1 beta (IL-1b) 0-150 pg/mL <15.0 pg/mL
Interleukin-6 (IL-6) 2-29 pg/mL <12.0 pg/mL
Interleukin-8 (IL-8) 10-80 pg/mL <32.0 pg/mL

Note: Quest and LabCorp are blood testing facilities. Other blood testing laboratory methods may have different ranges.

As stated earlier in this chapter, an inexpensive C-reactive protein (high-sensitivity) blood test (CRP-hs) can help reveal if you have systemic inflammation. If your C-reactive protein level is over 1.3 (mg/L), this is an indication that you have an inflammatory event occurring in your body. Those with elevated CRP-hs levels (and who have a disease associated with chronic inflammation) should consider using a supplement protocol and/or prescription drugs known to suppress elevated pro-inflammatory cytokines.

The Importance of Cytokine Testing for Those Suffering From Chronic Illness

There are many chronic disease states that can now be managed by the proper utilization of the Inflammatory Cytokine Blood Panel. If you are elderly, or suffer from any serious disorder, these cytokine tests can enable your doctor to prescribe therapies that specifically target the inflammatory cytokine responsible for your poor state of health.

From a practical standpoint, if you suffer from congestive heart failure, and your levels of TNF-a remain persistently high, you may ask your doctor to prescribe the drug Enbrel®, which specifically counteracts the destructive effects of TNF-a.

If you suffer from cancer and your levels of IL-6 remain persistently high, you may consider high dose DHEA or asking your doctor to prescribe a bisphosphonate drug (such as Zometa® that protects against bone destruction that releases excess IL-6 into the body. Those with prostate, certain types of breast cancer, and other hormonally driven cancer should consider other IL-6 lowering therapies (such as high dose DHA fish oil extract) in lieu of DHEA.

Some cancer and patients display elevated levels of IL-8, which induces cancer cells to express growth factors that fuel their propagation. In hepatitis C, elevated IL-8 signals interferon drug resistance. An IL-8 suppressing therapy will soon be available to Americans (it is already used in Japan).

Those with systemic inflammatory disease often manifest high levels of IL-1b. If diet, the anti-inflammatory supplements (fish oil, borage oil, DHEA, etc.) and cytokine-suppressing drugs (pentoxifylline, 400 mg twice a day) fail to suppress this destructive cytokine, then ask your doctor to prescribe the drug Arava (leflunomide), starting at the low dose of 10 mg a day.

Diet and Inflammation

In addition to toxic cytokines, there are other inflammatory pathways that can be mediated via diet modification. A common problem involves overproduction of pro-inflammatory hormone-like "messengers" (such as prostaglandin E2) and underproduction of anti-inflammatory "messengers" (such
as prostaglandin E1 and E3).

The good news is that omega-3 fatty acids found in fish oil help to suppress the formation of undesirable prostaglandin E2 and promote synthesis of beneficial prostaglandin E3 (Kelley et al. 1985; Watanabe et al. 2000). Gamma-linolenic acid (GLA) induces production of the anti-inflammatory prostaglandin E1 (Das et al. 1989; Fan et al. 1997). What you eat can significantly affect whether you have more of the beneficial prostaglandins (E1 and E3) as opposed to the pro-inflammatory prostaglandin E2.

Because prostaglandin E2 is a culprit in inflammation, reducing the consumption of foods that are high in omega-6 fatty acids and increasing the consumption of omega-3 rich foods, such as salmon and other fish, can be beneficial. Limiting foods that convert to arachidonic acid can help reduce inflammation. Arachidonic acid is a precursor to both prostaglandin E2 and the pro-inflammatory cytokine leukotriene B(4) (Brock et al. 1999). Another dietary factor that can lead to high levels of arachidonic acid is the overconsumption of high-glycemic index carbohydrates that cause excess production of insulin (Kreisberg et al. 1983). These quickly digestible foods include fruit juices or rice cakes. Food heavy in polyunsaturated fats or saturated fats can also increase prostaglandin E2.

Additionally, a study of elderly patients with heart disease requiring elective surgery (Tepaske et al. 2001) found that nutritional supplements containing omega-3 polyunsaturated fatty acids (as well as yeast and L-arginine) improved the outlook for high-risk patients when given a minimum of 5 days prior to surgery.

The number of inflammatory-related diseases that could be successfully treated with cytokine-lowering therapy is staggering. PTX and supplements such as fish oil, nettle leaf, DHEA, and vitamin K possess mechanisms of suppressing inflammatory cytokines. Unfortunately, there are no side-by-side comparisons to enable us to categorically state whether PTX or natural agents (such as DHA fish oil) work better.

