

HOW SMALLPOX RELATES TO AGING

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# LifeExtension®

The ULTIMATE Source For New Health And Medical Findings From Around The World

September 2011

## Why Aren't More Wealthy People *Funding* Aging Research?

**Reprogram  
Genes to Extend  
Healthy Life Span**

**Regenerative  
Medicine Key  
to Longevity**

**Aubrey de Grey's  
Plan To Reverse  
Human Aging**



Oracle® Founder  
**LARRY ELLISON**  
Donates Hundreds of  
Millions to Aging Research



# THE ULTIMATE TWO-PER-DAY TABLET

The following table compares the daily dosage of key nutrients included in both the Life Extension **Two-Per-Day Tablet** and **Centrum®**'s Daily Tablet:

SAMPLE INGREDIENT COMPARISON	LIFE EXTENSION TWO-PER-DAY	CENTRUM®
Vitamin C	500 mg	60 mg
Vitamin D	2,000 IU	400 IU
Vitamin B1	75 mg	1.5 mg
Vitamin B2	50 mg	1.7 mg
Vitamin B6	75 mg	2 mg
Vitamin B12	300 mcg	6 mcg
Niacin (as niacinamide)	50 mg	20 mg
Pantothenic acid	100 mg	10 mg
Vitamin E	200 IU (natural)	30 IU (synthetic)
Natural Folate	400 mcg	400 mcg
Zinc	30 mg	11 mg
Selenium	200 mcg	55 mcg
Lutein	5 mg	(none)*
Lycopene	2 mg	(none)*
Biotin	300 mcg	30 mcg
Boron	3 mg	75 mcg
Chromium	200 mcg	35 mcg
Molybdenum	100 mcg	45 mcg
Magnesium	100 mg	50 mg
Manganese	2 mg	2.3 mg
Iodine	150 mcg	150 mcg
Potassium	25 mg	80 mg
Vitamin A (preformed)	500 IU	1,015 IU
Vitamin A (as beta-carotene)	4,500 IU	2,485 IU
Choline (as bitartrate)	20 mg	(none)
Inositol	50 mg	(none)
PABA	30 mg	(none)
Calcium	12 mg	200 mg

Contains soybeans, rice, and corn.

\* Centrum® no longer contains significant amounts of lycopene nor lutein.

For many years, Life Extension members had to rely on commercial "one-a-day" supplements that provide very low potencies.

In response to requests for a science-based multi-nutrient, a special formula was compounded to provide the greatest potencies that can fit into two tablets. When compared to conventional "one-a-day" products, **Life Extension Two-Per-Day** contains up to **50 times more potency!**

The box on this page reveals how much more potent the **Two-Per-Day** formula is compared to the leading commercial multi-vitamin. Few consumers realize that commercial supplements often contain the cheapest form of nutrients that don't provide optimal benefits. For example, the 30 IU of synthetic vitamin E contained in Centrum® may provide relatively little vitamin E to the bloodstream. The 200 IU of natural vitamin E contained in Two-Per-Day thus provides about **7 times** more vitamin E activity than does Centrum®.



Item #01515

## Compared to Centrum®, Two-Per-Day Tablets provide about:

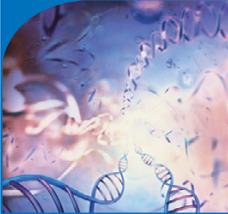
- 5 times more Vitamin D
- 8 times more Vitamin C
- 7 times more Vitamin E
- 10 times more Biotin
- 40 times more Boron
- 4 times more Selenium
- 37 times more Vitamin B6
- 50 times more Vitamin B1
- 50 times more Vitamin B12
- More than twice as much niacin, zinc, and many other nutrients

Life Extension Two-Per-Day Tablets provide much higher potencies of key nutrients and represent a better value than many commercial brands.

A bottle of 120 Life Extension Two-Per-Day Tablets retails for \$18.95. If a member buys four bottles, the price is reduced to \$12.75 per bottle. (The retail price for 180 tablets of Centrum® is around \$14.)

**To order Life Extension Two-Per-Day Tablets,  
call 1-800-544-4440 or visit [www.LifeExtension.com](http://www.LifeExtension.com)**

## REPORTS



### 20 PROGRAMMING GENES TO EXTEND LIFE SPAN

The phenomenon known as **gene expression**, or how genes turn “on” and “off” over the course of your lifetime, lies at the core of the aging process. Restoring **youthful** gene expression is vital to extending healthy life span. Avant-garde scientists talk about the latest strategies for reprogramming genes and boosting longevity.



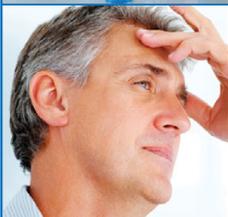
### 30 LIFE EXTENSION SUPPORTS AGE-REVERSAL RESEARCH

Every year Life Extension® funds millions of dollars in research to cure degenerative disease and *reverse* human aging. Here a project is outlined that may someday transform aging human cells into young cells and rejuvenate the vascular and immune systems.



### 52 NEW INITIATIVE TO ACCELERATE ANTI-AGING RESEARCH

An ambitious and novel plan is launched that presents research projects to interested parties via email for the purpose of rapidly raising funds to find an aging cure.



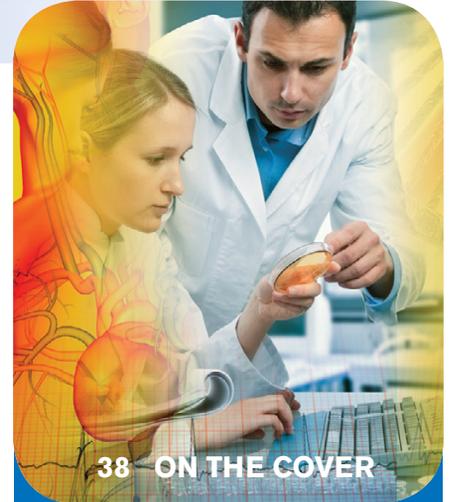
### 54 REDUCING THE RISKS OF HIGH CORTISOL

Your body releases the hormone cortisol in response to stress. Excess cortisol from chronic stress is linked to everything from diabetes to bone loss, weight gain, and sleepless nights. A low-cost supplement called **rhodiola** combats cortisol's lethal effects.



### 70 ENHANCE THE DETOXIFYING CAPACITY OF YOUR LIVER

The EPA estimates that average Americans may be carrying as many as **700 industrial chemicals** in their bodies. Your liver serves as the frontline defense against these toxic agents. The liver-protective **silymarin** complex contained in extracts of milk thistle may halt and even reverse externally induced liver damage.



38 ON THE COVER

### WHY DON'T MORE WEALTHY PEOPLE FUND ANTI-AGING RESEARCH?

Aubrey de Grey describes how **regenerative medicine** may rejuvenate the human body and postpone aging indefinitely. Aubrey summarizes where this science stands and explains why more wealthy people are not funding research aimed at reversing aging processes. Examples of billionaires like Oracle® software founder **Larry Ellison** and Dole Food Company chairman **David Murdock** are provided to show that some ultra-wealthy people are serious about supporting meaningful anti-aging research.

## DEPARTMENTS

### 7 SMALLPOX AND AGING

**Smallpox** killed **300 million people** in the 20<sup>th</sup> century alone before it was eradicated. Just as **smallpox** dramatically altered the course of human history, so will **aging** devastate the modern world unless we find a way to cure it. Enlightened individuals today can take steps to protect against degenerative disease and participate in scientific research that aims to control pathological aging processes.

### 15 IN THE NEWS

Sleep duration linked to cognitive function; olive oil lowers stroke risk; green tea combats autoimmune disorders; and more.

### 81 BOOK REVIEW: THE FUTURE OF AGING

More than just a guidebook, *The Future of Aging: Pathways to Human Life Extension* details the quantum leap forward in anti-aging research witnessed over the past decade. This visionary blueprint for increasing our life span draws from the best minds in the field, representing Life Extension and other scientific and medical research organizations.

### 89 PROFILE: MARK WEXLER

Documentary filmmaker Mark Wexler's latest film, *How to Live Forever*, takes viewers on a fascinating journey into the world of anti-aging. Featured alongside such luminaries as Aubrey de Grey and Raymond Bradbury are ordinary people leading full, active lives into their 90s and beyond.

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Post your questions, add your comments, and access useful information on health, nutrition, prevention, anti-aging, and more.

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PURE, HEART HEALTHY

# Super Omega-3

## EPA/DHA



**Fish Oil Blend with Sesame Lignans and a MORE Concentrated Olive Fruit Extract**

### A Comprehensive Fatty Acid Formula

There's no debating the power of omega-3 fatty acids. From support for heart health and brain function to help with inflammation, their broad-spectrum benefits have been firmly established in a wealth of studies.<sup>1-9</sup>

To ensure the purest, most stable, easy-to-tolerate fish oil supplement, Life Extension® SUPER OMEGA-3 EPA/DHA is *molecularly distilled*. This patented process ensures any pollutants are reduced to virtually undetectable levels. The result? Our fish oil enjoys a **5-star rating for purity, quality, and concentration** from the **International Fish Oil Standards** program (IFOS)—the highest possible rating from the world's *premier* testing laboratory.

### Sesame Lignans and Standardized Olive Fruit Extract for Enhanced Benefits

Fish oils (and other fatty acids) have a tendency to oxidize, rendering them nutritionally inferior. Scientific studies show that when added to fish oil, *sesame lignans* safeguard against oxidation and direct fatty acids toward pathways that help with inflammatory reactions.<sup>10</sup>

To further emulate the benefits of a **Mediterranean diet**, **Super Omega-3** delivers standardized, high-potency *olive fruit extract*. Research shows that when combined with olive oil, fish oil supplements help with inflammation better than fish oil alone.<sup>11</sup>

Olive also contains the compounds *hydroxytyrosol*, *tyrosol*, and *oleuropein*. Together these nutrients counter the action of free radicals, delay aging in specialized skin cells, prevent undesirable LDL oxidation, and help maintain normal platelet activation.<sup>12-15</sup>

**Super Omega-3** supplies the equivalent content of **6 ounces of extra virgin olive oil**. Take two softgels twice daily with meals.

Item #01482



Item #01484

A bottle containing 120 softgels of **Super Omega-3 EPA/DHA with Sesame Lignans and Olive Fruit Extract** retails for \$32. If a member buys four bottles, the price is reduced to just **\$21** per bottle. If **10 bottles** are purchased, the cost is just **\$18.68** per bottle. Item #01482

### Just four softgels of SUPER OMEGA-3 EPA/DHA with Sesame Lignans & Olive Fruit Extract provide:

<b>EPA Pure+™ Extract</b> (eicosapentaenoic acid)	<b>1400 mg</b>
<b>DHA Pure+™ Extract</b> (docosahexaenoic acid)	<b>1000 mg</b>
<b>Olive Fruit Extract</b> [std. to 6.5% polyphenols (39 mg), 1.73% hydroxytyrosol/tyrosol (10.4 mg), 0.5% verbascoside/oleuropein (3 mg)]	<b>600 mg</b>
<b>Sesame Seed Lignan Extract</b>	<b>20 mg</b>

For those with sensitive stomachs, **Super Omega-3** is also available with **enteric coating** and retails for **\$34**. If a member buys four bottles, the price is reduced to **\$23.25** per bottle. If **10 bottles** are purchased, the cost is just **\$21** per bottle. Item #01484

To order the most advanced fish oil supplement, **Super Omega-3 EPA/DHA with Sesame Lignans and Olive Fruit Extract** (with or without enteric coating), call **1-800-544-4440** or visit **www.LifeExtension.com**

**CAUTION:** If you are taking anti-coagulant or anti-platelet medications, or have a bleeding disorder, consult your healthcare provider before taking this product. Contains fish (anchovy, mackerel), soybeans, and sesame.

#### References:

1. *Public Health Nutr.* 2006 Dec;9(8A):1136-40.
2. *Am J Prev Med.* 2005 Nov;29(4):335-46.
3. *J Am Diet Assoc.* 2005 Mar;105(3):428-40.
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13. *J Agric Food Chem.* 2007 Sep 5;55(18):7609-14.
14. *Lipids.* 2001 Nov;36(11):1195-202.
15. *Eur J Cancer.* 2000 Jun;36(10):1235-47.

Supportive but not conclusive evidence shows that consumption of EPA and DHA omega-3 fatty acids may reduce the risk of coronary heart disease.

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**Jonathan V. Wright, MD**, is medical director of the Tahoma Clinic in Renton, WA. He received his MD from the University of Michigan and has taught natural biochemical medical treatments since 1983. Dr. Wright pioneered the use of bioidentical estrogens and DHEA in daily medical practice. He has authored 11 books and publishes *Nutrition and Healing*, a monthly newsletter with a worldwide circulation of more than 100,000.

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**John Boik, PhD**, is the author of two books on cancer therapy, *Cancer and Natural Medicine* (1996) and *Natural Compounds in Cancer Therapy* (2001). He obtained his doctorate at the University of Texas Graduate School of Biomedical Sciences with research at the MD Anderson Cancer Center, focusing on screening models to identify promising new anti-cancer drugs. He conducted his postdoctoral training at Stanford University Department of Statistics. He is currently president of New Earth BioMed, a nonprofit cancer research corporation that studies mixtures of natural products.



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**Stanley W. Jacob, MD**, is Gerlinger Distinguished Professor, Department of Surgery, Oregon Health and Science University. He has authored 175 scientific articles and 15 books and holds 3 patents, including the initial patent on the therapeutic implications of dimethyl sulfoxide (DMSO).



**Richard Kratz, MD, DSci**, is clinical professor of ophthalmology at the University of California, Irvine, and the University of Southern California (Los Angeles). Dr. Kratz pioneered the cataract-removal technique called phacoemulsification and developed intraocular lenses to replace the crystalline lens. He is currently involved in projects relating to glaucoma, cataract extraction, and facilitating eyesight for the totally blind.



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**Ralph W. Moss, PhD**, is the author of books such as *Antioxidants Against Cancer*, *Cancer Therapy*, *Questioning Chemotherapy*, and *The Cancer Industry*, as well as the award-winning PBS documentary "The Cancer War." Dr. Moss has independently evaluated the claims of various cancer treatments and currently directs The Moss Reports, an updated library of detailed reports on more than 200 varieties of cancer diagnoses.



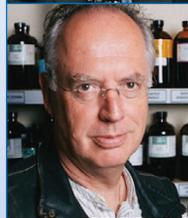
**Michael D. Ozner, MD, FACC, FAHA**, is a board-certified cardiologist who specializes in cardiovascular disease prevention. He serves as medical director for the Cardiovascular Prevention Institute of South Florida and is a noted national speaker on heart disease prevention. Dr. Ozner is also author of *The Great American Heart Hoax* and *The Miami Mediterranean Diet* (2008, Benbella Books). For more information visit [www.drozner.com](http://www.drozner.com).



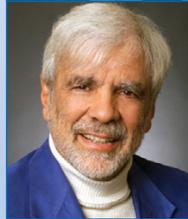
**Robert Pastore, PhD, CNS**, is a clinical nutritionist practicing in New York City. Due to his thorough nature and focus on organic chemistry and biochemistry, his colleagues have termed his practice forensic nutrition. He is a member of Harvard Medical School Postgraduate Association, the American College of Nutrition, New York Academy of Sciences, and the American Association of Pharmaceutical Scientists.



**Stephen B. Strum, MD**, is a medical oncologist who has specialized in prostate cancer treatment since 1983. He is co-founder and past medical director of the Prostate Cancer Research Institute. Currently, he directs a practice for prostate cancer patients in Ashland, OR.



**Jonathan Treasure, AHG, MNIMH**, is a British medical herbalist at the Centre for Natural Healing in Ashland, OR. Originally a medical sciences graduate from Cambridge University, he studied herbal medicine at the UK School of Phytotherapy. His clinical specialty is integrative botanical medicine for cancer, and his principal research interest is herb/drug interactions.



**Jonathan V. Wright, MD**, is medical director of the Tahoma Clinic in Renton, WA. He received his MD from the University of Michigan and has taught natural biochemical medical treatments since 1983. Dr. Wright pioneered the use of bioidentical estrogens and DHEA in daily medical practice. He has authored 11 books and publishes *Nutrition and Healing*, a monthly newsletter with a worldwide circulation of more than 100,000.

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# Smallpox and Aging



BY WILLIAM FALOON



Edward Jenner

In the 20<sup>th</sup> century alone, smallpox killed 300 million humans worldwide.<sup>1,2</sup> Historically, the disease infected so many people that no one thought it would ever go away.

While the smallpox virus was ravaging Europe, certain Asian populations had discovered a crude but effective method to prevent the infection. It was realized back then that those who survived smallpox were immune for life. Asians began taking pus from infected people's scabs and rubbing a small amount into a cut made in a healthy person's arm (or blowing dried powder from smallpox scabs up healthy people's noses).<sup>1,3</sup>

It took Europeans about 700 years to adopt this practice. While 2-3% of people exposed to this procedure died of smallpox, the practice decreased overall smallpox fatalities 10-fold.<sup>4,5</sup>

Edward Jenner demonstrated in 1796 that inoculation using fluid from cowpox lesions could safely prevent smallpox.<sup>5,6</sup> Jenner's research was initially rejected, but by 1840 the British government provided Jenner's vaccination free of charge. Jenner coined the term "vaccine," and widespread use of improved versions resulted in smallpox being the first human disease eradicated by vaccination.<sup>5</sup>

What's interesting is that no one back in those olden days had any idea that viruses existed, yet enlightened individuals were nonetheless able to take steps to reduce their risk of contracting smallpox.

# AS WE SEE IT

## Smallpox Brought Down Empires

The smallpox virus is believed to have appeared around 10,000 BC. It originated in Africa and spread to India and China. It took many more centuries to reach Europe. The impact of smallpox on major historical events, such as the rise and fall of empires, is largely forgotten.

For example, the Europeans were able to quickly conquer much of the Western hemisphere because while they carried smallpox, many were immune to it. Native Americans had never encountered the virus, and their populations were completely vulnerable. Not only did smallpox kill more than one third of Native Americans, but powerful empires such as the Aztecs were persuaded to convert to Christianity because they interpreted the smallpox epidemic that ravaged them as a sign their gods were weaker than the Spaniards.<sup>1</sup>

Had Native Americans been the ones harboring infectious diseases as insidious as smallpox, it is unlikely that Europeans would have so readily prevailed in conquering the Western hemisphere. One reason Napoleon sold the Louisiana Territory so cheaply to the United States is that a large contingent of his army was wiped out by yellow fever (a mosquito-borne virus) in Haiti and he feared losing an entire war if French soldiers died of these kinds of plagues in the New World.<sup>7</sup>

## What Does Smallpox Have to Do With Aging?

Aging is having an impact on today's empires similar to smallpox centuries ago.

By year 2020, more than half of all federal revenue collected in the

United States will go to support the aging population. As one can see from the chart on this page, when interest on the national debt and Medicare is factored in, there will be virtually nothing left to pay for other federal programs.

Medicaid spends huge dollars caring for aging people who can't afford healthcare costs not paid by Medicare, or those who have no Medicare coverage. Medicaid not only drains federal resources, but is also driving state governments towards insolvency.

Japan and many European countries suffer the same situation, as the percentage of the aging populations outstrips the number of younger workers that can support them.<sup>8,9</sup>

Just as smallpox dramatically altered the course of human history, so will aging devastate the modern industrialized world unless something is done to gain control over it.

## We Know More About Aging Than Previous Generations Did About Smallpox

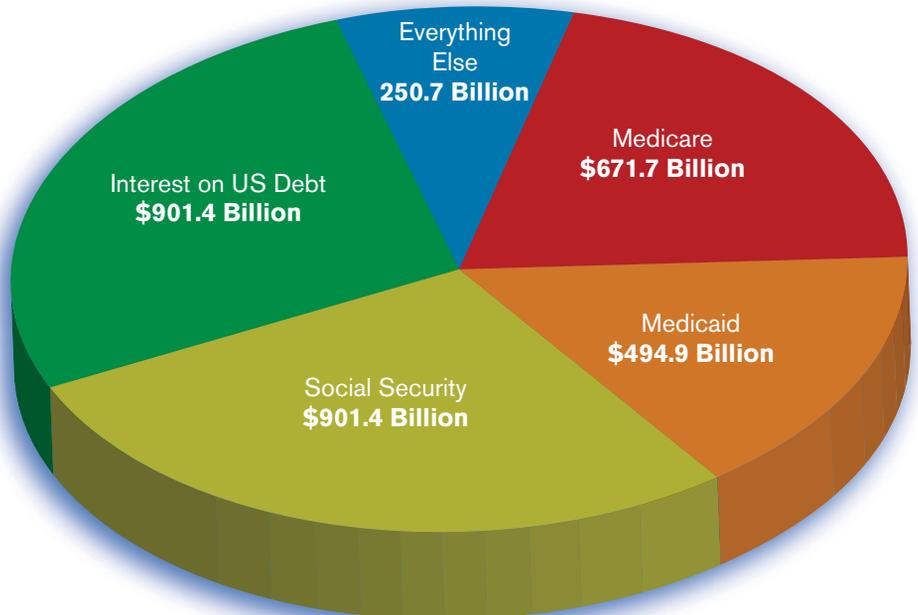
For nearly 12,000 years, mankind wallowed in a blind state of ignorance regarding smallpox. Compare that hopeless situation to the wealth of knowledge about the underlying causes of aging that exists today. Scientists have already discovered methods to slow aging and reverse some of its lethal pathologies.<sup>10-31</sup>

It would have been difficult to convince a group of 16<sup>th</sup> century European physicians that smallpox could ever be eradicated. Yet natural smallpox was vanquished from this planet (a mere 31 years ago).

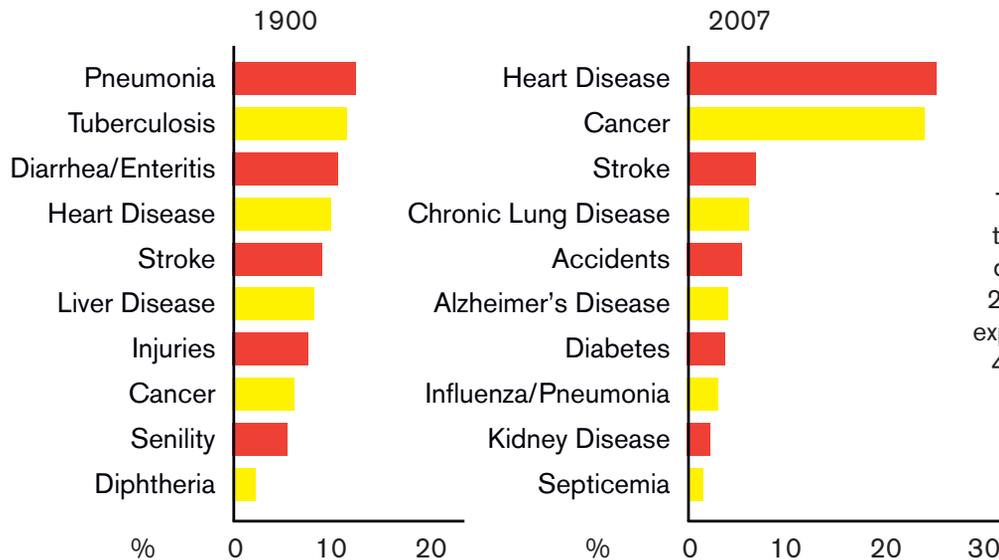
The history of the rise and fall of smallpox is a success story for modern medicine and public health, yet those who pioneered smallpox vaccines were initially

## Projected US Government Spending in 2020

In just nine years, unless we make big changes, 92% of the United States' tax revenue could go to just 4 things—leaving just a sliver to pay for everything else. Source: Government Accountability Office



## TOP TEN CAUSES OF DEATH, 1900 VERSUS 2007.



This graphic depicts the top ten causes of death in 1900 and in 2007. The average life expectancy in 1900 was 47.8 years. In 2007, it was 77.9 years.<sup>36-38</sup>

vilified. In today's era, enlightened individuals are coming to the realization that aging will become a relic of the past like smallpox.<sup>32-34</sup>

### We Have Already Cured What Used to Kill Most Humans

Most people you talk to today fail to appreciate how far medicine has progressed in a remarkably brief period of time. For instance, the three leading causes of death in 1900 were pneumonia, tuberculosis, and diarrhea.<sup>35</sup>

During the first four decades of the previous century, bacterial infections ravaged human populations of all ages. Diphtheria, typhoid fever, scarlet fever, syphilis, staphylococcus, and a host of enteric pathogens were the epidemic killers of the day. By 1946, these diseases were largely brought under control with the advent of antibiotics, improvements in hygiene, and other antimicrobial therapies.

The three leading killers today are heart disease, cancer, and

stroke.<sup>36</sup> Pneumonia still claims the lives of elderly people with weakened immune systems, but the bacterial infections that caused so many people to perish from pneumonia were eradicated long ago. In less than 75 years, science has turned the death tables upside down to the extent that the major threat now facing health-conscious people is aging and its accompanying diseases.

Critics of our plan to radically extend the healthy human life span contend that it is not possible to gain control over aging. We at Life Extension<sup>®</sup> disagree with cynics who fail to appreciate how rapidly science has advanced over the past eight decades.

To educate more people about how close we may be to eliminating pathological aging, it is useful to look back just a few generations to see how hopeless the prospects for living a long and healthy life appeared to be then. At the dawn of the twentieth century, life expectancy at birth was only 47.8 years in the United States, whereas in the year 2007, it reached 77.9 years.<sup>37</sup>

Considering the discoveries that are occurring now, aging may become a controllable disease before this century ends.

### My Early Life Observations About Aging

I never accepted the inevitability of aging and death and have spent the majority of my life seeking to defeat it, which is one reason why the Life Extension Foundation<sup>®</sup> was formed in 1980.

If one ever needs motivation, just visit a nursing home to see end-stage aging first hand. I had to make frequent visits to these horrific institutions as part of my employment in younger years.

My first impression was how could younger people possibly visit a nursing home and not think they will someday be there? I thought this alone should inspire a significant portion of the population to make anti-aging research a top priority.

My second perspective about these institutionalized individuals is perhaps cruel, but the question

## AS WE SEE IT

I always wanted to ask nursing home patients was “What steps did you take to avoid winding up in this predicament?” I almost felt contempt knowing that most of them did nothing during their productive years to alter their course of pathological aging.

My exposure to nursing home environments solidified my personal commitment to combat the aging process in every possible way. I reasoned that if I failed and wound up confined to a nursing home, I would at least have the peace of mind in knowing I did everything possible to avoid this calamity.

### US Life Expectancy Has More Than Doubled in the Past 200 Years<sup>36,38,43</sup>

Year	Life Expectancy
1800	36
1900	47.8
1920	54.1
1940	62.9
1960	69.7
1980	73.7
2000	77
2007	77.9

Just think that starting in **1840**, the British government provided smallpox vaccinations free of charge. Yet more than **500 million** people died of smallpox worldwide before it was finally eradicated in **1980**—140 years later.

I wonder if in the next 100 years or so, someone will write that we had the knowledge at our disposal to cure aging sooner, but an entire generation was lost because not enough resources were allocated to tie the scientific pieces together.

### What's Being Done Now to Defeat Aging?

In the April 2011 issue of *Life Extension Magazine*<sup>®</sup>, we described some of the initiatives being taken by activist members and our Foundation to accelerate the pace of discoveries that may lead to aging reversal in the not-too-distant future.

In this issue, we profile one of the wealthiest individuals on earth (Larry Ellison), who has spent over \$300 million of his own money

supporting research projects dedicated to uncovering the molecular mechanisms behind aging. Larry Ellison has set an example for others to follow in mankind's efforts to discover an aging cure.

We at Life Extension view Larry Ellison's enormous research contributions not just as beneficial to society, but also a logical expenditure from a personal survival perspective.

Just as smallpox and other infectious diseases have been eliminated in modern societies, so will the deadly consequences of aging. Similar to those in past centuries who figured out how to prevent smallpox, there are enlightened individuals today who have learned how to delay the effects of aging.

This issue of *Life Extension* describes an array of research initiatives aimed at discovering validated therapies to reverse aging.

We live at the cusp of revolutionary change. Your participation in this unprecedented scientific voyage to defeat aging may be the most rewarding endeavor you have ever been involved with.

Membership in the Life Extension Foundation stands at an all-time record. I am pleased that so many humans now have a sense of urgency and understand the need to make age-reversal research their number one priority. Your support through membership dues and product purposes enables us to fund research aimed at reversing aging, while encouraging others to do the same.

For longer life,



William Faloon





## Smallpox Affected All Classes... Just as Aging Spares No One Today!

Smallpox killed Queen Mary II of England, Emperor Joseph I of Austria, King Luis I of Spain, Tsar Peter II of Russia, Queen Ulrika Elenora of Sweden, and King Louis XV of France.

The disease killed as many as 30% of those infected. Infant mortality from smallpox was far higher. Between 65–80% of survivors were marked with deep pitted scars (pockmarks), most prominently on the face.<sup>39</sup>

Blindness was another complication. In 18<sup>th</sup> century Europe, a third of all reported cases of blindness were due to smallpox. Today, aging-related disease is the leading cause of blindness.<sup>40-42</sup>

Smallpox is now eradicated. No one would have thought that possible during the thousands of years when smallpox outbreaks decimated populations worldwide.

In the not-too-distant future, aging too can be eliminated...if enough people with resources choose to make aging research the number one priority.

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In recent studies comparing the effects of standard curcumin against turmeric extracts comparable to **Super Bio-Curcumin**®, researchers observed:<sup>1,2</sup>

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- Almost **double** the **antioxidant** support.

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Item #00407

# Complete Skin Protection *From Inside Out*

Scientists are realizing that skin needs to be protected against external factors such as sunlight, and also against internal damage caused by emotional stress. This is because our emotions, particularly stressful ones, release a wave of stress hormones such as cortisol that prematurely age the skin.

Fortunately, emerging research suggests that a natural herb called **ashwagandha** can protect and enhance psychological health as seen in a recent human trial.<sup>1</sup> In this study, just 125 mg of a patented ashwagandha extract once a day led to a **14.5%** reduction in cortisol levels in 98 chronically stressed individuals. This dose also resulted in a **13.2%** increase in levels of the anti-aging hormone DHEA, which helps maintain the youthfulness of skin cells. Overall, the ashwagandha-treated subjects experienced up to **62%** reduction in anxiety levels compared with virtually no change in the placebo group.

The impressive results from this trial have led to the incorporation of **ashwagandha** into a new skin-protection formula called **Enhanced FernBlock® with Sendara®**. As the name suggests, this formula also contains **FernBlock®**, the revolutionary oral supplement introduced by Life Extension® in July 2008 that acts as an internal sunscreen against damaging solar radiation.

**FernBlock®** is a natural extract derived from the fern plant *Polypodium leucotomos*. Extensive clinical studies document its ability to provide remarkable skin protection by inhibiting the absorption of harmful ultraviolet (UV) rays and quenching DNA-corrupting free radicals. **FernBlock®** also diminishes the consequences of excessive UV radiation by favorably altering a number of changes in skin cells that cause premature skin aging.

**Enhanced FernBlock® with Sendara®** is complemented with a powerful antioxidant called *Phyllanthus emblica*. This natural extract blocks a chemical reaction that generates several types of skin-damaging free radicals, thus shielding the skin against the destruction of collagen and other dermal matrix proteins. An *in vitro* study<sup>2</sup> using a patented extract of both **ashwagandha** and *Phyllanthus emblica* demonstrated an impressive **54%** inhibition of collagen-degrading enzymes and an **86%** inhibition of those that break down hyaluronic acid—the skin's natural moisturizer.

The unique combination of natural ingredients in **Enhanced FernBlock® with Sendara®** has been scientifically proven to help skin look and feel good from the inside out. This formula is designed to complement topical sunscreens for complete skin protection.

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## IN THE NEWS

### Sleep Length May Affect Cognitive Aging 4 to 7 Years

A study in a recent issue of the journal *Sleep* discusses how differing sleep patterns over a five-year period as people age can affect cognitive function in-later-life.\* When people get sleep in between the 6 to 8 hour time-frame, the body seems to respond normally, however, sleeping more or less than 6 to 8 hours per night may induce and accelerate cognitive decline that is equivalent to four to seven years of aging.

"The main result to come out of our study was that adverse changes in sleep duration appear to be associated with poorer cognitive function in later-middle age," said lead author Jane Ferrie, PhD, senior research fellow in the University College London Medical School Department of Epidemiology and Public Health in the UK.

The mined data from the Whitehall II study included more than 10,000 London-based citizens aged 35-55.

"The detrimental effects of too much, too little, and poor-quality sleep on various aspects of health have begun to receive more attention," Ferrie added. "Given that our 24/7 society increasingly impinges on the lives of many people, it is important to consider what effects changes in sleep duration may have on health and well-being in the long term."

—J. Finkel

\* *Sleep*. 2011 May 1;34(5):565-73.

### Olive Oil Use Linked with Lower Risk of Stroke

A study reported in the journal *Neurology* reveals an association between olive oil consumption and a lower risk of stroke.\*

Cécilia Samieri, PhD, and her associates analyzed data from 7,625 participants in the Three-City Study. Olive oil consumption frequency was ascertained from dietary intake documented upon enrollment between 1999 and 2000 and was categorized as no use, moderate use or intensive use.

During a median follow-up period of 5.25 years, 148 strokes occurred. Adjusted analysis of the data unveiled a **41% lower risk** of stroke among intensive olive oil users compared to those who reported no use. The protective association was significant for ischemic, but not hemorrhagic stroke.

In a secondary study, subjects with the highest levels of plasma oleic acid had a **73% reduction** in stroke risk compared to those whose levels were lowest.

**Editor's note:** Olive oil is a common feature of diets consumed in the countries surrounding the Mediterranean sea and has been suggested as an important factor in the Mediterranean diet's disease-protective benefit.

—D. Dye

\* *Neurol*. 2011 Jun 15.



## Micronutrient Supplementation Associated with Decreased Mortality Among the Critically Ill

A review published in the July 2011 issue of the journal *Nutrition* concludes that supplementation with vitamins and trace elements may help reduce the risk of dying among critically ill adults.\*

For their analysis, the authors selected 18 randomized clinical trials involving parenteral/intravenous or oral supplementation of single or combined micronutrients in critically ill patients, in order to determine the effect of such supplementation on mortality, infectious complications and other end points. Nutrients commonly used in the trials included selenium, alpha-tocopherol, ascorbic acid, zinc, and copper in varying doses.

Fourteen trials included in the analysis found a decrease in overall mortality and six indicated a reduction in 28-day mortality in association with micronutrient supplementation. Although no decrease in infectious complications or length of intensive care unit or hospital stay was indicated by the meta-analysis, a 31% decrease in mortality was associated with combined supplementation.

**Editor's note:** As more clinical trials are conducted, the authors suggest subgroup analyses to determine if greater benefit could be derived from supplementation at higher levels than those currently recommended for specific critically ill patient populations.

—D. Dye

\* *Nutr.* 2011 Jul;27(7):745-58.

## Resveratrol Shows Promise as Human Anti-Aging Compound

A review published in *Molecular Nutrition and Food Research* concludes that resveratrol, which has recently gained attention as a possible anti-aging and disease-preventive compound, could indeed possess an ability to help retard the development of some of the conditions associated with aging in humans.\*

In their introduction to the article, Heather Hausenblas and her associates note that nearly 4,000 studies have been published on the subject of resveratrol and that one study conducted in 2007 found two-thirds of those who use multiple supplements include resveratrol in their regimen. Although the review included just 15 peer-reviewed human trials involving varying doses of resveratrol, the authors conclude that there is significant evidence of a potential for the compound to prevent disease and improve human health.

In addition to resveratrol's anti-inflammatory effect, the compound's role as an antioxidant could be partly responsible for its numerous benefits.

**Editor's note:** Dr. Hausenblas and her colleagues "Believe the evidence is sufficiently strong to conclude that a single dose of resveratrol is able to induce beneficial physiologic responses, and that either weeks or months of resveratrol supplementation produces physiologic changes that are predictive of improved health, especially in clinical populations with compromised health."



—D. Dye

\* *Mol Nutr Food Res.* 2011 Jun 20.

## \$60 Million Trasylol® Settlement Reached

Following the egregious actions taken by Bayer regarding its insidious drug Trasylol®, the Big Pharma company is finally being held accountable for the untold deaths and suffering if caused by its profit-hungry, immoral actions.\*

Around 1,600 lawsuits were filed against the company in total, all claiming similar allegations that Bayer completely failed to design and test the drug properly. Furthermore, and perhaps most disturbing, the lawsuits allege that Bayer did not let healthcare professionals and users know about the dangerous side-effects and risks associated with the drug. Compounding the matter, the lawsuit also charges Bayer with delayed disclosure of negative data to the FDA, as well as failure to issue proper warnings or a Trasylol® recall.

*Life Extension*® recently wrote about the heinous acts by Bayer throughout this entire horrible ordeal. The company has reportedly reached a settlement agreement with about 150 Trasylol® lawsuits filed on behalf of individuals who allege that the drug, used during heart surgery, increased the risk of strokes, heart attack, kidney failure, and even death. Bayer will reportedly pay \$60 million to settle the lawsuits.

—J. Finkel

\* <http://www.aboutlawsuits.com/trasylol-settlement-reached-in-some-lawsuits-12206/>. Accessed June 20, 2011.

## How Deficiencies of Micronutrients Can Increase the Risk of Age-Related Disease

In the June 2011 *FASEB Journal*, Bruce N. Ames, PhD, and Joyce C. McCann, PhD, reveal why modest deficiencies of any vitamin or mineral can increase the incidence of age-related disease.\*

Dr. Ames' triage hypothesis proposes that the body evolved to allocate frequently scarce micronutrients to short-term survival or reproductive functions rather than to those that are protective of long-term health. This results in damage to the tissues during nutrient deficiency states.

The current review evaluates the effect of selenium deficiency on 12 selenoproteins. Five of these selenium-dependent proteins are considered essential from an evolutionary perspective and seven are nonessential. It was found that modest selenium deficiency results in the loss of nonessential selenoprotein activities and concentrations, with the exception of one non-essential protein that they predict is conditionally essential. Mutations in selenoproteins lost with deficiency were discovered to result in characteristics in common with diseases that occur with aging.

**Editor's note:** *FASEB Journal's* Editor-in-Chief Gerald Weissmann, MD, remarked that, "This paper should settle any debate about the importance of taking a good, complete, multivitamin every day. As this report shows, taking a multivitamin that contains selenium is a good way to prevent deficiencies that, over time, can cause harm in ways that we are just beginning to understand."

—D. Dye

\* *FASEB J.* 2011 Jun; 25(6):1793-814.

## Obesity Increasingly Leads to Liver Disease

A recent CNN.com feature highlights the growing relationship between overweight and obese people and liver disease.\* The epidemic lies in the basic fact that nearly two-thirds of the American population is either overweight and obese, and that too much fat can cause a person's liver to malfunction.

"It's overwhelming how many patients we're seeing with this problem," Dr. Naim Alkhouri, a hepatologist at the Cleveland Clinic says in the article. Dr. William Carey, also a hepatologist at the Cleveland Clinic, agrees, saying, "This is huge. We didn't even know this disease existed 30 years ago. Now, it's the most common liver disease in America."

According to some stats cited in the article, about one-third of the US population has nonalcoholic fatty liver disease. Most of these people, about 80%, will not develop significant liver disease, but the other 20% will develop nonalcoholic steatohepatitis, or NASH. Of those, about 20-30% will go on to develop cirrhosis and end-stage liver disease. Crunching the numbers leads to about 6 million people dealing with this awful disease.

The first sign of the disease is sometimes a swollen stomach, swollen ankles, or vomiting blood. Other people might develop brain changes similar to Alzheimer's, resulting in memory lapses and lack of coordination due to the amount of toxins in a person's system. The problem was reported in *Life Extension Magazine*® in February of 2004.

Eating better, exercising, and losing weight are all possible ways to reverse this disease in its earlier stages.

—J. Finkel

\* <http://www.cnn.com/2011/HEALTH/06/16/liver.disease.ep/>. Accessed, June 20, 2011.

## Tea Mechanism for Preventing Autoimmune Disease Uncovered

In an article published in the journal *Immunology Letters*, researchers at Oregon State University's Linus Pauling Institute report a mechanism for green tea in suppressing autoimmune disease: an imbalance of the immune system that results in the body attacking itself.

Oregon State University associate professor Emily Ho and her associates studied the effect of the green tea polyphenol known as epigallocatechin gallate (EGCG) in cell cultures and in mice. They found that EGCG increased the amount of regulatory T cells (which help dampen the immune system), whose function is regulated by processes that involve transcription factors and DNA methylation.

"EGCG may have health benefits through an epigenetic mechanism, meaning we aren't changing the underlying DNA codes, but just influencing what gets expressed, what cells get turned on," Dr. Ho elaborated. "And we may be able to do this with a simple, whole-food approach."

**Editor's note:** Although treatment with pharmaceutical agents can help regulate immune function in autoimmune disease, the drugs are frequently associated with toxicity.

—D. Dye

\* *Immunol Lett.* 2011 May 20.



# Experience Tranquility

## Overstressed? Losing sleep?

Left unchecked, the inner turmoil created by these issues can lead to *heart palpitations, muscle weakness, headaches, and even increased blood pressure.* You need to take action to halt these symptoms immediately.

Fortunately, **Life Extension®** has created **Natural Stress Relief**, a calming formula made with **lemon balm** and **L-theanine**, two ingredients **clinically proven** to help promote sleep and relaxation.<sup>1,3</sup>

The **Cyracos® lemon balm extract** used in this product is prepared from a special lemon balm chosen for its high concentrations of *hydroxycinnamic* and *rosmarinic acids*. These potent constituents may be **mood enhancers** that *relieve everyday stress and alleviate sleep problems.*<sup>1</sup>

*L-theanine*, an amino acid derived from green tea, is a natural relaxant that has been used by the Japanese for years. Those who have taken L-theanine compare it to a *massage, meditation session, and aromatherapy rolled into one.*<sup>2</sup>

Based on a tremendous amount of published data, Life Extension® combined these two ingredients with the idea of providing the ultimate calming experience. Try it today.

Each vegetarian capsule of **Natural Stress Relief** provides:

300 mg of **Cyracos® lemon balm extract**  
200 mg of **Suntheanine® L-Theanine**

Note that the amount of L-theanine in this product is double that of most L-theanine stand-alone supplements. The reason for this potency increase is reports of greater benefit when at least **200 mg of L-theanine** are taken.

The retail price of a 30 count bottle of **Natural Stress Relief** is \$28. If a member buys four bottles, the price of this potent stress-relieving formula is reduced to just **\$18 per bottle.**

**BWARE OF IMITATIONS** The L-theanine used in the new Natural Stress Relief is Suntheanine®, the only pure form of L-theanine available worldwide and the only form protected by 40 internationally recognized patents and scientifically proven in clinical studies to be safe and efficacious. Independent laboratory analysis has verified that certain other products on the market claiming to contain "L-theanine" are only half L-theanine, the other half being a different form of theanine known as "D-theanine" that has not been scientifically evaluated in published studies. Suntheanine® is a registered trademark of Taiyo International, Inc. Use of Suntheanine® is protected by US Trademark Registration No. 2,548,957. Cyracos® is a registered trademark of Naturex, Inc.