Foods cooked at high temperatures can produce a browning effect in which glycotoxins are formed from the reaction of sugars and oxidized fats with protein. Glycotoxins may contribute to low-grade chronic inflammation. High glycemic foods may also contribute to the inflammatory process. Dietary modifications to reduce inflammation should include elimination of foods and cooking processes that contribute to a chronic state.

For those who have multiple degenerative diseases, the cytokine profile blood test and the C-reactive protein blood test are highly recommended. This may be done through your own physician or the Life Extension Foundation. If your cytokine test reveals excess levels of cytokines such as TNF-a, IL-1(b), or both, nutritional supplementation, dietary modifications, and low-cost prescription medications such as PTX are advised.

The following supplements are suggested:

- The docosahexaenoic acid (DHA) fraction of fish oil may be the most effective nonprescription supplement to suppress pro-inflammatory cytokines. Gamma-linolenic acid (GLA) is a precursor of PGE1, a potent anti-inflammatory agent. A product called Super EPA/DHA provides 1400 mg of EPA and 1000 mg of DHA in 4 capsules.

- DHEA is a hormone that decreases with age. DHEA has been shown to suppress IL-6, an inflammatory cytokine that often increases as people age. Typical doses of DHEA are 25-50 mg daily, although some people take 100 mg daily. Refer to the DHEA Replacement protocol for suggested blood tests to safely and optimally use DHEA.

- Nettle leaf has been shown to suppress the proinflammatory cytokine TNF-a. Take 1000 mg daily.

- Vitamin E and N-acetyl-cysteine (NAC) are protective antioxidants with anti-inflammatory properties. Vitamin E that contains gamma-tocopherol and tocotrienols provides the most broad-spectrum protection. Take 1 capsule daily of Gamma E Tocopherols with Sesame Lignans and Tocotrienols with Sesame Lignans. NAC is an amino acid with antiviral and liver protectant properties. One 600 mg capsule daily is recommended.
Vitamin K helps reduce levels of IL-6, a pro-inflammatory messenger. Vitamin K also helps in the treatment of osteoporosis by regulating calcium and promoting bone calcification. One 10 mg capsule daily is recommended for prevention purposes. Do not take vitamin K if you are taking Coumadin or some other type of anticoagulant medicine.

Consuming at least 1000 mg per day of carnosine and/or 300 mg of the European drug aminoguanidine can inhibit pathological glycation reactions in the body.

Tantric and Kundalini sex

Orgasm is an opening or stimulation of the chakra. Most people can only open their base chakra for sex. But when you learn to open the other chakra for sex then the door to pleasure is intensified. There are at least seven chakra points in the human body as told in the age old texts of the powers of the body. The ancient cultures knew of these power points which correspond to endocrine hormone glands and other things.

Tantric and Kundalini yoga teach techniques of opening and controlling these energy points. Years ago I had the pleasure of working with a Patrick Flanagan who taught about opening the chakra energy centers.
He observed a group of yoga people who lived to old old age and used yoga daily. He found that they had developed a sexual technique of absorbing the life force of their partners during sex. A type of energy vampirism, this had anti-aging effects for the one absorbing the energy.

Tantra is a spiritual tradition that originated in India some 4,000 years ago. It is a way of life that celebrates and strives for the union of body, mind and spirit. Tantra is a form of yoga. Yoga means union. The vital
principle of Tantra is a union of lovers, and union with the divine, with God. In the Tantric practice, sexuality and spirituality are joined. Lovers actually attract God right into their bed!

Most people spill their life force out during sex. The energy is released but not reabsorbed. These people could not only reabsorb their own energy release but could absorb the excess release of others. If very practiced they could steal the energy of others and use it to keep themselves alive longer. I learned the technique and I can teach you the basis of it now.

First recognize that all clocks worldwide are designed to go clockwise. This is because the photon energy of aging and the degeneration of life from quantum control to thermodynamic decay rotate clockwise. The bio photon energy of life is counterclockwise and is defies entropy and resists aging. So meditating on a clock rotating counter clockwise is a start.
Then when you feel the energy release of orgasm, don’t let the energy just spill out, channel the energy with your mind up the spine. Feel each chakra center and open them with your mind and channel the energy up the spine allowing it to flow outwards from the top of your head the crown chakra center. Then the energy will return like a magnets energy and flow back to the base of your spine to be rechanneled.

Feel the whole planet Earth, sense the solar system, sense the galaxy, sense the universe, and sense the endless list of the multi-verses. Expand your energy and circle of compassion to include all things. This is best done with a stable sex relationship where there are no rushing and uncomfortable feelings. On a one night stand there is too much tension usually. As you open each chakra center with practice your sexual pleasure is increased. As you widen your circle of energy and compassion while feeling the energy up your spine, out of your head and back to your base, your pleasure will increase.