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Contains rice.



Item #00987

To order Natural Stress Relief  
with Lemon Balm and L-Theanine,  
call **1-800-544-4440** or visit  
**www.LifeExtension.com**

These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure, or prevent any disease.

# Mitochondrial Basics

## with BioPQQ™

**Energy to burn.** It's more than just a phrase. It's the key to a healthy life span.

Behind every process your body needs to survive and thrive are the cellular energy generators known as **mitochondria**. Their function is so crucial that a growing number of scientists now believe mitochondrial longevity may determine *overall* longevity in aging humans.<sup>1-5</sup> That's why **Life Extension®** has remained at the forefront in identifying innovative compounds that specifically support mitochondrial health.

In addition to the more comprehensive **Mitochondrial Energy Optimizer with BioPQQ™** and standalone **PQQ** products, we now offer a one capsule per day formula for individuals seeking a simplified, low-cost option called **Mitochondrial Basics with BioPQQ™**.

The reason? We want all members to have access to targeted nutrients required to support mitochondrial function and the generation of healthy new mitochondria.

### Three Premium Compounds in One Low-Cost Formula

**Mitochondrial Basics with BioPQQ™** brings together cutting-edge mitochondrial energizers, including the most exciting nutrient to emerge in recent years called *pyrroloquinoline quinone* or **PQQ**. The three ingredients in value-priced **Mitochondrial Basics with BioPQQ™** are:

- 1. PQQ.** This breakthrough micronutrient has recently been shown to trigger **mitochondrial biogenesis**—the growth of new mitochondria in aging cells!<sup>6</sup> PQQ also activates *genes* involved in protecting the delicate structures within the mitochondria.<sup>7-10</sup>
- 2. R-lipoic acid.** The detrimental effects of free radicals comprise one of the chief obstacles to optimal mitochondrial energy production. Published studies confirm R-lipoic acid's power to promote mitochondrial bioenergetics while simultaneously *blunting* free radical activity.<sup>11-16</sup> **Mitochondrial Basics with BioPQQ™** contains the superior **Bio-Enhanced® R-lipoic acid** and is in a proprietary *microencapsulated* form for better absorption.

- 3. Acetyl-L-carnitine arginate.** Fats are shuttled into the mitochondria for metabolic combustion by the amino acid **carnitine**. The *acetylated* form of carnitine helps to facilitate more efficient utilization of fats than carnitine alone.

**Life Extension®** members continue to enjoy access to a full range of targeted supplements clinically shown to optimize energy production in the mitochondria. Just one capsule a day of **Mitochondrial Basics with BioPQQ™** supplies:

**BioPQQ™** ..... 10 mg  
**R-lipoic acid** ..... 100 mg  
**Acetyl-L-carnitine** ..... 250 mg  
**arginate dihydrochloride**

Item # 01569



A bottle containing 30 capsules of **Mitochondrial Basics with BioPQQ™** retails for \$52. If a member buys four bottles, the price is reduced to just **\$34.50** per bottle.

PQQ can also be obtained as a low-cost standalone or in the **Mitochondrial Energy Optimizer with BioPQQ™** formula.

**To order  
Mitochondrial Basics  
with BioPQQ™  
call 1-800-544-4440 or visit  
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Contains soybeans.

These statements have not been evaluated by the Food and Drug Administration. These products are not intended to diagnose, treat, cure, or prevent any disease.

# Programming Genes to Extend Life Span

BY CHARLES PLATT

Skeptics who question whether aging can be conquered often make the problem appear more complicated than it may be.

Differences in gene expression between young people and older people are a well-documented fact.<sup>1,2</sup> In simple terms, almost all the processes in our bodies work better when we are young. Many of us make it to age 50 or beyond before changes in gene expression manifest themselves as serious illnesses.

In the future, we will be able to control (i.e., reprogram) our genes as readily as we do our computers. Some scientists believe that as a result of this, humans may theoretically remain young and healthy for very much longer than they do today.

Restoration of youthful gene expression would enable cells, tissues, and organs to grow younger as opposed to the degenerative downward spiral that now occurs.

We already exert some control over our gene expression with the lifestyle we choose and the supplements we ingest such as fish oil, vitamin D, pterostilbene, and resveratrol.

Scientists have only recently come to the realization that foods, nutrients, and medications that make us healthier do so in part because they induce the expression of health-promoting genes and reduce the expression of disease-promoting genes. Consumption of toxic foods and chemicals, on the other hand, induces the expression of disease-promoting genes and reduces the expression of health-promoting genes.<sup>3-5</sup>

Those who argue about cumulative damage to the body forget how healthy most children are, how they get healthier as they mature into young adulthood, and only then begin to decline. Youthful gene expression enables most children to maintain a relatively good state of health—until the bad genes overexpress while beneficial ones underexpress—and pathologic aging ensues.

This article focuses on the possibility of altering gene expression for the purposes of extending healthy life span. This science is in its infancy, but it is clearly leading to the time when scientists will develop genetic engineering and stem cell therapies that will enable physicians to reverse aging and help us to grow younger and healthier with advancing age. >>



## Rewriting the Aging Program

We live in an exciting time. Many scientists now agree that there are genetic mechanisms that control the aging process, and the implication of this is that it will eventually become possible to reverse aging and cure the diseases of aging.

We still have no comprehensive model explaining how aging occurs, but we know a great deal about how aging manifests itself, and we are beginning to learn how to reverse it.

This becomes evident to anyone who reads *The Future of Aging* (reviewed in this issue on page 81), a massive scholarly volume that includes articles by some of the most prominent researchers in the field.<sup>6</sup> In June of this year I spoke to Dr. Gregory Fahy, the editor-in-chief of the book, while he was attending the annual *American Aging Association* meeting. “One of the purposes of this book was to present the case for genetic causes of aging in a way that my colleagues will find difficult to ignore,” Dr. Fahy told me.

“Aging is not just due to local wear and tear,” Fahy concludes. “For example, in flies and worms, it has been shown to be a process controlled in significant part by the brain.”<sup>6</sup>

Dr. Fahy’s outlook is strongly supported by much work on *C. elegans*, a small nematode (worm) that is

widely used by biologists because it is so easily studied. At the same time, like all living things, it has its own DNA, bearing some resemblance to our own. It also has organs, intestines, and ganglia (nerve cell clumps that operate in some cases like our brains), eats food and reproduces, making it an ideal model for testing genetic modifications. Fahy reports that in recent work, the Shmookler-Reis lab succeeded in creating a genetic variant of *C. elegans* that has **ten times** the normal life span of the standard organism.<sup>6</sup> Cynthia Kenyon and her coworkers had previously reported a **six-fold** life span increase in *Science* magazine.<sup>7</sup> These astonishing changes in longevity were entirely caused by reducing the expression of a few master genes.

Similarly, gene expression changes are the major explanation for the results reported by Dr. Michael Rose, who claims to have **quadrupled** the average life span of fruit flies merely by selective breeding.<sup>8</sup> “The idea that aging is just a cumulative process of damage is fundamentally incorrect,” Rose commented when I spoke to him about his work. As a coauthor of the new book *Does Aging Stop?* from Oxford University Press, Rose points out that some organisms already **cease to age** late in life. “We have fly populations where 40% of the cohort **stops aging**,” he says.

Why, then, do some scientists—even within the aging field—remain skeptical?

Dr. Rose suggests that processes in biology are making a transition from being described entirely by words to being defined by mathematics. “The less mathematical scientists are, the longer it takes for them to change their minds,” he says. “Words give you much more opportunity for self-deception. Mathematics allows predictions that can be verified. Galileo was influential because he replaced words with equations.”

Gregory Fahy sees biological conservatism as being simply a facet of human nature. “Most scientists tend to be scientifically conservative,” he says. “They’re thinking about their next experiment and not necessarily about the broader relationships between genes and aging. And most biologists are discovery-oriented, not intervention-oriented.”

Even biogerontologists may underestimate the meaning of the breakthrough work by scientists such as Robert Shmookler-Reis, Cynthia Kenyon, and Michael Rose. The traditional outlook is that genes only control a relatively small proportion of the aging process, often estimated at around 30%.<sup>9,10</sup> After all, studies of identical twins have shown that genes only explain some of their differences in aging. “But of course, environmental influences such as diet and exercise can strongly influence gene expression!” Fahy comments. “My hypothesis is that if you can trace an aging process back far enough, there’s almost always a gene at the root of what you find.”



What You Need to Know

## Achieving Physical Immortality

- Older and younger people demonstrate differences in gene expression.
- Restoring youthful gene expression may help turn back the clock on aging and potentially extend healthy life span.
- In animal models, scientists have dramatically extended life span by modulating the expression of a few genes.
- Environmental influences such as diet and exercise may strongly influence gene expression and longevity.
- Mimicking the effects of genes associated with extreme longevity may provide another avenue to lengthening life span.
- Regenerative therapies developed from adult or embryonic stem cells seek to reverse aging by regenerating tissues or organs.
- Nutrigenomics is the field of nutritional interventions developed on a genetic basis.
- The field of anti-aging medicine is poised for tremendous growth and advancement in coming years, similar to what the field of computer science has seen in the past 60 years.



### Intervening in Aging

While we grow older waiting for a wider acceptance of genetic theories of aging, we can at least take advantage of the knowledge that already exists. Several genes, for instance, are known to be associated with extreme longevity.<sup>11,12</sup> If we can mimic what they do in people who have ordinary genes, we may gain some valuable time. Drug approaches have already been pursued for this purpose, and dietary supplements may also be effective in this respect, as suggested by Rose.

But there are also many common genes that change their expression with aging in counterproductive ways, and we have tools by which we might be able to prevent and reverse these detrimental changes in ordinary genes. For example, Sangamo Biosciences is developing “zinc finger” proteins that can be used for this purpose, as reported on their web site.<sup>13</sup> If their approach is fruitful, the zinc finger proteins could be targeted to specific cells by keying them to appropriate receptors, which would allow them to enter and therefore to turn a gene on or off in particular cells. Since only a relatively small number of master genes seem to be involved in controlling the aging process, a set of these modulators could be sufficient to facilitate greater human longevity.

One of the benefits could be the correction of a form of “cellular constipation” that may underlie a surprisingly large fraction of the aging process. Normally

when proteins are damaged, the human body breaks them down into amino acids and rebuilds them, but the rate of autophagy (which means, literally, “self-eating”) diminishes in cells with age, allowing damage to accumulate with time. Researcher Ana Marie Cuervo, MD, PhD, has already engineered her own specific remedies to address this problem. A paper she coauthored describes work that has successfully rejuvenated the livers of mice.<sup>14</sup> Very possibly, a similar approach could be applied to the brain.

Another problem that might be usefully addressed is the failure of damaged cells to die as they should through a normal process called apoptosis (programmed cell death). Rather than dying, the cells linger in the body and emit signals that promote over-expression of pro-inflammatory cytokines, or they mutate into cancer cells. By detecting inappropriate gene expression in such cells, it may be possible to re-activate apoptosis and get rid of them so they can be replaced with healthy young cells.

### Cell Replacement Therapies

In the longer term we have realistic expectations for aging reversal, or regeneration. The promise of regenerative medicine (as espoused by Aubrey de Grey) has been greatly boosted by the prospect of therapies developed from embryonic and adult stem cells, or induced pluripotent stem cells (iPS) devel-

oped from an individual's adult cells. Adult stem cells are already being used to develop therapies to regenerate tissues and organs. Embryonic stem cells have even greater potential for the development of anti-aging and anti-disease therapies because they can potentially be developed into any type of differentiated adult cells, which could then be transplanted into an aging, diseased, or injured person. The potential value of using iPS cells to develop new anti-aging therapies is that these cells are developed directly from the patient's own adult cells without the need to form an early embryo. Since they have the same genes as the treated patient, they should not be rejected by the patient's immune system.

Scientists including Dr. Michael West, the founder of Geron and current CEO of BioTime, Inc., have proved that embryonic stem cells can be created by inserting a person's DNA into an ovum from a woman of reproductive age and then allowing that cell to develop into a very early embryo called a blastocyst, which is basically still just a ball of cells with a hollow cavity inside. Other scientists have proved that iPS cells can be developed from adult cells by exposing them to four genetic factors. There have been studies showing that iPS cells may not be as safe or as potent as embryonic stem cells, but Dr. West and associates recently demonstrated that some

iPS cells may be as safe and potent as embryonic stem cells (see the interview with Michael West in the June 2010 issue of *Life Extension Magazine*<sup>®</sup>).<sup>15</sup> Dr. West is actively pursuing the potential of partially differentiated stem cells (progenitor cells) to regenerate or replace almost any type of cellular damage. Dr. West and his colleagues are attempting to develop a therapy to rejuvenate the vascular and immune system in old mice, which is being funded by the Life Extension Foundation<sup>®</sup>. (Refer to article on page 30 of this issue for details.)

Such research efforts are attempting to reverse aging and extend healthy life span essentially by turning back the clock of aging changes in gene expression in aging cells. However, we have no way of knowing which approaches will be most beneficial. "We're still in the blind-men-and-the-elephant stage," comments Dr. Gregory Benford, referring to the multiple approaches being used by different researchers attempting to understand and control the aging process. Benford is a physicist who helped to capitalize Genescient, a company that is developing products based on the work of Michael Rose. "For the next 5 to 10 years," he says, "we'll be doing nutrigenomics—supplements developed on a genetic base." After that, there will be a better prospect for more radical interventions.



## Validation for Genetic Causes of Aging

Dr. Fahy encountered recent validation of his outlook about the genetic mechanisms involved in aging at this year's American Aging Association conference.

Russian researchers presented evidence that the presence or absence of 27 specific SNPs (genetic variations called single-nucleotide polymorphisms) largely in certain introns (silent portions of genes that may help to control gene expression) could determine whether you are likely to live to **77** or **97**.

## Conclusion

Some of us still remember the Commodore Pet, the first desktop computer, marketed in 1977, with four kilobytes of memory.<sup>16</sup> Aside from playing very primitive video games on its tiny screen, consumers had difficulty imagining what they could use it for. Going back just a little further, a state-of-the-art computer at MIT occupied more than two rooms and its processor consisted of 18,000 vacuum tubes.<sup>17</sup> And this was a mere 60 years ago. Today, all of us have routine access to computers that are more than a million times as powerful while being small enough to hold in the palm of the hand, and we have difficulty imagining life without computing devices.

One mission of Life Extension Foundation® is to encourage public awareness that similar huge transformations are possible in the biosciences. Now that the human genome has been sequenced, we believe that the aging process can be controlled and biological death can be postponed or even eliminated, if sufficient resources are devoted to this challenge. ●

If you have any questions on the scientific content of this article, please call a Life Extension® Health Advisor at 1-866-864-3027.

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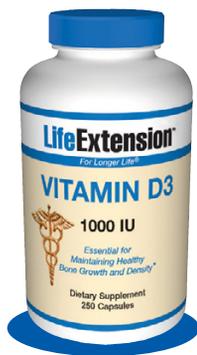


# Which VITAMIN D is Right for You?

Study after study confirms the vital importance of maintaining optimal levels of **vitamin D** for broad-spectrum health benefits. Research often indicates that a blood level of 50 ng/mL of **25-hydroxyvitamin D** is ideal.

Because people have individual requirements, Life Extension® has created the largest selection of **vitamin D** supplements available to ensure that you achieve your **vitamin D3** goals.

Keep in mind that you may already be getting 1,000-3,000 IU of vitamin D in your multi-nutrient formula.



## Vitamin D3 1,000 IU 250 capsules

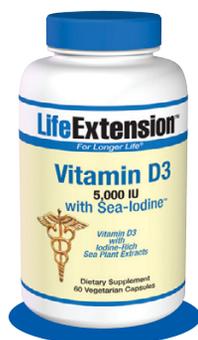
Retail: \$12.50

**Four-bottle Member Price: \$8.44 ea.**

Commercial companies offered only **400 IU** vitamin D products when Life Extension long ago introduced this **1,000 IU** version. For most people, this 1,000 IU potency is *insufficient* to attain optimal vitamin D blood levels. For smaller individuals who obtain **2,000-3,000 IU** in their multi-nutrient formulas (and children), this potency of vitamin D may be suitable.

**Item # 00251**

Please refer to website for allergen information.



## Vitamin D3 5,000 IU with Sea-Iodine™\* 60 vegetarian capsules

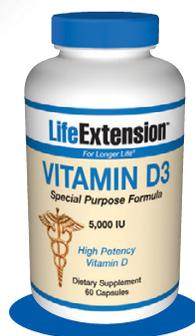
Retail: \$14

**Four-bottle Member Price: \$9.38 ea.**

Most people do not ingest enough vitamin D and iodine, especially those seeking to reduce their salt intake. Combining **5,000 IU** of **vitamin D3** and **1,000 mcg** of **iodine** into one capsule makes taking these two nutrients economical and convenient.

**Item # 01372**

Please refer to website for allergen information.



## Vitamin D3 5,000 IU 60 capsules

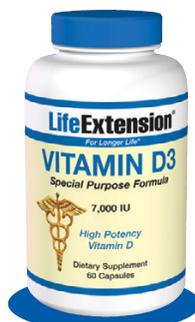
Retail: \$11

**Four-bottle Member Price: \$7.43 ea.**

For those obtaining **1,000-3,000 IU** of vitamin D in their multi-nutrient formulas, this **5,000 IU** potency is what most need to *achieve* optimal vitamin D blood levels.

**Item # 00713**

Please refer to website for allergen information.



## Vitamin D3 7,000 IU 60 capsules

Retail: \$14

**Four-bottle Member Price: \$9.45 ea.**

Some individuals (such as those weighing more than 180 pounds) may require higher potencies of vitamin D. When combined with **1,000-3,000 IU** obtained from multi-nutrient formulas, this **7,000 IU vitamin D3** capsule should enable these individuals to attain **25-hydroxyvitamin D** blood levels above the desired range of **50 ng/mL**.

**Item # 01418**

Please refer to website for allergen information.



## Vitamin D3 Liquid Emulsion 2,000 IU 1 ounce

Retail: \$28

**Four-bottle Member Price: \$18.75 ea.**

For those rare individuals who have difficulty absorbing enough vitamin D3 from powdered capsules, this liquid emulsion of vitamin D can be used.

**Item # 00864**

**To order any of these high-potency  
vitamin D3 supplements, call 1-800-544-4440  
or visit [www.LifeExtension.com](http://www.LifeExtension.com)**

**CAUTION:** Individuals consuming more than 2,000 IU/day of vitamin D (from diet and supplements) should periodically obtain a serum 25-hydroxyvitamin D measurement. Do not exceed 10,000 IU per day unless recommended by your doctor. Vitamin D supplementation is not recommended for individuals with hypercalcemia (high blood calcium levels). People with kidney disease, certain medi-

cal conditions (such as hyperparathyroidism or sarcoidosis), and those who use cardiac glycosides (digoxin) or thiazide diuretics should consult a physician before using supplemental vitamin D.

**\* If you have a thyroid condition or are taking antithyroid medications, do not use without consulting your healthcare practitioner.**



# Go Green, Get Healthy,

Turns out, the advice you got as a child to “eat your greens” could pay major dividends as an adult. Scientists have recently identified extracts from green vegetables like broccoli, cabbage, and Brussels sprouts that help maintain healthy hormone levels. Having optimal hormone levels is essential to any anti-aging strategy. In addition, many of these extracts contain *glucosinolates*, *isothiocyanates*, *carosic acid*, and *carosol* – bioactive compounds that have a wide variety of favorable effects on estrogen metabolism and cell division.<sup>1-4</sup>

**Triple Action Cruciferous Vegetable Extract with Apigenin** combines a **broccoli Super Concentrate** with **watercress**, **Indole-3-Carbinol (I3C)**, **rosemary extract**, **cat’s claw extract**, **cabbage extract**, **DIM**, and **apigenin**, a powerful plant flavonoid found in plants such as **parsley** and **celery**, to form the most comprehensive cruciferous vegetable supplement available.<sup>5</sup>

For those who don’t have the time to consume each of the above vegetables each and every day, **Triple Action Cruciferous Vegetable Extract with Apigenin** is the perfect solution to making sure your body gets the important extracts it needs from these crucial food sources. For those weighing less than 160 pounds, just one vegetarian capsule a day provides optimal potencies. Those weighing over 160 pounds should consider taking two capsules a day. A 60-vegetarian capsule bottle of **Triple Action Cruciferous Vegetable Extract** retails for \$24. If a member buys four bottles, the price is reduced to only **\$16.50 per bottle**.

Those who want to obtain the benefits of **resveratrol** can order **Triple Action Cruciferous Vegetable Extract with Resveratrol**. Each capsule provides **20 mg of resveratrol** in addition to the **vegetable extracts** and retails for \$32 per 60-capsule bottle. When a member buys four bottles, the price is reduced to only **\$22.20 per bottle**.



**Triple Action Cruciferous Vegetable Extract** provides the following concentrates in just one vegetarian capsule:

<b>Broccoli Super Concentrate</b>	<b>400 mg</b>
[standardized to 4% glucosinolates (16 mg)]	
<b>Watercress 4:1 extract</b>	<b>50 mg</b>
<b>Indole-3-Carbinol (I3C)</b>	<b>80 mg</b>
<b>Rosemary Extract</b>	<b>50 mg</b>
<b>Cat’s Claw Extract</b>	<b>50 mg</b>
<b>Cabbage Extract</b>	<b>25 mg</b>
<b>DIM (di-indolyl-methane)</b>	<b>14 mg</b>
<b>Apigenin</b>	<b>25 mg</b>

Contains yeast and corn.

#### REFERENCES:

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**To order Triple Action Cruciferous Vegetable Extract, call 1-800-544-4440 or visit [www.LifeExtension.com](http://www.LifeExtension.com)**

# Activate Your Longevity Genes with

## CALORIE RESTRICTION MIMETIC LONGEVITY FORMULA

Scientists have *intensely* focused on finding out how **calorie restriction** so radically extends life span.

In response to reduced **calorie intake**, beneficial “youth” genes are **activated** while detrimental “senescence” genes are **disabled**. These favorable **gene expression** changes play a critical role in the ability of calorie restriction to slow aging.

The incredible news is that a select group of nutrients has been discovered that trigger many of the same favorable mechanisms (including more youthful **gene expression** patterns) as **caloric restriction**.

Among the most promising **caloric restriction mimics** and enhancers are **resveratrol, pterostilbene, quercetin, and grape seed polyphenols**, along with **black tea extract**. These nutrients have been shown to generate many of the same effects in the body as caloric restriction, without significant dietary modification.<sup>1-8</sup> In particular, they help “mimic” caloric restriction’s favorable impact on **genes** that influence the aging process.<sup>1-8</sup>

**CR Mimetic Longevity Formula** includes **resveratrol, pterostilbene, quercetin, grape seed polyphenols, black tea extract, and fisetin** to provide even broader-spectrum gene expression support in one nutritional compound. The suggested dose of two capsules each day of **CR Mimetic Longevity Formula** provides:

<b>Trans-Resveratrol</b>	<b>250 mg</b>
<b>Trans-Pterostilbene</b>	<b>3 mg</b>
<b>Quercetin</b>	<b>150 mg</b>
<b>Black tea extract</b>	<b>300 mg</b>
<b>Grape seed polyphenols</b>	<b>50 mg</b>
<b>Fisetin</b>	<b>48 mg</b>

A bottle containing 60 vegetarian capsules of **CR Mimetic Longevity Formula** retails for \$39. If a member buys four bottles, the cost is reduced to **\$27** per bottle.

Note: Those taking other resveratrol products may consider switching to CR Mimetic Longevity Formula.



To order  
**CR Mimetic Longevity Formula**  
call 1-800-544-4440  
or visit to [www.LifeExtension.com](http://www.LifeExtension.com)



Item #01429

#### REFERENCES

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Caution: Consult your doctor before using this product if you have a bleeding disorder, or if you are taking anticoagulant, antiplatelet, or diabetic medications.

These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure, or prevent any disease.





# Research Funded by Life Extension® Could Lead to Therapies That *Reverse* Human Aging

The purpose of the Life Extension Foundation® is to fund the development of therapies to provide mankind with an indefinitely extended healthy life span. In order to reach this goal, we fund pioneering scientific research to learn how to reverse human aging.

Every year, Life Extension funds **millions of dollars** of research aimed at the development of path-breaking therapies to cure the diseases of aging and reverse aging itself. Our objective is to help you live longer now and extend your life span to 100 and beyond in the future.

This article describes research that Life Extension funded to transform aging cells into young stem cells capable of being developed into new therapies to cure age-related diseases and reverse aging. This study has advanced to a phase where scientists are attempting to rejuvenate the vascular and immune systems of old mice with induced pluripotent stem cells (iPS). If this animal phase is successful, an attempt will be made to adapt the same approach for use in humans. > >

### BioTime Rejuvenates Aging Cells With iPS Technology

Just as human embryos develop into adult humans with a wide variety of specialized cells, human embryonic stem cells (hES) can potentially be developed into any type of young healthy tissue, which could, eventually, be transplanted into people suffering from the diseases of aging and aging itself.

However, the practice of deriving hES cells from human embryos is controversial because of opposition to using human embryos for research purposes. A few years ago, it was discovered that aging human cells can be reprogrammed back to their embryonic state. These cells are called induced pluripotent stem cells (iPS). This technology holds the promise of using an aging person's own cells to develop young regenerative tissues that could be used to treat and, possibly, cure age-related diseases such as heart disease, stroke, and cancer.

Some studies with iPS cells have shown that they don't work as well as hES cells in stimulating the production of telomerase, the enzyme that maintains healthy cells by keeping the length of their telomeres intact. Telomeres are found at the ends of chromosomes in dividing cells. Every time the cell divides, it loses some of the units that make up its telomeres. As the telomeres become shorter, their ability to protect the integrity of the chromosomes degrades until the chromosomes malfunction and the cells die.

This process can be compared to the role that the plastic tips at the ends of shoelaces play in keeping the shoelaces from unraveling and becoming useless.

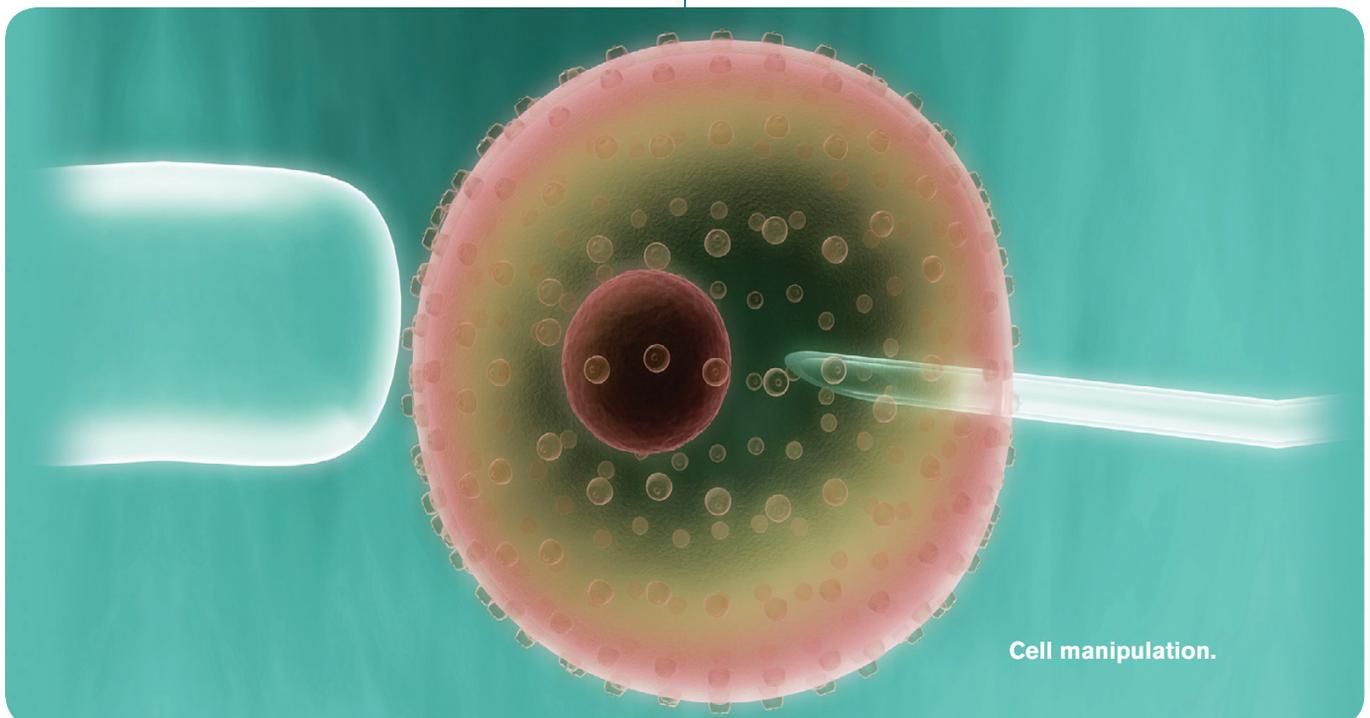
In 2009, the Life Extension Foundation® (LEF) funded \$250,000 to BioTime for a study that showed that, under special conditions, some iPS cells can work as well as hES cells.

In 2010, LEF contributed \$2 million to BioTime's subsidiary ReCyte Therapeutics to help develop novel, innovative, regenerative therapies to treat the diseases of aging and, perhaps, aging itself.

### Restoration of Replicative Life Span in Five Human Cell Types Validates Previous Published Report of Reversal of Developmental Aging by Transcriptional Reprogramming

Dr. Michael West, CEO of BioTime, Inc., and its subsidiary ReCyte Therapeutics, Inc., recently made a presentation at the French-American Biotech Symposium (FABS 2011) on "New Therapeutic Approaches of Aging" showing data for the first time on the restoration of cell life span using transcriptional reprogramming technology.

On March 16, 2010, BioTime announced the publication of a peer-reviewed scientific paper reporting that iPS cell reprogramming technologies could, under certain conditions, reverse the developmental aging of human cells. In other words, through genetic



Cell manipulation.



modification, cells from the human body can be reverted back to an embryonic state similar to that of embryonic stem cells, which are capable of developing into all other cell and tissue types. In the same publication, BioTime reported that these reprogramming technologies could reset the telomere clock of cellular aging. At the symposium, Dr. West presented new data validating this technology as it relates to actual cell life span.

In particular, new evidence was presented that the technique is capable not only of resetting telomere length, but also of restoring the proliferative life span of aged human cells back to that seen in cells obtained from young tissues. Specifically, BioTime scientists measured the replicative life span of five human cell types derived from aged human cells that had been returned to the embryonic state using transcriptional reprogramming. These life spans, which greatly exceeded the normal life expectancy of the original aged cells, provide the first definitive evidence that such technologies provide a means of manufacturing young cells genetically identical to the cells of an aged patient.

*iPs cell reprogramming technologies could, under certain conditions, reverse the developmental aging of human cells.*

“Ever since Dr. Leonard Hayflick’s original observations that human body cells have a finite capacity for cell division, researchers around the world have sought to discover a means to reset that clock for diverse clinical applications,” said West. The rising worldwide demand for novel therapeutics targeting the chronic degenerative diseases of aging makes these new technologies timely, and strategic for the biotechnology industry. We plan to aggressively pursue the commercialization of therapeutic products from this platform, beginning with the vascular products of our ReCyte Therapeutics subsidiary.”

This was the fourth French-American Biotech Symposium co-organized by The Office for Science and Technology of the French Embassy in Washington, DC, and Eurobiomed, a French biotech cluster dedicated to health sciences, in partnership with the Gladstone Institute for Virology and Immunology.

Dr. West’s presentation will be available on BioTime’s website at [www.biotimeinc.com](http://www.biotimeinc.com). For more information on ReCyte Therapeutics, Inc., please visit their website at [www.recytecorp.com](http://www.recytecorp.com).

### Background

Regenerative medicine refers to the development and use of therapies based on human embryonic stem (hES) cell or induced pluripotent stem (iPS) cell technology. These therapies will be designed to regenerate healthy tissues to replace tissues afflicted by degenerative diseases. The great scientific and public interest in regenerative medicine lies in the potential of hES and iPS cells to

become all of the cell types of the human body. Many scientists therefore believe that hES and iPS cells have considerable potential as sources of new therapies for a host of currently incurable diseases such as diabetes, Parkinson’s disease, heart failure, arthritis, muscular dystrophy, spinal cord injury, macular degeneration, hearing loss, liver failure, and many other disorders where cells and tissues become dysfunctional and need to be replaced.

In 2010, BioTime announced the publication of a peer-reviewed scientific paper titled “Spontaneous Reversal of the Developmental Aging in Normal Human Cells Following Transcriptional Reprogramming” in the journal *Regenerative Medicine*. The discovery that

the aging of human cells can be reversed may have significant implications for targeting age-related degenerative disease through the development of new classes of cell-based therapies. The article is available online at [www.futuremedicine.com/doi/abs/10.2217/rme.10.21](http://www.futuremedicine.com/doi/abs/10.2217/rme.10.21).

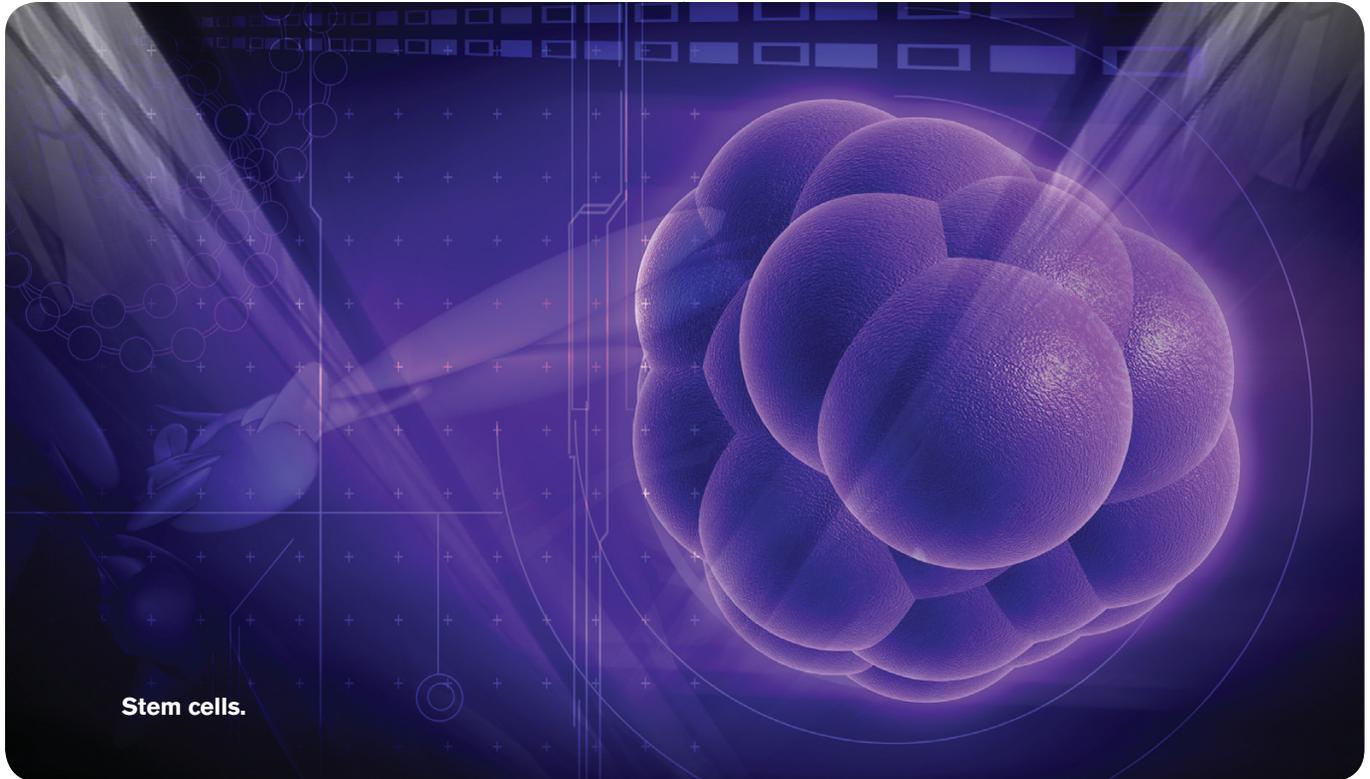
BioTime and its collaborators in the article demonstrated the successful reversal of the developmental aging of normal human cells. Normal human cells were induced to reverse the “clock” of differentiation (the process by which an embryonic stem cell becomes the many specialized differentiated cell types of the body), as well as the “clock” of cellular aging (telomere length), using precise genetic modifications. Aged differentiated cells became young stem cells capable of regeneration as a result.

The paper threw some light on the controversy over the aged status of induced pluripotent stem (iPS) cells. The scientific community has been excited over iPS technology as it has been demonstrated to be a means of transforming adult human cells back to a state very similar to that of embryonic stem cells (reversing the process of development) without the use of human embryos. However, there were reports that suggested that iPS cells, though very similar to embryonic stem cells in many respects, may not have the normal

replicative potential of embryonic stem cells (i.e., the iPS cells may be prematurely old). This problem has been called “the Achilles heel of iPS cell technology.” In this paper, BioTime scientists and their collaborators showed that many iPS cell lines currently being circulated in the scientific community have short telomeres, meaning that their clock of cellular aging is still set at the age of relatively old cells. However, among these prematurely old cells, other cells can be found with sufficient levels of telomerase (a protein that keeps reproductive cells young) that allow these cells to reverse cellular aging all the way back to the very beginning of the human life cycle.

The research presented in this paper is part of BioTime’s broader research strategy to advance the capabilities of the company’s proprietary ReCyte™ technology, which is being developed as a means of implementing iPS technology on an industrial scale. Whereas the study published in 2010 intentionally used older, viral-based means of introducing genes, BioTime now plans further studies of cellular aging reversal using its proprietary ReCyte™ technology specifically designed to rapidly reprogram cells in a manner expected to prevent the telomeric and other genetic abnormalities afflicting previous iPS cell approaches.





Stem cells.

### About BioTime, Inc.

BioTime, headquartered in Alameda, California, is a biotechnology company focused on regenerative medicine and blood plasma volume expanders. Its broad platform of stem cell technologies is developed through subsidiaries focused on specific fields of applications. BioTime develops and markets research products in the field of stem cells and regenerative medicine, including a wide array of proprietary ACTCellerate™ cell lines, culture media, and differentiation kits. BioTime's wholly owned subsidiary ES Cell International Pte Ltd (ESI) has produced clinical-grade human embryonic stem cell lines that were derived following principles of Good Manufacturing Practice and currently offers them for use in research. BioTime's therapeutic product development strategy is pursued through subsidiaries that focus on specific organ systems and related diseases for which there is a high unmet medical need. BioTime's majority owned subsidiary Cell Cure Neurosciences, Ltd., is developing therapeutic products derived from stem cells for the treatment of retinal and neural degenerative diseases. Cell Cure Neuroscience's minority shareholder Teva Pharmaceutical Industries has an option to clinically develop and commercialize Cell Cure's OpRegen™ retinal cell product for use in the treatment of age-related macular degeneration.

BioTime's subsidiary OrthoCyte Corporation is developing therapeutic applications of stem cells to treat orthopedic diseases and injuries. Another subsidiary, OncoCyte Corporation, focuses on the therapeutic applications of stem cell technology in cancer. ReCyte Therapeutics, Inc., is developing applications of BioTime's proprietary iPS cell technology to reverse the developmental aging of human cells to treat cardiovascular and blood cell diseases. BioTime's newest subsidiary, LifeMap Sciences, Inc., is developing an online database of the complex cell lineages arising from hES and iPS cells to guide basic research and to market BioTime's research products. In addition to its stem cell products, BioTime develops blood plasma volume expanders, blood replacement solutions for hypothermic (low temperature) surgery, and technology for use in surgery, emergency trauma treatment and other applications. BioTime's lead product, Hextend®, is a blood plasma volume expander manufactured and distributed in the US by Hospira, Inc. and in South Korea by CJ CheilJedang Corp. under exclusive licensing agreements. Additional information about BioTime, ReCyte Therapeutics, Cell Cure, OrthoCyte, OncoCyte, BioTime Asia, and ESI can be found on the web at [www.biotimeinc.com](http://www.biotimeinc.com). •

# SUPER BOOSTER

with the most effective form of Vitamin K2, Gamma Tocopherol, Ginkgo, and much more!

Despite abundant scientific validation, many people still do not take vital nutrients because they don't want to swallow so many pills. This problem has been solved with a one-per-day softgel that includes multiple health-promoting nutrients in just one supplement.

The **Life Extension® Super Booster** contains critical oil-based nutrients that cannot be incorporated into dry-powder based formulas like the **Life Extension Mix™**.

The **Super Booster** provides the most effective form of **vitamin K**, known as **menaquinone-7**, along with other forms of this critical nutrient.

Just one **Super Booster** softgel provides:

- **Gamma Tocopherol** If one consumes only alpha tocopherol, the critically important gamma tocopherol is displaced from cells within the body. While alpha tocopherol vitamin E inhibits lipid peroxidation, the gamma tocopherol form quenches the dangerous peroxynitrite free radical. It is especially important for those who take vitamin E supplements to make sure they consume at least 200 mg a day of gamma tocopherol.

- **Sesame Lignans** Sesame lignans augment the antioxidant effects of both alpha- and gamma-tocopherol. In a human study conducted at Life Extension, gamma tocopherol plus sesame lignans was 25% more effective in suppressing

measurements of free-radical damage than gamma tocopherol and tocotrienols.

- **Vitamin K2** **Vitamin K1** from dietary plant sources is poorly absorbed and only a small fraction gets into the bloodstream. **Vitamin K2** is absorbed much more efficiently.



Item #01590

To order Super Booster, call 1-800-544-4440 or visit [www.LifeExtension.com](http://www.LifeExtension.com)

Scientific studies show **K2** provides superior benefits for the bones, arteries, and other tissues. The **MK-4** form of vitamin K2 is the most rapidly absorbed and is now routinely used in Japan to maintain healthy bone density. **MK-4**, however, only remains active in the blood for a few hours. The **MK-7** form of K2, on the other hand, remains bioavailable to the human body over a sustained **24-hour period**. Super Booster provides a potent dose of **MK-7** to keep calcium in the bone and out of the arteries.

- **Lycopene** Evidence suggests that people who ingest the carotenoid lycopene enjoy healthier prostate function. Lycopene also helps guard against LDL oxidation.

- **Lutein** The carotenoid lutein helps maintain healthy cell division, supports the macula of the eye, and protects the endothelial lining of the arteries.

- **Ginkgo** Hundreds of studies substantiate the multifaceted effects of *Ginkgo biloba* in promoting healthy circulatory and neurological function.

- **Chlorophyllin** Scientific studies indicate that chlorophyllin may protect against environmentally induced damage to DNA.

- **Selenium** Some scientific evidence suggests that consumption of selenium may reduce the risk of certain forms of cancer. However, the FDA has determined that this evidence is limited and not conclusive. Selenium's effects in boosting glutathione are well-established.

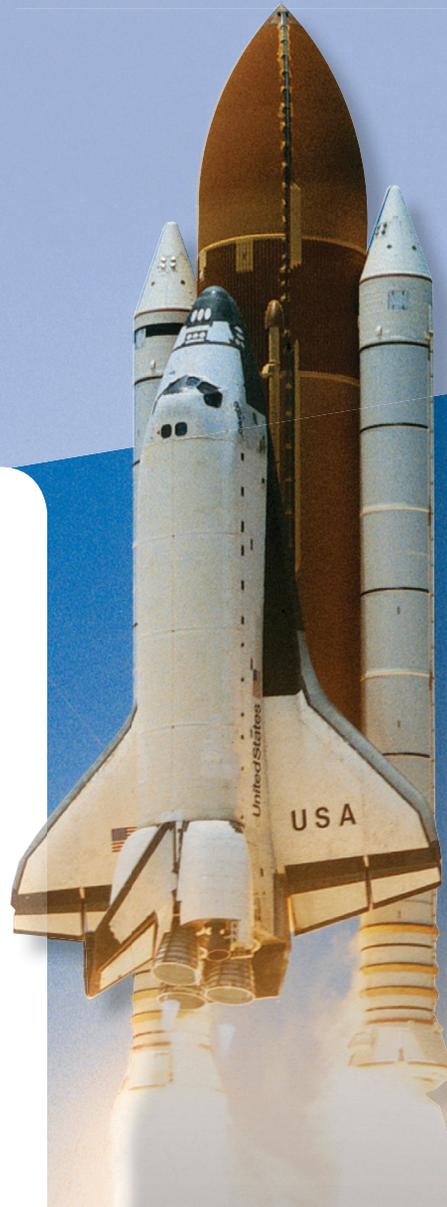
A bottle of 60 Super Booster softgels retails for \$42. If a member buys four bottles, the price is reduced to just **\$28.50** per bottle.

The **Super Booster** saves consumers **huge dollars** by combining a wide variety of costly nutrients into one daily softgel. If you add up the price of the individual ingredients contained in the **Super Booster**, you would spend **two to three times more** for this potency if taken separately.

Contains corn and sesame.

Caution: If you are taking anti-coagulant or anti-platelet medications, or have a bleeding disorder, consult your healthcare provider before taking this product.

Lyc-O-Mato® is a registered trademark of LicoRed Natural Products Limited.



Just one softgel of Super Booster supplies:

Vitamin K2 (as menaquinone-7)	100 mcg
Vitamin K2 (as menaquinone-4)	1000 mcg
Vitamin K1 (as phytonadione)	1000 mcg
Gamma tocopherol	230 mg
Ginkgo extract	120 mg
Chlorophyllin	100 mg
Sesame lignans	20 mg
Lycopene	10 mg
Lutein	2 mg
Selenium (as Se-Methyl L-Selenocysteine)	67 mcg
Selenium (as L-Selenomethionine)	67 mcg
Selenium (as Sodium selenite)	67 mcg
Vitamin B12	300 mcg
Vitamin C	95 mg
Zinc	10 mg
Mixed tocopherols	359 mg

## Comprehensive Pomegranate Protection!

# FULL-SPECTRUM POMEGRANATE™ FORMULA

Few nutritional sources have gained as much scientific validation as **pomegranate**.<sup>1</sup>

The vast majority of research has focused on extracts from the *fruit*. Only recently have scientists identified the synergistic action of compounds specific to other parts of the pomegranate—most notably its **seeds** and **flowers**.

### The Next-Generation Pomegranate Formula

**Life Extension®** offers an advanced, cutting-edge pomegranate formula that brings together novel phytonutrients for the first time in a unique, high-potency blend.

**Full-Spectrum Pomegranate™** combines standardized extracts from the **whole fruit and flower**, along with pomegranate **seed oil**, to support system-wide health. In addition to the highly absorbable antioxidant powerhouses found in pomegranate fruit,<sup>2-4</sup> **Full-Spectrum Pomegranate™** augments these polyphenols with newly discovered biologically *active* compounds from other parts of the pomegranate plant.

These little-known nutrients include: **punicanolic acid**, a member of the **triterpene** family of essential oils that provides cellular support to help with inflammation,<sup>5</sup> and **pomegranatate**, to combat age-related metabolic changes.<sup>6</sup>

This superior formula supplies the **complete** nutritional profile of the pomegranate plant. Just one softgel of **Full-Spectrum Pomegranate™** provides polyphenols equivalent to 12.3 ounces of pomegranate juice (or 24 pomegranates) *plus* a proprietary blend of **seed oil** and **flower extract**.

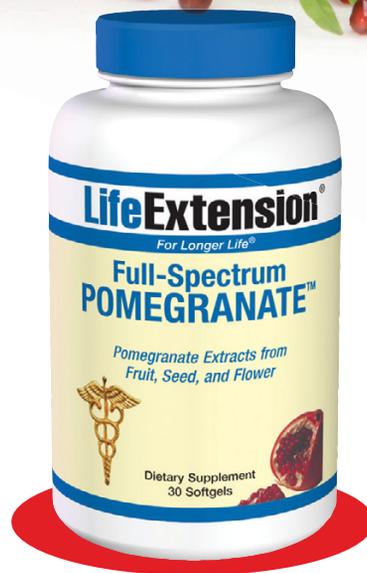
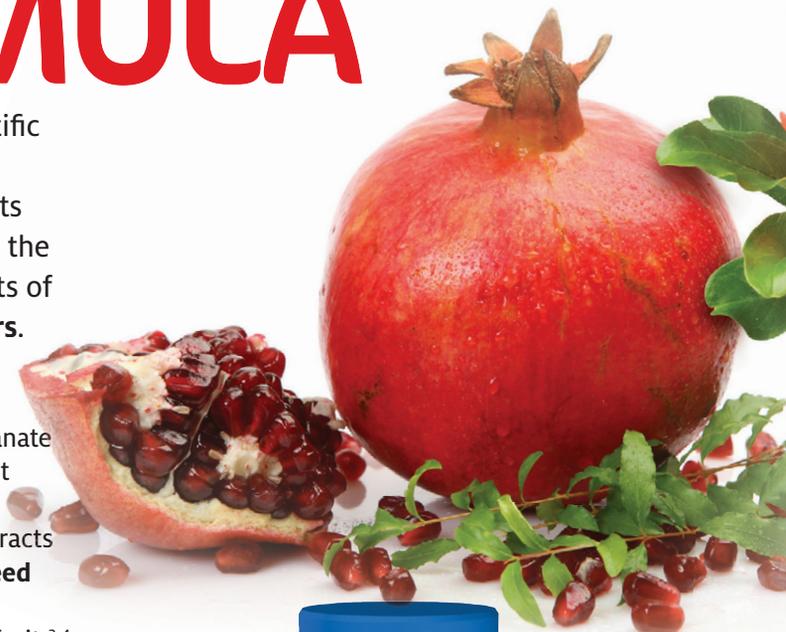
One softgel of **Full-Spectrum Pomegranate™** contains:

<b>POMELLA® Pomegranate</b> .....	400	mg
<i>(Punica granatum)</i> Extract (fruit) [std. to 30% punicalagins (120 mg)]		
<b>PomComplete™ Pomegranate</b> .....	137.5	mg
<i>(Punica granatum)</i> Blend [flower extract and seed oil (standardized to 22% (30 mg) punicic acid)]		

### Full-Spectrum Pomegranate™

A bottle containing 30 softgels of **Full-Spectrum Pomegranate™** retails for \$24. If a member buys four bottles, the price is reduced to just **\$15.75** per bottle. **Item# 01423**

Contains soybeans.



To order **Full-Spectrum Pomegranate™**,  
call **1-800-544-4440**  
or visit **www.LifeExtension.com**

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POMELLA® extract is covered under U.S. Patent 7,638,640 and POMELLA® is a registered trademark of Verdure Science, Inc. Socell SA, France is the owner of U.S. Patents Nos. 6,045,808 and 6,426,881 and trademark of GliSodin®.

These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure, or prevent any disease.



# WHY AREN'T MORE WEALTHY PEOPLE FUNDING AGING RESEARCH?

BY AUBREY DE GREY, PHD

Aubrey de Grey is a biomedical gerontologist based in Cambridge, England. He is editor-in-chief of the academic journal *Rejuvenation Research*, author of *The Mitochondrial Free Radical Theory of Aging* (1999) and co-author of *Ending Aging* (2007).

As Chief Science Officer of the SENS Foundation, Aubrey has been interviewed by numerous media sources in the US and Europe, including an in-depth *60 Minutes* report titled “The Quest for Immortality.”

Aubrey’s research focuses on whether regenerative medicine can thwart the aging process. He works on the development of what he calls “Strategies for Engineered Negligible Senescence” (SENS), a tissue-repair initiative intended to rejuvenate the human body and allow an indefinite life span. To this end, he has identified seven types of molecular and cellular damage caused by normal metabolic processes. Aubrey’s focus is to perfect therapies to repair this damage.

We asked Aubrey to write a concise summary of where the SENS Foundation’s research stands now and why more resources are not being allocated to eradicating aging. > >

**AUBREY BEGINS...**

Historically, the tacit goal of those who dare to dream of postponing age-related ill health has been to apply some kind of intervention to retard pathogenic aging processes. The thinking has been:



- we don't understand aging very well at all,
- however, we see a huge variation in rates of aging in nature, both between species and in response to environmental cues (notably calorie restriction),
- thus, maybe we can emulate/extrapolate from these differences to slow human aging, even though we don't understand the details.

However, it has proven challenging up until now to execute this plan.

In the past decade, a radically different approach to intervening in aging has emerged. It took a few years to gain credence within the biogerontology community, and there remain some old guard who resist engaging in debate on this topic. Fortunately, the army of prestigious academics who enthusiastically endorse this new approach, at least as a viable alternative to prior ideas, has grown to a point where it is unrealistic to reject it out of hand. This approach is the application of **regenerative medicine** to aging.

**Regenerative medicine** is the process of creating living, functional tissues to repair or replace cellular function lost due to damage, including injuries sustained as a consequence of aging. **Regenerative medicine** refers to clinical therapies that may involve the injection of stem cells or progenitor cells; the induction of removal of damaged molecules or cells by biologically active molecules; and transplantation of *in vitro* grown organs and tissues, all with the goal of restoring the structure of aged tissue to its state in young adulthood. This field holds the promise of regenerating damaged tissues in the body by stimulating previously irreparable organs to heal themselves. SENS Foundation is focused on pursuing this approach, especially by sponsoring the early stage, proof-of-concept research that is required in some areas that are still being neglected by other funding bodies. Details can be found in my academic publications (especially between 2002 and 2007) at [www.sens.org](http://www.sens.org) and in my book *Ending Aging* (St. Martin's Press, 2007).

Since aging is indisputably humanity's worst medical problem, with the treatment (albeit only minimally effective) of age-related diseases consuming the vast

majority of the industrialized world's medical budget, one would imagine that all reasonable approaches to the development of medicine to postpone it would be vigorously pursued and well funded. Unfortunately, none of them are. Neither the retardation of aging nor its repair receives a fraction of the research budget—whether from the public purse or from the for-profit biotech sector—that is enjoyed by disease-specific research. And this is despite the fact that gerontologists have been pointing out for decades that even modest progress in the implementation of “preventative geriatrics”—which is exactly what treatment for aging would be—would be staggeringly cost-effective.

**WHY SO LITTLE MONEY IS BEING ALLOCATED**

I believe that the overwhelming reason why politicians (and, to a lesser extent, companies) have not heard this message is not because they fail to understand it but because they dispute the premise. There is a profoundly deep-seated belief that aging is *untreatable*. This has been reinforced, I am afraid to say, by the short-sighted protestations of past gerontologists who mistakenly claimed “aging is not a disease.” These grossly inaccurate proclamations also reinforce their audience's tragic misconception as to whether aging is in fact a bad thing at all!

Thus, as long as mainstream gerontologists can point only to very flimsy evidence that anything substantive could be expected to emerge from their efforts even if greatly increased funding were forthcoming, they will fail to provide a convincing argument that



vastly greater sums of resources should be allocated to this critical arena of medical research. It doesn't matter how good a case we make that astronomically many dollars will be saved by progress against aging at a relatively small cost in the funding of the necessary research. As long as the holders of purse strings continue to believe that there is no chance whatsoever of research delivering progress against aging, they will conclude that such research is quixotic, so the necessary resources will not be mobilized.

This brings me to the first opportunity that arises from the new paradigm of applying **regenerative medicine** to aging. Regenerative medicine has not enjoyed a precisely smooth progression from concept to clinic over the years, but today it is riding high. Breakthroughs in stem cell research (most notably the "induced pluripotent stem cell" approach to the immune rejection problem) and in tissue engineering (most notably the decellularization approach to the vascularization problem) has propelled regenerative medicine to an enviable stature within biology and biotechnology, among both the scientific community and the general public. Most importantly, this stature exists in terms of the approach's perceived feasibility, not merely its theoretical attractiveness. Accordingly, to the extent that its applicability to aging is accepted, regenerative medicine has the potential to transcend the entrenched fatalism that I have noted above.

#### **WILL TRANSLATIONAL GERONTOLOGY BE ACCEPTED BY AGING RESEARCHERS?**

It remains, therefore, to examine the question of whether the applicability of regenerative medicine to aging will be accepted. The effort to elevate it to that status is, I must concede, a work in progress. The core difficulty is that, in order to appreciate the feasibility of repairing the molecular and cellular damage of aging, one must acquire an in-depth grasp of two fields that have historically communicated hardly at all.

Regenerative medicine has overwhelmingly been developed with a view to treating acute injury, so very few of its practitioners are up to speed on the current status of **biogerontology**. Conversely, the focus of biogerontology on comparative analysis, with the aim of eventually developing interventions that slow aging rather than repairing it, has not induced biogerontologists to maintain a thorough understanding of the rate of progress in **regenerative medicine**.

Inevitably, this lack of mutual education between the two fields has resulted in a high degree of over-pessimism about each other's work: being out-of-date about a field equates inexorably to presuming that it is less far advanced than it actually is. My own work over the past several years has, accordingly, incorporated a

sustained effort to bring these communities together and facilitate that mutual education.

Unfortunately, there is an extremely powerful force opposing this ostensibly uncontroversial effort: funding. As science funding has fallen further and further short of demand, and investigators have been forced to spend ever more of their time applying for grants and publishing as much as possible to increase their chances of said funding, it has become progressively less possible to pursue interdisciplinary work, and more imperative to "stick to what one knows" and get money in the door by playing to one's established strengths. This is immensely bad for science in general, as is probably obvious to readers. But it is particularly bad in the case of biogerontology.

This is because, among scientific disciplines, **biogerontology** has a very—in fact, arguably a uniquely—high profile in the mainstream media. The problem is that the "newcomer" nature of **regenerative medicine** on the biomedical gerontology playing field translates into considerable unfamiliarity with its relevance to aging on the part of journalists. It remains the unfortunate case that when a reporter reaches for his or her phone book in relation to some new breakthrough concerning aging, the recipients of the calls are overwhelmingly those who represent the old-school, "retardation" approach to combating aging. This might not be so problematic if scientists were mainly minded to highlight the importance of diversity in approaching any research area, but the funding-fueled tyranny described above decisively prevents such altruism. The result is that the public, policy-makers, and most of the scientific community are maintained in a state of wholly inadequate information on this topic.

#### **THE BENEFIT TO THOSE WHO ARE ALREADY ABLE TO HELP**

Biogerontology is not your average scientific discipline. It is the study of a phenomenon that currently accounts for two-thirds of all deaths worldwide, and 90% of all deaths within the industrialized world. If measured in terms of suffering or of health care costs, the numbers are equally staggering.

As several of my colleagues have noted over many decades, and with increasing energy since the turn of the millennium, the impact of even a modest degree of progress in postponing age-related diseases, as a result of intervening in their common cause (aging), would be immense. The missing link, as already discussed, is the view of policy-makers as to whether there is any chance of success. This could be changed if those to whom policy-makers look for guidance were to alert them to the potential for **regenerative medicine** to postpone aging, but, as I have also discussed above,

the funding environment within which the acknowledged experts of biogerontology are forced to work impels them to ignore that option, whether in their own work or in their pronouncements to others, in favor of the far less promising alternatives that they have pursued in years past.

So why is everyone still oblivious to this disaster? Ultimately, I believe that the answer comes down to just one thing: a failure to appreciate who can potentially benefit from progress. The massive Achilles' heel of biomedical gerontology in terms of appeal to the wider world has always been its focus on lifelong interventions. Those in a position to influence the level of financial support for such work, therefore, are required to start from a position of disenfranchised altruism (since they are already too old to benefit from therapies that need to be begun in youth or earlier). That is a noble position, to be sure, but realistically it is not one that enjoys prolific favor from the public. In particular, it is not a promising target for philanthropy.

But the regenerative approach changes all that—indeed, it abolishes it. The whole point of all regenerative medicine is to start with people who are already carrying a significant quantity of damage, which the intervention will then repair. As such, if it can be made to work, rejuvenation biotechnology has the capacity to deliver the substantial (exactly how substantial remains to be seen, but we won't know until we try) postponement of all the debilities that we most fear as we progress toward the age at which we expect our health to fail. And it can deliver it to people who are already in middle age or older by the time the therapies materialize.

### TURNING RESEARCH INTO REALITY

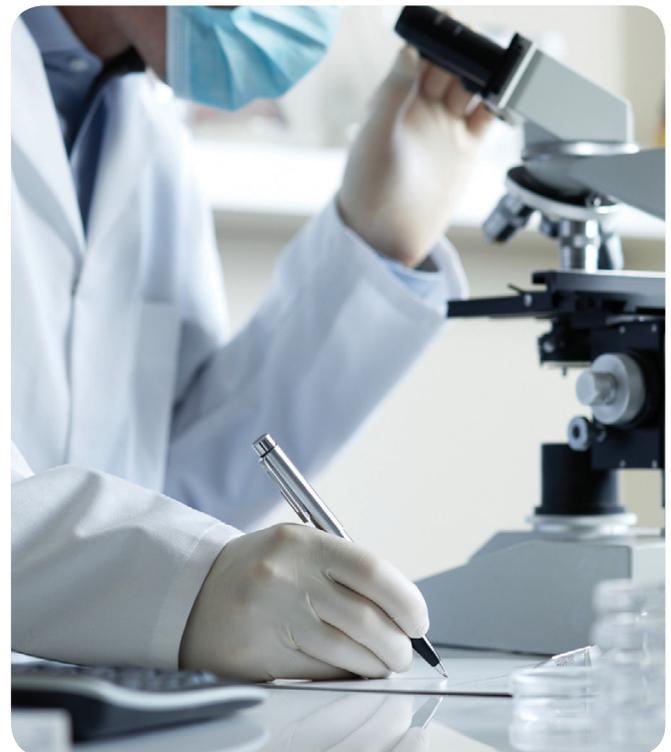
So, well, can it be made to work? There are two ways for those with the financial resources (i.e., today's ultra-wealthy) to answer that question. One way is to accept the prognostications of those who occupy positions of prestige among the established biogerontology community, who still know and understand little of regenerative medicine, and who, with varying degrees of stridency, declare that aging is practically beyond the reach of medicine and that all we can realistically seek to do is understand aging well enough to postpone the ill-health of old age by a few years.

The other way is to enlighten those with financial resources to the burgeoning field of regenerative medicine and the ever-increasing plethora of distinguished leaders of that field who are lining up behind the proposition that aging can be *reversed* by the comprehensive repair of the molecular and cellular damage that underlies it.

If these individuals want to avoid the ill health of old age, now is their chance to take meaningful action. We still need as much knowledge as we can get about how aging really works. But augment it with a similar level of support for unashamedly translational biogerontology, focused on the postponement of age-related ill health, and focused especially on interventions that will benefit those who are already adversely impacted by aging, and the result will be the saving of hundreds of millions of lives, along with countless life-years of suffering.

We are all in the same lifeboat. The difference is that some have available financial resources that could result in their own rescue from the horrific consequences of aging, along with all of mankind. I urge those fortunate enough to have accumulated wealth beyond their worldly needs to emulate what **Larry Ellison** has done, i.e., support scientists who are aggressively researching means to gain control over aging. It seems so logical, yet Larry Ellison is among only a few who has demonstrated the clear vision to fund those who could enable humans to rapidly evolve into a species that enjoys an indefinitely extended healthy life span.

The next section of this article describes Larry Ellison's unique approach to funding aging research. I urge Larry and others to consider augmenting their research funding with donations to the *translational biogerontology* arena, and particularly to the regenerative medicine approach.



# The Ellison Medical Foundation

## Paving a New Path for Aging Research

BY AIMEE DINGWELL



Larry Ellison is a speculator. He is also a visionary. Not afraid of risk or ridicule, this maverick mogul of Silicon Valley built his Oracle software empire (and his \$39.5 billion net worth) with less than \$2,000 in savings on a philosophy that dismisses convention; and it is exactly that philosophy that he is betting on

to change the face of aging and age-related diseases.

Some may know him for his high-dollar, daredevil lifestyle, like owning the fastest sailboat in history and racing it and leading Team Oracle to a 2010 World Cup victory, flying his Italian F-16 fighter jet for fun, or owning the largest private yacht in the world. But few will know he has a serious philanthropic side that is just as focused as his business acumen.

The Ellison Medical Foundation is the largest private funder of research on aging and the second largest overall funder—second only to the federal government's National Institute on Aging. Since its inception in 1998, Ellison's Medical Foundation has provided more than \$300 million to fund basic biomedical research on aging relevant to understanding life span development processes and age-related diseases and disabilities, including stem cells, telomeres, longevity genes, DNA and mitochondrial damage, Werner Syndrome, Alzheimer's disease, neural development, degeneration and cognitive decline, and cellular response systems to aging and toxins.

It is said the research foundation began not so much from altruistic origins but from the confluence of Ellison's interest in science and an aversion to mortality. Cancer killed Ellison's adoptive mother when he was in college and Oracle co-founder Robert Miner in 1994.

A chance encounter with an equally visionary scientist, the late Nobel laureate Dr. Joshua Lederberg, led Larry Ellison to understanding the therapeutic and market potential of biotechnology.

After hearing Lederberg, an icon of molecular biology and artificial intelligence, speak on the topic at a Stanford University symposium in 1990, Ellison was so intrigued by the scientist that he invited him to his home for a weekend. That weekend turned into a lifelong friendship. In 1994, Lederberg returned the

favor with an invitation to vacation with him for two weeks—in the lab. Never one to pass up a challenge, Ellison took Lederberg up on the offer, likely to explore his own interests in molecular biology and science.

During those 14 days, pushed by his own interest to challenge himself, Ellison started asking questions that altered the course of Lederberg's experiments and would change the face of aging research in this country for years to come.

Thus, over the next several years, the beginnings and mission of The Ellison Medical Foundation focused on aging emerged. Lederberg, who was then president emeritus of Rockefeller University, was tapped as director of the Scientific Advisory Board, and Dr. Richard Sprott became the new Foundation's executive director, after years directing the National Institute of Aging's Biology of Aging Program.

"One of the problems with philanthropy is that people think that once they've written the check they're done," noted Ellison when asked about his charitable activities. "I believe that in order to be a successful philanthropist, you not only have to write the check but you have to spend enough time with these projects to make sure you are getting results."

And for Ellison, the road to results is often the one least traveled by others. Not surprisingly, The Ellison Medical Foundation's approach is different, innovative, and bold. As Lederberg once put it, "Our job is to fund the new, the unconventional, and to take chances that others won't. Our only criterion will be the best science and the best of scientists."

### **CUTTING-EDGE AGING RESEARCH STILL UNDERFUNDED**

Fifteen years later, The Ellison Medical Foundation continues to "fund people, not projects," according to Sprott, looking for scientists with track records of creative, productive work and unique ideas, while favoring basic research that may be too risky or speculative to attract mainstream funding. This year, The Ellison Medical Foundation will award a total of \$40 million to 25 Senior Scholars and 25 New Scholars, each for four years. "At the moment, that means that at any point in time we are funding 200 laboratories," says Sprott. And the funding levels are significant. Senior Scholars are awarded about \$1 million for 4 years of research, according to Sprott.

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“My reason for coming here could be summed up with the notion that basic biologic research on aging was the least well-funded research at the National Institute on Aging,” says Sprott. “And it still is.”

While all of the degenerative and proliferative diseases of aging are related to basic biological, genetic and molecular processes, “no Congressman believes that he or she or his constituents die of basic biology—they die of diseases,” says Sprott. “And so it doesn’t sound very sexy. It is very hard to attract research dollars for basic biology,” Sprott frustratingly notes. “Even in the view of Josh and Larry and the advisory board, the only long-term solution to age-related problems is to prevent them. And you can only do that with basic biological research. Anything else you do is playing catch up. Unfortunately, most of the money is going to fixing diseases that are already in place. So The Ellison Medical Foundation particularly wishes to stimulate new, creative research that might not be funded by traditional sources or that is often underfunded in the US,” says Sprott.

And despite his personal losses from cancer, there are no specific diseases that motivate Ellison or drive The Ellison Medical Foundation’s work, according to Sprott. Ellison is so devoted to basic aging research that the foundation started to focus exclusively on identifying and funding research opportunities that could lead to “quantum leaps” or “paradigm shifts” in scientific understanding that greatly impact human health.

“Larry is one of those people who truly understands the need for basic science, and he clearly understands the need for focus. We focus very sharply,” says Sprott. “If we funded a broader variety of things, we would have much less impact on any of them. And I think he appreciates that’s the way you really get something done.”

### **THE EMF FILLS A GAP, ADVANCES SCIENCE**

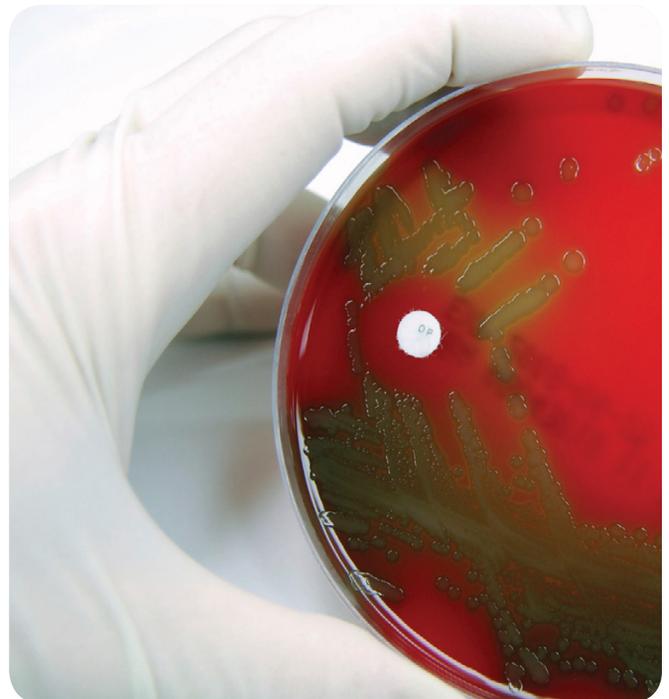
Such sentiments are echoed by veteran researcher and EMF Senior Scientist Scholar Dr. Judith Campisi. The current research climate “is the worst I have ever seen it,” says Campisi. “And it is particularly bad for basic aging research right now, as opposed to other aspects of aging research, and certainly as opposed to other fields,” notes Campisi. “It is really terrible right now. And what I think Ellison has done is helping to fill a gap that is a real need.”

Campisi, who is a professor and has her own lab at the Buck Institute for Research on Aging in Berkeley, California, knows first-hand the difficulties of securing research funding from the standard government

sources like the National Institutes of Health (NIH), including onerous application procedures and extensive oversight once funded. “The Ellison Medical Foundation, I believe, has striven to break the NIH mode of requiring extensive preliminary data and really encourages people to even go outside their fields or to bring people who have not worked in aging to begin to apply what they know in other fields to the problem of aging,” says Campisi, who studies the relationship between cancer and aging. “And in my opinion they have been very successful in doing that.”

This is exactly what Ellison and Sprott want to hear. “What we think we can do that is not necessarily done very well by NIH is that we can take a chance on an investigator based on what we know about them in their application or what we know about them from their existing research and track record,” Sprott explains. “If they have a really good idea, we can take a risk because we are not doing it with taxpayer dollars.”

Campisi is a perfect example of this. “Cancer is very different than most other age-related diseases,” says Campisi. “Most age-related diseases are degenerative. Your kidneys stop working well, your heart doesn’t work well, your brain stops working well. But cancer is very different,” she says. “In order for a lethal tumor to form, cells have to acquire new functions, new phenotypes, and so we’ve been thinking for years about whether this is coincidence that cancer goes up with age and all these degenerative pathologies go up with age or whether there is real biology that connects them.”



### ENTER TELOMERES

**Telomeres** are small units of DNA at the end of our chromosomes. As our cells divide, telomeres progressively shorten until they become dysfunctional, causing aging and age-related diseases, including cancer. But if telomeres can remain intact, they protect the genes inside the cell. Still, while Campisi knew about new theories surrounding telomeres at the time, she had never done research in them.

The funding from The Ellison Medical Foundation allowed her to blend her cancer research with telomere research. “At the time I got my Ellison funding, the major paradigm for understanding this potential link was this idea that telomeres, these structures that cap the ends of chromosomes, get shorter with each cell division. And they also get shorter with age. And when they fail, when they get so short that the telomeres fail to function, the cells become senescent. But when cells become senescent, they change their function so much that they can begin to alter the tissue and cause degenerative changes,” says Campisi. “But I had never worked in telomeres. I was just dabbling.

“So the link between telomeres and degenerative changes was extremely obscure. And it was through The Ellison Medical Foundation that we were able to do some really interesting molecular studies and sort of close that loop to help us understand how it is that telomere failure related to all of the other inducers of senescence and then how senescent cells can change the tissue-marker environment.”

The Ellison Medical Foundation’s funding, Campisi says, was a crucial link that really allowed her and her lab to go outside the box of traditional NIH funding. “It was something we had suspected for many years, and now we have proof, but at the time we only had a suspicion.”

While Campisi is no longer funded by The Ellison Medical Foundation, those advancements have allowed her to continue to make “enormous progress.” Not only has she been able to confirm many of the early, very speculative ideas about how senescence might link to degenerative diseases of aging with cancer, but she also has recently been able to identify that senescent cells may be responsible for chronic inflammation in the body.

“Very often aged tissues are said to have ‘sterile’ inflammation, meaning a pathologist will look at that tissue and see low-level, chronic inflammation, but there is no evidence of a pathogen. It has nothing to do with infection,” says Campisi. “But we now know that senescent cells have the capability to create that kind of environment,” based in part on an evolutionary need, Campisi believes, for the compromised cell to communicate with the immune system to clear the cell.

“But if that damaged cell doesn’t go away, it becomes a chronic situation and we think this is a major reason why senescent cells might drive multiple pathologies, because every major pathology associated with aging has a component, either a cause or an exacerbating factor we now refer to as chronic inflammation.”

### BASIC RESEARCH MEANS SAVING LIVES

With this type of knowledge, scientists and researching physicians affiliated with groups like The Ellison Medical Foundation and Life Extension Foundation® are able to do much more to extend our healthy life spans and prevent needless deaths.

The Ellison Medical Foundation has also funded major initiatives in **longevity genes** and **life span extension**. In 2000, Dr. Nir Barzilai at Albert Einstein College of Medicine of Yeshiva University also became a Senior Scholar in Aging. His research focused on identifying longevity genes and biological factors associated with long life span in humans based on Ashkenazi Jews and Old Order Amish populations. He found that both groups had significantly larger high-density lipoprotein (HDL) and low-density lipoprotein (LDL) particle sizes than control groups.

As many *Life Extension* readers may already know, in terms of cardiovascular health, this characteristic is associated with lower prevalence of hypertension, cardiovascular disease, and metabolic syndrome. Dr. Barzilai’s research identified two genetic alleles seen with increased frequency in the centenarians and their offspring. His research even found that one of the genetic mutations also conferred better cognitive function in the centenarians.

“What we’re doing is investing philanthropic dollars in basic research that has the potential to have a very large impact on everyone’s lives,” notes Sprott. “When you look at the website and look at the projects we fund, you see a lot about life span extension. But we don’t fund them for precisely that reason. We fund them to understand the basic processes so that we can improve the quality of the latter part of the life span. So we are more interested in quality rather than quantity,” notes Sprott. “And our underlying theme is that if we can eliminate the diseases that are age-related that will translate into a big effect for people’s lives.”

### WHAT'S THE FUTURE OF AGING RESEARCH?

Going forward, Sprott’s goal for The Ellison Medical Foundation is to “stay on top of what is cutting edge research at any point in time and make sure that we are leading and providing the funds for those cutting edge scientists to get far enough down the road that they are successful for funding from more traditional sources.”

And come late summer and early fall, Ellison, Sprott and the foundation's Scientific Advisory Board will have funded a new round of New and Senior Scientists. Still, The Ellison Medical Foundation only funds a researcher once, which means there is still a tremendous unmet need in aging research. "We have a firm policy that no one gets a second award," Sprott says flatly. "When we first started out, we thought we would run out of bright people fairly fast. But in fact, we get more and more good applications every year. We have been at this 14 years and we are finding more and more really good people. But if we give people second awards—we've funded 800 so far—there would be another 800 people standing in line looking for an award. And we wouldn't fund anybody new."

### CONCLUSION

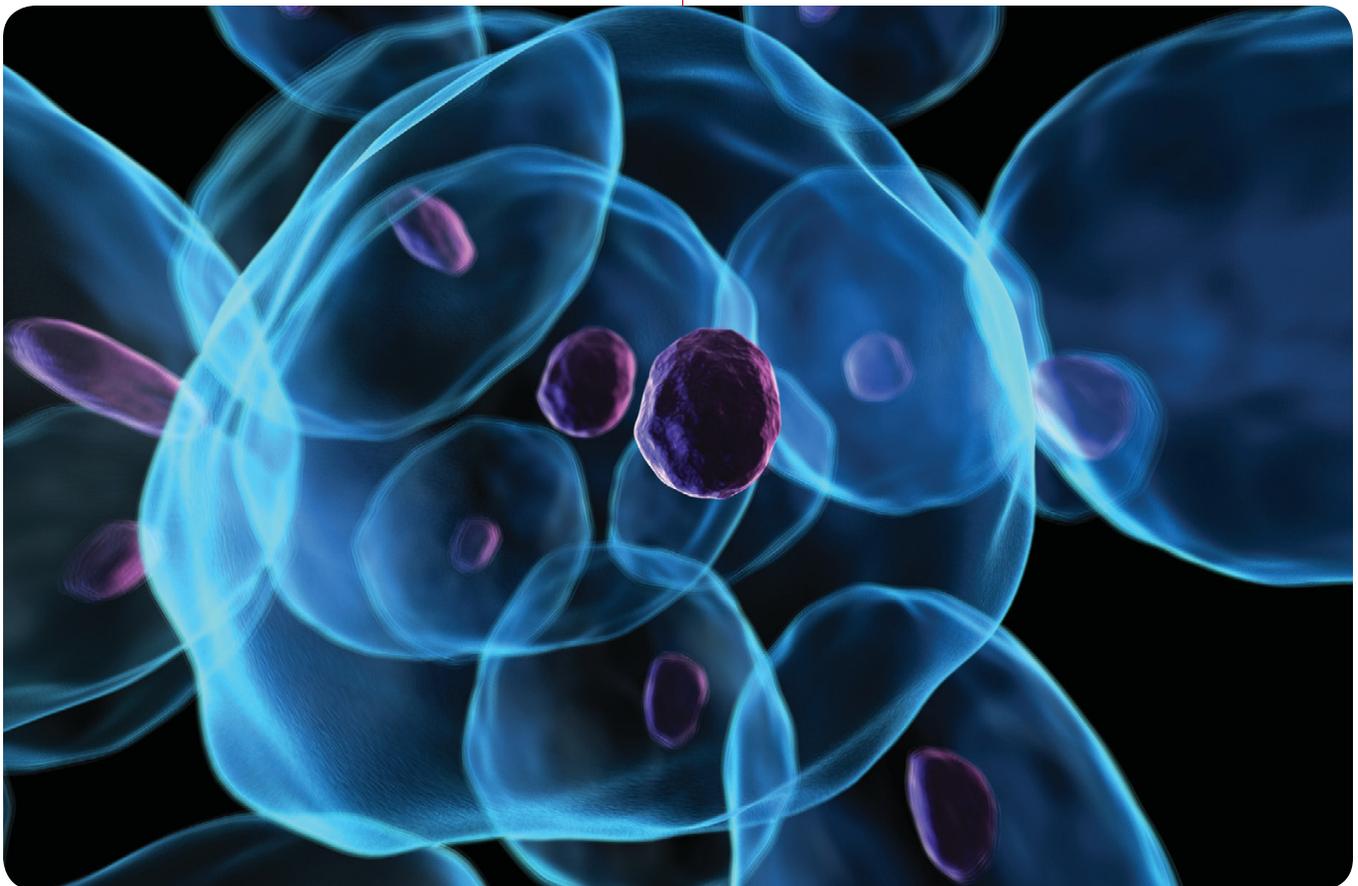
Larry Ellison and David Murdock (described on following page) are examples of what ultra-wealthy individuals should be doing to fund **research** aimed at eliminating the horrific consequences of **aging** and its associated pathologies. They are not the only philanthropists supporting aging research, but they remain in the tiny minority.

Unlike any other philanthropy, the fruits of aging research benefit virtually every human on the planet. Even if one were to find a cure for all cancers, this would only benefit those stricken with cancer. Aging, on the other hand, strikes every human who lives long enough.

Based on what you are learning in this month's issue of *Life Extension Magazine*<sup>®</sup>, scientists are discovering enough about the mechanisms of aging to make significant strides...but only if enough **research dollars** are intelligently allocated to perfect methods to control and **reverse** it. ●

To learn about a new initiative to accelerate the pace of **aging-reversal** research, turn to page 52 of this issue.

If you have any questions on the scientific content of this article, please call a **Life Extension**<sup>®</sup> Health Advisor at 1-866-864-3027.



## DOLE FOODS OWNER DOLES OUT MONEY AND IDEAS TO EXTEND LONGEVITY

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Now at 87 years of age, David H. Murdock, the chairman and sole owner of Dole Food Company, Inc., has decided to aggressively fund longevity research by studying the nutritional and therapeutic powers of fresh

foods. It was the death of his wife from cancer that motivated Murdock to explore the healing benefits of a plant-based diet.

Embodying his vision of longevity research is the North Carolina Research Campus, a private-public venture that utilizes Mr. Murdock's \$1.5 billion investment to become, according to company information, the world's epicenter of disease research and nutrition. Located in Kannapolis, North Carolina, the NCRC is over one million square feet in size. Inside the building, the leading minds in both private enterprise and public universities study and scrutinize plants, fruits, and vegetables to discover hidden information and unlock how these foods promote excellent health and may one day conquer the diseases of aging. According to Murdock, "I want everyone to understand the importance of the Institute and the Campus. We've opened the door to research that will help everyone lead longer, healthier lives." At this state-of-the-art facility, the Imaging Sciences group is working to shed light on cellular mechanisms that can identify biomarkers associated with distinct phenotypes and ultimately design new therapeutics. The University of North Carolina, Chapel Hill, as well as Duke University and North Carolina State University, among others, participate in this groundbreaking research. At the center of NCRC lies the David H.

Murdock Research Institute, where the Institute's goal is to "transform science at the intersection of human health, nutrition, and agriculture."

Along with healthy eating, his efforts to help people include studying healthy living as well. Personally, Murdock follows a strict diet absent of meat, dairy, sugar, and alcohol. Murdock believes he will live at least to 125 years old by eating fruits, vegetables, seafood, nuts, and beans.

In addition to the David H. Murdock Research Institute, Murdock has also funded the California Health and Longevity Institute, which was founded in November 2006 through a partnership between Mr. Murdock, renowned geneticist Andrew Conrad, PhD, and health benefit company, WellPoint. At CHLI, some of the finest minds in medicine, fitness, nutrition, and life balance have come together to create a rewarding and life-altering destination where guests can improve their own quality of life while boosting preventive care for age-related diseases.

While these two projects on opposite sides of the country stand as monuments to Mr. Murdock's longevity-oriented strategy, they are hardly his only endeavors to promote a healthy lifestyle. Mr. Murdock also spearheaded an effort between medical and nutrition experts at the Mayo Clinic, the University of California, Los Angeles, and the Dole Food Company, Inc., to write the *Encyclopedia of Foods: A Guide to Healthy Nutrition*. This 500-page book is the ultimate guide to improving one's health through nutrition, exercise, and disease prevention. In addition, Mr. Murdock has established three endowed professorships at North Carolina State University in order to attract top-flight talent to be involved in food and nutrition research.



# ADVANCED Anti-Adipocyte FORMULA

## CELLULAR SUPPORT FOR HEALTHY BODY WEIGHT

If you're struggling to maintain healthy body weight, you're not alone. Up to **65%** of Americans face the same challenge.<sup>1</sup> Even a modest increase in fat pounds can have an impact on overall health, especially when it's stubborn belly or visceral fat.

The problem is that conventional methods to combat *age-related* changes that predispose us to weight gain have proven *ineffective*. Adjustments in diet and lifestyle alone are often not enough. But there's hope . . .

### State-of-the-Art Dual Plant Extract Technology

To help maturing individuals deal effectively with this serious health issue, **Life Extension®** introduces

a brand new, clinically validated solution: **Advanced Anti-Adipocyte Formula with AdipoStat.**

**AdipoStat** is the first dietary intervention to support healthy body weight using these innovative approaches.<sup>2</sup> Through multiple pathways, it targets the mechanisms by which fat-storing cells or **adipocytes** become bloated and metabolically dysfunctional.

This widely overlooked *cellular* condition leads to excess fat accumulations in the belly and throughout your body.

After careful scientific analysis of over **1,000** plant extracts,<sup>2</sup> researchers identified the two species included in **AdipoStat** that target adipocytes: **Sphaeranthus indicus** flower (*S. indicus*) and the **mangosteen** fruit (*Garcinia mangostana*).

Optimal results were shown in studies when these two **plant extracts** were combined.

## Three Ways to Fight Fat Cell Derangements

**AdipoStat** functions via the following mechanisms to support healthy body weight:<sup>2</sup>

1. **AdipoStat** targets adipocyte (fat cell) creation.
2. **AdipoStat** impedes adipocyte growth (adipogenesis).
3. **AdipoStat** induces fat in adipocytes to break down (lipolysis).

## Success in Clinical Trials

**AdipoStat**'s performance in clinical studies indicates it can safely deliver impressive results.

In a key study, 30 adults with difficulty maintaining healthy body weight ingested **800 mg per day of AdipoStat** while following a 2,000-calorie-per-day diet and were asked to walk just 30 minutes five days a week. A group of equal size was given placebo.<sup>3</sup>

After just eight weeks, the **AdipoStat** group:

- Lost **4.05 inches** of harmful belly fat—**2.0** times the placebo group.
- Experienced a **2.05** drop in body mass index (BMI)—**3.9** times over placebo.
- Shed **11.4 pounds** of total body weight—**3.7** times over placebo.

These improvements began to emerge after just **14** days.<sup>3</sup>

After eight weeks, the **AdipoStat** group saw a noticeable drop in **waist-to-hip ratio**,<sup>3</sup> indicating they experienced **fat loss** in the **abdominal** area, where excess fat mass is associated with serious health issues.