You will absorb any free floating energy around you and watch out you will be able to steal others energy. But this has karmic implications. Please try to resist the urge, or at least use it wisely. If you do not your partner will age too fast and you will outlast them.

<table>
<thead>
<tr>
<th>Chakra</th>
<th>Color</th>
<th>Endocrine organ</th>
<th>Sexual activation tip</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Crown Chakra</td>
<td>Violet</td>
<td>total and Brain</td>
<td>complete focus of all</td>
</tr>
<tr>
<td>The Brow Chakra</td>
<td>Indigo</td>
<td>Pineal Pituitary Hypothalamus</td>
<td>low lights pleasurable sights</td>
</tr>
<tr>
<td>The Throat Chakra</td>
<td>Blue</td>
<td>Thymus Thyroid ParaThyr</td>
<td>Music, Sounds, Mantra</td>
</tr>
<tr>
<td>The Heart Chakra</td>
<td>Green</td>
<td>Heart</td>
<td>Romance, Compassion</td>
</tr>
<tr>
<td>The Stomach Chakra</td>
<td>Yellow</td>
<td>Stomach Intestine</td>
<td>Good food, will power</td>
</tr>
<tr>
<td>The Spleen Chakra</td>
<td>Orange</td>
<td>Adrenals Kidneys</td>
<td>Adrenal tap, scratch</td>
</tr>
<tr>
<td>The Base Chakra</td>
<td>Red</td>
<td>Gonads</td>
<td>Proper Genital stimulation</td>
</tr>
</tbody>
</table>
Tantric sex is not just a means of physical intimacy between sexual partners. It is also an emotional and philosophical way to gain a deeper level of understanding with your mate and to add to your witch powers. Though the art of Tantra is thousands of years old, you can learn from self discovery and networking with friends.

1. Step 1

Take a seminar, class, or retreat. Or find a mentor who can teach you and coach your technique. As they say “When the student is ready the Master will Appear”.
2. **Step 2**

Find a tutor. If you look online or in the classified sections of alternative newspapers, New Age magazines, or bulletin boards at wellness centers and fitness establishments, you will most likely find at least one or two listings for private Tantra tutors. Many of these tutors also offer group classes, but if you do not feel that you would be comfortable in a group setting than try to set up one-on-one time with the instructor. Be careful when setting up private instruction, as some people who claim to be professional Tantric Sex tutors could be looking for other kinds of encounters. Before you go in for an actual session, set up a meeting with them just to get to know them and see their teaching facility. Ask if you can get the names and numbers of some of their previous clients so that you can call and ask them if the tutor is legitimate. Be careful.

3. **Step 3**

Learn from a book. There are many books available on the subject of Tantric sexuality. You can start looking for one by going online and doing a search at places like Amazon.com or Barnesandnoble.com. The books that come up from your search will probably cover every
aspect of Tantra you could think of, from the religious and philosophical side to the relationship side to the physical side. Once you find one that sounds right for you, either order it online or go into a bookstore with the author and title in hand so you can find it on the shelf.

4. Step 4

Watch an instructional video. These can be found in a number of places, including catalogues, Internet stores, and some video and bookstores. Like books on Tantric sex, they cover all of the aspects of Tantra, from physical postures and positions to philosophical mediations. For people who learn better from seeing things than just reading them, learning from a video can be a lot better than trying to learn from a book, as you will be able to see everything you are being instructed on.

5. Step 5
Research on the Internet. There are numerous websites available to learn Tantric sexuality from. Some have instructional videos and audio lectures, others have pictures and diagrams, and still others are comprised of mostly text and images. Like videos and books, these websites contain a variety of information on all aspects of Tantra and can be very helpful if you wish to learn in the privacy of your own home and are looking for as much information as possible. Some websites will ask you to pay a fee, and will give instruction in the form of modules and class lectures as if you were taking a course at a school. Others will contain their information in essays and quotes from experts in the field.

6. Teach yourself, for the best teacher is within.

Never mistake Tantra for lust! Some Tantrikas undergo years of training so that they can experience sacred sexuality without the least trace of lust ever crossing their minds! "I also love this part, and can attest to the truthfulness of it~ "In ordinary sex, people rush to get to the end...But in Tantra, the process of getting there is even more delightful~ Tantrika adepts can make love for several hours or even longer~
The popular understanding of Tantra in the West represents only a part of the vast system. “Tantra” means a loom or weaving. In Tantric teachings, the universe is perceived as a fabric where everything is woven together, connected and related seamlessly. Tantra is also translated as “web”. We are all connected to each other in this infinite web. The main initiators of Tantra into the esoteric world were originally female adepts—These women were seen as manifestations of the divine Shakti, the female aspect of the ultimate reality Devi created the universe and the whole universe is her body—The sun and moon are Her eyes—The wind is Her breath—The mountains are Her bones—The rivers and oceans are Her veins—Devi is omnipresent and all-knowing...Electricity, magnetism, power, heat, light, and the five elements are
Anti-aging Articles