They also exhibited favorably elevated levels of a hormone called **adiponectin**.<sup>2</sup> Adiponectin sends command signals that determine how big your fat cells get, how much they break down (*lipolysis*), and how often they are produced (*adipogenesis*).<sup>4</sup>

A second human clinical trial yielded similar results, confirming **AdipoStat**'s beneficial effects.<sup>2</sup>

## The New AdipoStat Formulas

There are two ways you can easily incorporate **AdipoStat** into your daily supplement program.

The first option is to take **AdipoStat** by itself. The daily dose of one vegetarian capsule of **Advanced Anti-Adipocyte Formula** taken 30 minutes before each of the two heaviest meals of the day provides:

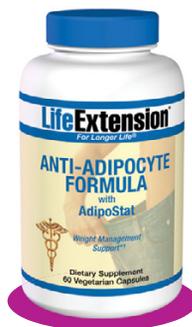
**AdipoStat** Proprietary Blend ..... **800 mg**  
(*Sphaeranthus indicus* extract and  
*Garcinia mangostana* extract)

**Caution:** These products are designed to target several critical factors involved in age-related weight gain. Those who ingest more calories than what their body has the metabolic capacity to utilize will not see results. This is because some people are ingesting so many excess calories that no matter how much their metabolic rate is increased, or how much improvement occurs in their after-meal blood sugar and triglyceride levels, or by how much youthful insulin sensitivity and other body fat-regulating systems are restored, they are overwhelming the metabolic capacity to utilize these calories. This will result in excess calories being stored in adipocytes. One cannot consume limitless calories and expect to shed fat pounds by taking drugs, nutrients, and/or hormones that demonstrate weight loss in clinical studies.

These supplements should be taken in conjunction with a healthy diet and regular exercise program. Results may vary.

The second option enables consumers to obtain the same dose of **AdipoStat** along with the highly popular **Integra-Lean®** (*Irvingia gabonensis*). **Irvingia** operates via additional mechanisms to combat surplus fat storage, including inhibition of **glycerol-3-phosphate dehydrogenase**,<sup>5</sup> an enzyme involved in the conversion of glucose and triglycerides into adipocyte fat storage.

The **Advanced Anti-Adipocyte Formula with AdipoStat and Integra-Lean®** supplies **800 mg of AdipoStat** and **300 mg** of proprietary *Irvingia* extract in the same suggested daily serving of one vegetarian capsule before each of the two heaviest meals.



### Advanced Anti-Adipocyte Formula with AdipoStat

Item # 01510

A bottle containing **60** vegetarian capsules of **Advanced Anti-Adipocyte Formula with AdipoStat** retails for \$35. If a member buys four bottles, the price is reduced to just **\$24** per bottle.



### Advanced Anti-Adipocyte Formula with AdipoStat and Integra-Lean® African Mango Irvingia

Item # 01509

A bottle containing **60** vegetarian capsules of **Advanced Anti-Adipocyte Formula with AdipoStat and Integra-Lean® African Mango Irvingia** retails for \$39. If a member buys four bottles, the price is reduced to just **\$27** per bottle.

**Integra-Lean®** *Irvingia* is protected by U.S. Patent No. 7,537,790. Other patents pending. **AdipoStat** is a proprietary ingredient derived from natural plant extracts exclusively distributed by InterHealth N.I.

#### References

1. Available at: [http://www.usatoday.com/news/health/2003-05-13-obesity-usat\\_x.htm](http://www.usatoday.com/news/health/2003-05-13-obesity-usat_x.htm). Accessed April 29, 2011.
2. Results based on initial analyses of unpublished research data.
3. Adapted from *FASEB J.* April 2011; 25:(Meeting Abstract Supplement) 601.9. Presented at Experimental Biology 2011, Washington, DC. April 10, 2011. Program No. 601.9, Poster No. A278.
4. *J Mol Med.* 2002 Nov;80(11):696-702.
5. *Lipids Health Dis.* 2008 Nov 13;7:44.

To order either of the new  
**Advanced  
Anti-Adipocyte Formulas**

call **1-800-544-4440** or visit  
**[www.LifeExtension.com](http://www.LifeExtension.com)**

These statements have not been evaluated by the Food and Drug Administration. These products are not intended to diagnose, treat, cure, or prevent any disease.

# Rock Solid BONES

**Feeble bones** severely hamper quality of life and put aging humans *at risk for injury* due to possible *breaks or fractures*.

**Bone Restore** combines critical **bone boosting** nutrients into one superior formula.

**Bone Restore** includes highly **absorbable** forms of **calcium**, a *bioavailable form* of **boron**, along with **vitamin D3**, **magnesium**, **zinc**, **manganese**, and **silicon**.

**Bone Restore** comes in fast-release capsules, making the minerals and other nutrients immediately available for absorption into the bloodstream.

The retail price for 150 capsules of **Bone Restore** is \$22.50. If a member buys four bottles, the price is reduced to just **\$14.63** per bottle.

**To order Bone Restore, call 1-800-544-4440 or visit [www.LifeExtension.com](http://www.LifeExtension.com)**

Contains corn.

Fruitex B® and OsteoBoron® are registered trademarks of VDF Futureceuticals, Inc. U.S. patent #5,962,049.

DimaCal® and TRAACS® are registered trademarks of Albion Laboratories, Inc. Malate is covered by U.S. Patent 6,706,904 and patents pending.



Item #00811

#### Just five capsules of Bone Restore provide:

<b>Highly-Absorbable Calcium</b> (as DimaCal® dicalcium malate, TRAACS® calcium glycinate chelate, calcium fructoborate)	<b>1,200 mg</b>
<b>Vitamin D3</b>	<b>1,000 IU</b>
<b>Magnesium</b>	<b>340 mg</b>
<b>Boron</b> (calcium fructoborate as patented Fruitex B® OsteoBoron®)	<b>3 mg</b>
<b>Zinc</b>	<b>2 mg</b>
<b>Manganese</b>	<b>1 mg</b>
<b>Silicon</b>	<b>5 mg</b>

These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure, or prevent any disease.



# Higher Potency ArthroMax™ with Theaflavins

Full-Spectrum Joint Support  
Now with Standardized Theaflavins

**ArthroMax™ with Theaflavins** is a multi-nutrient formula designed to provide broad-spectrum support for aging joints and cartilage. Based on recent scientific findings, **ArthroMax™ with Theaflavins has been improved with higher potencies and an exciting new ingredient.**

ArthroMax™ with Theaflavins contains more **glucosamine sulfate** along with a special **Boswellia extract** known as **5-LOXIN®**. Glucosamine sulfate provides underlying structural foundation for joints, while **5-LOXIN®** inhibits the *5-lipoxygenase* enzyme, thereby reducing levels of pro-inflammatory *leukotriene B4*.\*

### Key New Ingredient... Black Tea Theaflavins

Inflammatory reactions are regulated by a series of "cytokines" produced in the body. Normal aging results in an unfavorable balance of these **cytokines** that contributes to persistent inflammatory conditions. New studies have shown that a special fraction found in **black tea** suppresses proinflammatory cytokines at the genomic level. Scientists have found that these compounds called **theaflavins** uniquely down-regulate the expression of genes and cytokines associated with inflammatory conditions.

5-LOXIN® is used under license by PL Thomas-Laila Nutra, LLC and is registered in the United States and other countries. International Patents Pending.  
FruiteX B® and OsteoBoron® are a registered trademark of VDF FutureCeuticals, Inc. U.S. Patent #5,962,049.

**ArthroMax™ with Theaflavins** formula provides these bioactive **theaflavin** fractions, along with **methylsulfonyl methane (MSM)**, which contains sulfur components that are critically important in maintaining comfortable joint function.\* ArthroMax™ with Theaflavins also contains **FruiteX B® OsteoBoron®**, a patented form of boron that is identical to natural plant forms found in food. Considered more bioavailable than other forms of boron, **FruiteX B® OsteoBoron®** also supports healthy bones and joints.\*

Four vegetarian capsules of new **ArthroMax™ with Theaflavins** provide the following nutrients in one convenient, joint-protecting formula:

**Black tea theaflavins with TF-2a fraction 440 mg**  
(decaffeinated)

**Glucosamine sulfate 2KCl (from corn) 2000 mg**

**MSM (methylsulfonylmethane) 1000 mg**

**5-LOXIN® 100 mg**

**Boron 1.5 mg**  
(as patented FruiteX B® OsteoBoron®)

The retail price of a bottle of 120 vegetarian capsules of **ArthroMax™ with Theaflavins** is \$44. If a member buys four bottles, the price is reduced to only **\$30** a bottle. **Contains corn.**

Item #01317



To order ArthroMax™ with Theaflavins,  
call 1-800-544-4440 or visit [www.LifeExtension.com](http://www.LifeExtension.com)

\*These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure, or prevent any disease.



## New Initiative to Accelerate Anti-Aging Research

This magazine opened up with an analogy as to how **aging** might be *eradicated* similar to the way **smallpox** was.

To elaborate on this a bit further, in **1840** the British government offered free smallpox vaccinations to all its citizens. At that point in time, the most powerful nation on earth proclaimed that smallpox could be prevented.

Move forward to **1900**, and most of the world was not vaccinated. The tragic result was that from **1900 to 1980**, at least **300 million people** needlessly died of smallpox. Some estimates show smallpox may have killed **500 million** worldwide from **1900 to 1980**.

This outlandish delay in eliminating the scourge of smallpox shows how slowly civilizations adapt to change. For the most part, they disregard proven technologies even as people around them fall sick and die.

Here we are in **2011** and there are multiple ways to postpone age-related disease, yet the majority of the population ignores them. We know that reduced calorie intake, increased physical activity, maintaining

blood markers in safe ranges, and ensuring optimal nutrient intake can delay the consequences of premature aging, but we still don't have an outright cure for normal aging!

Frustratingly, we know about technological advances that might lead to an aging cure, but they remain tantalizingly out of our grasp.

So what Life Extension® has done is set up a website for the purpose of ascertaining how many humans today would be willing to assist in funding accelerated anti-aging research. Activist members have pledged to reach out to wealthy individuals to see if they are willing to help support aggressive research projects aimed at finding a cure for aging.

If enough pledges of support are received, Life Extension and others will coordinate programs and present them to those who indicate a desire to contribute.

If you want to be on this list to receive periodic research proposals for your consideration, please register by logging on to **[www.lef.org/cureaging](http://www.lef.org/cureaging)**

Life Extension assures all those who register that their names and contact information will be kept strictly confidential and that only Life Extension will send them research opportunity reports.

If you know someone who might be interested, we ask that you reach out to them and offer to let us send them a copy of this issue of *Life Extension Magazine*. They can even register on the [www.lef.org/cureaging](http://www.lef.org/cureaging) website before they receive this magazine.

We are confident in the science, but not necessarily in the willingness of enough people to make anti-aging research a personal priority today. We fear that populations will ignore the obvious and continue to make poor lifestyle choices, while failing to support emerging anti-aging technologies that can spare them agonizing suffering and personal extinction.

While we can be optimistic about the long term, too many Life Extension members are reaching a point that requires major breakthroughs, ergo our establishing the [www.lef.org/cureaging](http://www.lef.org/cureaging) website. Please log on today if you want to participate.

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## CURE AGING IN OUR LIFETIME

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Never before has such a volume of scientific knowledge existed about the underlying mechanisms of aging and how they may be thwarted.

A growing number of researchers are predicting major advances in our ability to slow and reverse degenerative aging processes.

One obstacle is the bureaucratic regulations that slow the development of new medical technologies.

An even more troubling concern, however, is an epidemic of apathy as it relates to providing funding for promising *age-reversal* research projects.

Those with disposable income and assets donate monies to all kinds of so-called charities, yet overlook research that could help them live in a youthful state of health for a very long time.

When one considers that aging is the disease that eventually kills us all, you would think that this is where the bulk of medical research emphasis would be focused. Instead, billions of dollars are squandered developing band-aid approaches to degenerative diseases instead of seeking to intervene directly in the aging process itself.

There is a causality dilemma called the “chicken or the egg—which came first.” In the case of aging research, so few dollars are allocated that promising areas are poorly funded or receive no support. The result is that relatively few scientists can afford to make aging research a priority.

All along, it has been the burden of the scientists to show their research had a reasonable chance of evolving into valid anti-aging therapy. They had to beg, borrow and do who knows what else to get to a level that would generate financial support for their work.

So the Life Extension Foundation, a non-profit organization founded in 1980, decided to try a novel method. We know there are millions of enlightened individuals in this world who want to defeat the aging process in their lifetime. Some of them have contributed, but most lack the knowledge to make intelligent choices, even if they desire to.

We want those who are able and willing to help fund anti-aging research to register on this new website ([www.lef.org/cureaging](http://www.lef.org/cureaging)). On a periodic basis, you will be sent overviews of research projects that require funding. You'll be sent direct contact information in case you want to check it out yourself. If a research proposal excites you, then you will be notified how to send funds. Accredited investors may choose to provide some or all the funding and buy rights to the research. Life Extension does not care which way it happens, we just want more resources allocated to the most critical medical urgency of our era—the aging process.

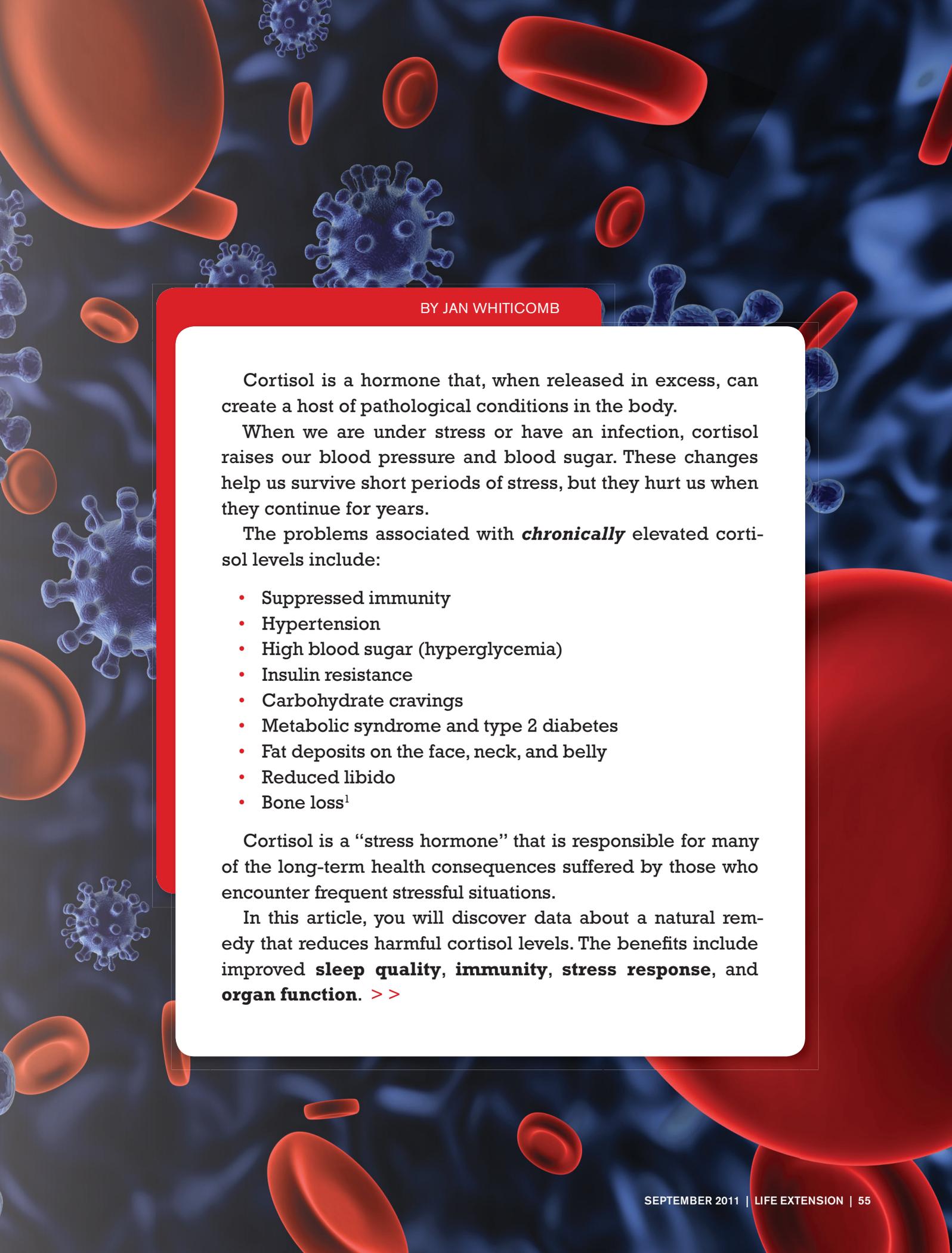
If we were initiating this program 100 years ago, we might be asking you to support research aimed at finding new vaccines and anti-bacterial agents. Those illnesses have largely been eradicated. Today it is the pathological aging process itself that we must develop a cure for.

We ask that you kindly register by visiting [www.lef.org/cureaging](http://www.lef.org/cureaging), so we can provide avant-garde scientists the opportunity to impress you. If you're lucky, you may even benefit from an anti-aging breakthrough before it is made available to the general public.

**To register today, log on to:**  
**[www.lef.org/cureaging](http://www.lef.org/cureaging)**

# Reducing the Risks of High **CORTISOL**





BY JAN WHITICOMB

Cortisol is a hormone that, when released in excess, can create a host of pathological conditions in the body.

When we are under stress or have an infection, cortisol raises our blood pressure and blood sugar. These changes help us survive short periods of stress, but they hurt us when they continue for years.

The problems associated with **chronically** elevated cortisol levels include:

- Suppressed immunity
- Hypertension
- High blood sugar (hyperglycemia)
- Insulin resistance
- Carbohydrate cravings
- Metabolic syndrome and type 2 diabetes
- Fat deposits on the face, neck, and belly
- Reduced libido
- Bone loss<sup>1</sup>

Cortisol is a “stress hormone” that is responsible for many of the long-term health consequences suffered by those who encounter frequent stressful situations.

In this article, you will discover data about a natural remedy that reduces harmful cortisol levels. The benefits include improved **sleep quality, immunity, stress response, and organ function.** >>



## The Dangers of Cortisol

Our bodies have a built-in mechanism for protecting us from the effects of acute, immediate stress (say, an attack by a wild animal). That effect, often called the “stress response,” involves production of several hormones in the adrenal gland. Following the immediate “adrenaline rush” that helps us escape the danger, we experience a massive release of cortisol, often referred to as the “stress hormone.”

Short-term bursts of cortisol are necessary to help us recover from the effects of stress. They boost blood sugar levels, providing immediate energy. They bolster immune responses in the short-term. They pull calcium from our bones, making it available to muscles for immediate action. They reduce our response to pain, keeping us focused on survival. And they enhance short-term memory, enabling us to evade similar threats in the near future.

Short, intermittent bursts of cortisol helped our ancestors survive in the wilderness and still come to our aid today. But unlike our ancestors, we face **chronically** stressful situations such as job loss and financial insecurity. Additionally, there are new biological stressors such as obesity and environmental

toxins. This **chronic stress** means that we experience **chronic cortisol elevation**—where levels of the stress hormone never get a chance to return to normal. This produces a major problem that threatens our health and longevity.

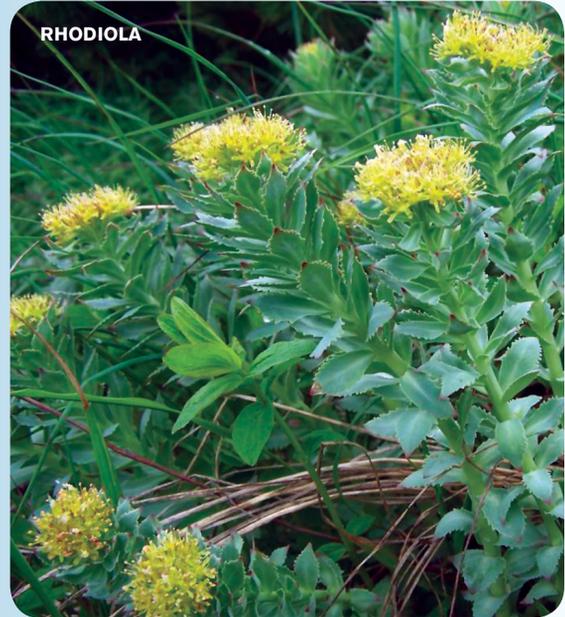
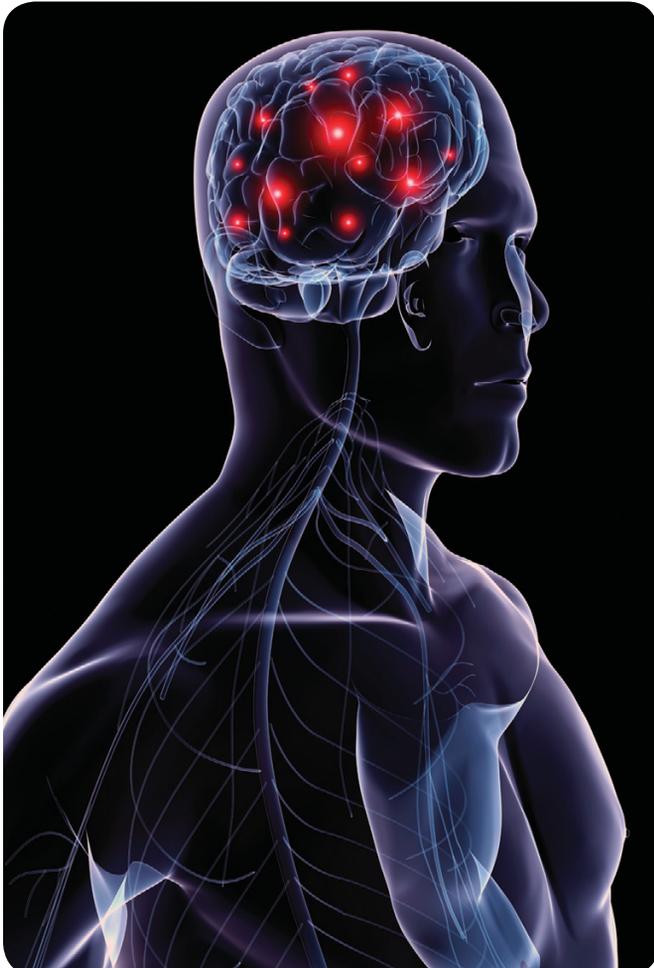
The effects of chronic overexposure to cortisol can be devastating. Prolonged cortisol elevations result in sustained elevations of blood sugar, substantial loss of calcium from bones, depression of important immune responses, high blood pressure, loss of muscle mass, increased fat accumulation, and even loss of cognitive function.

If you’ve ever seen someone on chronic steroid therapy, say, for protection against transplant rejection, you’ve seen the destructive effects of cortisol: such people develop a classic “moon face,” the result of excess fat and fluid accumulations. They develop a stooped posture, the result of calcium losses from bones. They often succumb to infections, the result of excessive immune suppression. Less obviously, but still of concern, they often develop dangerous hypertension requiring medication, and they can develop a range of cognitive dysfunctions as well.

So how can we preserve the beneficial effects of short-term cortisol elevations in response to acute, dangerous stress, while tamping down the dangerous effects of chronic, long-term cortisol elevations? That's where adaptogens such as rhodiola become important.

The reason that the Soviet scientists were so interested in rhodiola was that they recognized its value in situations where long-term stress was an issue. They saw that rhodiola's adaptogenic powers could balance the impairments produced by chronic stress without interfering with the valuable short-term stress response. Modern science is further validating rhodiola's ability to mitigate the impact of chronic cortisol elevations.

A large, phase III placebo-controlled clinical trial was conducted in Sweden in 2009, studying participants aged 20-55 years with a diagnosis of stress-related fatigue.<sup>2</sup> Subjects taking the rhodiola extract had significantly lower cortisol responses to chronic stress than did the placebo recipients—and as a result they had lower scores on scales of burnout and improved performance on cognitive testing.



What You Need to Know

## Rhodiola: An Increasingly Popular Adaptogen

- Rhodiola is a known **adaptogen**—a plant-based compound that improves resistance to stress.
- It exerts system-wide protective and restorative effects, increasing longevity and healthy life span in experimental models.
- It has been shown to favorably modulate the stress response, restore vital organ function, and boost immunity.
- It also combats aging cognitive function, minimizing depression, and anxiety.
- Rhodiola enhances muscle performance, increases endurance, prevents muscle damage, and improves blood circulation.



A placebo-controlled Chinese study in 2009 also revealed protective effects of rhodiola on stress-induced cortisol levels in otherwise healthy individuals.<sup>3</sup> In this case, subjects who received rhodiola experienced no change in their cortisol levels, while levels rose sharply among placebo recipients when both groups were exposed to chronic stress in the form of endurance exercise. Rhodiola also increased the efficiency with which subjects used oxygen, potentially reducing additional stress from oxygen radicals.

Advanced laboratory studies have now demonstrated that rhodiola achieves its cortisol-lowering, stress-fighting effects through several different mechanisms. Rhodiola directly interacts with the brain-adrenal gland system to reduce cortisol production while enhancing stress-resistance proteins.<sup>4</sup> It upregulates “stress-sensor” proteins that reduce the production and impact of cortisol, resulting in enhanced mental and physical performance and even longevity.<sup>5</sup> And multiple studies have demonstrated the complete lack of side effects from rhodiola supplementation.<sup>2,4</sup>

## Rhodiola Research Conducted in Russia

Scarcely heard of in this country, rhodiola is an adaptogenic herb that first gained prominence when used by Russian cosmonauts to improve their endurance, concentration, and strength during space missions. During the Cold War, the Russians began to scientifically study the use of adaptogenic herbs for their elite athletes and military.

Their goal was to identify a natural product that created a sense of well being and reduced the harmful effects of the stress hormone, cortisol. The Russian scientists knew that high levels of cortisol initiate a dangerous cascade of stress and disease that would hamper the efforts of their best and brightest.

Rhodiola is one of only **16** scientifically established **adaptogens**, or plants endowed with the power to enhance system-wide function in the aging human.

## Modulating the Stress Response

Unlike any other compound, adaptogens condition your body to respond favorably to stress at the physiological level through a unique mechanism.

Adaptogens deliver minute shocks of mild stress that condition your physiology to respond to more major stresses in a favorable way. Interestingly, this is similar to the vaccine theory of inoculating the body with a small but harmless amount of a virus to help the body fend off a major attack.<sup>6</sup>

Rhodiola reduces fatigue and restores normal mental and physiological functioning, even in stressed humans categorized as having “burnout.”<sup>6,7</sup> Studies of highly stressed individuals—doctors working overnight shifts, students studying for major exams—all demonstrate improvements in fatigue level, neuromotor performance, and perceptive and cognitive function, even when tested under ongoing stressful conditions.<sup>8-10</sup>

A study of young to middle-aged women with significant impairment from living in psychologically stressful environments demonstrated improved scores on attention, speed, and accuracy during stressful cognitive tasks.<sup>11</sup> Those effects were evident just two hours after a single dose of rhodiola combined with Siberian ginseng and *Schisandra chinensis*. No serious side effects were reported in this or any other study of rhodiola.<sup>4</sup>

## A Powerful Weapon Against Anxiety

While *Rhodiola rosea* has demonstrated the ability to help people deal with stress, it has also shown promise in alleviating stress-related symptoms such as anxiety and a diminished appetite.

A new study shined a light on rhodiola's ability to circumvent the symptoms and severity of general anxiety disorder, a common condition characterized by frequent, excessive worry that is out of proportion to external circumstances. Symptoms of the disorder include difficulty concentrating, irritability, tense muscles, sleep disturbances, and trouble controlling worries. Ten participants (ages 34-55) with generalized anxiety disorder received a total daily dose of 340 mg of *R. rosea* extract for 10 weeks. At the study's end, the participants demonstrated significant improvements in symptoms of generalized anxiety disorder, as determined by a widely used clinical assessment scale.<sup>12</sup>



As researchers began to investigate rhodiola in greater detail, they discovered that one of rhodiola's key components, the phytochemical *salidroside*, may be responsible for many of rhodiola's anti-aging properties, as well as an important factor in its ability to help combat anxiety. One animal study showed that salidroside produced notable sedative (calming) and hypnotic (sleep-inducing) effects in a dose-dependent fashion.<sup>13</sup> Another study showed that administering salidroside to animals reversed stress-induced anorexia (discontinuation of eating).<sup>14</sup> Together, these findings support rhodiola's ability to calm individuals subjected to stress and to restore normal patterns of rest and eating.

These studies back up centuries of common knowledge in Russia and Scandinavia, where people have used rhodiola to alleviate everyday symptoms of anxiety and poor sleep.

## Enhanced Longevity

Scientists have found that rhodiola possesses the power to *restore* malfunctioning biological systems, a key factor in reducing the detrimental effects of aging. In testing multiple organisms, rhodiola was found to enhance healthy responses to negative environmental stressors that include **oxidative stress, acute and chronic heat shocks, and toxic chemical exposure**.<sup>15</sup>

In the laboratory, rhodiola was found to protect human cells from premature aging when they were exposed to oxidative stress. Again, scientists used the compound derived from rhodiola called *salidroside*.<sup>16</sup> Salidroside further preserves aging skin cells' ability to reproduce, thereby creating healthier, more vital skin. One group of scientists found that the salidroside in rhodiola dramatically diminishes pathologic symptoms of aging in laboratory mice by preventing accumulation of inflammatory *advanced glycation end products* (AGEs).<sup>17</sup>

Further bolstering rhodiola's anti-aging credentials is a recent study showing that rhodiola extract helps slow the aging process while extending life span.<sup>18</sup> During this study, scientists administered rhodiola extract in the diet to a group of fruit flies. A control group did not receive the dietary rhodiola. The rhodiola-supplemented fruit flies demonstrated a 10% longer life span, compared with control subjects. When examined more closely, it was clear that the rhodiola-supplemented animals displayed *decelerated aging*, compared with subjects that did not receive the herb.<sup>19</sup>

Of important note, rhodiola's anti-aging and longevity-promoting effects appeared to be independent of any special diet.<sup>19</sup> This is of vital importance

because it suggests that rhodiola provides longevity benefits through a mechanism separate from caloric restriction, which, as *Life Extension* readers know, is the best-documented method to increase life span to date.<sup>20</sup>

The possibility that rhodiola could act through a novel mechanism to forestall aging and lengthen life span is remarkable news for the anti-aging community.

### Bolstering Heart Health

Heart disease remains the number one killer, and doctors report that many cardiac events are stress induced.<sup>21,22</sup>

Stress, whether physical or emotional, puts extra strain on the heart and other muscles. Numerous studies suggest that rhodiola exerts several protective benefits for the heart.<sup>23</sup>

A probable link between the administration of *Rhodiola rosea* extract and prevention of arrhythmia (potentially dangerous abnormal heart rhythms) was discovered in a recent study.<sup>24</sup> The study involved test animals receiving *Rhodiola rosea* each day for 8 straight days. They were then subjected to an agent known to disrupt heart rhythm. Pre-treatment with rhodiola protected the animals against experimentally induced arrhythmia and electrical instability of the heart. The animals who received rhodiola were less vulnerable to heart damage caused by experimentally induced myocardial infarction (heart attack).

Another animal study highlights further potential cardioprotective benefits of rhodiola. In an animal model of coronary artery disease, rhodiola helped decrease the heart muscle's oxygen consumption while increasing oxygen supply to the myocardium, helping to ensure that the heart muscle has enough oxygen required for optimal function.<sup>25</sup>

## SYSTEM-WIDE AGE REVERSAL

<b>Reduces Stress</b>	Lowers levels of cortisol <sup>7</sup> Restores normal physiological response to stress <sup>64</sup> Fights stress-induced despair <sup>64</sup> Restores brain cells in areas damaged by stress-induced depression <sup>45,46</sup>
<b>Protects the Heart</b>	Prevents stress- and ischemia-induced heart muscle damage <sup>65-67</sup> Increases heart muscle cell tolerance to ischemia <sup>68</sup> Prevents stress- and heart attack-induced arrhythmias <sup>26,69-72</sup> Reduces size of heart muscle infarction (tissue death) <sup>62-64,68</sup> Promotes new cardiac blood vessel growth after heart attack <sup>66,73-75</sup>
<b>Protects the Liver</b>	Prevents toxin- and oxidative stress-induced liver cell damage <sup>26-29</sup> Reduces serum markers of liver dysfunction <sup>76</sup> Restores depleted liver stores of natural antioxidants <sup>26</sup>
<b>Prevents Cancer</b>	Inhibits proliferation of human leukemia cells <sup>77</sup> Inhibits growth, induces death of human cancer cells <sup>78-81</sup> Reduces new blood vessel formation (angiogenesis) in tumors <sup>82</sup>
<b>Protects Against Radiation</b>	Increases survival following otherwise lethal total-body irradiation <sup>83</sup> Reduces radiation-induced lipid oxidation <sup>83</sup> Scavenges radiation-induced free radicals <sup>83</sup> Prevents anemia from red blood cell membrane damage <sup>83</sup>
<b>Modulates the Immune System</b>	Anti-inflammatory effects in settings of excessive inflammation <sup>30,41</sup> Stimulates appropriate immune responses <sup>84,85</sup> Boosts immune response to vaccines <sup>33</sup> Antiviral effects against hepatitis C, influenza, and Coxsackie virus (cause of viral myocarditis) <sup>34-36</sup> Antibacterial effects against <i>Staph aureus</i> and tuberculosis <sup>37,38</sup> Combines with other adaptogens to boost suppressed immune function following chemotherapy <sup>86</sup>

This evidence, combined with earlier animal studies suggesting rhodiola's ability to reduce cardiac stress-related damage,<sup>23</sup> supports the need for further in-depth studies of rhodiola's cardiovascular benefits in humans.

### Vital Organ Function and Enhanced Immunity

As the major detoxifier for the body, the liver processes countless amounts of toxins and removes them from our body. Rhodiola species support natural antioxidant systems in the liver and protect liver cells from damage by toxins and oxidative stress.<sup>26-29</sup> As adaptogens, rhodiola species also carefully modulate the immune system, increasing its response to real threats of infection or malignancy, while preventing excessive inflammation.<sup>30-32</sup> A species of rhodiola was found to modulate the immune system to promote a healthy response to certain vaccinations.<sup>33</sup> Rhodiola potently inhibits tissue inflammatory responses to irritating drugs, preventing skin redness, swelling, and pain following exposure to the antifungal drug nystatin.<sup>30</sup>

Rhodiola species possess direct antiviral and antibacterial activities, which may reduce the risk of serious infections.<sup>34-38</sup> For example, *Rhodiola rosea* inhibits the enzymes that flu viruses use to attach to and invade the cells of the respiratory tract, reducing your chances of catching the flu following an exposure.<sup>35</sup>



### What Is An “Adaptogen”?

The concept of “adaptogens” is thousands of years old and is an important feature of ancient medical systems in the mountains of Asia and in northern Europe.<sup>87</sup> The modern term was coined in 1947 by a Russian scientist who defined an “adaptogen” as an agent that allows an organism to counteract and resist a variety of stressors.<sup>88</sup> In 2001, noted nutrition scientist Gregory S. Kelly updated and strengthened criteria for defining an adaptogen, requiring that any one adaptogen:<sup>88</sup>

- Produce an increase in power of resistance against multiple stressors, including physical, chemical, or biological agents
- Normalize physiology, helping the body maintain youthful function, regardless of the cause of stress
- Normalize bodily functions beyond what is required to gain resistance to stress naturally.

Adaptogens exert a normalizing effect,<sup>87</sup> allowing organisms to increase healthy functions that are impaired by stress, and to decrease unhealthy responses that are triggered by stress, without any risk of “overshooting” and creating an unbalanced response. Scientists use the term “homeostasis” to describe your body’s ability to maintain physiological function within certain parameters, including temperature, respiratory rate, and blood chemistry within tightly controlled limits. In mainstream language, then, adaptogens simply enhance the body’s ability to maintain homeostasis and fight age-inducing stress.<sup>5</sup>

### Combating Brain Aging

The neurodegeneration in Alzheimer’s and Parkinson’s diseases occurs as a result of inflammation in the nervous system coupled with the accumulation of harmful, pro-oxidant proteins that trigger even more inflammation and ultimately brain cell destruction. Constituents from rhodiola species such as salidroside display powerful antioxidant properties that prevent oxidative, pro-inflammatory effects as well as the formation of these proteins and the subsequent inflammatory cascade.<sup>39-43</sup> Fewer brain cells die from oxidative stress.<sup>40,44</sup>

Nerve cells in the memory centers of the brain resist age-related damage and produce more beneficial neurotransmitters after treatment with rhodiola.<sup>45,46</sup>

Both short- and long-term memory enhancements have been demonstrated with rhodiola.<sup>47-49</sup> Mental performance and acuity under experimentally induced adverse conditions, such as test-taking or sleep deprivation, are also significantly improved.<sup>7-9,11</sup>

Rhodiola species help aging humans fall asleep faster, longer, and with improved quality of rest.<sup>50,51</sup> In one study of men with sleep disturbances, rhodiola increased the amount of time spent in healthful REM sleep, reduced total wakeful time during the night, and markedly increased the “efficiency” of sleep sessions.<sup>51</sup> Greater blood oxygenation during sleep was also observed—a key longevity factor.

### Physical Performance

Physical activity and moderate exercise have multiple health benefits, but they also induce injury from oxidative stress, muscle cell damage, and inflammation. There is an important role, therefore, for adaptogens such as rhodiola in mitigating exercise-induced stress. Russian athletes have been known to use adaptogens to promote endurance and improve performance.

Rhodiola increased antioxidant blood levels and minimized oxidative stress-induced muscle damage in trained athletes for up to 24 hours after strenuous activity.<sup>52,53</sup> One study showed an increase in the time to exhaustion during exercise, with significant increases in oxygen delivery to muscle tissues during the workout as well.<sup>54</sup>

Rhodiola species have been used for centuries by villagers living high in the Himalayas to enhance their resistance to the effects of oxygen deprivation and to boost their endurance for strenuous tasks.<sup>55</sup> Those effects prove equally beneficial at more moderate altitudes. During exercise, rhodiola helps people work out longer, increasing their oxygen uptake and decreasing muscle damage.<sup>53,54</sup> Long-term supplementation boosts energy storage capacity and blood oxygen level prior to exercise, further enhancing exercise capacity and endurance.<sup>55</sup>

Rhodiola species protect internal organs from the low oxygen levels found at higher altitudes and that also occur during heart attacks and strokes.<sup>56,57</sup> A 2011 study revealed something of even greater significance: rhodiola prevents a phenomenon known as *vascular remodeling* in lung tissue at high altitudes.<sup>58</sup>

Vascular remodeling describes the thickening of pulmonary blood vessels that contributes to increased blood pressure in the lungs, a condition known as *pulmonary hypertension*.<sup>59</sup> Chronic exposure to high altitude is just one cause of this condition, which leads rapidly to congestive heart failure.<sup>60,61</sup> More common causes of pulmonary hypertension include cardiovascular disease, obesity, and obstructive sleep apnea.<sup>59,62</sup> Rhodiola’s ability to prevent vascular remodeling, then, may represent an important and sorely needed new approach to managing a major cause of death and disability in older adults.<sup>63</sup>

### Not All Rhodiola Is the Same

The authentic *Rhodiola rosea* species validated in clinical research is wildcrafted from the forests of the Altai Mountains of Siberia. The raw materials are harvested after a minimum of four years of growth, according to the World Health Organization Guidelines of Good Agricultural Practices. This practice of sustainable stewardship preserves the natural resources of rhodiola’s native habitat.

Some rhodiola extracts are standardized to salidroside content only. Salidroside content is not specific to the *Rhodiola* genus only and is not the only beneficial constituent of rhodiola. Highly beneficial *Rhodiola rosea* extracts contain a ratio of rosavin and salidroside phytochemicals similar to that which is found in the authentic plant itself.



## Summary

Rhodiola is a cortisol suppressing herb that is becoming an increasingly popular dietary intervention in the United States.

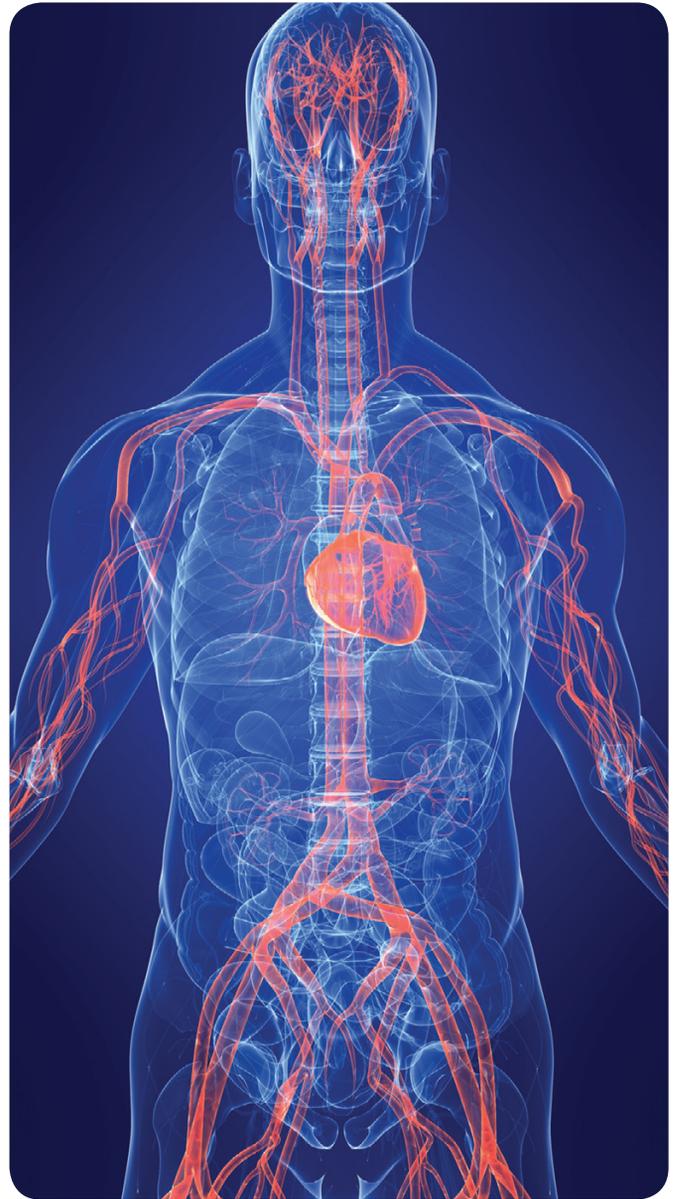
It is one of a handful of known *adaptogens*—plant-based compounds known to support long, healthy life span in part by exerting system-wide protective and restorative effects.

Rhodiola has been shown to favorably modulate the stress response, restore vital organ function, and boost immunity. It is a low-cost nutrient that combats cognitive dysfunction, minimizing depression and anxiety, while enhancing muscle performance, endurance, and circulatory health. ●

If you have any questions on the scientific content of this article, please call a Life Extension® Health Advisor at 1-866-864-3027.

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Foundation members can now choose between SolarShield® sunglasses or OveRxCast polarized lenses that provide the same eye protection, plus improved vision under difficult weather conditions.

Life Extension's SolarShield® sunglasses are recognized as the number-one doctor-recommended sunglass in the world, with more than 50 million pairs sold to date. Patented SolarShield® sunglasses with durable polycarbonate lenses and 100% UV protection fit comfortably over prescription eyewear, providing convenient protection from the harmful effects of ultraviolet radiation.

For those who desire the added benefit of lenses that reduce distracting glare, Life Extension's OveRxCast sunglasses come with polarized gray lenses that provide natural color definition with

100% UV protection. Like the SolarShield® sunglasses, OveRxCast polarized sunglasses are designed to be worn over your prescription eyeglasses.

The SolarShield® sunglasses retail for \$12.99 for one pair, and the member price is \$9.74. If a member buys two pairs, the price is reduced to only \$8.63 a pair.

One pair of OveRxCast sunglasses retails for \$27, and the member price is \$20.25. If a member orders two pairs, the price is reduced to just \$15.75 per pair.

**To order SolarShield® or OveRxCast sunglasses, call 1-800-544-4440 or visit [www.LifeExtension.com](http://www.LifeExtension.com)**

SolarShield® is a registered trademark Dioptrics, Inc.



# RHODIOLA EXTRACT

## Supports Cellular Energy Metabolism!

*A common complaint among older adults is loss of physical and mental energy. As people age, their cells' ability to produce energy is diminished. Many scientists believe that cellular energy deficit is a critical factor in the onset of many degenerative problems.*

The Russian herb **rhodiola** (*Rhodiola rosea*) has demonstrated a remarkable ability to *support cellular energy metabolism*.\* **Rhodiola** promotes higher levels of ATP (adenosine triphosphate) and CP (creatine phosphate) in the cellular power plants known as the *mitochondria*, thus providing more of the energy molecules need to power many daily activities.<sup>1</sup>

In a human trial, **rhodiola** aided exercise endurance after just a single dose.<sup>2</sup> In another double-blind, crossover human trial, **rhodiola** increased several measures of mental performance, including associative thinking, short-term memory, calculation, concentration, and speed of audiovisual perception. Statistically significant improvements were reported after just two weeks of supplementation.<sup>3</sup>

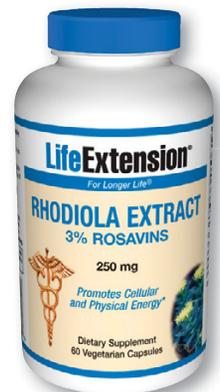
Life Extension has formulated a **Rhodiola Extract** that provides **250 mg** of *Rhodiola rosea* extract in each capsule.

Unlike other rhodiola supplements on the market today, **Rhodiola Extract** uses only the authentic *Rhodiola rosea* species and is standardized to contain the proven 3:1 ratio of 3% *rosavins* and 1% *salidrosides*—matching the concentrations of active “adaptogens” used in clinical trials.

**Rhodiola Extract** is an extremely low-cost supplement. The retail price of a bottle of 60 vegetarian capsules (a two-month supply) of **Rhodiola Extract** is just **\$11.75**. If a member orders four bottles, the price is reduced to only **\$7.94** per bottle!

**Contains rice.**

**Caution: Individuals with manic or bipolar disorder should not use Rhodiola. Take early in the day if Rhodiola Extract interferes with your sleep.**



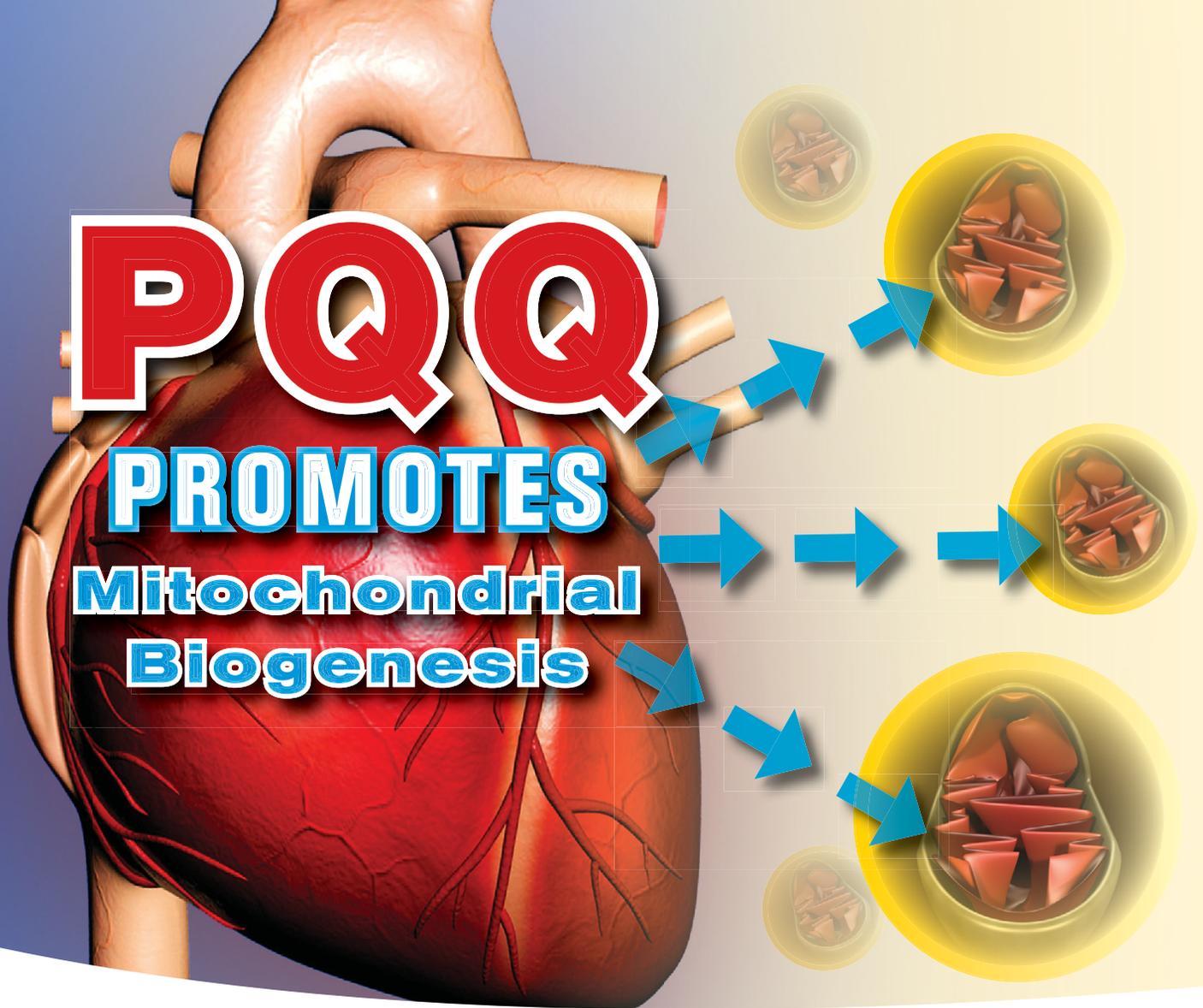
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To order **Rhodiola Extract**,  
call **1-800-544-4440**  
or visit **www.LifeExtension.com**

\*These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure, or prevent any disease.



## Critical Importance of Mitochondria

Back in 1983, **Life Extension**<sup>®</sup> was the first to introduce **CoQ10** as a proven method to enhance **mitochondrial** energy production.

**CoQ10** has since gained universal recognition for its role in supporting cellular performance throughout the body.<sup>1-6</sup>

In an unprecedented breakthrough, a compound called **PQQ** (*pyrroloquinoline quinone*) has been shown to support **mitochondrial biogenesis**—the spontaneous generation of **new mitochondria** in aging cells.<sup>7</sup> **PQQ** is available as a low-cost dietary supplement.

**Mitochondria** are cellular energy generators that supply virtually all the power your body requires for a healthy life span. An abundance of published studies underscores the critical importance of the **mitochondria** to overall health, especially as we age.<sup>8-14</sup> Energy-intensive organs like the heart and brain are *dense* with mitochondria.

Until recently, the only natural ways for aging individuals to increase the number of mitochondria in their bodies were long-term calorie restriction or exhaustive physical activity—which are difficult or impractical for most people to implement.

**PQQ** offers a viable alternative.

## The Ultimate Cell Rejuvenator

The enormous amount of energy generated within the mitochondria exposes them to constant free radical attack. The resulting **mitochondrial decay** is a hallmark of aging.

PQQ protects and augments delicate mitochondrial structures to promote *youthful* cellular function in **three** distinct ways:

- **Antioxidant power.** Like CoQ10, **PQQ** is a highly potent antioxidant. Its extraordinary molecular stability enables it to facilitate thousands of biochemical reactions in the mitochondria without breaking down, for maximum antioxidant and bioenergetic support.<sup>15</sup>
- **Favorably modulates gene expression.** PQQ activates *genes* that promote formation of new mitochondria<sup>7</sup>—and beneficially interacts with genes directly involved in mitochondrial health. These same genes also support **healthy body weight**, normal **fat** and **sugar metabolism**, and **youthful cellular proliferation**.<sup>16</sup>
- **Mitochondrial defense.** Mitochondria possess their *own* DNA, distinct from the DNA contained in the nucleus. Unfortunately, compared to nuclear DNA, mitochondrial DNA is relatively unprotected. PQQ's antioxidant potency and favorable gene expression profile act to support mitochondrial defense.

## Vital Protection for the Aging Heart and Brain

PQQ is an **essential nutrient**, meaning your body cannot make it on its own. A growing body of research indicates that PQQ's unique nutritional profile supports heart health and cognitive function—alone and in combination with CoQ10.<sup>17,18</sup> This comes as no surprise, given how much energy these vital organs need.

Research shows that **PQQ** supports **heart cell function** in the presence of free radicals and promotes blood flow in heart muscle.<sup>19</sup>

When taken in combination with **CoQ10**, just **20 mg per day** of **PQQ** has been shown to promote **memory, attention, and cognition** in maturing individuals.<sup>20</sup>

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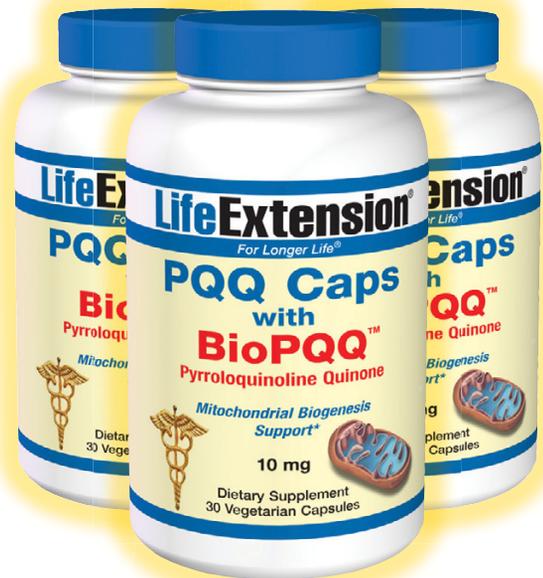
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## A Breakthrough Weapon in the Battle Against Aging

**Life Extension**® has identified a purified, highly potent form of PQQ from Japan that is produced through a natural fermentation process. The result is the highest quality PQQ available on the market today called **BioPQQ**™.

A bottle containing **30 10 mg** vegetarian capsules of **PQQ Caps with BioPQQ**™ retails for \$24. If a member buys four bottles, the price is reduced to just **\$16.50** per bottle.

A 10 mg dose of **PQQ** is also included in the **Mitochondrial Energy Optimizer with BioPQQ**™ and **Mitochondrial Basics with BioPQQ**™ formulas. Contains rice.



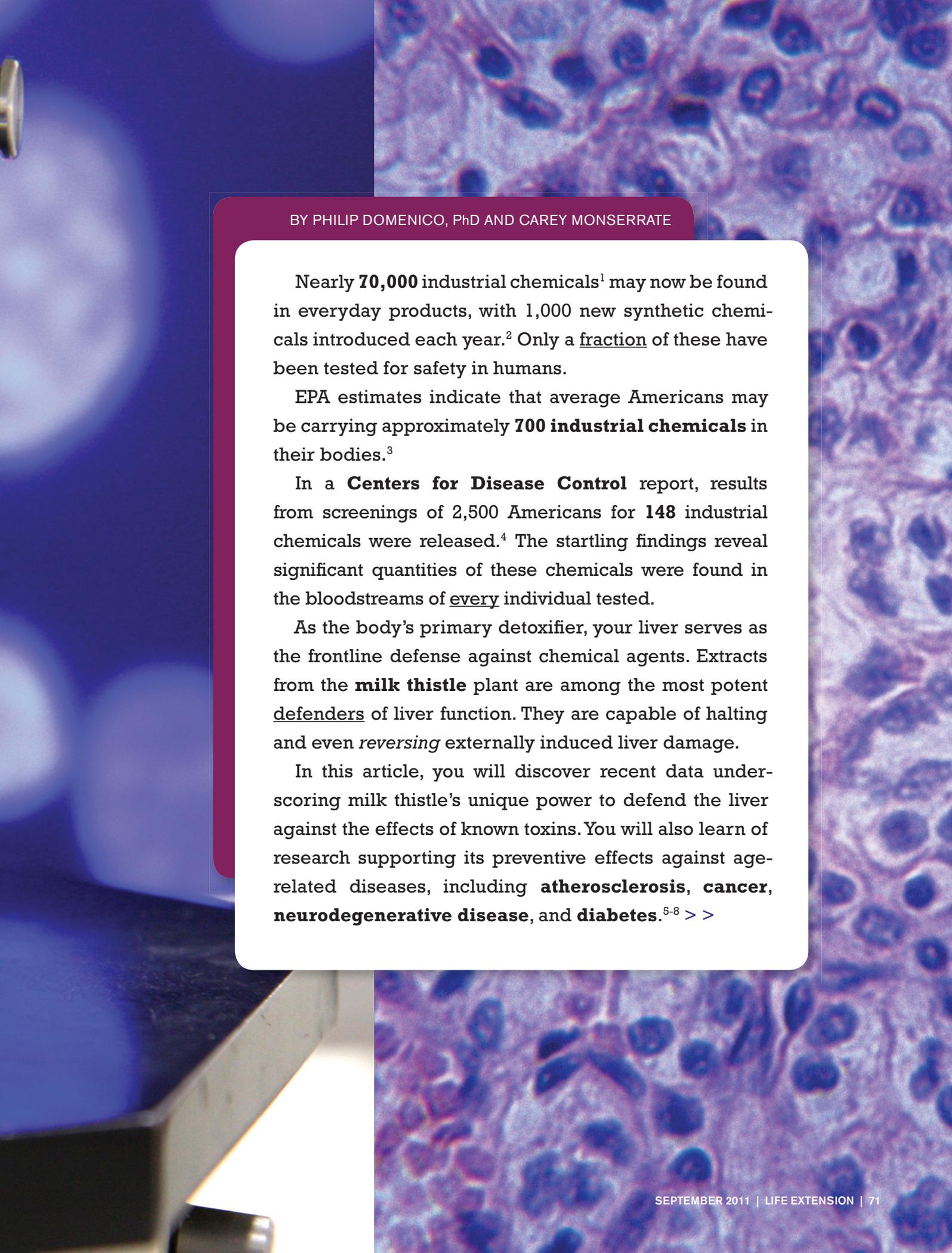
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**To order**  
**PQQ Caps with BioPQQ**™  
standalone or any other  
**PQQ-containing formula**  
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BioPQQ™ is a trademark of MGC (Japan).



**PROTECT**  
**Your Body**  
**Against Today's**  
**Toxic Deluge**

A background image showing a microscopic view of cells, likely liver tissue, stained with a purple dye. The cells are arranged in a grid-like pattern, with prominent nuclei and some cytoplasmic details visible. The overall tone is a deep purple/blue.

BY PHILIP DOMENICO, PhD AND CAREY MONSERRATE

Nearly **70,000** industrial chemicals<sup>1</sup> may now be found in everyday products, with 1,000 new synthetic chemicals introduced each year.<sup>2</sup> Only a fraction of these have been tested for safety in humans.

EPA estimates indicate that average Americans may be carrying approximately **700 industrial chemicals** in their bodies.<sup>3</sup>

In a **Centers for Disease Control** report, results from screenings of 2,500 Americans for **148** industrial chemicals were released.<sup>4</sup> The startling findings reveal significant quantities of these chemicals were found in the bloodstreams of every individual tested.

As the body's primary detoxifier, your liver serves as the frontline defense against chemical agents. Extracts from the **milk thistle** plant are among the most potent defenders of liver function. They are capable of halting and even *reversing* externally induced liver damage.

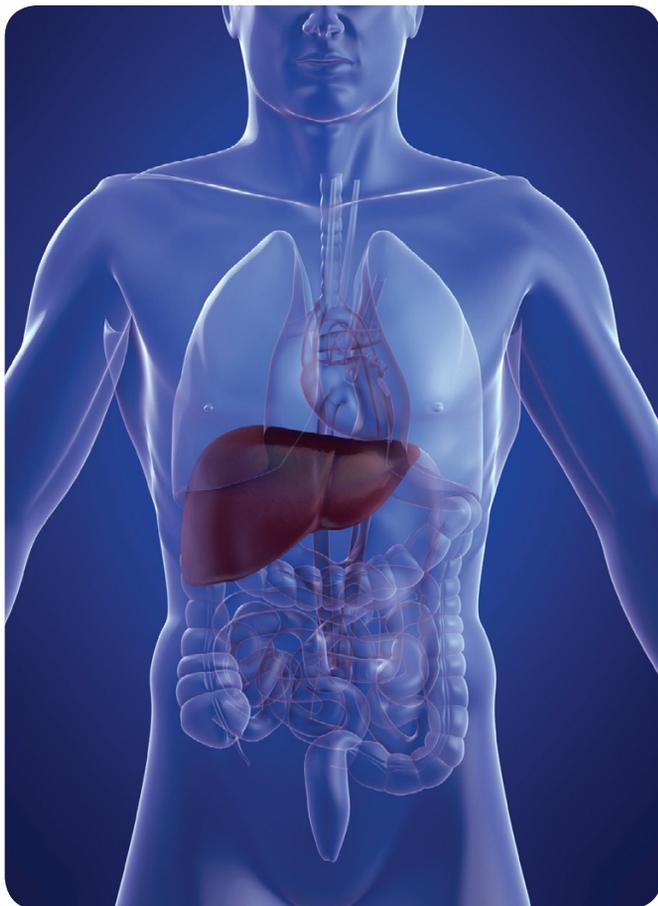
In this article, you will discover recent data underscoring milk thistle's unique power to defend the liver against the effects of known toxins. You will also learn of research supporting its preventive effects against age-related diseases, including **atherosclerosis, cancer, neurodegenerative disease, and diabetes.**<sup>5-8</sup> > >

## Liver Protection

The liver performs over **300** critical metabolic functions. It is your body's primary metabolic processor for virtually all substances, including those that are internally produced, like protein and cholesterol, and externally introduced substances like drugs and alcohol. Its central role in transforming or eliminating these chemicals makes the liver especially susceptible to chemically induced injury.

In addition to overexposure to thousands of synthetic chemicals in our post-industrial age,<sup>9</sup> everyday drugs have been shown to dramatically increase the liver's chemical burden. More than **900** drugs have been implicated in liver damage, including statins, hormonal contraceptives, and antibiotics like erythromycin.<sup>9</sup> The popular pain-relieving drug **Tylenol® (acetaminophen)** happens to be the number one cause of acute liver failure in the United States.<sup>10</sup>

Many drugs require liver function monitoring to ensure no damage has been inflicted. Unfortunately, the damage inflicted by many liver toxins (also known as *hepatotoxins*) often goes undetected. This makes routine blood testing of vital importance, particularly if you're taking a drug with potential hepatotoxic



effects. Elevated liver enzymes in the blood indicate liver dysfunction, although liver damage can develop rapidly, before liver enzyme abnormalities manifest.

**Silymarin, silibinin**, and other milk thistle components protect against these and other chemical insults. They have been conclusively shown to counteract toxicity from a wide variety of toxic substances, including **ethanol**,<sup>11</sup> **organic solvents**,<sup>12</sup> **pharmaceuticals**,<sup>13,14</sup> and mushroom-based poisons or **mycotoxins**.<sup>15,16</sup> Milk thistle, for instance, produces superior survival rates from *Amanita phalloides* mushroom poisoning, compared with standard treatment.<sup>17</sup>

By altering liver cell membranes, silymarin *inhibits* toxin uptake and stimulates **cell regeneration**.<sup>18,19</sup> Silymarin's potent antioxidant activity helps to quell inflammation and replenish **glutathione**.<sup>18</sup> Glutathione is the chief antioxidant inside most living cells and is the main line of defense against free radical damage. It is found in high concentrations in the liver.

Human studies are equally confirmatory. Silymarin treatment has been shown to significantly reduce liver-related mortality in patients with alcoholic liver damage.<sup>17,20</sup> Clinical evidence supports silibinin for alcohol-induced cirrhosis.<sup>16,21</sup> Silymarin reduced the symptoms of biliary retention caused by acute hepatitis of various causes in humans.<sup>22</sup>

In a review of viral hepatitis studies, silymarin decreased liver enzymes known as serum transaminases<sup>23</sup> and improved symptoms and general well-being.<sup>24</sup> Regarding activity against hepatitis C virus, silymarin and its components were anti-inflammatory. All compounds blocked virus-induced oxidative stress. Multiple assays suggest that numerous milk thistle compounds may help ameliorate hepatitis C disease.<sup>25</sup>

A high-carbohydrate diet can cause excess blood triglycerides to lodge in hepatic cells, causing inflammation and oxidative damage.<sup>26-28</sup> This in turn results in **nonalcoholic fatty liver disease** or NAFLD, a condition that afflicts roughly **one-third** of all Americans.<sup>29</sup>

Left unchecked, NAFLD can progress to cirrhosis, carcinoma, and death. Clinical trials investigating silymarin showed **significant reduction in liver enzymes** alanine aminotransferase (ALT) and aspartate aminotransferase (AST), with no serious side effects.<sup>29</sup> The authors concluded that this inexpensive and readily available extract should be considered an adjunct therapy in the treatment of NAFLD.



### Neuroprotection

Milk thistle's constituents, including silymarin, are powerful antioxidants.<sup>33</sup> Beyond its utility as a liver tonic, milk thistle also protects against **nerve damage** and **abnormal brain aging**.

Silymarin helps protect certain cells of the central nervous system from free radical damage.<sup>34</sup> It may also help protect against brain injury caused by stroke.<sup>35</sup> Research in an animal model of dementia shows that silymarin reduces amyloid-beta deposition in the brain while improving behavior, a finding that suggests applications in preventing or slowing the progression of **Alzheimer's disease**.<sup>8</sup>

### Protection Against Cardiovascular Disease

Silymarin is also protective for those at high risk for **cardiovascular disease**. In animal models, silymarin's antioxidant properties were shown to reduce oxidation of low-density lipoprotein (LDL)—a finding with important applications for protecting against cardiovascular health.<sup>36</sup> Silymarin offers further atherosclerotic activity by inhibiting inflammation-induced adhesion molecule expression.<sup>37</sup>

Silymarin benefits lipid (fat) metabolism and protects against the ravages of overeating. Animals placed on a high-fat diet to induce hardening of the arteries (*atherosclerosis*) exhibited significant benefit from silymarin: reduced **LDL**, total cholesterol, **triglycerides**; and increased **high-density lipoprotein (HDL)** and glutathione.<sup>38,39</sup>

LDL and total cholesterol levels decreased in prostate cancer surgery patients who were administered silymarin (**570 mg**) with selenium (**240 mcg**).<sup>6</sup>

## Silymarin and Chemical Overload

- The liver is subjected to constant chemical assaults in the modern world.
- The phytonutrient **silymarin**, derived from the milk thistle plant, has been conclusively shown to both protect and heal the liver from multiple forms of damage induced by foreign compounds and infectious agents.
- Milk thistle also combats liver damage caused by metabolic burdens such as excessive alcohol and caloric intake.
- Recent research indicates a role for silymarin in combating cancer, atherosclerosis, and neurodegenerative diseases like Alzheimer's as well.



MILK THISTLE



### Silymarin and Milk Thistle: Liver Protection Across the Millennia

*Silybum marianum*, or milk thistle, the source for the potent silymarin complex, has been used for over **2,000 years** to treat liver disease. Currently, seed extracts are in common use to protect against liver damage from alcohol or pollutants and are prescribed for various liver conditions.

Milk thistle is approved in the German Commission E Monographs for inflammatory liver conditions. These monographs, compiled for the licensed medical prescription of botanicals in Germany, rank among the world's most respected and definitive evaluations of the safety and efficacy of various herbs and phytonutrient interventions.<sup>30</sup>

### Fighting Metabolic Disorders

A **4-month** clinical trial comprising **51** patients with type 2 diabetes showed that **200 mg** of silymarin **3 times** daily significantly lowered LDL, total cholesterol, and triglycerides, compared to placebo. It also lowered liver enzymes, fasting blood sugar, and **hemoglobin A1c**—a measure of long-term blood sugar control.<sup>5</sup> In effect, silymarin may help your liver and your entire body cope with the trauma of excess food consumption. Benefits may also extend to diabetes<sup>5</sup> and kidney injury.<sup>40</sup>

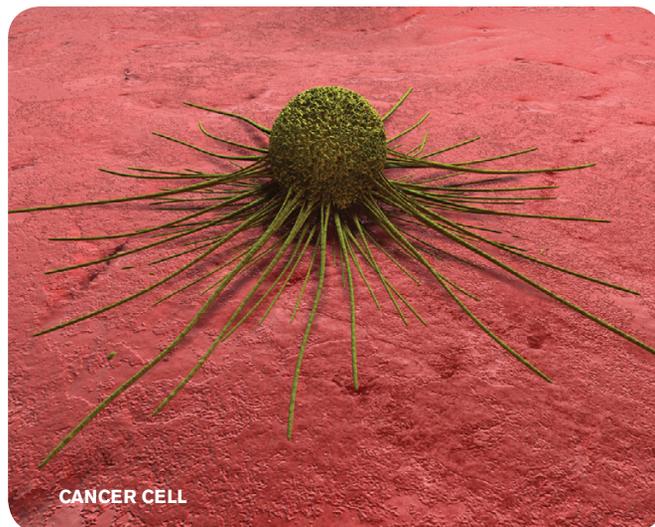
### Combating Cancer

The chemopreventive role of silymarin has been established in laboratory and animal studies. Silymarin interferes with cancer growth and immortality, and it exhibits anti-inflammatory and anti-*metastatic* activity (prevents cancer spread). Furthermore, silymarin and silibinin may be valuable adjuncts to established anti-cancer therapies, to mitigate toxicity from chemotherapy or radiotherapy.<sup>7</sup>

Silibinin demonstrates efficacy against numerous malignancies including those of the liver, colon, skin, and prostate.<sup>41-45</sup>

Both topical and internally ingested silibinin extracts show promise against skin cancer. Silibinin displays photoprotection against the skin cancer-inducing effects of ultraviolet (UV) radiation through anti-inflammatory and anti-angiogenic effects.<sup>43</sup> Silibinin may thus represent an important topical and internal agent for protecting the skin against the cancer-inducing effects of UV light.

Silibinin is an essential component for arresting replication of prostate cancer cells.<sup>41</sup> Silibinin inhibited tumor growth, progression, local invasion, and distant metastasis of prostate cancer in mice. Research suggests that silibinin works in part by inducing cell cycle arrest.<sup>44</sup>





Among the milk thistle flavonolignans, isosilybin B proved to be the most effective at inhibiting prostate cancer cell growth and maintaining healthy prostate cell division.<sup>46,47</sup> Isosilybin B suppressed a genetic factor in human cancers and was active against both hormone-dependent and hormone-independent prostate cancers in the laboratory.<sup>48</sup> Isosilybin A and B together were effective suppressors of prostate-specific antigen (PSA) secretion, a marker of prostate cancer progression and recurrence.<sup>46</sup>

Together, these findings argue strongly for silibinin's use as an adjunct to conventional chemotherapy.<sup>49</sup>

### Summary

The liver is subjected to constant chemical assaults in the modern world. Over 70,000 industrial chemicals of unknown safety and **900** drugs known to induce liver damage underscore the critical need for optimal liver support. Milk thistle extracts protect and heal the liver from multiple forms of damage induced by foreign compounds, metabolic burdens, and infectious agents. Recent research indicates a role for silymarin, silibinin, and other milk thistle components in combating cancer, atherosclerosis, and neurodegenerative diseases like Alzheimer's as well. ●

### Milk Thistle's Active Components

Milk thistle's use is supported by research on its active ingredients. Several polyphenols called **flavonolignans** have been extracted from milk thistle. Collectively, these extracts are called **silymarin** and are under investigation for many health conditions.

The active compounds isolated thus far include **silybin A, silybin B, isosilybin A, isosilybin B, silydianin, isosilydianin, silychristin** and **isosilychristin**.<sup>31,32</sup>

If you have any questions on the scientific content of this article, please call a **Life Extension®** Health Advisor at 1-866-864-3027.

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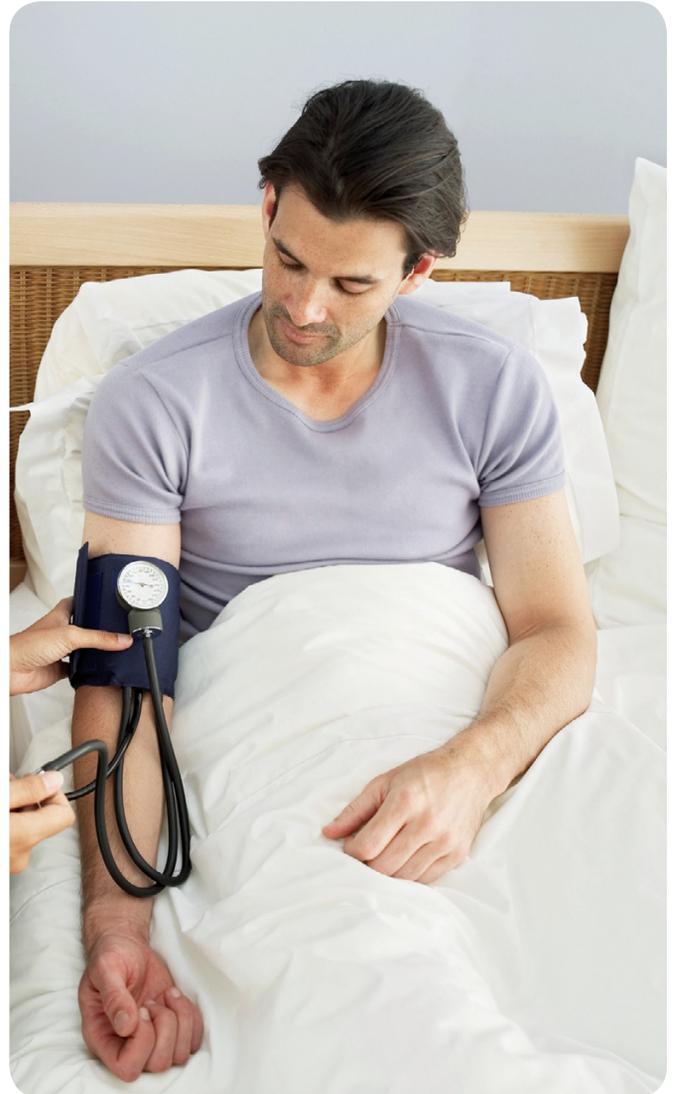
### Vital Liver Functions

- Detoxification
- Glycogen storage; blood sugar regulation
- Protein production/storage; regulation of protein metabolism
- Bile production
- Cholesterol production
- Production of clotting factors; red blood cell components
- Hormonal regulation
- Free-radical neutralization
- Storage of vitamins, minerals



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Restore  
Cellular  
Energy  
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NEXT-GENERATION

# CoQ10

Since Life Extension® introduced CoQ10 in 1983, our scientists have continued to develop increased potency and absorbability.

**Super Ubiquinol CoQ10 with Enhanced Mitochondrial Support™** contains **PrimaVie® shilajit** that **doubles** levels of CoQ10 in the mitochondria.<sup>1</sup>

Combining CoQ10 and **shilajit** produced a **56%** increase in cellular energy production in the **brain**, and in muscle there was a **144%** increase in cellular energy production.<sup>2</sup>

**Shilajit** boosts CoQ10's beneficial effects by stabilizing CoQ10 in the superior ubiquinol form, which *prolongs* its action at the cellular level.<sup>3,4</sup> Additionally, **shilajit** facilitates the more efficient *delivery* of CoQ10 into the mitochondria, which results in enhanced cellular energy.<sup>5-9</sup>

Shilajit helps the mitochondria convert fats and sugars into the body's main source of energy, ATP (adenosine triphosphate).<sup>5-9</sup>

## Super Ubiquinol CoQ10 with Enhanced Mitochondrial Support™

Combining ubiquinol CoQ10 with **shilajit** generates a powerful *synergy* that supports more youthful cellular energy production than CoQ10 alone.<sup>2,4,5</sup>

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Item #01426

The retail price for 60 100 mg softgels of **Super Ubiquinol CoQ10 with Enhanced Mitochondrial Support™** is \$62. If a member buys four bottles, the price is reduced to \$42 per bottle. **Item # 01426**



Item #01425

The retail price for 100 50 mg softgels of **Super Ubiquinol CoQ10 with Enhanced Mitochondrial Support™** is \$58. If a member buys four bottles, the price is reduced to \$39.75 per bottle. **Item # 01425**



Item #01431

The retail price for 30 200 mg softgels of **Super Ubiquinol CoQ10 with Enhanced Mitochondrial Support™** is \$62. If a member buys four bottles, the price is reduced to \$42 per bottle. **Item # 01431**

To order Super Ubiquinol CoQ10 with Enhanced Mitochondrial Support™ call 1-800-544-4440 or visit [www.LifeExtension.com](http://www.LifeExtension.com)

# Unleash the Power of the Milk Thistle Seed

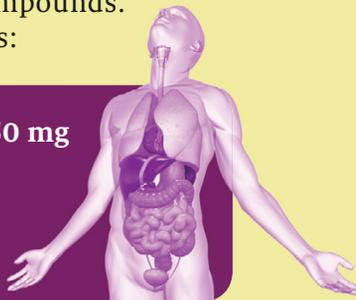


**Milk thistle** extract has long been thought of as one of nature's most potent weapons to support *human health*, but until recently, the technology hasn't been available to fully harness this plant's potential. Among the compounds waiting to be unlocked are a slew of *nourishing antioxidants* and flavonolignans valued for their role in *ensuring healthy liver function*.<sup>1\*</sup>

Life Extension® has uncovered an advanced extraction technology that has enabled scientists to isolate silymarin constituents and to test their efficacy against various cell lines. Among the compounds tested, silymarin constituents **isosilybin A** and **B** proved to be the most efficient in maintaining healthy cell division.<sup>2</sup>

**Certified European Milk Thistle** is the first milk thistle extract to contain standardized, high potencies of **silymarin**, **silibinins**, and **isosilybin A** and **B**—providing the full spectrum of milk thistle's liver and prostate protective compounds. Each capsule of this advanced formula provides:

**Milk Thistle (*Silybum marianum*) Extract (seed) 750 mg**  
[std. to 80% Silymarin (600 mg),  
30% Silibinins (225 mg),  
and 8% Isosilybin A and Isosilybin B (60 mg)]



A 120 vegetarian capsule bottle of **Certified European Milk Thistle** retails for \$42. If a member buys four bottles, the cost is reduced to only **\$28.50** per bottle—a **savings of nearly one third!** Each bottle will last a healthy person for at least three months.

Compare the price of **Certified European Milk Thistle** to commercial silymarin supplements, and members will see that this new formula is available at one of the lowest costs per milligram—with standardized concentrations of **silibinins** and **isosilybin A** and **B** not found in other milk thistle extracts!

#### Reference

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Contains rice.



Item #01517

To order  
**Certified European Milk Thistle**  
call 1-800-544-4440  
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[www.LifeExtension.com](http://www.LifeExtension.com)

\*These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure, or prevent any disease.

# Advanced RESVERATROL Formula

In 2003, the **Life Extension Foundation**® introduced a standardized **resveratrol** extract shown to favorably alter genes implicated in the aging process—many of the same genes that respond to **calorie restriction**.

Since then, we have identified additional compounds that simulate calorie restriction's ability to trigger youthful **gene expression**—the process by which genes transmit signals that slow certain aspects of aging.

Compelling evidence reveals that certain compounds found in berries, such as **pterostilbene** and **fisetin**, possess potent “longevity gene” activators that work in synergy with **resveratrol**. For example, **fisetin** (found in strawberries) has been shown to **stabilize** resveratrol in the body by shielding it from metabolic breakdown,<sup>1-10</sup> thus extending its beneficial effects.

## High-Potency Resveratrol with Synergistic Activators

Life Extension members gain access to standardized **trans-resveratrol** combined with plant extracts that favorably influence longevity gene expression. Unlike many commercial formulas, Life Extension standardizes to **trans-resveratrol**, which researchers contend is the most active constituent.

A bottle containing 60 vegetarian capsules of **Optimized Resveratrol with Synergistic Grape-Berry Actives** retails for \$46. If a member buys four bottles, the price is reduced to just **\$31** per bottle. The suggested dose of one capsule a day provides:

<b>Trans-Resveratrol</b>	<b>250 mg</b>
<b>Grape-Berry Actives</b>	<b>85 mg</b>
<b>Quercetin</b>	<b>60 mg</b>
<b>Trans-Pterostilbene</b>	<b>0.5 mg</b>
<b>Fisetin</b>	<b>10 mg</b>

Contains yeast.

Item #01430

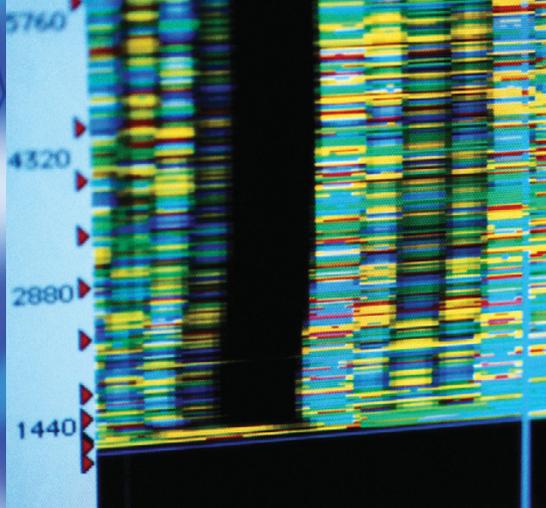
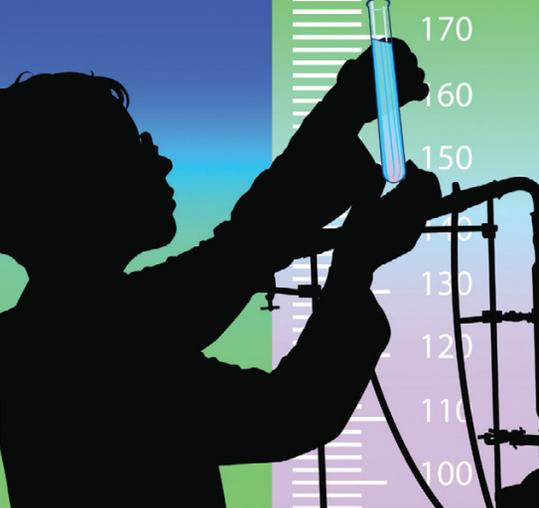


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To order Optimized Resveratrol,  
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## BOOK REVIEW

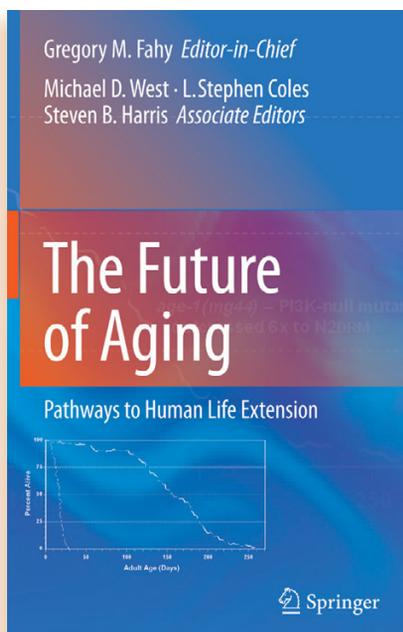
BY STEPHEN LAIFER

# The Future of Aging

## Blueprint for a Longer Life

Last year, the minds at Life Extension® and a host of other scientific and medical research organizations came together to produce *The Future of Aging—Pathways to Human Life Extension*. This project is much more than just a guidebook: it can literally be taken as a visionary blueprint for extending our life span and redefining our place in a radically transformed society, as predicted by the best brains in the science of aging.

Aging research (biogerontology) has seen staggering exponential advances in the last decade, but the contributors to *The Future of Aging* have come together for the first time in a single volume to make the convincing case that we are still in the beginning stages, and indeed the best is yet to come. They assert that we are in the midst of a crucial period in the study of aging: millions of post-World War II Baby Boomers are about to enter the American long-term health care system, and the economic costs could potentially cripple an already severely strained economy. Accordingly, this guide is not only indispensable; the timing for it has never been more urgent.



## BOOK REVIEW

Free radicals.

### Aging Intervention: Easy First Steps

*The Future of Aging* begins with nutrition, exercise, and supplementation as basic first steps to extending life. Writer and inventor Raymond Kurzweil, author of several books on futurism, employs a “bridge” metaphor, adopting present-day therapies to enable people to remain healthy long enough to take advantage of later advancements. Kurzweil cites modified caloric restriction (CR) as a proven viable method of increasing life span across a broad range of animal species.

“Free radicals cause a gradual deterioration of body tissues, particularly fragile cell membranes,” explains Kurzweil. “CR test animals have significantly lower levels of free radicals, so they also have less free-radical damage to their cell membranes. Extrapolating animal studies to humans, some researchers have estimated that our maximum life span might be extended from 120 to 180 years,” he concludes.

Exercise, says Kurzweil, is a basic tool of life extension that everyone can and should be utilizing. He cites an eight-year study that logged a 60% lower overall death rate for even moderate exercisers, particularly with respect to cardiovascular disease. “Even

as little as 30 minutes a day can provide significant benefit,” he says. “Despite this, some 70% of Americans do not participate in any type of physical activity.” Likewise, nutritional supplementation can overcome depleted levels of vitamin and mineral content resulting from modern farming methods, long linked with premature aging of human bodies.

Michael R. Rose, professor in the Department of Ecology and Evolutionary Biology at the University of California, Irvine, takes Kurzweil’s notion a huge leap further: Rose and his research colleagues suggest that the best future strategy for radically extending human life span several-fold may well be nutritional supplementation. “Evolutionary nutrigenomic agents,” Rose believes, “can emulate the process of natural selection, using nutritional supplements in lieu of genetic variation.”