Her eternal manifestations~ She is the primal force of life which underlies all existence and the Tantrik seeks union with Her~

By use of mantras a person is able to create and experience the vibration of the Goddess~ Mantra is so important in Tantra that it has been called the "Path of the Mantra~" Mantra is a chant, a prayer, an invocation, a magical syllable, living words made of power, and a manifestation of the Goddess~ A Mantra is a combination of sacred syllables which form a nucleus of spiritual energy~ It serves as a lens to focus spiritual vibration~ The potency of mantra is released through repetition and this may entail many thousands of repetitions or just one, depending upon the receptivity of the individual~ OM is the supreme mantra and the easiest to remember~ The mantra of the Hindu and Buddhist goddess Tara is OM HRIM STRIM HUM PHAT~ The universe and every being are made of these occult sounds, letters of light, the little mothers of existence~ The mantra helps to focus the mind and awaken the supernatural energies within the body and to evoke the presence of the Goddess~ Mantra is used to bring oneself into harmony with the universe, uniting individual and cosmic consciousness (the Goddess)~ The devata is the presiding deity of the mantra, a very personal aspect of the goddess~ Mantra is Goddess of the spoken word~ Tantra views the body as a living temple~ A mysterious force is active in the body. It is in the brain, the cells, everywhere~ Consciousness is not found in the brain alone, but exists throughout the body~ Raising the Kundalini (life force) is a primary goal of Tantra~
The Kundalini awakens in the lower back and when it reaches the brain through Tantric methods, bliss and enlightenment result. In Tantra there is always an emphasis on personal experimentation and experience. Tantrikas experience enhanced sensory and mental capacities. Though our ordinary perception is confined to a narrow range, Tantrikas can often feel an intense variety of universal vibrations. Tantric yogis use the senses as a means of elevating their consciousness. Tantric yoga is the only system of yoga which deals with human sexuality and focuses on the unification of male and female energies. By merging with a partner, one can experience the blending of male and female essences. Within each gender lies the seed of the opposite sex which creates attraction between two people. The Taoist sages call these opposites yin and yang (feminine and masculine respectively). Both yin and yang exist in men and women, with the yen predominantly in women, and the yang in men. These polarities complement each other and it is important to learn how to balance them. Tantra endeavors to combine yin and yang into blissful union.
and although one can work with a sexual partner to accomplish this, the inner yoga practices of Tantra can enable an individual to unfold and unite the male and female energies without a partner. In fact, it is better for a person to do Tantric spirituality alone than to attempt it with the wrong type of sexual partner. In Tantric sexual practice, to see your partner as divine, to actually and deliberately worship and adore the divine in her/him, initiates the process of transformation. Tantra teaches that men and women are manifestations of god and goddess. Two of the ancient Hindu Tantric models for this are Shiva and Shakti, Krishna and Radha. These Divine couples demonstrate the possibility, through Tantric sexual union, of achieving a fully conscious awareness of themselves as God and Goddess. Tantric partners should maintain eye contact and become aware of each other's breathing until their breaths come simultaneously. With practice, they'll eventually match their heartbeats, energy, and consciousness. In Tantric sex the couple becomes one Being and they are able to experience the ecstasy of sexual union for an hour or more. In this sense, Tantric sex is used as a vehicle to expand consciousness. Experiencing oneness with each other will enable them to experience the ultimate oneness with the Goddess. Sexual foreplay, which should last at least an hour, is used to build energy and increase a couple’s awareness of each other.

In ordinary sex, people rush to get to the end. But in Tantra, the process of getting there is even more delightful. Tantrika adepts can make love for several hours or even longer. In Tantric sex the climax is avoided as long as possible or even dispensed with entirely so as to build energy which can be used
for psychic experiences or even for spiritual enlightenment~*~Tantra is not about giving into lust~*~Many people have been led astray in Tantric sex because they only fell into lust~*~Never mistake Tantra for lust! Some Tantrikas undergo years of training so that they can experience sacred sexuality without the least trace of lust ever crossing their minds! Suggestions for creating a Tantric environment include keeping the bedroom clean, as well as oneself, use incense and candles, and meditative music. Eat a light meal and either drink just one glass of wine to attain a slight glow and to help relax or abstain from alcohol completely for the evening. Use massage to begin foreplay. Dancing, feeding one another and taking a bath or shower together can also begin Tantric foreplay. Loving conversation is good as long as it’s not of the past or future... Keep your thoughts in the present! Tantric sex requires you to fully engage all of your senses~ Be aware of what you hear, of what you smell, of what you see~~ Be aware of the sensations on your skin~ Try to be totally cognizant of as many sensations as possible occurring at once~ In this heightened state of awareness, your body will give you messages~ Listen to them~ Tantra seeks to animate and control the life force~ When Tantric lovers connect deeply and their energies join, they magnify the life force in each other~ If one person constantly drains the other, then this is conscious or unconscious vampirism~ Lovers can exchange and magnify energies by holding one another and breathing together~ This Tantric practice can lead to a pure and enlightened love that is beyond sex~ Ultimately love is Divine... Love is God/dess~ Tantra uses love’s energies to awaken the soul’s light, power, and awareness~ Several forms of Hinduism teach that the world is an illusion, but Tantra teaches that our world is real~ Tantra celebrates the physical aspect of creation~ The Tantrika enjoys all aspects of life and some of the skills s/he develops are composing poems, drawing, singing, chanting, writing, gardening, cooking, playing musical instruments, dancing, tattooing, sewing, solving riddles, carpentry, meditation, sports, gymnastics and sexuality~ Those who practice Tantra know that all seemingly ordinary activities can lead one to higher mystical awareness if these things are done mindfully and skillfully~ Basic Tantric mind training teaches one how to control thoughts and moods~ We must always learn to think consciously without daydreaming, thus do our thoughts become focused and powerful. Eventually we can even experience the primal cosmic realm that has eternally existed beyond all thoughts and symbols~ Without mental discipline, Tantra, nor any form of
yoga or spirituality can be effective...The mind is our basic tool—A strong mind saves us while a weak mind dooms us! Tantra teaches that there is a constant exchange of energies between people, animals, plants, planets, stars and universes—It is the blessing of a human being to be able to feel things more deeply and consciously—The human being can sink lower than the animals or rise higher than the angels—Tantra is a way of life, a path of discovering the ecstatic in everyday life. Everything is to be experienced as a gift from the Goddess—Passion is important in all aspects of life and in Tantra it’s understood that our search for passion and pleasure is really a search for God/dess—Sex is only one doorway to the Divine—Each flower is a doorway—Each smile of a child is a doorway—For the Tantrika adept, there is nothing but doorways—Even eating, drinking, or listening to music can be a communion with God/dess—God/dess is in a finger, a nut, or a glass of water—A feeling of warmth is felt. The soul becomes a fire—An inner light is seen...When God and Goddess unite within us, we experience the true inner marriage~
10 Foods That May Improve Your Appearance and YOUR WELLNESS

Get skin glowing and hair shining the natural way, while making your body more well.

Collagen is a natural protein in your skin and muscles that provides resiliency, shape and texture. Unfortunately, collagen production decreases with age— but you can fight back with dark fruit. "Blood oranges, cherries and blueberries are full of antioxidants, which decrease aging and disease by lowering inflammation. Antioxidants also increase collagen production and thicken the skin, making you look younger and healthier," says Julia Tatum Hunter, M.D., of Skin Fitness Plus in Beverly Hills. "Antioxidants also decrease [the severity of] rosacea." Blackberries, raspberries, plums, pomegranates, cranberries, Asian dragon fruit and kiwis also. A recent Canadian study concluded that getting more potassium might help lower your weight and blood pressure. Levels measured in study participants were proportional to their diet and weight. "That makes sense," says Blatner. "The richest sources of potassium are beans, vegetables, and fruit, so the person with high potassium levels is consuming a lot of these foods, which are low in calories and are the most filling." You should aim for 4,700 milligrams of potassium each day. Supplements may help you hit that target, but doctors don't recommend them for everyone. Try filling up on white beans (1 cup: 1,000 mg. potassium), winter squash (1 cup: 494 mg.), spinach (1 cup: 840 mg.), baked potato with skin (926 mg.), yogurt (1 cup: 600 mg.), halibut (4 ounces: 566 mg.), and orange juice (1 cup: 473 mg.).

2. Shellfish, sunflower seeds and sardines
These foods may not taste great together, but individually they offer a powerhouse of essential fatty acids. Steven Chang, M.D., staff physician for RightHealth.com, says fatty acids nourish the skin, help maintain skin integrity and keep skin cells
performing optimally. "Essential fatty acids, a component of all cell membranes in the body, regulate the flow of nutrients, waste materials, and water in and out of cells—which keeps you looking young." Flax seeds, tuna, walnuts, canola oil, soybean oil and pumpkin seeds are more good sources of essential fatty acids. Foods are better than powders, powders are better than pills, and pills are better than no supplements.