### Solutions Already Inside Us

Cryobiologist and biogerontologist Gregory M. Fahy, originator and editor-in-chief of *The Future of Aging*, goes beyond Kurzweil’s basic recommendations to suggest that resources for basic control over aging in fact reside in our own genomes. Citing examples of “zero aging” in certain species of

juvenile mollusks and insects that wait for biochemical signals to develop into their mature forms, Fahy believes aging is not only malleable, but even preventable and reversible in mammals.

“The ability of many species to sustain a nominally zero aging state even as adults indicates that aging is not a fundamentally inescapable process,” says Fahy. The key, he believes, will be gaining interventional control over how and when these signals are expressed.

Building on the idea of biological control, biotechnology entrepreneur Michael D. West feels the neglect of stem cell research is a specific example of the dearth of medical research in gerontology in general. “Many researchers quickly ascribe the aging process to entropy, and then just conclude that reversing aging is, for all practical purposes, impossible,” West comments. He feels these conclusions ignore the fact that the lineage of germ-line cells, unlike their somatic counterparts, replicate in an immortal process of cell division. “This means that these cells must possess sufficient repair mechanisms to allow enough individuals to survive in order to perpetuate their species,” he says.

### Scouting Killers and Rewriting DNA

“If we strive for life extension in humans, it will be nearly impossible without solving the biggest challenge that shortens human life span most inexorably today,” says Zhen Cui, biochemist and assistant professor of pathology at Wake Forest University. “In plain words, if we don’t solve the cancer problem, it will be very difficult to think about healthy life extension in meaningful terms.”

Before cancer can be treated, it must obviously be detected. To that end, Cui envisions a cancer surveillance system, utilizing the body’s own immune defenses. Granulocytes, a category of white blood cells, are the first line of defense in the human immune system, explains Cui; they are the first to arrive at sites of infection, wounds, or neoplasia (malignant abnormal cell growth), fighting off and limiting damage.

“In the mid- to late 1800s, clinicians noticed a profound association between bacterial infections and miraculous regressions of incurable malignancies,” he says. “Nowadays, we know that a common theme of human response to all bacterial infections is a massive increase of human granulocytes entering the circulation within days or even hours.” Aggressive cancer cells are always metabolically active, with a negative surface charge similar to bacteria. Cui surmises that this trait makes them ideal targets for neutrophils, the most abundant type of granulocyte. In effect, the neutrophils could be used to “tag” cancer cells, functioning as a type of early warning system.

There is evidence that nearly all age-related illnesses involve some degree of damage to DNA. The advances in genetic engineering in the last decade offer great potential for the treatment of acquired or inherited genetic disorders asso-

ciated with aging, says Clifford Steer, a University of Minnesota professor in the Department of Medicine, Genetics, and Cell Development.

Gene repair, says Steer, has several advantages over other regenerative approaches in terms of potential therapeutic benefit. “Most importantly, it allows for the correction of single-point gene mutations without impacting functional regions of the gene,” he explains.

### What the Future Holds

Robert A. Freitas, Jr., senior research fellow at the Institute for Molecular Manufacturing, believes nanorobotic control of human aging—a technology once relegated to the realm of science fiction—is now of great relevance to our present-day medical reality. “The comprehensive knowledge of human molecular structure, so



## BOOK REVIEW

painstakingly acquired during the previous century, will be extended and employed in this century to design medically active microscopic machines,” Freitas forecasts. These machines, rather than being tasked with discovery, will be sent on missions of cellular inspection, repairing and reconstructing whole cells. Moreover, Freitas predicts that systems based on nanomachines will be “more compact and capable than those found in nature.”

Nanotechnology, the control of the composition and structure of molecular material at the atomic level, involves the engineering of precise structures and, ultimately, molecular machines. The prefix “nano” refers to their scale, a nanometer being one-billionth of a meter, or the width of five carbon atoms. Challenges inherent in micron-scale sources of energy and propulsion methods still need to be overcome, and questions of biocompatibility present further problems—e.g., whether a human immune system can recognize

medical nanorobots. But with the global market for nanodevices expected to reach \$8.6 billion this year, demand will be the technology’s greatest impetus.

Kurzweil supports Freitas’ projections, adding that Freitas is already ahead of the curve: “Freitas has designed a nanorobotic red blood cell which is a relatively simple device for storing and releasing oxygen and carbon dioxide,” he says. “A conservative analysis shows that if you were to replace ten percent of your red blood cells with these robotic versions, you could do an Olympic sprint for 15 minutes without taking a breath, or sit at the bottom of your pool for four hours.”

### Attainable Visions

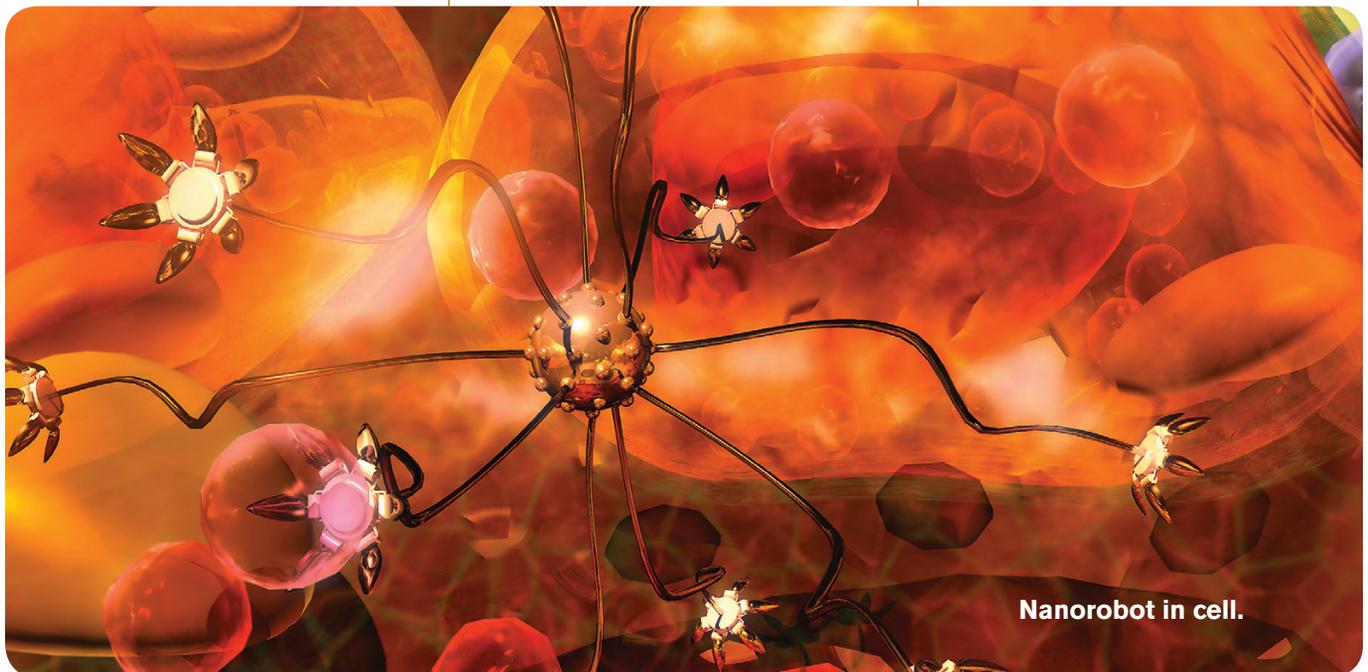
Taken as a whole, the visions described here represent just a fraction of alternate pathways toward the goal of extending human life, with each method showing equal promise. As with most plans, one

step may be inextricably interlinked with another, so that several interventions work in tandem. “Truly effective intervention into aging is likely to require a multiplicity of interventive strategies, and this will remain a significant challenge for some time,” says Fahy.

There is no question that we are learning how to intervene in the process, and that process is accelerating. In the prophetic words of the contributors, the future of aging will begin to arrive sooner than we think. ●

If you have any questions on the scientific content of this article, please call a Life Extension® Health Advisor at 1-866-864-3027.

To order *The Future of Aging—Pathways to Human Life Extension*, call 1-800-544-4440 or visit [www.LifeExtension.com](http://www.LifeExtension.com).  
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# THE POWER OF MAGNESIUM

**MOST AMERICANS DO NOT OBTAIN  
SUFFICIENT MAGNESIUM FROM THEIR DIET.**

According to the National Institutes of Health, magnesium is required for more than 300 biochemical reactions in the body. Magnesium “helps maintain normal muscle and nerve function, keeps heart rhythm steady, supports a healthy immune system, and keeps bones strong. Magnesium also helps maintain blood sugar levels already within normal range, promotes normal blood pressure, and is known to be involved in energy metabolism and protein synthesis.”<sup>1,2</sup>

With so many of our body’s critical functions dependent upon magnesium, supplementation can help ensure that you obtain healthy levels of this vital mineral. The recommended intake of magnesium to maintain vascular health is 500 mg or more a day. With Life Extension®’s **Magnesium Capsules** you can easily obtain 500 mg of elemental magnesium in each capsule.

The retail price of a bottle containing 100 500 mg **Magnesium Capsules** is **\$10**. If a member buys four bottles, the price is reduced to just **\$6.75** per bottle.

**Caution:** If taken in high doses, magnesium may have a laxative effect. If this occurs, divide dosing, reduce intake, or discontinue product.



Item #01369

**To order Magnesium Capsules,  
call 1-800-544-4440 or  
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**References:**

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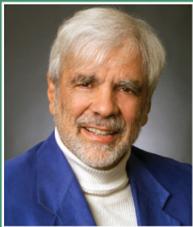
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# All the **K** ... One a Day

There are **three forms** of **vitamin K** that the human body can utilize to promote **arterial health** and **bone support**.<sup>1-8</sup>

**Life Extension®'s Super K with Advanced K2 Complex** provides the *dynamic trio* of vitamin K forms in **one softgel**, including **vitamin K1**, **vitamin K2 (MK-4)**, and **vitamin K2 (MK-7)**.

**Vitamin K1** is the form of vitamin K that is found in green vegetables. **K1** is tightly bound to plant fiber, so only a fraction is *absorbed* into the bloodstream. Supplementation ensures ample **K1** blood levels.

**Vitamin K2** is usually found in meats, dairy, and egg yolks. Since you may be avoiding these foods for health reasons, ingesting a **K2** supplement is *essential*. **MK-4** is the most *rapidly absorbed* form of **K2**, and **MK-7** boasts a very *long half-life* in the body, making both forms the *perfect complement* to any **vitamin K** regimen.<sup>9</sup>

The retail price for a bottle containing **90 softgels** (three-month supply) is \$26. If a member buys four bottles, the price is reduced to just **\$17.25 per bottle**.

## Super K formula provides in just one daily softgel:

Vitamin K1	1000 mcg
Vitamin K2 (MK-4)	1000 mcg
Vitamin K2 (MK-7)	100 mcg

Item #01224

The same **Super K** formula consisting of Vitamin K1, K2 (MK-4) and K2 (MK-7) can be found in the **Life Extension® Super Booster**. If you take the **Super Booster**, you do not need additional **Super K softgels**.

Contains tree nuts (coconut).

### Warning to Coumadin® (warfarin) Drug Users

Patients prescribed vitamin K-antagonist anti-coagulant prescription drugs like warfarin should consult their physician before taking vitamin K supplements like Super K and Super Booster. There is evidence, however, that users of drugs like warfarin could benefit from a consistent low dose of supplemental vitamin K.

Ask your doctor if you can take a low dose (45 mcg a day) of vitamin K2 in the long-acting MK-7 form for the purpose of stabilizing your INR levels and also protecting your body against long-term vitamin K deficit. Do not initiate any form of vitamin K supplementation without full cooperation of your treating doctor, as your doctor may need to increase your dose of warfarin to compensate for the vitamin K you supplement with. Life Extension provides several forms of low-dose vitamin K for physician consideration.

**To order Super K or Super Booster, call 1-800-544-4440 or visit [www.LifeExtension.com](http://www.LifeExtension.com)**

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# Optimized FUCCOIDAN

## The Japanese Dietary Longevity Factor!

In recent years, scientific interest has intensified around **fuccoidan**, a little-known molecule found *primarily* in edible **seaweeds** native to the Japanese diet. Nearly **900** published studies indicate its power to promote healthy immune function, cell-to-cell communication, and tissue repair.<sup>1-3</sup>

## The "Okinawan Secret"

Many experts now believe that **fuccoidan** is one of the key nutrients responsible for the exceptionally long, healthy lives enjoyed in **Okinawa**, which for decades boasted the world's highest concentration of **centenarians** (individuals at least a *century old*).<sup>4-8</sup>

**Maritech® 926 fuccoidan** is sourced from hand-harvested, wild seaweed exclusively from pristine ocean waters of Patagonia (located in the southern tip of South America). A cutting-edge water extraction process ensures **fuccoidan's** delicate molecular structure is delivered intact to provide the critical nutritional benefit of *Undaria pinnatifida*, which is the species of seaweed used in a majority of scientific studies on **fuccoidan**.

## A Full Day's Supply . . . In Just One Capsule

A single vegetarian capsule of **Optimized Fuccoidan with Maritech® 926** provides **88.5 mg** of standardized *Undaria pinnatifida* extract, equaling the amount of fuccoidan typically consumed daily in the traditional Japanese diet. Most people require only one capsule daily, though aging individuals seeking to enhance the benefit may choose to take two per day.

A bottle containing **60** vegetarian capsules of **Optimized Fuccoidan with Maritech® 926** retails for **\$36**. If a member buys four bottles, the price is reduced to just **\$24.75** per bottle.

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# WELLNESS PROFILE

BY JON FINKEL

## MARK WEXLER

### LEARNING HOW TO LIVE FOREVER

Life Extension® members will find a kindred spirit in documentarian Mark Wexler, whose latest film, *How to Live Forever*, takes viewers on a fascinating journey into the world of anti-aging. Wexler is the man behind the famous documentaries *Seeing Double*, about the annual Twins Days festival in Twinsburg, Ohio, and most recently *Tell Them Who You Are*, a 2005 documentary about Wexler and his father that landed on several Top 10 film lists that year.

While Life Extension members may be familiar with a few of the better-known personalities featured in the documentary, including world-famous fitness pioneer Jack LaLanne, esteemed author Ray Bradbury, and Cambridge biogeneticist Dr. Aubrey de Grey, what viewers may find most compelling are the extraordinary lives of the men and women in their nineties and beyond who are living full, active lives.



Mark Wexler

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# WELLNESS PROFILE

No doubt poised to be the breakout star of the movie is Buster Martin, a 101-year-old irascible Englishman who runs marathons.

“Buster obviously has lots of great genes working in his favor,” Wexler says. “But he has one of the main characteristics that many healthy people in their nineties have, namely they are still active and engaged in the world. Buster still has a day job washing vans for a local company.”

If a 101-year-old van-washing marathoner seems like a one-off genetic lottery ticket, there are many, many others in the film who believe they achieved their longevity through healthy living and a healthy attitude.

## AGING GRACEFULLY

“One of the more remarkable people I came across was Ellsworth Wareham,” Wexler says. “Wareham is a 94-year-old cardiothoracic surgeon from Loma Linda, California. He still assists in surgery and credits his diet and exercise for keeping him in good health. In addition, the community that Wareham lives in adheres to a strict religious policy of forced rest

### BLUE ZONES: Areas on earth with very high life expectancy

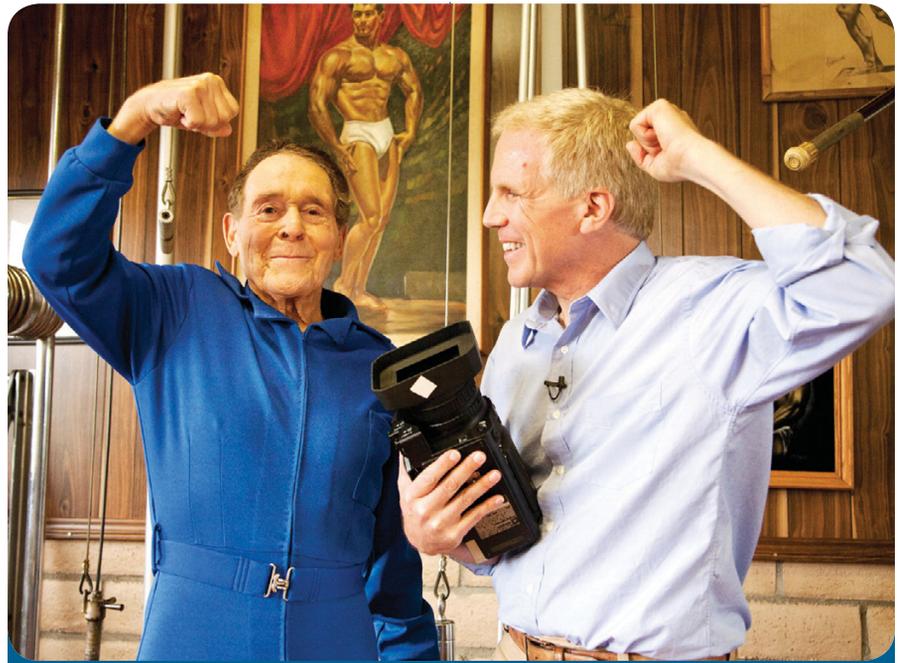
Sardinia, Italy

Okinawa, Japan

Loma Linda, California

Nicoya Peninsula, Costa Rica

Icaria, Greece



Jack LaLanne and Mark Wexler.

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on Saturday. That day really calms him down, and his belief system gives him comfort and support.”

Then, of course, there's the late, great Jack LaLanne, who practically bursts off the screen with energy. In one of the more astounding moments in the film, LaLanne puts Wexler through one of his workouts, and it is clear that the 94-year-old might have a little more pep in his step than the director half his age.

“I watched my mom exercise with Jack on television as a kid so it was amazing to do that,” Wexler explains. “He was very funny and he has one of the best lines I've ever heard. When I asked him if he loves to exercise, he said to me, ‘I hate to exercise. It's very hard to leave a warm bed and a hot woman for a cold gym.’”

Having a great sense of humor was another characteristic the filmmaker noted many of the elderly subjects in his film possessed.

## INSPIRATION FOR A DOCUMENTARY

Wexler says the recent passing of his mother, followed closely by the arrival of his AARP card, got him thinking about life and death and eventually led to the making of this film, which took three years to put together.



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## WELLNESS PROFILE

“Aging is a difficult subject for a lot of people to think about and talk about, including me,” he says. “I hope that this movie brings some lightness to the subject and that it maybe helps people feel inspired about what is possible when it comes to living a long, full life.”

In a small twist of irony, Wexler notes that making a movie is very nerve-racking and probably ages someone a great deal. Fortunately, throughout the shooting of the film, he spent time with dozens of centenarians who had pointers on living a long time. He also visited a few “blue zones,” which are areas on earth that have an unusually high life expectancy for humans. Two of the most prominent “blue zones” are Iceland and Okinawa, Japan.

“I loved Iceland as a country,” Wexler says. “The people I met there on the journey were some of the most interesting and inspiring that I came across. For men, Iceland has the highest life expectancy rate in the world, with an average life expectancy of over 80 years.”

While in Okinawa, Wexler discovers that among many of the locals there is a sharp distinction between longevity and living a long life. According to one, long life is simply living, whether it’s in a bed or in a wheel chair. Essentially, it’s merely surviving. Longevity is maintaining your health and your activity level until the day you die.

This philosophy becomes most apparent when Wexler takes his cameras along to follow a ninety-year-old Okinawan fisherman who gets up every day, rows his boat out to his fishery, and sets up his own nets by diving under water, swimming, and holding his breath. It is an astonishing display of what is possible as the limits of

aging are pushed. Scientists have pointed to a number of factors as to why Okinawans enjoy particularly impressive longevity. The local diet, which consists largely of very nutrient-rich, low-calorie foods and sea vegetables, is one of the main reasons, as well as environmental issues, genetic inheritance, and lifestyle.

In addition to speaking with centenarians, Wexler talked with some of the leading minds in anti-aging science, most notably Aubrey de Grey and Ray Kurzweil.

“I think a lot is possible with life extension,” Wexler says. “I just think some things might take a little longer to develop than some of the experts predict. We’ve already increased the average life span in the last hundred years greatly. I think we need to look at everything that is being done and learn from it.”

This last sentence, of course, begs the question: What did Wexler learn from the experience of making this film? And has he incorporated any lessons from the people he talked to in his own life? The answer is yes.

“I’ve learned that for many of these centenarians and active people in their nineties, they take everything in moderation,” he says. “It’s not only about the foods that you ingest, but it’s also how you see the world and how you think about things. One of the biggest takeaways I got was that your attitude can have as much to do with your health as what you’re eating and breathing. I also tend to try and eat less and have some smaller meals throughout the day instead of a few big meals. And I supplement with a multivitamin, CoQ10, and vitamin D3.”

What will you take away from this incredible documentary? See it in a theater near you to find out.

If you have any questions on the scientific content of this article, please call a **Life Extension®** Health Advisor at 1-866-864-3027.

For more information, visit the movie's website at [www.liveforevermovie.com](http://www.liveforevermovie.com)

The film was released in Palm Springs in January 2011.



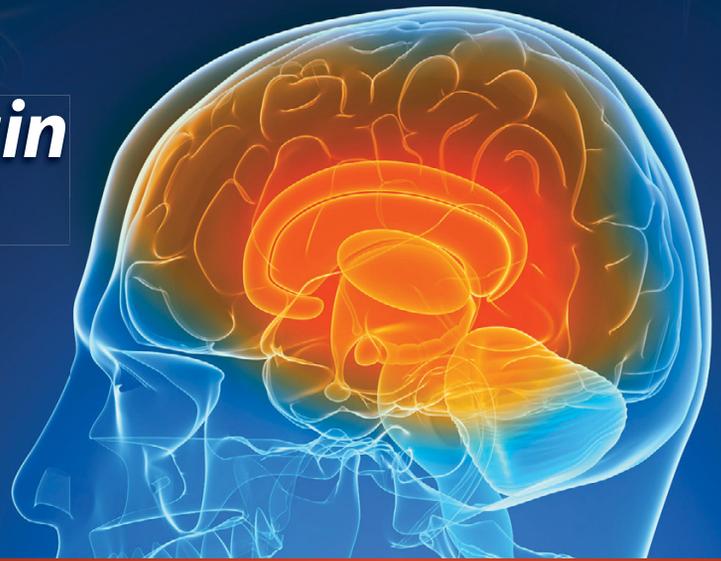
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**References:**

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A more useful approach is to take the bioactive folate **5-MTHF** directly, which has been declassified as a drug and is now available as a dietary supplement. **5-MTHF** has been shown to dramatically raise blood serum folate levels<sup>2</sup> compared with folic acid supplementation. This bioactive folate is up to **seven times** more bioavailable than folic acid. This greater *bioavailability* is especially important in people who have a genetic enzyme deficiency<sup>3</sup> since it requires no conversion to become metabolically active.

People with elevated homocysteine levels have a greater risk of cognitive decline.<sup>4</sup> Unlike folic acid, **5-MTHF** is able to cross the blood-brain barrier, which is especially important for people with cognitive difficulties to enhance the synthesis of *acetylcholine* in the brain—the neurotransmitter associated with memory.

Studies also show that the effectiveness of **5-MTHF** can be further enhanced by co-supplementing with methylcobalamin (the active form of vitamin B12),<sup>5</sup> vitamin B6, and riboflavin.<sup>6</sup> **5-MTHF** is seven times more bioavailable than regular folic acid.

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To order Optimized Folate,  
call 1-800-544-4440 or  
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5. *Nephrol Dial Transplant*. May 2002;17(5):916-22.
6. *Clin Chem*. 2000 Aug;46 (8 Pt 1):1065-71.

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**B**lood testing provides the ultimate information regarding correctable risk factors that may predispose you to disorders such as cancer, diabetes, cardiovascular disease, and more. Information about general health and nutritional status can also be gained through standard blood analysis. Standing behind the belief that blood testing is an essential component of any program designed to attain optimal health and longevity, *Life Extension*<sup>®</sup> offers this innovative and convenient service at a very affordable price. Not only is comprehensive blood testing an important step in safeguarding your health, it is a simple process from virtually anywhere in the United States.

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For those residing in the Ft. Lauderdale, Florida area, blood-draws are also performed at the Life Extension Nutrition Center from 9:00 am to 2:00 pm Monday through Saturday. Simply purchase the blood test and have it drawn with no wait! Our address is 1100 West Commercial Blvd, Ft. Lauderdale, FL, 33309. We're located at Commercial Blvd and Powerline Road, just west of I-95. For more information or directions call 954-766-8144.

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This panel provides valuable information about a testosterone metabolite that can affect the prostate, and the mother hormone that acts as a precursor to all other hormones.</p> <p>○ <b>FEMALE LIFE EXTENSION PANEL (LC322535)</b> <b>\$269</b></p> <p>CBC/Chemistry Profile DHEA-S<br/>           Estradiol Homocysteine<br/>           Progesterone TSH for thyroid function<br/>           Free Testosterone Total Testosterone<br/>           C-Reactive Protein (high sensitivity) SHBG</p> <p>○ <b>FEMALE HORMONE ADD-ON PANEL (LCADDF)*</b> <b>\$125</b></p> <p><b>Pregnenolone and Total Estrogens</b><br/>           To provide an even more in-depth analysis of a woman's hormone status, Life Extension has created this panel as an addition to the Female Life Extension Panel. This panel provides valuable information about total estrogen status, and the mother hormone that acts as a precursor to all other hormones.</p> <p>○ <b>LIFE EXTENSION THYROID PANEL (LC304131)</b> <b>\$75</b></p> <p>TSH, T4, Free T3, Free T4.</p> <p>○ <b>MALE HORMONE RE-TEST PROFILE (LCRTM)*</b> <b>\$275</b></p> <p>CBC/Chemistry Profile, DHEA-S, Dihydrotestosterone (DHT), Estradiol, PSA, Pregnenolone, Total and Free Testosterone, and TSH. Continual monitoring of hormone levels is necessary for men seeking to maintain optimal blood level values.</p> <p>○ <b>FEMALE HORMONE RE-TEST PROFILE (LCRTF)*</b> <b>\$250</b></p> <p>CBC/Chemistry Profile, DHEA-S, Total Estrogen, Pregnenolone, Total and Free Testosterone, Progesterone, and TSH. Continual monitoring of hormone levels is necessary for women seeking to maintain optimal blood level values.</p> | <p>○ <b>THE CBC/CHEMISTRY PROFILE (LC381822)</b> <b>\$35</b></p> <p><b>OVER 40 PARAMETERS TESTED</b></p> <p><b>CARDIOVASCULAR RISK PROFILE</b><br/>           Total Cholesterol Cholesterol/HDL Ratio<br/>           HDL Cholesterol Estimated CHD Risk<br/>           LDL Cholesterol Globulin<br/>           Triglycerides Iron</p> <p><b>LIVER FUNCTION PANEL</b><br/>           AST (SGOT) Total Bilirubin<br/>           ALT (SGPT) Alkaline Phosphatase<br/>           LDH</p> <p><b>KIDNEY FUNCTION PANEL</b><br/>           BUN BUN/Creatinine Ratio<br/>           Creatinine Uric Acid</p> <p><b>BLOOD PROTEIN LEVELS</b><br/>           Total Protein Globulin<br/>           Albumin Albumin/Globulin Ratio</p> <p><b>BLOOD COUNT/RED AND WHITE BLOOD CELL PROFILE</b><br/>           Red Blood Cell Count Monocytes<br/>           White Blood Cell Count Lymphocytes<br/>           Eosinophils Platelet Count<br/>           Basophils Hemoglobin<br/>           Polys (Absolute) Hematocrit<br/>           Lymphs (Absolute) MCV<br/>           Monocytes (Absolute) MCH<br/>           Eos (Absolute) MCHC<br/>           Baso (Absolute) Polynucleated Cells<br/>           RDW</p> <p><b>BLOOD MINERAL PANEL</b><br/>           Calcium Sodium<br/>           Potassium Chloride<br/>           Phosphorus Iron</p> <p><b>NOTE: CBC/Chemistry profile is included in the Male and Female Life Extension panels and Weight Loss Panels.</b></p> <p>○ <b>GENERAL HEALTH</b></p> <p>○ <b>HEMOGLOBIN A1C (HBA1C) (LC001453)</b> <b>\$31</b></p> <p>Hemoglobin A1C evaluates long-term blood sugar control. Serum glucose sometimes reacts with important proteins in the body rendering them nonfunctional. Since this process, known as glycation is one of the leading theories of aging, Life Extension<sup>®</sup> believes everyone should check their A1C level.</p> <p>○ <b>VITAMIN D (25OH) (LC081950)</b> <b>\$47</b></p> <p>This test is used to rule out vitamin D deficiency as a cause of bone disease. It can also be used to identify hypercalcemia.</p> <p>○ <b>FOOD SAFE ALLERGY TEST (LCM73001)</b> <b>\$174</b></p> <p>This test measures delayed (IgG) food allergies for 95 common foods.</p> <p>○ <b>CYTOKINE PANEL (LCCYT)*</b> <b>\$399</b></p> <p>Includes TNF-alpha, IL-6, IL-1 beta and IL-8. Cytokines are proteins that modulate the inflammatory response. This panel is used to identify elevated levels of specific cytokines.</p> <p>○ <b>OMEGA SCORE™™™ (LCOMEGA)</b> <b>\$131.25</b></p> <p>Provides valuable information on your risk of developing heart disease, sudden heart attack, and cardiac death. The Omega Score™™ also includes your AA:EPA ratio, allowing you to determine and track a major factor in total body inflammation.</p> <p>○ <b>COQ10* (COENZYME Q10) (LC120251)</b> <b>\$145</b></p> <p>This test is used to check the blood level of CoQ10 and will enable more precise dosing for anyone seeking to achieve and maintain high levels of this critical antioxidant.</p> |
|--|---|

\* This test requires samples to be shipped to the lab on dry ice for customers using a Blood Draw Kit and will incur an additional \$35 charge. If the customer is having blood drawn at a LabCorp facility, this extra charge does not apply.

\*\* This test is packaged as a kit, requiring a finger stick performed at home.



## MOST POPULAR SINGLE TESTS

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|---|----------------|--|--------------|
| <input type="radio"/> <b>HORMONES</b><br><b>CORTISOL (LC004051)</b><br>This test is to measure adrenal function.  | <b>\$39</b>    | <input type="radio"/> <b>CARDIAC RISK</b><br><b>Lp-PLA2 (PLAC TEST)* (LC123240)</b><br>This test is used to aid in predicting risk for coronary heart disease, and ischemic stroke associated with atherosclerosis. Lp-PLA2 is a cardiovascular risk factor that provides unique information about the stability of the plaque inside your arteries.   | <b>\$125</b> |
| <input type="radio"/> <b>ADRENOCORTICOTROPIC HORMONE (ACTH)* (LC004440)</b><br>A pituitary function test useful in evaluating adrenocortical dysfunction.   | <b>\$91.50</b> | <input type="radio"/> <b>C-REACTIVE PROTEIN (HIGH-SENSITIVITY) (LC120766)</b><br>Measures inflammation factors in arteries. Recent studies indicate that C-reactive protein may be the most accurate risk factor for predicting heart attack and stroke.   | <b>\$42</b>  |
| <input type="radio"/> <b>DHEA-SULFATE (LC004020)</b><br>This test shows if you are taking the proper amount of DHEA. This test normally costs \$100 or more at commercial laboratories.   | <b>\$61</b>    | <input type="radio"/> <b>APOLIPOPROTEIN ASSESSMENT (APO A1 + APO B + RATIO) (LC216010)</b><br>This ratio correlates with risk of coronary artery disease and is useful in the presence of borderline elevations of cholesterol.  | <b>\$55</b>  |
| <input type="radio"/> <b>DIHYDROTESTOSTERONE (DHT)* (LC500142)</b><br>Measures serum concentrations of DHT.   | <b>\$99</b>    | <input type="radio"/> <b>FIBRINOGEN* (LC001610)</b><br>High levels of this blood-clotting factor increase the risk of heart attack and stroke.   | <b>\$31</b>  |
| <input type="radio"/> <b>ESTRADIOL (LC004515)</b><br>For men and women. Determines the proper amount in the body.   | <b>\$33</b>    | <input type="radio"/> <b>HOMOCYSTEINE (LC706994)</b><br>Can indicate if you are likely to have a heart attack or stroke. Even if you take folic acid, you still may have dangerously high levels of this artery-clotting metabolic debris that can be lowered with high doses of TMG and vitamin B6.   | <b>\$64</b>  |
| <input type="radio"/> <b>INSULIN-LIKE GROWTH FACTOR BINDING PROTEIN 3 (IGFBP3) (LC140152)</b><br>Elevated levels in hypertensive individuals have been associated with a nine-fold increase of carotid arteriosclerosis.                        | <b>\$47</b>    | <input type="radio"/> <b>VAP™ TEST (LC804500)</b><br>The VAP cholesterol test provides a more comprehensive coronary heart disease (CHD) risk assessment than the conventional lipid profile. Direct measurements, not estimations, are provided for total cholesterol, LDL, HDL, VLDL, and cholesterol subclasses.  | <b>\$90</b>  |
| <input type="radio"/> <b>INSULIN FASTING* (LC004333)</b><br>Can predict those at risk of diabetes, obesity, and heart and other diseases.   | <b>\$42</b>    | <input type="radio"/> <b>MALE HEALTH</b><br><b>PSA (PROSTATE-SPECIFIC ANTIGEN) (LC010322)</b><br>Can provide an early warning sign for prostate disorders and possible cancer.   | <b>\$31</b>  |
| <input type="radio"/> <b>PREGNENOLONE* (LC140707)</b><br>Used to determine ovarian failure, hirsutism, adrenal carcinoma, and Cushing's syndrome.   | <b>\$116</b>   | <input type="radio"/> <b>FREE-PSA (INCLUDES TOTAL PSA)* (LC480780)</b><br>Recommended to determine if an elevated PSA is indicative of prostate cancer.  | <b>\$61</b>  |
| <input type="radio"/> <b>PROGESTERONE (LC004317)</b><br>Primarily for women. Determines the proper amount in the body.  | <b>\$55</b>    | <input type="radio"/> <b>BONE HEALTH</b><br><b>OSTEOCALCIN* (LC010249)</b><br>Osteocalcin is often used as a biochemical marker, or biomarker, for the bone formation process. It has been routinely observed that higher serum osteocalcin levels are relatively well correlated with bone diseases characterized by increased bone turnover, especially osteoporosis.                      | <b>\$91</b>  |
| <input type="radio"/> <b>SEX HORMONE BINDING GLOBULIN (SHBG) (LC082016)</b><br>This test is used to monitor SHBG levels which are under the positive control of estrogens and thyroid hormones, and suppressed by androgens.                    | <b>\$33</b>    | <input type="radio"/> <b>DPD CROSS LINK URINE TEST (LC511105)</b><br>The deoxypyridinoline (DPD) urine test can be used to measure bone re-absorption rates in healthy individuals and in those with enhanced risk of developing metabolic bone diseases. Deoxypyridinoline can be used to monitor therapies (which may include bisphosphonate drugs) in people diagnosed with osteoporosis. | <b>\$79</b>  |
| <input type="radio"/> <b>SOMATOMEDIN C (IGF-1) (LC010363)</b><br>Indicates growth hormone secretion levels. Low levels have been associated with atherosclerosis as well as all-cause mortality.  | <b>\$75</b>    |  |              |
| <input type="radio"/> <b>TOTAL AND FREE TESTOSTERONE (LC140103)</b><br>Determines whether testosterone replacement should be considered as a therapy for depression, abdominal obesity, low energy, poor mental performance, or loss of libido. | <b>\$99</b>    |  |              |

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## BONE & JOINT HEALTH

ArthroMax™ with Theaflavins  
Bone-Up™  
Bone Restore™  
Bone Strength Formula w/KoAct™  
Chondroitin Sulfate  
Chondrox  
Fast Acting Joint Formula  
Glucosamine Chondroitin Capsules

## BRAIN HEALTH

Acetyl-L-Carnitine  
Acetyl-L-Carnitine-Arginate  
CDF Choline Capsules  
Cognitex® with NeuroProtection Complex  
Cognitex® with Pregnenolone &  
NeuroProtection Complex  
Cognitex® Basics  
DMAE  
DMAE-Ginkgo  
Ginkgo Biloba Certified Extract™  
Huperzine A  
Lecithin with B5 and BHA  
Lecithin Granules  
Methylcobalamin Lozenges  
Optimized Ashwagandha Extract  
Phosphatidylserine Capsules  
Rhodiola Extract  
Super Ginkgo Extract  
Vinpocetine

## DIGESTIVE

Bromelain Powder  
Carnosoothe w/PicroProtect  
Digest RC™  
Enhanced Super Digestive Enzymes  
(also available with Probiotics)  
Florastor  
Intact Digest  
Life Flora™  
Natural EsophaGuard  
N-Zimes™  
Pancreatin  
Primal Defense™  
Regimint  
Saccharomyces Boulardii+mos  
Theralac Probiotics

## DURK AND SANDY PRODUCTS

Blast™  
Dual-C  
Inner Power™  
Memory Upgrade™

## EYE CARE

Bilberry Extract  
Blackcurrant Freeze Dried Extract  
Brite Eyes III  
Eye Pressure Support with Mirtogenol®

Overcast Polarized Sunglasses  
Solarshield Sunglasses  
Super Zeaxanthin with Lutein &  
Meso-Zeaxanthin and C3G  
(Plus Astaxanthin also available)  
Vision Optimizer

## FIBER

Apple Pectin Powder  
Fiber Food  
Hi-Lignan® Nutri-Flax®  
WellBetX PGX® Soluble Fiber Blend

## FOOD

Asian Cruciferous Vegetable Soup  
Cruciferous Vegetable Soup

## HAIR CARE

Dr. Proctor's Advanced Hair Formula  
Dr. Proctor's Shampoo  
Life Extension Shampoo and Conditioner  
Super-Absorbable Tocotrienols

## HEART HEALTH

Advanced Lipid Control  
Aspirin (Enteric Coated)  
Cho-Less™  
D-Ribose Capsules  
D-Ribose Powder  
Endothelial Defense™ with  
Full-Spectrum Pomegranate™  
Fibrinogen Resist  
Forskolin  
Homocysteine Resist  
Natural BP Management  
Peak ATP® with GlycoCarn®  
Policosanol  
Red Yeast Rice  
Super Absorbable CoQ10™ with d-Limonene  
Super Omega-3 EPA/DHA with Sesame  
Lignans & Olive Fruit Extract  
Super Ubiquinol CoQ10  
Super Ubiquinol CoQ10 with Enhanced  
Mitochondrial™ Support  
Sytrinol™  
Theaflavin Standardized Extract  
TMG Powder  
TMG Tablets

## HERBAL/PHYTO PRODUCTS

Artichoke Leaf Extract  
Astaxanthin  
Berry Complete  
Blueberry Extract  
Blueberry Extract w/Pomegranate  
Butterbur Extract w/Standardized  
Rosmarinic Acid  
Calcium D-Glucarate  
Cilantro Herbal Extract  
Citrus Bioflavonoid  
Enhanced Berry Complete with RZD™ Acai  
Floradix® Iron & Herbs  
Floravital® Iron & Herbs  
Full-Spectrum Pomegranate™  
Grapeseed Extract with Resveratrol &  
Pterostilbene  
Huperzine A with Natural Vitamin E  
Kyolic® Garlic Formula 105  
Kyolic® Reserve  
Mega Green Tea Extract  
Mega Green Tea Extract (Decaffeinated)  
Mega Lycopene Extract  
Nutrim  
Optimized Ashwagandha Extract  
Pomegranate Extract  
Pomegranate Juice Concentrate  
ProGreens®  
Pure-Gar™  
Pycnogenol  
Optimized Quercetin  
Resveratrol with Synergistic Grape-Berry Actives  
Rhodiola Extract  
Rosmarinic Acid Extract  
Silymarin  
SODzyme™ with GliSODin®  
Stevia Extract  
Super Bio-Curcumin®

Super Ginkgo Extract  
Triple Action Cruciferous Vegetable Extract  
Venotone  
Whole Grape Extract

## HORMONES

7-Keto® DHEA  
DHEA  
DHEA Complete  
GH Pituitary Support Day Formula  
GH Pituitary Support Night Formula  
Melatonin  
Melatonin Timed Release  
Natural Estrogen with Pomegranate Extract  
Pregnenolone  
ProFem Cream  
Pure IGF  
Super Miraforte with Standardized Lignans

## IMMUNE ENHANCEMENT

Agave Digestive-Immune Support  
AHCC® (Active Hexose Correlated Compound)  
Buffered Vitamin C Powder  
Echinacea  
Enhanced Life Extension Whey Protein  
i26 Hyperimmune Egg  
Immune Protect with PARACTIN®  
Lactoferrin  
LifesShield® Immunity™  
Maitake SX-Fraction  
Norwegian Shark Liver Oil  
Optimized Fucoidan w/Maritech® 926  
Primal Defense™  
ProBoost™ Thymic Protein A  
Pure Gar™  
Sambu® Guard  
Thymic Immune Factors  
Ultimate Flora Advanced Immunity  
Vitamin C with Dihydroquercetin  
Zinc Lozenges with Vitamin C

## INFLAMMATORY REACTIONS

Arthro-Immune Joint Support  
ArthroMax™ with Theaflavins  
Barlean's Kids DHA  
Boswellia  
Boswellia™ Topical Cream  
Bromelain (Specially-coated)  
Coromega Kids Brain and Body (DHA)  
DHA 240  
Emulsified Norwegian Cod Liver Oil  
Emulsified Super Twin EPA/DHA  
Fast Acting Joint Formula  
Ginger Force  
Krill Oil  
5-LOXIN®  
Mega EPA/DHA  
Mega GLA with Sesame Lignans  
MSM  
Natural Relief 1222™ Cream  
Serraflazyme  
SODzyme™ with GliSODin® and Wolfberry  
Supercritical Omega 7™  
Super Omega-3 EPA/DHA with Sesame  
Lignans & Olive Fruit Extract  
Tart Cherry  
Udo's Choice Oil  
Zyflamend Easy

## LIVER HEALTH

Branch Chain Amino Acids  
N-Acetyl Cysteine  
Liver Force  
Certified European Milk Thistle  
PhosChol® (Nutrasal)  
SAME  
Silymarin

## MINERALS

Biosil  
Bone Restore  
Bone Strength Formula w/KoAct®  
Bone-Up™  
Boron Capsules  
Calcium Citrate with D3  
Chromium Ultra  
Copper

Dr. Strum's Intensive Bone Formula  
Iodoral  
Iron Protein Plus  
Magnesium  
Magnesium Citrate  
Mineral Formula for Men  
Mineral Formula for Women  
Only Trace Minerals  
Optimized Chromium w/Crominex® 3+  
OptiZinc  
Sea-Iodine™  
Selenium  
Se-Methyl L-Selenocysteine  
Strontium  
Vanadyl Sulfate  
Zinc/Vitamin C Lozenges

## MISCELLANEOUS

Blood Pressure Monitor Arm Cuff Medium  
Cell Sensor Gauss Meter™  
CR Way Edition Advanced Dietary Software  
Empty Gelatin Capsules  
The Capsule Filler Machine  
The Pill Cutter and Grinder

## MITOCHONDRIAL SUPPORT

Acetyl-L-Carnitine  
Acetyl-L-Carnitine-Arginate  
Mitochondrial Basics w/BioPQQ™  
Mitochondrial Energy Optimizer w/BioPQQ™  
Optimized Carnitine with GlycoCarn®  
Super Absorbable CoQ10™ with d-Limonene  
Super Alpha Lipoic Acid with Biotin  
Super R-Lipoic Acid  
Super Ubiquinol CoQ10 with Enhanced Mitochondrial™ Support

## MOOD RELIEF

Bioactive Milk Peptides  
Holy Basil  
L-Theanine  
5 HTP  
Enhanced Natural Sleep® w/ Melatonin  
Enhanced Natural Sleep® w/o Melatonin  
Natural Stress Relief  
Optimized Tryptopure™ Plus  
Stabilium® 200  
SAmE  
St. John's Wort Extract  
Tryptopure™ L-Tryptophan

## MOUTH CARE

Advanced Oral Hygiene  
Dr. Tung's Tongue Cleaner  
Mist Oral III™ with CoQ10  
Mouthwash w/Pomegranate  
Toothpaste

## MULTIVITAMIN

Children's Formula Life Extension Mix  
Comprehensive Nutrient Pack  
Life Extension Booster  
Life Extension Mix™ Capsules  
Life Extension Mix™ Powder  
Life Extension Mix™ Tablets  
Life Extension Mix™ w/o Copper Capsules  
Life Extension Mix™ w/o Copper Tablets  
Life Extension Mix™ w/Extra Niacin  
Life Extension Mix™ w/Extra Niacin w/o Copper  
Life Extension Mix™ w/Stevia Powder  
Life Extension Mix™ w/Stevia w/o Copper Powder  
Life Extension One-Per-Day  
Life Extension Two-Per-Day  
Super Booster Softgels w/Advanced K2 Complex  
Vital Greens Mix

## PET CARE

Cat Mix  
Dog Mix

## PROSTATE & URINARY HEALTH

BetterWOMAN®  
Optimized Cran-Max® with UTIRose™  
5-LOXIN®  
(Water-Soluble) Pumpkin Seed Extract  
Super Saw Palmetto with Beta-Sitosterol  
Super Saw Palmetto/Nettle Root Formula w/Beta-Sitosterol  
Ultra Natural Prostate Formula

## SKIN CARE

Advanced Under Eye Serum with Stem Cells  
Amber Self MicroDermabrasion  
Anti-Aging Mask  
Anti-Glycation Serum  
Antioxidant Rejuvenating Foot Cream  
Antioxidant Rejuvenating Foot Scrub  
Antioxidant Rejuvenating Hand Cream  
Antioxidant Rejuvenating Hand Scrub  
Anti-Redness & Blemish Lotion  
Cellulite Suppress™ Formula  
Corrective Clearing Mask  
DermaWhewy  
DNA Repair Cream  
Dual-Action MicroDerm Abrasion  
Elastin Collagen Body Firming Lotion  
Essential Plant Lipids Reporative Serum  
Face Master® Platinum  
Face Rejuvenating Antioxidant Cream  
Enhanced FernBlock® with Sendara™  
Fine Line-Less  
Hair Suppress Formula  
Healing Formula All-in-One Cream  
Healing Mask  
Hyaluronic Facial Moisturizer  
Hydrating Anti-oxidant Face Mist  
Hydroderm®  
Lavinil Underarm Deodorant  
Lifting & Tightening Complex  
Melatonin Cream  
Mild Facial Cleanser  
NaPCA w/Aloe Vera  
Neck Rejuvenating Antioxidant Cream  
New Face Solution  
Peel Off Cleansing Mask  
Pigment Correcting Cream (Ultra) Rejuvenex®  
Rejuvenex® Body Lotion  
Rejuvenex® Factor  
Rejuvenating Serum  
Skin Lightening Serum  
Skin Restoring Ceramides w/Lipowheat™  
Skin Stem Cell Serum  
Sun Protection Spray  
Total Sun Protection Cream  
Ultra Rejuvenex®  
Ultra RejuveNight® w/ Progesterone  
Ultra RejuveNight® w/o Progesterone  
Ultra Lip Plumper  
Ultra Wrinkle Relaxer  
Under Eye Refining Serum  
Under Eye Rescue Cream  
Vitamin C Serum  
Vitamin D Lotion  
Vitamin K Healing Cream

## SOY

Natural Estrogen w/Pomegranate  
Soy Protein Concentrate  
Super Absorbable Soy Isoflavones  
Ultra Soy Extract

## SPECIAL PURPOSE FORMULA

Anti-Alcohol Antioxidants w/HepatoProtection Complex  
Benfotiamine w/Thiamine  
Breast Health Formula  
Butterbur Extract w/Standardized Rosmarinic Acid  
Chlorella  
Chlorophyllin w/Zinc  
Cleanse Smart  
Coriolus Super Strength  
CR Mimetic Longevity Formula  
Derma-Vits™  
Cinsulin® w/InSea2™ and Crominex® 3+ EDTA  
European Leg Solution Diosmin 95  
Fem Dophilus  
Femmenessence MacaPause®  
Flush & Be Fit  
GlucoFit™  
Ideal Bowel Support 299  
Lustre™  
Maitake SX-Fraction™

Menopause Solutions  
Migra-eeze™  
Natural Female Support  
Organic Total Body Cleanse  
Pecta-Sol®  
Potassium Iodide  
PQQ Caps with BioPQQ™  
PteroPure™  
Prelox® Natural Sex for Men®  
Pyridoxal 5' - Phosphate  
Rosmarinic Acid Extract

## SPORTS PERFORMANCE

Creatine Capsules  
Creatine Powder  
Enhanced Life Extension Protein  
DMG (N, N-dimethylglycine)  
Inosine  
L-Glutamine Capsules  
L-Glutamine Powder  
Octacosanol

## VITAMINS

Ascorbic Acid Powder  
Ascorbyl Palmitate Capsules  
B1  
B2  
B12  
Beta-Carotene  
Biotin Capsules  
Biotin Powder  
Buffered Vitamin C Powder  
Complete B Complex  
Essential Fat-Soluble Nutrient  
Folic Acid + B12  
Gamma E Tocopherol w/Sesame Lignans  
Gamma E Tocopherol/Tocotrienols  
Inositol Capsules  
Inositol Powder  
Mega Lycopene Extract  
Methylcobalamin  
MK-7  
No-Flush Niacin  
Optimized Folate  
PABA Capsules  
Super Ascorbate C Capsules  
Super Ascorbate C Powder  
Super K w/Advanced K2 Complex  
Tocotrienols w/Sesame Lignans  
Vitamin A Nutrisorb  
Vitamin B3 (Niacin) Capsules  
Vitamin B6  
Vitamin B12 Tablets  
Vitamin C  
Vitamin D  
Vitamin D3  
Vitamin D3 w/Sea-Iodine™  
Vitamins D and K w/Sea-Iodine™  
Vitamin E  
Vitamin K1

## WEIGHT MANAGEMENT

Alli® Refill Pack  
Advanced Anti-Adipocyte Formula w/AdipoStat & Integra Lean®  
Anti-Adipocyte Formula w/AdipoStat  
Calorie Control Weight Management Formula  
7-Keto DHEA  
DHEA Complete  
Fucoxanthin Slim™  
HCA  
Integra-Lean® Irvingia  
LuraLean® Caps Special Propolmannan Particle Size  
Optimized Irvingia w/Phase 3™ Calorie Control Complex  
Optimized Saffron with Satiereal®  
Natural Appetite Control  
Natural Glucose Absorption Control  
Stevia Liquid Extract  
Super CLA Blend w/Guarana and Sesame Lignans  
Super CLA Blend w/Sesame Lignans  
Udo's Choice Wholesome Fast Food Blend  
WellBetX PGX® Soluble Fiber Blend

# Buyers Club Order Form

To order call: 1.954.766.8433 or 1.800.544.4440

No.		Retail Each	Member Each	Qty	Total
<b>A</b>					
00449	<b>ACETYL-L-CARNITINE</b> - 500 mg, 100 caps	\$56.00	\$42.00		
	Buy 4 bottles, price each	46.66	35.00		
00788	<b>ACETYL-L-CARNITINE ARGINATE</b> - 100 caps	59.00	44.25		
	Buy 4 bottles, price each	50.99	38.24		
01308	<b>ADVANCED LIPID CONTROL</b> - 60 veg. caps	30.00	22.50		
	Buy 4 bottles, price each	27.00	20.25		
01300	<b>ADVANCED ORAL HYGIENE</b> - 60 veg. mint lozenges	20.00	15.00		
	Buy 4 bottles, price each	18.00	13.50		
00681	<b>AHCC</b> - 500 mg, 30 caps	59.98	44.99		
	Buy 4 bottles, price each	53.33	40.00		
*46925	<b>ALLI® REFILL PACK</b> - 120 caps	69.95	58.00		
00457	<b>ALPHA-LIPOIC ACID w/BIOTIN (SUPER)</b> - 250 mg, 60 caps	37.00	27.75		
	Buy 4 bottles, price each	32.00	24.00		
01440	<b>ANTI-ALCOHOL ANTIOXIDANTS w/HEPATOPRO</b> - 100 caps	26.00	19.50		
	Buy 4 bottles, price each	23.00	17.25		
01510	<b>ANTI-ADIPOCYTE FORMULA w/ADIPOSTAT</b> - 60 veg. caps	35.00	26.25		
	Buy 4 bottles, price each	32.00	24.00		
01509	<b>ANTI-ADIPOCYTE FORMULA w/ADIPOSTAT &amp; INTEGRA LEAN® (ADVANCED)</b>	39.00	29.25		
	60 veg. caps • Buy 4 bottles, price each	36.00	27.00		
00105	<b>APPLE PECTIN POWDER</b> - 227 grams	14.75	11.06		
	Buy 4 bottles, price each	13.75	10.31		
01012	<b>ARGININE CAPS</b> - 800 mg, 200 caps	26.50	19.88		
	Buy 4 bottles, price each	23.25	17.44		
01039	<b>ARGININE/ORNITHINE</b> - 500/250, 100 caps	16.00	12.00		
	Buy 4 bottles, price each	14.50	10.88		
00038	<b>ARGININE/ORNITHINE POWDER</b> - 150 grams	22.95	17.21		
	Buy 4 bottles, price each	19.00	14.25		
01025	<b>(L)-ARGININE FREE-FORM POWDER</b> - 100 grams	15.98	11.99		
	Buy 4 bottles, price each	14.31	10.73		
01317	<b>ARTHRONAX™ w/THEAFLAVINS</b> - 120 veg. caps	44.00	33.00		
	Buy 4 bottles, price each	40.00	30.00		
01404	<b>ARTHRO-IMMUNE JOINT SUPPORT</b> - 60 veg. caps	32.00	24.00		
	Buy 4 bottles, price each	28.00	21.00		
00919	<b>ARTICHOKE LEAF EXTRACT</b> - 500 mg, 180 veg. caps	28.00	21.00		
	Buy 4 bottles, price each	25.38	19.04		
00086	<b>ASCORBATE C (SUPER)</b> - 8 oz powder	29.76	22.32		
	Buy 4 bottles, price each	27.00	20.25		
00080	<b>ASCORBIC ACID POWDER</b> - 454 grams	38.00	28.50		
	Buy 4 bottles, price each	34.93	26.20		
00082	<b>ASCORBYL PALMITATE</b> - 500 mg, 100 caps	22.50	16.88		
	Buy 4 bottles, price each	20.00	15.00		
00888	<b>ASHWAGANDHA EXTRACT (OPTIMIZED)</b> - 60 veg. caps	10.00	7.50		
	Buy 4 bottles, price each	9.00	6.75		

**SUB-TOTAL OF COLUMN 1**

No.		Retail Each	Member Each	Qty	Total
01066	<b>ASPIRIN</b> - 81 mg, 300 enteric coated tablets	\$6.00	\$4.50		
	Buy 4 bottles, price each	5.33	4.00		
00708	<b>ASTAXANTHIN</b> - 2 mg, 30 softgels	10.25	7.69		
<b>B</b>					
00920	<b>BENFOTIAMINE w/ THIAMINE</b> - 100 mg, 120 veg. caps	\$19.95	\$14.96		
	Buy 4 bottles, price each	18.60	13.95		
00925	<b>BENFOTIAMINE (MEGA)</b> - 250 mg, 120 veg. caps	30.00	22.50		
	Buy 4 bottles, price each	27.00	20.25		
01206	<b>BERRY COMPLETE</b> - 30 veg. caps	21.00	15.75		
	Buy 4 bottles, price each	18.67	14.00		
01406	<b>BERRY COMPLETE w/RZD™ ACAI (ENHANCED)</b> - 60 veg. caps	29.00	21.75		
	Buy 4 bottles, price each	26.00	19.50		
00664	<b>BETA-CAROTENE</b> - 25,000 IU, 100 softgels	10.98	8.24		
	Buy 4 bottles, price each	9.83	7.37		
00653	<b>BETTERWOMAN®</b> -40 caps	40.00	30.00		
	Buy 4 bottles, price each	38.00	28.50		
01073	<b>BILBERRY EXTRACT</b> - 100 mg, 100 veg. caps	28.00	21.00		
	Buy 4 bottles, price each	25.00	18.75		
01512	<b>BIOACTIVE MILK PEPTIDES</b> - 30 caps	18.00	13.50		
	Buy 4 bottles, price each	16.00	12.00		
*01006	<b>BIOSIL™</b> - 5 mg, 30 veg. caps	18.95	15.16		
*01007	<b>BIOSIL™</b> - 1 fl oz	29.99	23.99		
00102	<b>BIOTIN</b> - 600 mcg, 100 caps	7.50	5.63		
	Buy 4 bottles, price each	6.50	4.88		
00145	<b>BIOTIN POWDER</b> - 30 grams	12.50	9.38		
	Buy 4 bottles, price each	11.00	8.25		
01037	<b>BLACKCURRANT FREEZE DRIED EXTRACT</b> - 60 veg. caps	21.95	16.46		
01008	<b>BLAST™</b> - 600 grams of powder	26.95	20.21		
70000	<b>BLOOD PRESSURE MONITOR-ARM CUFF</b> (medium)	99.95	64.97		
70001	<b>BLOOD PRESSURE MONITOR-WRIST</b> (travel size)	69.95	45.47		
01214	<b>BLUEBERRY EXTRACT</b> - 60 veg. caps	22.50	16.88		
	Buy 4 bottles, price each	20.00	15.00		
01438	<b>BLUEBERRY EXTRACT w/ POMEGRANATE</b> - 60 veg. caps	30.00	22.50		
	Buy 4 bottles, price each	27.00	20.25		
01506	<b>BONE FORMULA (DR. STRUM'S INTENSIVE)</b> - 300 veg. caps	56.00	42.00		
	Buy 4 bottles, price each	50.00	37.50		
00811	<b>BONE RESTORE</b> - 150 caps	22.50	16.88		
	Buy 4 bottles, price each	19.50	14.63		
01211	<b>BONE STRENGTH FORMULA w/KOACT®</b> - 120 caps	42.00	31.50		
	Buy 4 bottles, price each	38.00	28.50		
00313	<b>BONE-UP®</b> - 240 caps	24.95	18.71		
	Buy 4 bottles, price each	22.50	16.88		
01379	<b>BOOSTER</b> - 60 softgels	48.00	36.00		
	Buy 4 bottles, price each	44.00	33.00		
01590	<b>BOOSTER w/ADVANCED K2 COMPLEX (SUPER)</b> - 60 softgels	42.00	31.50		
	Buy 4 bottles, price each	38.00	28.50		
00621	<b>BORON</b> - 3 mg, 100 caps	5.95	4.46		
	Buy 4 bottles, price each	5.25	3.94		
00202	<b>BOSWELLA</b> - 100 caps	38.00	28.50		
	Buy 4 bottles, price each	30.00	22.50		
00258	<b>BOSWELLA TOPICAL CREAM</b> - 4 oz	15.00	11.25		
	Buy 4 jars, price each	13.00	9.75		

**SUB-TOTAL OF COLUMN 2**

To order online visit: [www.LifeExtension.com](http://www.LifeExtension.com)

# Buyers Club Order Form

No.		Retail Each	Member Each	Qty	Total
01253	<b>BRANCHED CHAIN AMINO ACIDS</b> - 90 veg. caps Buy 4 bottles, price each	\$19.50 17.00	\$14.63 12.75		
00999	<b>BREAST HEALTH FORMULA</b> - 60 veg. caps Buy 4 bottles, price each	34.00 30.00	25.50 22.50		
00893	<b>BRITE EYES III</b> - 2 vials, 5 ml each Buy 4 boxes, price each	34.00 32.00	25.50 24.00		
00136	<b>BROMELAIN POWDER</b> - 100 grams Buy 4 bottles, price each	21.00 18.75	15.75 14.06		
01203	<b>BROMELAIN (SPECIALLY-COATED)</b> - 500 mg, 60 enteric coated tablets Buy 4 bottles, price each	21.00 19.00	15.75 14.25		
00884	<b>BUTTERBUR EXT. w/STANDARDIZED ROSMARINIC ACID</b> - 60 softgels Buy 4 bottles, price each	44.00 39.60	33.00 29.70		
<b>C</b>					
01015	<b>CALCIUM CITRATE w/VITAMIN D</b> - 300 caps Buy 4 bottles, price each	\$24.00 21.25	\$18.00 15.94		
00535	<b>CALCIUM D-GLUCARATE</b> - 200 mg, 60 caps Buy 4 bottles, price each	18.00 15.00	13.50 11.25		
01493	<b>CLORIE CONTROL WEIGHT MANAGEMENT FORMULA BLUEBERRY-POMEGRANATE FLAVOR</b> - 402 grams powder Buy 4 jars, price each Buy 8 jars, price each	50.00 44.00 40.00	37.50 33.00 30.00		
00118	<b>CAPSULE FILLER MACHINE FOR "00" CAPSULES</b> Buy 4 machines, price each	17.95 17.25	13.46 12.94		
00613	<b>CAPSULE FILLER MACHINE FOR "0" CAPSULES</b> Buy 4 machines, price each	17.95 17.25	13.46 12.94		
00916	<b>CARNITINE w/GLYCOCARN® (OPTIMIZED)</b> - 60 veg. caps Buy 4 bottles, price each	29.00 26.10	21.75 19.58		
01041	<b>L-CARNITINE</b> - 500 mg, 30 caps Buy 4 bottles, price each	15.00 13.20	11.25 9.90		
01258	<b>CARNOSOOTHE w/PICROPROTECT™</b> - 60 veg. caps Buy 4 bottles, price each	29.95 27.00	22.46 20.25		
01287	<b>CARNOSINE (SUPER)</b> - 500 mg, 90 caps Buy 4 bottles, price each	66.00 60.00	49.50 45.00		
01003	<b>CAT MIX</b> - 100 grams powder Buy 4 bottles, price each	15.00 12.00	11.25 9.00		
00390	<b>CDP CHOLINE CAPS</b> - 250 mg, 60 caps Buy 4 bottles, price each	36.00 34.00	27.00 25.50		
00998	<b>CELL SENSOR-EMF DETECTION METER</b>	39.95	29.95		
01370	<b>CHILDREN'S FORMULA LIFE EXTENSION MIX™</b> - 100 chewable tablets Buy 4 bottles, price each	18.00 16.00	13.50 12.00		
00550	<b>CHLORELLA</b> - 500 mg, 200 tablets Buy 4 bottles, price each	23.50 21.00	17.63 15.75		
01549	<b>CHLOROPHYLLIN w/ZINC</b> - 100 veg. caps Buy 4 bottles, price each	24.00 20.00	18.00 15.00		
*01359	<b>CHO-LESS™</b> - 90 capsules	32.50	24.38		
00541	<b>CHOLINE CHLORIDE</b> - 16 oz liquid Buy 4 bottles, price each	14.95 14.00	11.21 10.50		
00364	<b>CHONDROITIN SULFATE CONCENTRATE</b> - 400 mg, 60 tablets Buy 4 bottles, price each	19.95 18.00	14.96 13.50		
01218	<b>CHROMIUM ULTRA</b> - 100 veg. caps Buy 4 bottles, price each	24.00 21.00	18.00 15.75		
01504	<b>CHROMIUM W/CROMINEX® 3+ (OPTIMIZED)</b> - 500 mcg, 60 veg. caps Buy 4 bottles, price each	9.00 8.00	6.75 6.00		
00551	<b>CILANTRO HERBAL EXTRACT</b> - 1 oz Buy 4 bottles, price each	12.00 11.00	9.00 8.25		

**SUB-TOTAL OF COLUMN 3**

No.		Retail Each	Member Each	Qty	Total
01503	<b>CINSULIN® w/INSEA™ AND CROMINEX® 3+</b> - 90 veg. caps Buy 4 bottles, price each	\$38.00 34.00	\$28.50 25.50		
00069	<b>CITRUS BIOFLAVONOID</b> - 100 caps Buy 4 bottles, price each	16.79 15.56	12.59 11.67		
00818	<b>CLA BLEND W/SESAME LIGNANS (SUPER)</b> - 1000 mg, 120 softgels Buy 4 bottles, price each Buy 10 bottles, price each	36.00 33.00 26.33	27.00 24.75 19.75		
00819	<b>CLA BLEND w/GUARANA &amp; SESAME (SUPER)</b> -1000 mg, 120 softgels Buy 4 bottles, price each	42.00 38.33	31.50 28.75		
01078	<b>CLEANSE SMART</b> - 60 caps	31.99	23.99		
00050	<b>COD LIVER OIL (EMULSIFIED)</b> - 12 fl oz (355 ml) Buy 4 bottles, price each	10.97 10.34	8.23 7.76		
00293	<b>COD LIVER OIL (EMULSIFIED)</b> - 100 softgels (Emulsified) Buy 4 bottles, price each	10.97 10.34	8.23 7.76		
00922	<b>COGNITEX® w/PREGNENOLONE &amp; NEUROPROTECTION COMPLEX</b> - 90 softgels Buy 4 bottles, price each Buy 12 bottles, price each	74.00 66.60 64.00	55.50 49.95 48.00		
00921	<b>COGNITEX® w/o PREGNENOLONE w/NEUROPROTECTION COMPLEX</b> - 90 softgels Buy 4 bottles, price each Buy 12 bottles, price each	72.00 64.00 62.00	54.00 48.00 46.50		
01421	<b>COGNITEX® BASICS</b> - 60 softgels Buy 4 bottles, price each Buy 12 bottles, price each	38.00 35.00 32.00	28.50 26.25 24.00		
00110	<b>COMPLETE B-COMPLEX</b> - 180 caps Buy 4 bottles, price each	21.50 18.00	16.13 13.50		
01575	<b>COMPREHENSIVE NUTRIENT PACK</b> - 30-day supply Buy 4 bottles, price each	189.00 171.00	141.75 128.25		
00119	<b>COPPER CAPSULES</b> - 2 mg, 100 caps Buy 4 bottles, price each	9.91 8.96	7.43 6.72		
00949	<b>COQ10™ w/ d-LIMONENE (SUPER ABSORBABLE)</b> - 50 mg, 60 softgels Buy 4 bottles, price each Buy 12 bottles, price each	25.00 22.00 20.00	18.75 16.50 15.00		
00950	<b>COQ10™ w/ d-LIMONENE (SUPER ABSORBABLE)</b> - 100 mg, 100 softgels Buy 4 bottles, price each Buy 12 bottles, price each	66.00 60.00 56.00	49.50 45.00 42.00		
01226	<b>COQ10 (SUPER UBIQUINOL)</b> - 100 mg, 60 softgels Buy 4 bottles, price each Buy 12 bottles, price each	56.00 52.00 48.00	42.00 39.00 36.00		
01426	<b>COQ10 w/ENH MITOCHONDRIAL SUPPORT™ (SUPER UBIQUINOL)</b> -100 mg, 60 softgels Buy 4 bottles, price each Buy 12 bottles, price each	62.00 56.00 52.00	46.50 42.00 39.00		
01425	<b>COQ10 w/ENH MITOCHONDRIAL SUPPORT™ (SUPER UBIQUINOL)</b> -50 mg, 100 softgels Buy 4 bottles, price each Buy 10 bottles, price each	58.00 53.00 50.00	43.50 39.75 37.50		
01427	<b>COQ10 w/ENH MITOCHONDRIAL SUPPORT™ (SUPER UBIQUINOL)</b> -50 mg, 30 softgels Buy 4 bottles, price each	20.00 18.00	15.00 13.50		
01431	<b>COQ10 w/ENH MITOCHONDRIAL SUPPORT™ (SUPER UBIQUINOL)</b> -200 mg, 30 softgels Buy 4 bottles, price each Buy 10 bottles, price each	62.00 56.00 52.00	46.50 42.00 39.00		
*01053	<b>CORIOLUS SUPER STRENGTH</b> - 600 mg, 150 veg. caps	99.95	74.96		
00857	<b>COROMEGA CHILD BRAIN &amp; BODY</b> - (Lemon Lime) 30 packets Buy 4 boxes, price each	25.00 22.50	18.75 16.75		

**SUB-TOTAL OF COLUMN 4**

**LIFE EXTENSION MEMBERS RECEIVE 25% OFF THE RETAIL PRICE OF ALL PRODUCTS**

SEPTEMBER 2011

# Buyers Club Order Form

To order call: 1.954.766.8433 or 1.800.544.4440

No.		Retail Each	Member Each	Qty	Total
<b>C CONTINUED</b>					
80140	<b>COSMESIS ADVANCED UNDER EYE SERUM w/STEM CELLS - 33 oz</b> Buy 2 bottles, price each	\$49.00 42.00	\$36.75 31.50		
80139	<b>COSMESIS AMBER SELF MICRODERMABRASION - 2 oz</b> Buy 2 jars, price each	49.00 42.00	36.75 31.50		
80118	<b>COSMESIS ANTI-AGING MASK - 2 oz</b> Buy 2 bottles, price each	72.00 63.36	54.00 47.52		
80134	<b>COSMESIS ANTI-GLYCATION SERUM - 1 oz</b> <b>W/BLUEBERRY &amp; POMEGRANATE EXTRACTS</b> Buy 2 bottles, price each	33.00 31.35	24.75 23.51		
80133	<b>COSMESIS ANTIOXIDANT FACIAL MIST - 2 oz</b> Buy 2 bottles, price each	32.00 30.40	24.00 22.80		
80127	<b>COSMESIS ANTIOXIDANT REJUVENATING FOOT CREAM - 2 oz</b> Buy 2 jars, price each	45.00 42.80	33.75 32.10		
80128	<b>COSMESIS ANTIOXIDANT REJUVENATING FOOT SCRUB - 2 oz</b> Buy 2 jars, price each	59.00 51.92	44.25 38.94		
80117	<b>COSMESIS ANTIOXIDANT REJUVENATING HAND CREAM - 2 oz</b> Buy 2 jars, price each	64.00 57.49	48.00 43.12		
80121	<b>COSMESIS ANTIOXIDANT REJUVENATING HAND SCRUB - 2 oz</b> Buy 2 jars, price each	58.00 51.04	43.50 38.28		
80105	<b>COSMESIS ANTI-REDNESS &amp; BLEMISH LOTION - 1 oz</b> Buy 2 bottles, price each	74.50 65.56	55.88 49.17		
80120	<b>COSMESIS CORRECTIVE CLEARING MASK - 2 oz</b> Buy 2 jars, price each	64.50 56.76	48.38 42.57		
80141	<b>COSMESIS DNA REPAIR CREAM - 1 oz jar</b> Buy 2 jars, price each	49.00 42.00	36.75 31.50		
80108	<b>COSMESIS ESSENTIAL PLANT LIPIDS REPARATIVE SERUM - 1 oz</b> Buy 2 bottles, price each	74.95 65.95	56.21 49.46		
80123	<b>COSMESIS FACE REJUVENATING ANTIOXIDANT CREAM - 2 oz</b> Buy 2 jars, price each	69.50 61.16	52.13 45.87		
80107	<b>COSMESIS FINE LINE-LESS - 1 oz</b> Buy 2 bottles, price each	74.50 65.56	55.88 49.17		
80131	<b>COSMESIS HAIR SUPPRESS FORMULA - 4 oz</b> Buy 2 bottles, price each	59.00 51.92	44.25 38.94		
80137	<b>COSMESIS HEALING FORMULA ALL-IN-ONE CREAM - 1 oz</b> Buy 2 jars, price each	53.00 45.43	39.75 34.07		
80115	<b>COSMESIS HEALING MASK - 2 oz</b> Buy 2 bottles, price each	64.50 56.76	48.38 42.57		
80109	<b>COSMESIS HYALURONIC FACIAL MOISTURIZER - 1 oz</b> Buy 2 bottles, price each	58.00 51.04	43.50 38.28		
80110	<b>COSMESIS HYALURONIC OIL-FREE FACIAL MOISTURIZER - 1 oz</b> Buy 2 bottles, price each	58.00 51.04	43.50 38.28		
80138	<b>COSMESIS HYDRATING ANTI-OXIDANT FACE MIST - 4 oz</b> Buy 2 bottles, price each	39.95 38.00	29.96 28.50		
80103	<b>COSMESIS LIFTING &amp; TIGHTENING COMPLEX - 1 oz</b> Buy 2 bottles, price each	74.50 65.56	55.88 49.17		
80135	<b>COSMESIS MELATONIN CREAM - 1 oz</b> Buy 2 jars, price each	33.00 27.10	24.75 20.33		
80114	<b>COSMESIS MILD FACIAL CLEANSER - 8 oz</b> Buy 2 bottles, price each	59.00 51.92	44.25 38.94		
80122	<b>COSMESIS NECK REJUVENATING ANTIOXIDANT CREAM - 2 oz</b> Buy 2 jars, price each	64.00 56.32	48.00 42.24		
80111	<b>COSMESIS PIGMENT CORRECTING CREAM - 1/2 oz</b> Buy 2 bottles, price each	74.00 65.12	55.50 48.84		
80106	<b>COSMESIS REJUVENATING SERUM - 1 oz</b> Buy 2 bottles, price each	74.50 65.56	55.88 49.17		

**SUB-TOTAL OF COLUMN 5**

No.		Retail Each	Member Each	Qty	Total
80112	<b>COSMESIS SKIN LIGHTENING SERUM - 1/2 oz</b> Buy 2 bottles, price each	\$85.00 74.80	\$63.75 56.10		
80130	<b>COSMESIS SKIN STEM CELL SERUM - 1 oz</b> Buy 2 bottles, price each	74.00 69.00	55.50 51.75		
80116	<b>COSMESIS ULTRA LIP PLUMPER - 1/3 oz</b> Buy 2 bottles, price each	64.00 56.32	48.00 42.24		
80101	<b>COSMESIS ULTRA WRINKLE RELAXER - 1 oz</b> Buy 2 bottles, price each	89.95 79.76	67.46 59.82		
80113	<b>COSMESIS UNDER EYE REFINING SERUM - 1/2 oz</b> Buy 2 bottles, price each	74.50 65.56	55.88 49.17		
80104	<b>COSMESIS UNDER EYE RESCUE CREAM - 1/2 oz</b> Buy 2 bottles, price each	74.50 65.56	55.88 49.17		
80129	<b>COSMESIS VITAMIN C SERUM - 1 oz</b> Buy 2 bottles, price each	85.00 74.80	63.75 56.10		
80136	<b>COSMESIS VITAMIN D LOTION - 4 oz</b> Buy 2 bottles, price each	36.00 33.66	27.00 25.25		
80102	<b>COSMESIS VITAMIN K HEALING CREAM - 1 oz</b> Buy 2 bottles, price each	79.50 69.96	59.63 52.47		
00862	<b>CRAN-MAX® - 500 mg, 60 veg. caps</b> Buy 4 bottles, price each	17.50 15.00	13.13 11.25		
01424	<b>CRAN-MAX® with UTIROSE™ (OPTIMIZED) - 60 veg. caps</b> Buy 4 bottles, price each	18.00 16.00	13.50 12.00		
00609	<b>CREATINE CAPSULES - 120 caps</b> Buy 4 bottles, price each	10.95 9.25	8.21 6.94		
00610	<b>CREATINE POWDER - 500 grams</b> Buy 4 bottles, price each	29.00 26.63	21.75 19.97		
01096	<b>CREATINE WHEY GLUTAMINE POWDER - 1000 grams (vanilla)</b> Buy 4 bottles, price each	45.00 42.00	33.75 31.50		
~01089	<b>CRUCIFEROUS VEGETABLE SOUP - 32 oz. pouch</b> Buy 6 pouches, price each	11.95 11.25	8.96 8.44		
~01090	<b>(ASIAN) CRUCIFEROUS VEGETABLE SOUP - 32 oz. pouch</b> Buy 6 pouches, price each	11.95 11.25	8.96 8.44		
01429	<b>CR MIMETIC LONGEVITY FORMULA - 60 veg. caps</b> Buy 4 bottles, price each	39.00 36.00	29.25 27.00		
***CRWAY	<b>CR WAY OPTIMAL HEALTH PROGRAM SOFTWARE</b>	195.00	195.00		
00407	<b>CURCUMIN® (SUPER BIO) - 400 mg, 60 veg. caps</b> Buy 4 bottles, price each	38.00 35.00	28.50 26.25		
00064	<b>(L) CYSTEINE - 500 mg, 60 caps</b> Buy 4 bottles, price each	19.90 18.00	14.93 13.50		
<b>D</b>					
01063	<b>DERMA-VITS™ - 90 caps</b>	\$14.99	\$11.24		
01313	<b>DERMAWHEY - 400 mg, 60 caps</b> Buy 4 bottles, price each	65.00 59.00	48.75 44.25		
00856	<b>DHA (BARLEAN'S KID'S) 8 fl. oz (Fruit Punch)</b> Buy 4 bottles, price each	22.00 20.00	16.50 15.00		
00995	<b>DHA 240 - 240 mg, 60 softgels</b> Buy 4 bottles, price each	19.00 17.00	14.25 12.75		
00658	<b>7-KETO® DHEA METABOLITE - 25 mg, 100 caps</b> Buy 4 bottles, price each	28.00 24.00	21.00 18.00		
01271	<b>7-KETO® DHEA METABOLITE - 100 mg, 60 veg. caps</b> Buy 4 bottles, price each	40.00 36.00	30.00 27.00		
00607	<b>DHEA - 25 mg, 100 tablets (dissolve in mouth)</b> Buy 4 bottles, price each	14.00 11.75	10.50 8.81		

**SUB-TOTAL OF COLUMN 6**

No.		Retail Each	Member Each	Qty	Total
01250	<b>DHEA COMPLETE</b> - 60 veg. caps Buy 4 bottles, price each	\$48.00	\$36.00		
00335	<b>DHEA</b> - 25 mg, 100 caps Buy 4 bottles, price each	15.00	11.25		
00454	<b>DHEA</b> - 15 mg, 100 caps Buy 4 bottles, price each	12.00	9.00		
00882	<b>DHEA</b> - 50 mg, 60 caps Buy 4 bottles, price each	16.00	12.00		
00883	<b>DHEA</b> - 100 mg, 60 caps Buy 4 bottles, price each	22.50	16.88		
01358	<b>DIGEST RC</b> - 30 tablets Buy 4 boxes, price each	19.95	14.96		
01272	<b>DIGESTIVE ENZYMES (ENHANCED SUPER)</b> - 100 veg. caps Buy 4 bottles, price each	18.95	14.21		
01273	<b>DIGESTIVE ENZYMES w/PROBIOTICS (ENHANCED SUPER)</b> - 100 veg. caps Buy 4 bottles, price each	24.00	18.00		
00034	<b>D,L-PHENYLALANINE CAPSULES</b> - 500 mg, 100 caps Buy 4 bottles, price each	18.75	14.06		
00257	<b>DMAE BITARTRATE</b> - 150 mg, 200 caps Buy 4 bottles, price each	14.00	10.50		
00197	<b>DMAE-GINKGO</b> - 100 caps Buy 4 bottles, price each Buy 8 bottles, price each	36.00 30.00 27.50	27.00 22.50 20.63		
00059	<b>DMG</b> - 125 mg, 60 tablets Buy 4 boxes, price each	18.50	13.88		
01547	<b>DNA PROTECTION FORMULA</b> - 60 veg. caps Buy 4 bottles, price each	30.00	22.50		
00544	<b>DOG MIX</b> - 100 grams powder Buy 4 bottles, price each	19.50	14.63		
00321	<b>DR. PROCTOR'S ADVANCED HAIR FORMULA</b> - 2 oz Buy 4 bottles, price each	39.95	29.96		
00320	<b>DR. PROCTOR'S HAIR FORMULA SHAMPOO</b> - 8 oz Buy 4 bottles, price each	24.95	18.71		
00376	<b>DR. TUNG'S TONGUE CLEANER</b> Buy 4 bottles, price each	8.45 8.05	6.34 6.04		
00899	<b>DUAL-ACTION MICRODERMABRASION ADV. EXFOLIATE</b> - 2.4 oz Buy 4 jars, price each	39.95 38.95	29.96 29.21		
00240	<b>DUAL-C</b> - 90 caps Buy 4 bottles, price each	12.00	9.00		
<b>E</b>					
00388	<b>ECHINACEA EXTRACT</b> - 250 mg, 60 caps Buy 4 bottles, price each	\$14.35	\$10.76		
01024	<b>EDTA</b> - 500 mg, 100 caps	17.50	13.13		
01321	<b>ELASTIN &amp; COLLAGEN BODY FIRING LOTION</b> - 8 fl. oz.	10.00	7.50		
00048	<b>EMULSIFIED SUPER TWIN EPA/DHA</b> - 12 fl. oz.	23.57	17.68		
01498	<b>ENDOTHELIAL DEFENSE™ w/FULL-SPECTRUM POMEGRANATE™</b> - 60 softgels Buy 4 bottles, price each	56.00	42.00		
00997	<b>ENDOTHELIAL DEFENSE™ w/GLISODIN®</b> - 60 veg. caps Buy 4 bottles, price each	52.00	39.00		
00625	<b>EPA/DHA (MEGA)</b> - 120 softgels Buy 4 bottles, price each	46.00	34.50		
01428	<b>ESSENTIAL FAT-SOLUBLE NUTRIENTS</b> - 30 softgels Buy 4 bottles, price each	19.95 18.00	14.96 13.50		
*01042	<b>EUROPEAN LEG SOLUTION DIOSMIN 95</b> - 600 mg, 30 veg. tabs Buy 4 bottles, price each	20.00	15.00		
01514	<b>EYE PRESSURE SUPPORT w/MIRTOGENOL®</b> - 30 veg. caps Buy 4 bottles, price each	18.00 38.00	13.50 28.50		

**SUB-TOTAL OF COLUMN 7**

No.		Retail Each	Member Each	Qty	Total
<b>F</b>					
***01054	<b>FACE MASTER® PLATINUM</b>	\$199.00	\$199.00		
00965	<b>FAST-ACTING JOINT FORMULA</b> - 30 caps Buy 4 bottles, price each	39.00	29.25		
20053	<b>FEM DOPHILUS®</b> - 30 caps	25.95	19.46		
20055	<b>FEM DOPHILUS®</b> - 60 caps	39.95	29.96		
01064	<b>FEMMENESENCE MACAPAUSE®</b> - 120 veg. caps	34.99	26.24		
*01311	<b>FERNBLOCK® w/SENDARA™ (ENHANCED)</b> - 30 veg. caps Buy 4 bottles, price each	39.00	29.25		
00229	<b>FIBER FOOD CAPS</b> - 200 caps Buy 4 bottles, price each Buy 10 bottles, price each	15.00 12.50 11.90	11.25 9.38 8.93		
00718	<b>FIBRINOGEN RESIST™</b> - 30 veg. caps Buy 4 bottles, price each	49.00	36.75		
00873	<b>FLAXSEED POWDER (HI-LIGNAN® NUTRI-FLAX®)</b> - 16 oz powder	9.95	7.46		
01384	<b>FLORADIX® IRON &amp; HERBS</b> - 17 fl. oz	43.49	32.62		
01200	<b>FLORASTOR®</b> - 250 mg, 50 caps	55.15	41.36		
01382	<b>FLORAVITAL® IRON &amp; HERBS</b> - 17 fl. oz	43.49	32.62		
01212	<b>FLUSH + BE FIT</b> - 2- week cleanse for women	29.99	22.49		
01439	<b>FOLATE (OPTIMIZED) (L-METHYLFOLATE)</b> 1000 mcg - 100 veg. caps Buy 4 bottles, price each	28.00	21.00		
00347	<b>FOLIC ACID + B12 CAPSULES</b> - 200 caps Buy 4 bottles, price each	10.50	7.88		
00300	<b>FORSKOLIN</b> - 10 mg, 60 caps Buy 4 bottles, price each	15.00	11.25		
01513	<b>FUCOIDAN w/MARITECH® 926 (OPTIMIZED)</b> - 60 veg. caps Buy 4 bottles, price each	36.00	27.00		
00993	<b>FUCOXANTHIN-SLIM™</b> - 90 softgels Buy 4 bottles, price each	44.00	33.00		
<b>G</b>					
00127	<b>GABA POWDER</b> - 100 grams Buy 4 bottles, price each	\$23.75	\$17.81		
00559	<b>GAMMA E TOCOPHEROL/TOCOTRIENOLS</b> - 60 softgels Buy 4 bottles, price each	42.00	31.50		
00759	<b>GAMMA E TOCOPHEROL w/SESAME LIGNANS</b> - 60 softgels Buy 4 bottles, price each	37.00	27.75		
00117	<b>GELATIN CAPSULES</b> - 1000 empty caps size "00" Buy 4 bags, price each	32.00	24.00		
01301	<b>GH PITUITARY SUPPORT DAY FORMULA</b> - 120 vegetarian tabs Buy 4 bottles, price each	19.00	14.25		
01302	<b>GH PITUITARY SUPPORT NIGHT FORMULA</b> - 120 veg. caps Buy 4 bottles, price each	18.00	13.50		
01228	<b>GINGER FORCE</b> - 60 softgels	48.00	36.00		
00778	<b>GINKGO BILOBA CERTIFIED EXTRACT™</b> - 120 mg, 365 caps Buy 2 bottles, price each	44.00	33.00		
00504	<b>GINKGO EXTRACT (SUPER)</b> - 120 mg, 100 caps Buy 4 bottles, price each	25.00	18.75		
01032	<b>(PANAX RED) GINSENG</b> - 60 veg. caps	22.50	16.88		
00756	<b>GLA WITH SESAME LIGNANS (MEGA)</b> - 60 softgels Buy 4 bottles, price each	29.95	22.46		
00345	<b>(L) GLUTAMINE CAPSULES</b> - 500 mg, 100 caps Buy 4 bottles, price each	46.00	34.50		
00141	<b>(L)-GLUTAMINE POWDER</b> - 100 grams Buy 4 bottles, price each	43.50	32.63		