3. Dandelion, turnip and mustard greens
"Foods that keep our livers cleansed of toxins, heavy metals and fats make our whole body function more efficiently," says Dr. Hunter. "This makes us happier, which affects how we look. Plus, a healthy liver brightens our eyes and tightens our skin." She recommends dense green foods such as broccoli, spinach and arugula—as well as turnip, mustard and dandelion greens. Eating these slightly bitter greens has been shown to lessen your sweet tooth. Hunter warns: "Simple and refined sugars, high-glycemic carbohydrates, and refined, manufactured foods age us." Excess sugar has been linked to a process called glycation, in which sugar molecules bond to protein molecules, which has been linked to sagging, wrinkled skin.

4. Oregano, thyme and parsley
"If you have puffy bags under your eyes in the morning, you are almost certainly consuming much more salt than you need," says Doris Day, M.D., author of Forget the Facelift: Turn Back the Clock with a Revolutionary Program for Ageless Skin (Avery, 2005). "Another problem is alcohol: It dehydrates you and can make your skin sag. The worst combination is alcohol and salt, which causes puffy dark circles under your eyes." Dr. Day recommends reducing your sodium intake to
eliminate bloating. Instead of salt, season your meals with herbs and spices such as oregano, thyme, rosemary, parsley and garlic.

5. Crunchy vegetables
Fresh raw veggies are as good for your grin as they are for your skin! Celery, carrots, string beans and cauliflower contain cellulose, which helps scrub stains from your teeth—giving you a whiter, brighter smile. "Both the cellulose and the [other] fiber in these foods act as abrasives that clean and remove bacteria from teeth," says Mickey Bernstein, M.D., president of the American Academy of Cosmetic Dentistry. Crunchy veggies are especially effective for recent discolorations. If you've just consumed blueberries, coffee, mustard, red wine or cranberry juice, follow it up with fresh cucumber slices or an apple.

Foods are better than powders, powders are better than pills, and pills are better than no supplements. Water in your glass is good, but water in your food can have serious slimming power. In a new American Journal of Clinical Nutrition study, obese women ages 20 to 60 were told to either reduce their fat intake or increase their intake of water-rich foods, such as fruits and veggies. Although they ate more, women in the water-rich group chose foods that were more filling—yet had fewer calories—so they still lost 33 percent more weight in the first 6 months than the women in the reduced-fat group. Fill up on food that's high in H2O. Some good choices in addition to fruits and veggies: broth-based, low-sodium soups; oatmeal and other whole grains; and beans.

6. Sea vegetables
"Polluted cells can't function at their optimum level. When our cells are functioning optimally, not only do we have more energy—we look and feel great," says nutritionist Carol Wasserman. "Sea vegetables are one of our richest sources of minerals and phytochemicals." These veggies help detoxify, rebuild and nourish all the cells in our body. Unhealthy foods, stress and environmental pollutants cause cells to age prematurely, potentially leading to thinning hair and premature wrinkles. "Sea vegetables reverse this process," says Wasserman. "For example, spirulina is a 'detox powerhouse.' Hijiki, kelp, arame, wakame, and dulse also work wonders." Foods are better than powders, powders are better than pills, and pills are better than no supplements.

7. Meat, cheese, lentils, and sprouts
It may take 10 pounds of milk to make a pound of cheese, but fortunately you don't need to eat that much dairy or protein to repair your cells. As you age, your hair and skin cells become damaged, making you appear older. The protein in meat, chicken, low-fat cheese, cottage cheese, and certain vegetables promotes cell growth and repair, which translates to younger-looking skin, fewer wrinkles, less hair loss and a glossy mane. To take a break from meat or dairy, try soybeans and lentils instead (they contain more protein than any other legume). The need for protein is over rated. We should not absorb protein, but should break down the protein to its' amino acids. Sprouts are rich in the amino acids we need and thus supply the needed factors. When you get a meat craving it is because you are craving amino acids. A small handful of sprouts will supply the amino acids you need. And the meat craving that is left is just addiction.
8. Egg yolks, organ meats
Dr. Chang says, "Vitamin A is especially important for skin repair, and decreased levels can lead to dry, flaky skin." Dr. Day adds that a lack of vitamin A may cause your skin to heal poorly and wrinkle easily. The main sources of this vitamin are foods from animals, such as liver, eggs and whole-milk dairy products. Some plants—carrots and broccoli, for example—supply beta-carotene, which your body converts to vitamin A as needed. Apricots, nectarines, plums and cantaloupe are more great sources of beta-carotene.

9. Almond or hemp "milk"
Almond milk is a nutritious dairy alternative because of its high levels of magnesium, potassium, manganese, copper, vitamin E, selenium and calcium. Licensed medical esthetician Tina Seitz says, "Hemp milk is a delicious, nutty-tasting non-dairy beverage that provides essential balanced nutrition. It's a fantastic alternative to soymilk or dairy, and has a natural well-balanced ratio of omega-3 and omega-6 essential fatty acids to keep your mind sharp, your immune system strong and your skin glowing." Both almond and hemp milks are plant-based, and don't contain lactose. They offer high-quality protein that can give hair a radiant, healthy shine and helps keep skin soft.

10. Wild salmon with avocado and mango dressing
This is more than a delicious meal—it's an anti-aging feast! Stephen Sinatra, M.D., of the University of Connecticut School of Medicine says, "Wild Alaskan salmon has precious omega-3 essential fatty acids, which enhance blood flow. The
The pink/orange color of wild salmon is an anti-aging carotenoid called astaxanthin that protects cell membranes. Salmon also contains dimethylaminoethanol (DMAE), which improves facial muscle tone and reduces wrinkles. Add avocado for its antioxidant properties and mango (for vitamin E and anti-inflammatory carotenoids) and you’ll be sitting pretty after dinner!

**MOST IMPORTANT**

Eat good sugars and good oils. Avoid bad sugars and bad oils.

Dextrose sugars are bad because they have a high glycemic index and go into fat very quickly while weaken the immune system the nerves and the hormone production. Dextrose sugars are white, sugar cane, sugar beet, corn sugar. Levulose or fructose (fruit sugar) as it is called makes less fat, more hormones and strengthens the immune system.

Cold processed plant oils are best. They contain unsaturated fatty acids which are carbon chains. They make the cell membranes of all cells. Thus the visible skin is made of fatty acids. Once a fatty acid is boiled or cooked the fatty acids become trans fatty acids and acrylamides are formed by cooking that cause cancer. Avoid any food boiled in oil. And avoid any trans fatty acid containing processed food.

Avoid nitrates especially in processed meats. Hot dogs, bologna, lunch meats, convenience meats, nitrate sausage and other processed meats are more of a cancer risk than anybody has suspected. The nitrates produce age acceleration and a host of other problems. Avoid at all costs.

Avoid smoking and exposure to smoke. This is an age accelerant. Also most synthetic drugs accelerate aging.

Avoid excess or disturbing stress. At age forty, life has given you your face. If you have been over stressed and over reactive your face will show the life.

**WHAT ABOUT CHOCOLATE**

Cocoa can lower blood pressure; reduce the risk of heart attack, stroke, diabetes, and dementia; and possibly even prevent cancer. But the research isn’t as delicious as it seems. The cocoa-bean products used in the studies are a far cry from the highly processed chocolate candy you find on the shelves of your local store. “Milk chocolate contains about 150 calories and 10 grams of fat per ounce,” says Campbell. The key here is small doses. Dark chocolate, which retains more of the bean during processing, generally has slightly less fat and fewer calories than milk chocolate—plus, it’s richer, so less goes a longer way.
Scientists Reverse Aging In Human Cell Line

May 28, 2015 | by Josh L Davis

It’s the Holy Grail for medicine: how to stop or even reverse aging. With teams of scientists the world over frantically trying to figure out what may cause it, studying everything from nematode worms to naked mole-rats, it seems that a team from Japan might have taken a step forward.

Defects in mitochondria, called “the powerhouse of the cell,” as they produce the cells’ energy, have long been associated with causing aging-related characteristics such as hair and weight loss, curvature of the spine and osteoporosis. One of the most popular current theories on why we age is called “the mitochondrial theory of aging.” It’s been thought that accumulated mutations in the DNA found in mitochondria are the reason behind this.

But researchers from the University of Tsukuba in Japan have been able to demonstrate that this might not be the case. They suggest that the defects are not due to mutations in the DNA after all, but that external factors might be driving them. They looked at how the mitochondria were working in cell lines derived from young people, and compared them with cell lines derived from older people. What they found was fascinating. There were no observable differences in the number of mitochondrial DNA mutations between the older and younger cells. Their results are published in Science Reports.

This led the scientists to suggest that perhaps it was so-called “epigenetic” factors, such as the addition of certain proteins to the mitochondrial DNA, which might be creating the defects that cause the signs of aging. If this were the case - the researchers purposed - then “resetting” the cell lines to stem cells would correct and remove these epigenetic factors. When they tested this with the cell
lines from the older people, this is exactly what they found. Quite amazingly, it seemed to turn the "old" cells back into "young" ones.

When they looked further into the sections of DNA that might be influenced by these epigenetic factors, their results pointed to two regions that control the production of a particular amino acid. The amino acid in question is called glycine. What’s more, when they then bathed the cell line derived from a 97-year-old in glycine for ten days, it restored the mitochondria’s ability to produce energy and reversed some age related defects.

Whilst this research was only conducted with cell lines in the lab, the researchers are keen to investigate further whether the same epigenetic factors contribute towards aging in humans, and whether the same processes could be used to either halt or reverse it.

**Learn to use the anti-aging Eductor therapy**
Phase Out Destructive Habits

1. The single best thing you can do for your health and longevity is **quit smoking**. Smoking has been indicted for a laundry list of ills from **heart disease** to **lung** disorders, all of which can foil your longevity plans.

2. Drink only in moderation. Alcohol infuses every cell, damaging genes and inflaming your **liver**. A glass of wine a day for women and maybe two for men, but no more, may be mildly beneficial.

3. Get your Zzzz’s. Your body needs down time to repair cells and rest your **heart**. And your mind needs **dreaming** to stay sane.

4. Find a doctor who specializes in geriatrics or anti-aging. Barbara M. Morris, RPh, author of *Boomers Can Really Put Old on Hold*, recommends an anti-aging doctor. But according to Marc R. Blackman, MD, chief of the laboratory of clinical investigation of the National Center for *Complementary and Alternative Medicine* (part of the National Institutes of Health), a geriatrician would be more mainstream and recommend fewer unproven treatments. "Anti-aging is like saying anti-puberty or anti-pregnancy. This is a natural process," he says. Whatever his or her style, your new doctor may recommend yearly assessment of various biomarkers, including lipids, **DHEA**, **estrogen**, cortisol, **thyroid**, lung function, and micronutrient assays.

5. Cut **saturated fat**, up omega-3 fats. It’s gospel by now: eat less or no red meat; lose the cake and ice cream; consume more complex carbs, such as whole grains, fruits, and vegetables; and get plenty of fatty fish. The **healthy fats** in salmon, mackerel, and sardines help keep oxygen free-radical molecules from damaging your cells.

6. Consider moderating your total food intake. Studies in rats show that a 30% calorie restriction means **longer life** (no, it doesn't just seem longer!). Blackman also cites studies in rhesus monkeys showing a gain in years from a reduction in food. Obviously, losing excess pounds means less strain on your system.

7. Be careful when tweaking your hormones. Morris swears by controversial **human growth hormone** -- for her. Blackman is no fan. "There have been big studies to determine the relationship between decreases in human growth hormone and thinner bones, more body fat, and mood swings. Giving growth hormone can build muscle, but it has not been shown that the muscle is any stronger." HGH has also been associated with water retention, **carpal tunnel syndrome**, **high blood pressure**, and **blood**-sugar fluctuations. "[HGH science] is not at a point
where any responsible provider could recommend it," Blackman says. And what about the other substance -- a steroid called DHEA -- often recommended for aging? "Dramatically less evidence than HGH!" exclaims Blackman. As for estrogen and progesterone replacement, it's been in all the papers. The combo therapy may increase, rather than cut, the risk of cancer and heart disease. Many natural alternatives to these substances exist -- your own situation should dictate your decision, but always consult your doctor.

8. Supplement, supplement, supplement. Most of us suffer from "overconsumption malnutrition" -- too much of the wrong things, Morris says. She takes a fistful of vitamins and minerals each morning. Even the cautious American Medical Association recently endorsed taking a daily multivitamin. In addition to the effective antioxidant vitamin C, Morris says CoQ10, vitamin E, alpha lipoic acid (another antioxidant), and perhaps some of those "mental acuity" mixtures in the health-food store should be in your medicine cabinet. Again, your doctor can help you fashion routine.

9. Reprogram your vision of old age. A study at Yale recently showed that those with a positive view of growing older lived seven years longer than those who griped about it. Morris works with young people and "they forget things all the time and never refer to 'having to a junior moment.'"

10. Kick guilt out of your life! Laura Berman Fortgang, author of Living Your Best Life, says: "Be future-minded. Guilt and regrets are part of the past. Evolving and changing is how we stay young."

11. Don't be afraid to make a big change. Fortgang says it's never too late to move, join the Peace Corps, change careers, get married, or get a divorce. "Don't say you're too old," she says. "Sometimes [earlier] decisions need to be changed." She and Morris also say plastic surgery can be life-enhancing if you do it to look and feel better, not to change your life overnight.

12. Morris also half-jokingly advises that people never retire. "Retirement is a contagious, debilitating disease." Take some time off for a vacation and smell the roses, she advises. But don't get so intoxicated by the roses that you don't come back and do something useful. "Those roses could turn into daisies," she says, "as in pushing up daisies."
Desiré is the Professor of Medicine at IMUNE. IMUNE is an accredited and legally registered medical university in Europe.

Since 1995 IMUNE has been offering medical education in a variety of subjects to defend and perpetuate Natural Medicine. There are many small minded people being driven by the SWthetic chemical companies to destroy Natural Medicine as a viable choice in Medicine. IMUNE has offices in Switzerland, Mexico, Dubai, Budapest, England, and the British Virgin Islands. The small party minded picayune minions of the chemical companies constantly attack with their anal retentive biased short sided views.

We must fight for freedom of choice and especially freedom of choice on medicine.