**SUB-TOTAL OF COLUMN 8**

# Buyers Club Order Form

To order call: 1.954.766.8433 or 1.800.544.4440

No.		Retail Each	Member Each	Qty	Total
<b>G CONTINUED</b>					
00522	<b>GLUCOSAMINE/CHONDROITIN CAPSULES</b> - 100 caps	\$38.00	\$28.50		
	Buy 4 bottles, price each	32.00	24.00		
00512	<b>GLUCOFIT™</b> - 100 softgels	28.00	21.00		
	Buy 4 bottles, price each	25.00	18.75		
00113	<b>GLUTATHIONE, CYSTEINE &amp; C</b> - 750 mg, 100 caps	18.00	13.50		
	Buy 4 bottles, price each	16.00	12.00		
00314	<b>L-GLUTATHIONE (MEGA)</b> - 250 mg, 60 caps	39.64	27.03		
	Buy 4 bottles, price each	35.68	26.76		
00795	<b>GLYCINE</b> - 1000 mg, 100 caps	12.00	9.00		
	Buy 4 bottles, price each	10.80	8.10		
00128	<b>GLYCINE POWDER</b> - 300 grams	18.00	13.50		
	Buy 4 bottles, price each	16.00	12.00		
01091	<b>GRAPE EXTRACT w/RESVERATROL (WHOLE)</b> - 60 veg. caps	36.00	27.00		
	Buy 4 bottles, price each	34.00	25.50		
01411	<b>GRAPE SEED EXTRACT w/RESVERATROL &amp; PTEROSTILBENE</b> -100 mg, 60 veg. caps	36.00	27.00		
	Buy 4 bottles, price each	34.00	25.50		
00953	<b>GREEN TEA EXTRACT (MEGA)</b> - lightly caffeinated - 100 veg. caps	28.00	21.00		
	Buy 4 bottles, price each	26.50	19.88		
00954	<b>GREEN TEA EXTRACT (MEGA)</b> - decaffeinated - 100 veg. caps	28.00	21.00		
	Buy 4 bottles, price each	26.50	19.88		
<b>H</b>					
01074	<b>5 HTP</b> - 100 mg, 60 caps	\$27.95	\$20.96		
00010	<b>HAIR CONDITIONER</b> - 16 oz	6.00	4.50		
	Buy 4 bottles, price each	4.50	3.38		
00230	<b>HCA</b> - 90 caps	18.00	13.50		
	Buy 4 bottles, price each	15.50	11.63		
01433	<b>HOLY BASIL</b> - 60 softgel caps	31.95	23.96		
01434	<b>HOLY BASIL</b> - 120 softgel caps	51.95	38.96		
01435	<b>HOMOCYSTEINE RESIST</b> - 100 caps	24.00	18.00		
	Buy 4 bottles, price each	21.60	16.20		
00067	<b>HOODIA GORDONII</b> - 60 caps	14.00	10.50		
00627	<b>HUPERZINE A w/NATURAL VITAMIN E</b> - 50 mcg, 60 caps	27.95	20.96		
	Buy 4 bottles, price each	24.00	18.00		
00661	<b>HYDRODERM®</b> - 1 oz	79.95	59.96		
	Buy 2 bottles, price each	65.33	49.00		
<b>I</b>					
^01060	<b>i26 HYPERIMMUNE EGG</b> - 140 grams powder	\$49.99	\$42.00		
^01319	<b>i26 HYPERIMMUNE EGG</b> - 135 capsules	31.99	25.59		
^01318	<b>i26 HYPERIMMUNE EGG CHEWABLES</b> - (vanilla) 45 tablets	31.99	25.59		
01065	<b>IDEAL BOWEL SUPPORT 299V</b> - 30 veg. caps	21.95	16.46		
00955	<b>IMMUNE PROTECT w/PARACTIN®</b> - 30 veg. caps	29.50	22.13		
	Buy 4 bottles, price each	26.55	19.91		
01049	<b>INNERPOWER™</b> - 555 grams powder	42.00	31.50		
00155	<b>INOSINE</b> - 500 mg, 60 caps	22.95	17.21		
	Buy 4 bottles, price each	21.00	15.75		
00109	<b>INOSITOL CAPSULES</b> - 500 mg, 100 caps	16.53	12.40		
	Buy 4 bottles, price each	15.21	11.41		
00410	<b>INOSITOL CAPSULES</b> - 1000 mg, 360 caps	48.00	36.00		
	Buy 4 bottles, price each	43.75	32.81		
00108	<b>INOSITOL POWDER</b> - 100 grams	18.00	13.50		
	Buy 4 bottles, price each	16.88	12.66		
01021	<b>INTACT DIGEST™</b> - 8 fl oz	35.00	26.25		
	Buy 4 bottles, price each	33.00	24.75		
01292	<b>INTEGRA-LEAN® IRVINGIA</b> - 150 mg, 60 veg. caps	28.00	21.00		
	Buy 4 bottles, price each	24.00	18.00		

**SUB-TOTAL OF COLUMN 9**

No.		Retail Each	Member Each	Qty	Total
01002	<b>IODORAL®</b> - 180 caps	\$50.00	\$37.50		
00563	<b>IRON PROTEIN PLUS</b> - 300 mg, 100 caps	24.00	18.00		
	Buy 4 bottles, price each	22.00	16.50		
01492	<b>IRVINGIA W/PHASE 3™</b> - 120 veg. caps <b>CALORIE CONTROL COMPLEX (OPTIMIZED)</b>	56.00	42.00		
	Buy 4 bottles, price each	48.00	36.00		
<b>J, K</b>					
00056	<b>JARRO-DOPHILUS EPS™</b> - 60 veg. caps	\$21.95	\$16.46		
01224	<b>K w/ADVANCED K2 COMPLEX (SUPER)</b> - 90 softgels	26.00	19.50		
	Buy 4 bottles, price each	23.00	17.25		
01050	<b>(NKO) KRILL OIL</b> - 60 softgels	33.95	25.46		
00316	<b>KYOLIC® GARLIC FORMULA 102</b> - 200 caps	23.95	17.96		
	Buy 4 bottles, price each	20.50	15.38		
00214	<b>KYOLIC® GARLIC FORMULA 105</b> - 200 caps	22.95	17.21		
	Buy 4 bottles, price each	18.25	13.69		
00789	<b>KYOLIC® RESERVE</b> - 600 mg, 120 caps	24.75	18.56		
	Buy 4 bottles, price each	21.45	16.09		
<b>L</b>					
00513	<b>LACTOFERRIN (APOLACTOFERRIN) CAPS</b> - 60 caps	\$40.00	\$30.00		
	Buy 4 bottles, price each	36.00	27.00		
00017	<b>LAVILIN UNDERARM DEODORANT</b> - 12.5 grams cream	15.00	11.25		
	Buy 4 jars, price each	13.75	10.31		
00020	<b>LECITHIN</b> - 16 oz. granules	15.00	11.25		
	Buy 4 jars, price each	12.50	9.38		
01538	<b>LIFE EXTENSION MIX™</b> - 315 veg. tablets	98.00	73.50		
	Buy 4 bottles, price each	86.00	64.50		
	Buy 10 bottles, price each	69.50	52.13		
01555	<b>LIFE EXTENSION MIX™</b> - 315 tablets	98.00	73.50		
	Buy 4 bottles, price each	86.00	64.50		
	Buy 10 bottles, price each	69.50	52.13		
01557	<b>LIFE EXTENSION MIX™ w/EXTRA NIACIN</b> - 315 tablets	98.00	73.50		
	Buy 4 bottles, price each	86.00	64.50		
	Buy 10 bottles, price each	69.50	52.13		
01554	<b>LIFE EXTENSION MIX™</b> - 490 caps	110.00	82.50		
	Buy 4 bottles, price each	98.00	73.50		
	Buy 10 bottles, price each	85.00	63.75		
01556	<b>LIFE EXTENSION MIX™ POWDER</b> - 14.81 oz	98.00	73.50		
	Buy 4 bottles, price each	86.00	64.50		
	Buy 10 bottles, price each	72.00	54.00		
01565	<b>LIFE EXTENSION MIX™</b> - 315 tablets w/o copper	98.00	73.50		
	Buy 4 bottles, price each	86.00	64.50		
	Buy 10 bottles, price each	69.50	52.13		
01567	<b>LIFE EXTENSION MIX™ w/EXTRA NIACIN</b> 315 tablets w/o copper	98.00	73.50		
	Buy 4 bottles, price each	86.00	64.50		
	Buy 10 bottles, price each	69.50	52.13		
01564	<b>LIFE EXTENSION MIX™</b> - 490 caps w/o copper	110.00	82.50		
	Buy 4 bottles, price each	98.00	73.50		
	Buy 10 bottles, price each	85.00	63.75		
01566	<b>LIFE EXTENSION MIX™ POWDER</b> - 14.81 oz w/o copper	98.00	73.50		
	Buy 4 bottles, price each	86.00	64.50		
	Buy 10 bottles, price each	72.00	54.00		

**SUB-TOTAL OF COLUMN 10**

No.		Retail Each	Member Each	Qty	Total
00263	<b>LIFE FLORA™</b> - 300 mg, 120 caps Buy 4 bottles, price each	\$20.50 18.75	\$15.38 14.06		
01314	<b>LIFESHIELD® IMMUNITY™</b> - 60 veg. caps	39.95	29.96		
01227	<b>LIVER FORCE</b> - 30 veg. caps	34.95	26.21		
00939	<b>5-LOXIN®</b> - 75 mg, 100 veg. caps Buy 4 bottles, price each	19.50 17.25	14.63 12.94		
01013	<b>L-LYSINE</b> - 620 mg, 100 caps Buy 4 bottles, price each	9.00 8.00	6.75 6.00		
00129	<b>L-LYSINE POWDER</b> - 300 grams Buy 4 bottles, price each	16.00 13.75	12.00 10.31		
01470	<b>LURALEAN® CAPS SPECIAL PROPOLMANNAN PARTICLE SIZE</b> - 120 veg. caps Buy 4 bottles, price each	28.00 25.00	21.00 18.75		
01017	<b>LUSTRE™</b> - 90 tablets Buy 4 bottles, price each	17.50 15.50	13.13 11.63		
00455	<b>LYCOPENE EXTRACT (MEGA)</b> - 15 mg, 90 softgels Buy 4 bottles, price each	35.00 30.00	26.25 22.50		
<b>M</b>					
01369	<b>MAGNESIUM CAPS</b> - 500 mg, 100 veg. caps Buy 4 bottles, price each	\$10.00 9.00	\$7.50 6.75		
00502	<b>MAGNESIUM CITRATE</b> - 160 mg, 100 caps Buy 4 bottles, price each	9.00 7.50	6.75 5.63		
00704	<b>MAITAKE™ SX-FRACTION</b> - 90 veg. tablets	49.95	37.46		
00547	<b>MELATONIN</b> - 300 mcg, 100 caps Buy 4 bottles, price each	5.75 5.00	4.31 3.75		
01083	<b>MELATONIN</b> - 500 mcg, 200 veg. caps Buy 4 bottles, price each	18.00 16.00	13.50 12.00		
00329	<b>MELATONIN</b> - 1 mg, 60 caps Buy 4 bottles, price each	5.00 4.63	3.75 3.47		
00330	<b>MELATONIN</b> - 3 mg, 60 caps Buy 4 bottles, price each	8.00 6.88	6.00 5.16		
01086	<b>MELATONIN</b> - 3 mg, 60 time-release veg. caps Buy 4 bottles, price each	10.50 9.38	7.88 7.04		
00331	<b>MELATONIN</b> - 10 mg, 60 caps Buy 4 bottles, price each	28.00 24.00	21.00 18.00		
00332	<b>MELATONIN</b> - 3 mg, 60 lozenges Buy 4 bottles, price each	8.00 6.88	6.00 5.16		
01087	<b>MELATONIN TIME RELEASE</b> - 300 mcg, 100 veg. caps Buy 4 bottles, price each	6.25 5.63	4.69 4.22		
01088	<b>MELATONIN TIME RELEASE</b> - 750 mcg, 60 veg. caps Buy 4 bottles, price each	5.75 5.00	4.31 3.75		
01009	<b>MEMORY UPGRADE™</b> - 600 grams powder	26.95	20.21		
01047	<b>MENOPAUSE SOLUTIONS</b> - 120 tablets	49.95	37.46		
00536	<b>METHYLCOBALAMIN</b> - 1 mg, 60 lozenges (vanilla) Buy 4 bottles, price each	9.95 8.00	7.46 6.00		
00537	<b>METHYLCOBALAMIN</b> - 5 mg, 60 lozenges (vanilla) Buy 4 bottles, price each Buy 10 bottles, price each	32.00 25.00 23.00	24.00 18.75 17.25		
00709	<b>MIGRA-EEZE™ (BUTTERBUR)</b> - 60 softgels Buy 4 bottles, price each	29.50 26.33	22.13 19.75		

**SUB-TOTAL OF COLUMN 11**

No.		Retail Each	Member Each	Qty	Total
01517	<b>MILK THISTLE (CERTIFIED EUROPEAN)</b> - 120 veg. caps Buy 4 bottles, price each	\$42.00 38.00	\$31.50 28.50		
00623	<b>MINERAL FORMULA FOR MEN</b> - 100 caps Buy 4 bottles, price each Buy 12 bottles, price each	15.00 12.50 10.83	11.25 9.38 8.13		
00624	<b>MINERAL FORMULA FOR WOMEN</b> - 100 caps Buy 4 bottles, price each Buy 12 bottles, price each	15.00 12.50 10.83	11.25 9.38 8.13		
01315	<b>MIRAFORTE w/STANDARDIZED LIGNANS (SUPER)</b> - 120 caps Buy 4 bottles, price each	62.00 56.00	46.50 42.00		
01569	<b>MITOCHONDRIAL BASICS w/BIOPOQ™</b> - 30 caps Buy 4 bottles, price each	52.00 46.00	39.00 34.50		
01568	<b>MITOCHONDRIAL ENERGY OPTIMIZER w/BIOPOQ™</b> - 120 caps Buy 4 bottles, price each	94.00 84.00	70.50 63.00		
00803	<b>MIST ORAL III w/COQ10</b> - 2 fl oz Buy 4 bottles, price each	28.00 25.33	21.00 19.00		
00065	<b>MK-7</b> - 90 mcg, 60 softgels Buy 4 bottles, price each	28.00 25.00	21.00 18.75		
01279	<b>MOUTHWASH W/POMEGRANATE</b> - 16 oz Buy 4 bottles, price each	18.50 17.00	13.88 12.75		
00451	<b>MSM (METHYLSULFONYLMETHANE)</b> - 1000 mg, 100 caps Buy 4 bottles, price each	14.00 11.95	10.50 8.96		
<b>N</b>					
00215	<b>N-ACETYL-L-CYSTEINE</b> - 600 mg, 60 caps Buy 4 bottles, price each	\$14.00 13.50	\$10.50 10.13		
00168	<b>NAPCA W/ALOE VERA</b> - 8 fl oz Buy 4 bottles, price each	10.50 9.61	7.88 7.21		
00066	<b>NATTOKINASE</b> - 60 softgels	24.98	18.74		
00891	<b>NATURAL APPETITE CONTROL</b> - 90 softgels Buy 4 bottles, price each	28.00 25.20	21.00 18.90		
00984	<b>NATURAL BP MANAGEMENT</b> - 60 tablets Buy 4 bottles, price each	42.00 37.80	31.50 28.35		
00913	<b>NATURAL ESOPHAGUARD</b> - 10 softgels Buy 2 boxes, price each	19.95 19.00	14.96 14.25		
00712	<b>NATURAL ESTROGEN w/POMEGRANATE EXTRACT</b> - 60 caplets Buy 4 bottles, price each	38.00 33.00	28.50 24.75		
01221	<b>NATURAL FEMALE SUPPORT</b> - 30 veg. caps Buy 4 bottles, price each	28.00 24.00	21.00 18.00		
01471	<b>NATURAL GLUCOSE ABSORPTION CONTROL</b> - 60 veg. caps Buy 4 bottles, price each	39.00 36.00	29.25 27.00		
00698	<b>NATURAL RELIEF 1222™</b> - 2 oz Buy 4 tubes, price each	28.00 25.00	21.00 18.75		
01084	<b>NATURAL SLEEP®</b> - 3 mg, 60 veg. caps Buy 4 bottles, price each	12.99 10.00	9.74 7.50		
01507	<b>NATURAL SLEEP® (ENHANCED) W/ MELATONIN</b> - 30 caps Buy 4 bottles, price each	22.00 20.00	16.50 15.00		
01511	<b>NATURAL SLEEP® (ENHANCED) W/O MELATONIN</b> - 30 caps Buy 4 bottles, price each	20.00 18.00	15.00 13.50		

**SUB-TOTAL OF COLUMN 12**

# Buyers Club Order Form

To order call: 1.954.766.8433 or 1.800.544.4440

No.		Retail Each	Member Each	Qty	Total
<b>N CONTINUED</b>					
01085	<b>NATURAL SLEEP MELATONIN®</b> - 5 mg, 60 veg. caps	\$18.00	\$13.50		
	Buy 4 bottles, price each	16.00	12.00		
00987	<b>NATURAL STRESS RELIEF</b> - 30 veg. caps	28.00	21.00		
	Buy 4 bottles, price each	24.00	18.00		
01076	<b>NEW FACE SOLUTION</b> - 1.7 oz bottle	54.00	40.50		
	Buy 4 bottles, price each	49.00	36.75		
00373	<b>NO-FLUSH NIACIN</b> - 800 mg, 100 caps	19.00	14.25		
	Buy 4 bottles, price each	17.00	12.75		
01035	<b>NUTRIM</b> - 170 grams powder	25.95	19.46		
00523	<b>N-ZIMES™</b> - 270 caps	23.90	17.93		
	Buy 4 bottles, price each	22.00	16.50		
<b>O</b>					
00104	<b>OCTACOSANOL</b> - 8000 mcg, 60 caps	\$19.83	\$14.87		
	Buy 4 bottles, price each	17.35	13.01		
01483	<b>OMEGA 3 EPA/DHA w/SESAME LIGNANS &amp; OLIVE FRUIT EXTRACT (SUPER)</b> - 60 softgels	18.00	13.50		
	Buy 4 bottles, price each	16.00	12.00		
01482	<b>OMEGA 3 EPA/DHA w/SESAME LIGNANS &amp; OLIVE FRUIT EXTRACT (SUPER)</b> - 120 softgels	32.00	24.00		
	Buy 4 bottles, price each	28.00	21.00		
	Buy 10 bottles, price each	24.90	18.68		
01484	<b>OMEGA 3 EPA/DHA w/SESAME LIGNANS &amp; OLIVE FRUIT EXTRACT (SUPER)</b> - 120 enteric coated softgels	34.00	25.50		
	Buy 4 bottles, price each	31.00	23.25		
	Buy 10 bottles, price each	28.00	21.00		
01501	<b>ONE-PER-DAY</b> - 60 veg. tablets	19.95	14.96		
	Buy 4 bottles, price each	18.00	13.50		
00717	<b>ONLY TRACE MINERALS</b> - 90 caps	15.00	11.25		
	Buy 4 bottles, price each	12.50	9.38		
00915	<b>OPTIZINC®</b> - 30 mg, 90 veg. caps	5.95	4.46		
	Buy 4 bottles, price each	5.00	3.75		
01070	<b>ORGANIC TOTAL BODY CLEANSE™</b> - 14-day supply	34.99	26.24		
00043	<b>L-ORNITHINE</b> - 500 mg, 100 caps	27.51	20.63		
	Buy 4 bottles, price each	22.00	16.50		
<b>P</b>					
00107	<b>PABA CAPS</b> - 500 mg, 100 caps	\$15.42	\$11.57		
	Buy 4 bottles, price each	13.59	10.19		
00073	<b>PANCREATIN</b> - 500 mg, 50 caps	13.22	9.92		
	Buy 4 bottles, price each	12.12	9.09		
01323	<b>PEAK ATP® WITH GLYCOCARN®</b> - 60 veg. caps	59.00	44.25		
	Buy 4 bottles, price each	56.00	42.00		
00342	<b>PECTA SOL-C® MODIFIED CITRUS PECTIN</b> - 454 grams powder	99.95	74.96		
	Buy 4 jars, price each	95.70	71.78		
01080	<b>PECTA SOL-C® MODIFIED CITRUS PECTIN</b> - 270 veg. caps	69.95	52.46		
00673	<b>PGX™ SOLUBLE FIBER BLEND (WELLBETX®)</b> -180 caps	34.95	26.21		
00865	<b>PHARMAGABA™</b> - 60 chewable tablets	29.95	22.46		
	Buy 4 bottles, price each	27.00	20.25		
01320	<b>PHOSCHOL®</b> - 900 mg, 100 softgels	69.45	52.09		
00368	<b>PHOSPHATIDYLSERINE CAPS</b> - 100 mg, 100 caps	54.00	40.50		
	Buy 4 bottles, price each	48.00	36.00		
00614	<b>PILL CUTTER/GRINDER</b>	11.95	8.96		
00561	<b>POLICOSANOL</b> - 10 mg, 60 tablets	24.00	18.00		
	Buy 6 bottles, price each	18.00	13.50		

**SUB-TOTAL OF COLUMN 13**

No.		Retail Each	Member Each	Qty	Total
01423	<b>POMEGRANATE™ (FULL-SPECTRUM)</b> - 30 softgels	\$24.00	\$18.00		
	Buy 4 bottles, price each	21.00	15.75		
00956	<b>POMEGRANATE EXTRACT</b> - 30 veg. caps	19.50	14.63		
	Buy 4 bottles, price each	17.55	13.16		
00957	<b>POMEGRANATE JUICE CONCENTRATE</b> - 16 oz. liquid	25.95	19.46		
	Buy 4 bottles, price each	24.00	18.00		
00577	<b>POTASSIUM IODIDE</b> - 1 box, 14 tablets	6.95	5.21		
	Buy 4 boxes, price each	5.25	3.94		
01500	<b>PQQ CAPS W/BIOPQQ™</b> - 10 mg, 30 veg. caps	24.00	18.00		
	Buy 4 bottles, price each	22.00	16.50		
00302	<b>PREGNENOLONE</b> - 50 mg, 100 caps	24.00	18.00		
	Buy 4 bottles, price each	19.00	14.25		
00700	<b>PREGNENOLONE</b> - 100 mg, 100 caps	26.00	19.50		
	Buy 4 bottles, price each	22.50	16.88		
01373	<b>PRELOX® NATURAL SEX FOR MEN®</b> - 60 tablets	50.00	37.50		
	Buy 4 bottles, price each	45.00	33.75		
00571	<b>PRIMAL DEFENSE™</b> - 90 caplets	49.95	37.46		
	Buy 4 bottles, price each	48.50	36.38		
01019	<b>PRIMAL DEFENSE™</b> - 180 caplets	78.95	59.21		
00525	<b>PROBOOST THYMIC PROTEIN A™</b> - 4 mcg, 30 packets	72.00	54.00		
	Buy 4 boxes, price each	70.00	52.50		
00869	<b>PRO FEM CREAM</b> - 2 fl oz (Progesterone Cream)	32.00	24.00		
	Buy 4 bottles, price each	29.00	21.75		
01020	<b>PROGREENS®</b> - 15 stick pack	22.50	16.88		
01072	<b>PRO M INTERNAL DEODORIZER</b> - 500 mg, 100 veg. caps	28.00	21.00		
	Buy 4 bottles, price each	25.00	18.75		
01495	<b>PROSTATE FORMULA W/ 5-LOXIN® STAND. LIGNANS (ULTRA NAT)</b> -60 softgels	38.00	28.50		
	Buy 4 bottles, price each	35.00	26.25		
	Buy 12 bottles, price each	32.00	24.00		
01092	<b>PROTEIN - VANILLA</b> - (Enhanced Life Extension) -1000 grams powder	42.00	31.50		
	Buy 4 bottles, price each	40.00	30.00		
01093	<b>PROTEIN - CHOCOLATE</b> - (Enhanced Life Extension) -1000 grams powder	42.00	31.50		
	Buy 4 bottles, price each	40.00	30.00		
01094	<b>PROTEIN - NATURAL</b> - (Enhanced Life Extension) -1000 grams powder	42.00	31.50		
	Buy 4 bottles, price each	40.00	30.00		
01095	<b>PROTEIN - BERRY</b> - (Enhanced Life Extension) -1000 grams powder	42.00	31.50		
	Buy 4 bottles, price each	40.00	30.00		
00290	<b>PROTEIN - VANILLA</b> - (Designer Whey) 2 lbs powder	42.49	31.87		
	Buy 4 bottles, price each	38.50	28.88		
00282	<b>PROTEIN - CHOCOLATE</b> - (Designer Whey) 2 lbs powder	42.49	31.87		
	Buy 4 bottles, price each	38.50	28.88		
00283	<b>PROTEIN - NATURAL</b> - (Designer Whey) 2 lbs powder	42.49	31.87		
	Buy 4 bottles, price each	38.50	28.88		
01508	<b>PTEROPURE™</b> - 50 mg Pterostilbene 60 veg. caps	32.00	24.00		
	Buy 4 bottles, price each	30.00	22.50		
01056	<b>PURE-GAR®</b> - 200 caps	24.95	18.71		
	Buy 4 bottles, price each	21.00	15.75		
01075	<b>PURE PLANT PROTEIN</b> - Natural Vanilla 450 grams powder	36.00	27.00		
	Buy 4 jars, price each	33.00	24.75		
01209	<b>PUMPKIN SEED EXTRACT (WATER-SOLUBLE)</b> - 60 veg. caps	20.00	15.00		
	Buy 4 bottles, price each	18.00	13.50		
01210	<b>PUMPKIN SEED EXT w/SOY ISOFLAVONES (WATER-SOLUBLE)</b> - 60 veg. caps	22.00	16.50		
	Buy 4 bottles, price each	20.00	15.00		
01031	<b>PYCNOGENOL®</b> - 60 veg. caps	89.95	67.46		

**SUB-TOTAL OF COLUMN 14**

No.		Retail Each	Member Each	Qty	Total
<b>P CONTINUED</b>					
01217	<b>PYRIDOXAL 5'-PHOSPHATE</b> - 100 mg, 60 veg. caps	\$22.00	\$16.50		
	Buy 4 bottles, price each	19.80	14.85		
<b>Q, R</b>					
01309	<b>QUERCETIN (OPTIMIZED)</b> - 250 mg, 60 veg. caps	\$18.00	\$13.50		
	Buy 4 bottles, price each	17.00	12.75		
01030	<b>RED YEAST RICE</b> (Bluebonnet)- 600 mg, 60 veg. caps	17.50	13.13		
00979	<b>RED YEAST RICE</b> (Nature's Plus)- 600 mg, 60 veg. caps	23.95	17.96		
00060	<b>RED YEAST RICE EXTENDED RELEASE</b> - 30 veg. tablets	21.50	16.13		
00605	<b>REGIMINT</b> - 60 enteric-coated caps	19.95	14.96		
	Buy 4 bottles, price each	18.67	14.00		
01448	<b>REJUVENEX® BODY LOTION</b> - 6 oz	24.00	18.00		
	Buy 4 tubes, price each	19.80	14.85		
	Buy 8 tubes, price each	17.00	12.75		
00918	<b>REJUVENEX® FACTOR</b> - 1.7 oz airless pump	65.00	48.75		
	Buy 2 bottles, price each	60.00	45.00		
	Buy 4 bottles, price each	55.00	41.25		
	Buy 8 bottles, price each	49.91	37.43		
01220	<b>REJUVENEX® (ULTRA)</b> - 2 oz	52.00	39.00		
	Buy 2 jars, price each	48.00	36.00		
	Buy 4 jars, price each	44.00	33.00		
	Buy 8 jars, price each	39.93	29.95		
00676	<b>REJUVENIGHT (ULTRA)</b> - 2 oz	39.95	29.96		
	Buy 4 jars, price each	36.00	27.00		
00706	<b>REJUVENIGHT w/PROGESTERONE (ULTRA)</b> - 2 oz	42.00	31.50		
	Buy 4 jars, price each	38.00	28.50		
01413	<b>RESVERATROL W/PTEROSTILBENE</b> - 20 mg, 60 veg. caps	24.00	18.00		
	Buy 4 bottles, price each	22.00	16.50		
01410	<b>RESVERATROL W/PTEROSTILBENE</b> - 100 mg, 60 veg. caps	36.00	27.00		
	Buy 4 bottles, price each	32.00	24.00		
01430	<b>RESVERATROL w/SYNERGISTIC GRAPE-BERRY ACTIVES (OPTIMIZED)</b> - 250 mg, 60 veg. caps	46.00	34.50		
	Buy 4 bottles, price each	41.33	31.00		
00889	<b>RHODIOLA EXTRACT</b> - 250 mg, 60 veg. caps	11.75	8.81		
	Buy 4 bottles, price each	10.58	7.94		
00972	<b>(D) RIBOSE POWDER</b> - 150 grams	27.50	20.63		
	Buy 4 jars, price each	24.75	18.56		
01473	<b>(D) RIBOSE TABLETS</b> - 100 veg. tabs	32.00	24.00		
	Buy 4 bottles, price each	28.00	21.00		
01208	<b>R-LIPOIC ACID (SUPER)</b> - 300 mg, 60 veg. caps	49.00	36.75		
	Buy 4 bottles, price each	45.00	33.75		
00070	<b>RNA CAPSULES</b> - 500 mg, 100 caps	17.95	13.46		
	Buy 4 bottles, price each	16.16	12.12		
00917	<b>ROSMARINIC ACID EXTRACT</b> - 60 veg. caps	59.00	44.25		
	Buy 4 bottles, price each	53.00	39.75		
<b>S</b>					
01082	<b>SACCHAROMYCES BOULARDII + MOS</b> - 30 veg. caps	\$9.95	\$7.46		
01067	<b>SACCHAROMYCES BOULARDII + MOS</b> - 90 veg. caps	21.95	16.46		
01432	<b>SAFFRON w/SATIAREAL (OPTIMIZED)</b> - 60 veg. caps	36.00	27.00		
	Buy 4 bottles, price each	32.00	24.00		
**00573	<b>SAMBU® GUARD</b> - 175 ml	17.49	13.99		
00358	<b>SAME (S-ADENOSYL-METHIONINE)</b> - 200 mg, 20 enteric coated tablets	17.00	12.75		
	Buy 8 boxes, price each	15.00	11.25		

**SUB-TOTAL OF COLUMN 15**

No.		Retail Each	Member Each	Qty	Total
00453	<b>SAME (S-ADENOSYL-METHIONINE)</b> - 200 mg, 50 enteric coated tablets	\$40.00	\$30.00		
	Buy 4 bottles, price each	35.00	26.25		
00557	<b>SAME (S-ADENOSYL-METHIONINE)</b> - 400 mg, 20 enteric coated tablets	32.00	24.00		
	Buy 6 boxes, price each	25.00	18.75		
01055	<b>SAME (S-ADENOSYL-METHIONINE)</b> - 400 mg, 50 enteric coated tablets	72.00	54.00		
	Buy 4 bottles, price each	66.00	49.50		
01043	<b>SEA-IODINE™</b> - 1000 mcg, 60 veg. caps	8.00	6.00		
	Buy 4 bottles, price each	7.20	5.40		
00046	<b>SELENIUM</b> - 2 oz dropper bottle	9.95	7.46		
	Buy 4 bottles, price each	9.45	7.09		
00567	<b>SE-METHYL L-SELENOCYSTEINE</b> - 200 mcg, 100 caps	12.00	9.00		
	Buy 4 bottles, price each	11.00	8.25		
00318	<b>SERRAFLAZYME</b> - 100 tablets	18.00	13.50		
	Buy 4 bottles, price each	16.00	12.00		
00011	<b>SHAMPOO</b> - 16 fl oz	6.00	4.50		
	Buy 4 bottles, price each	4.75	3.56		
00284	<b>SHARK LIVER OIL (NORWEGIAN)</b> - 1000 mg, 30 softgels	18.00	13.50		
	Buy 4 bottles, price each	16.00	12.00		
00184	<b>SILYMARIN</b> - 100 mg, 50 caps	9.25	6.94		
	Buy 4 bottles, price each	8.25	6.19		
01502	<b>SKIN RESTORING CERAMIDES w/LIPOWHEAT™</b> - 30 liquid caps	25.00	18.75		
	Buy 4 bottles, price each	23.00	17.25		
00961	<b>SODZYME® w/GLISODIN® AND WOLFBERRY</b> - 90 veg. caps	28.00	21.00		
	Buy 4 bottles, price each	24.00	18.00		
00657	<b>SOLARSHIELD SUNGLASSES</b> - 1 pair smoke color	12.99	9.74		
	Buy 2 pairs, price each	11.50	8.63		
01097	<b>SOY EXTRACT (ULTRA)</b> - 150 veg. caps	87.00	65.25		
	Buy 4 bottles, price each	78.00	58.50		
00286	<b>SOY PROTEIN CONCENTRATE</b> - 16 oz of powder	12.00	9.00		
	Buy 4 jars, price each	10.63	7.97		
01099	<b>STABILIMUM® 200</b> - 30 caps	30.00	22.50		
00432	<b>STEVIA EXTRACT</b> - 100 packets, 1 gram each	9.95	7.46		
	Buy 4 boxes, price each	9.00	6.75		
00351	<b>ST. JOHN'S WORT EXTRACT</b> - 300 mg, 60 caps	10.98	8.24		
	Buy 4 bottles, price each	10.00	7.50		
00327	<b>ST. JOHN'S WORT EXTRACT (PLANETARY)</b> - 600 mg, 60 tablets	16.75	12.56		
	Buy 4 bottles, price each	13.85	10.39		
01476	<b>STRONTIUM</b> - 750 mg, 90 veg. caps	20.00	15.00		
	Buy 4 bottles, price each	18.00	13.50		
00971	<b>SUN PROTECTION SPRAY W/BETA GLUCAN</b> - SPF30 - 6 oz	14.95	11.21		
	Buy 4 bottles, price each	13.50	10.13		
00747	<b>SUNGLASSES (OVERXCAST POLARIZED)</b> - gray color, large	27.00	20.25		
	Buy 2 pairs, price each	21.00	15.75		
00748	<b>SUNGLASSES (OVERXCAST POLARIZED)</b> - gray color, medium	27.00	20.25		
	Buy 2 pairs, price each	21.00	15.75		
00758	<b>SUPER ABSORBABLE SOY ISOFLAVONES</b> - 60 caps	28.00	21.00		
	Buy 4 bottles, price each	25.00	18.75		
01381	<b>SUPERCritical OMEGA 7™</b>	56.95	42.71		
01408	<b>SUPER SAW PALMETTO/NETTLE ROOT W/BETA-SITOSTEROL</b> 60 softgels	28.00	21.00		
	Buy 4 bottles, price each	26.00	19.50		
	Buy 12 bottles, price each	24.00	18.00		

**SUB-TOTAL OF COLUMN 16**

# Buyers Club Order Form

To order call: 1.954.766.8433 or 1.800.544.4440

No.		Retail Each	Member Each	Qty	Total
<b>S CONTINUED</b>					
01407	<b>SUPER SAW PALMETTO W/BETA-SITOSTEROL</b> - 30 softgels	\$15.00	\$11.25		
	Buy 12 bottles, price each	12.00	9.00		
00578	<b>SUPER SELENIUM COMPLEX</b> - 200 mcg, 100 caps	12.00	9.00		
	Buy 4 bottles, price each	10.00	7.50		
	Buy 12 bottles, price each	9.00	6.75		
00674	<b>SYTRINOL™</b> - 60 softgels	32.00	24.00		
	Buy 4 bottles, price each	28.00	21.00		
<b>T</b>					
<b>TAL•SHI™ COSMETICS</b> • For information please call 1-800-544-4440 or visit www.LifeExtension.com					
01062	<b>TART CHERRY</b> - 600 mg, 60 caps	\$18.95	\$14.21		
00199	<b>TAURINE</b> - 1000 mg, 50 caps	8.95	6.71		
	Buy 4 bottles, price each	8.00	6.00		
00133	<b>TAURINE POWDER</b> - 300 grams	20.00	15.00		
	Buy 4 bottles, price each	16.88	12.66		
01304	<b>THEAFLAVIN STANDARDIZED EXTRACT</b> - 30 veg. caps	18.00	13.50		
	Buy 4 bottles, price each	16.00	12.00		
00555	<b>(L) THEANINE</b> - 100 mg, 60 caps	24.00	18.00		
	Buy 4 bottles, price each	20.50	15.38		
01038	<b>THERALAC PROBIOTICS</b> - 30 caps	44.95	33.71		
00224	<b>THYMIC IMMUNE FACTORS</b> - 100 caps	18.00	13.50		
	Buy 4 bottles, price each	14.00	10.50		
00668	<b>THYROID FORMULA™ (METABOLIC ADVANTAGE)</b> - 100 caps	21.95	16.46		
00349	<b>TMG POWDER</b> - 50 grams	14.00	10.50		
	Buy 4 bottles, price each	11.00	8.25		
00359	<b>TMG</b> - 500 mg, 180 tablets	18.00	13.50		
	Buy 4 bottles, price each	15.50	11.63		
00366	<b>TOCOTRIENOLS</b> - (Rice) 50 mg, 60 softgel caps	41.95	31.46		
	Buy 4 bottles, price each	38.00	28.50		
00781	<b>TOCOTRIENOLS WITH SESAME LIGNANS</b> - 60 softgels	38.00	28.50		
	Buy 4 bottles, price each	36.00	27.00		
01400	<b>TOCOTRIENOLS (SUPER-ABSORBABLE)</b> - 60 softgels	30.00	22.50		
	Buy 4 bottles, price each	28.00	21.00		
01278	<b>TOOTHPASTE</b> - 4 oz (Mint)	9.50	7.13		
	Buy 4 tubes, price each	8.67	6.50		
01274	<b>TOTAL SUN PROTECTION CREAM W/BETA GLUCAN</b> - 4 oz	28.00	21.00		
	Buy 4 tubes, price each	25.20	18.90		
01468	<b>TRIPLE ACTION CRUCIFEROUS VEGETABLE EXTRACT</b> - 60 veg. caps	24.00	18.00		
	Buy 4 bottles, price each	22.00	16.50		
01469	<b>TRIPLE ACTION CRUCIFEROUS VEGETABLE EXTRACT W/RESVERATROL</b> -60 veg. caps	32.00	24.00		
	Buy 4 bottles, price each	29.60	22.20		
00866	<b>TRYPTOPURE® L-TRYPTOPHAN</b> - 500 mg, 90 veg. caps	38.00	28.50		
	Buy 4 bottles, price each	34.00	25.50		
01202	<b>TRYPTOPURE® PLUS (OPTIMIZED)</b> - 90 veg. caps	40.00	30.00		
	Buy 4 bottles, price each	36.00	27.00		
01516	<b>TWO-PER-DAY</b> - 60 veg. tablets	9.95	7.46		
	Buy 4 bottles, price each	9.00	6.75		
01515	<b>TWO-PER-DAY</b> - 120 veg. tablets	18.95	14.21		
	Buy 4 bottles, price each	17.00	12.75		
00326	<b>L-TYROSINE</b> - 500 mg, 100 tablets	12.50	9.38		
	Buy 4 bottles, price each	11.42	8.57		

**SUB-TOTAL OF COLUMN 17**

No.		Retail Each	Member Each	Qty	Total
<b>U</b>					
* 00310	<b>UDO'S OIL 3-6-9 BLEND</b> - 17 fl oz	\$27.49	\$21.99		
* 00311	<b>UDO'S 3-6-9 OIL BLEND</b> - 180 caps	33.79	27.03		
* 00322	<b>UDO'S CHOICE® WHOLESOME FAST FOOD</b> - 16 oz bottle	27.49	21.99		
01061	<b>ULTIMATE FLORA ADVANCED IMMUNITY PROBIOTICS</b> - 30 caps	29.99	22.49		
<b>V</b>					
00213	<b>VANADYL SULFATE</b> - 7.5 mg, 100 tablets	\$15.00	\$11.25		
	Buy 4 bottles, price each	12.50	9.38		
00252	<b>VELVET DEER ANTLER</b> - 250 mg, 30 caps	36.00	27.00		
	Buy 4 bottles, price each	34.00	25.50		
00408	<b>VENOTONE</b> - 60 caps	18.95	14.21		
	Buy 4 bottles, price each	16.00	12.00		
01327	<b>VINPOCETINE</b> - 10 mg, 100 tablets	18.00	13.50		
	Buy 4 bottles, price each	14.00	10.50		
01033	<b>VISION OPTIMIZER</b> - 90 caps	29.95	22.46		
01098	<b>VITAL GREENS MIX</b> - 319.5 grams powder	48.00	36.00		
	Buy 4 jars, price each	44.00	33.00		
01219	<b>VITAMIN A NUTRISORB</b> - 0.6 fl oz	27.00	20.25		
00091	<b>VITAMIN B1 CAPS</b> - 500 mg, 100 caps	18.73	14.05		
	Buy 4 bottles, price each	17.00	12.75		
00093	<b>VITAMIN B2 CAPS</b> - 100 mg, 100 caps	14.32	10.74		
	Buy 4 bottles, price each	13.00	9.75		
00096	<b>VITAMIN B3 NIACIN</b> - 1000 mg, 100 caps	12.75	9.56		
	Buy 4 bottles, price each	12.00	9.00		
00372	<b>VITAMIN B3 NIACIN</b> - 500 mg, 100 caps	7.65	5.74		
	Buy 4 bottles, price each	6.65	4.99		
00098	<b>VITAMIN B5</b> - 500 mg, 100 caps (Pantothenic Acid)	10.50	7.88		
	Buy 4 bottles, price each	9.38	7.04		
00556	<b>VITAMIN B6</b> - 250 mg, 100 caps	12.50	9.38		
	Buy 4 bottles, price each	11.00	8.25		
00361	<b>VITAMIN B12</b> - 500 mcg, 100 lozenges	8.75	6.56		
	Buy 4 bottles, price each	7.25	5.44		
00927	<b>VITAMIN C WITH DIHYDROQUERCETIN</b> - 1000 mg, 250 tablets	25.50	19.13		
	Buy 4 bottles, price each	23.25	17.44		
00084	<b>VITAMIN C (BUFFERED) POWDER</b> - 454.6 grams	23.95	17.96		
	Buy 4 bottles, price each	22.00	16.50		
00864	<b>VITAMIN D3</b> - 2000 IU, 1 fl oz	28.00	21.00		
	Buy 4 bottles, price each	25.00	18.75		
00251	<b>VITAMIN D3</b> - 1000 IU, 250 caps	12.50	9.38		
	Buy 4 bottles, price each	11.25	8.44		
00713	<b>VITAMIN D3</b> - 5000 IU, 60 caps	11.00	8.25		
	Buy 4 bottles, price each	9.90	7.43		
01418	<b>VITAMIN D3</b> - 7000 IU, 60 caps	14.00	10.50		
	Buy 4 bottles, price each	12.60	9.45		
01372	<b>VITAMIN D3 w/SEA-IODINE™</b> - 5000 IU, 60 veg. caps	14.00	10.50		
	Buy 4 bottles, price each	12.50	9.38		
01472	<b>VITAMINS D AND K w/SEA-IODINE™</b> - 60 veg. caps	24.00	18.00		
	Buy 4 bottles, price each	22.00	16.50		
00063	<b>VITAMIN E (PURE NATURAL)</b> - 400 IU, 100 caps	18.75	14.06		
	Buy 4 bottles, price each	17.25	12.94		
	Buy 10 bottles, price each	15.00	11.25		

**SUB-TOTAL OF COLUMN 18**

To order online visit: [www.LifeExtension.com](http://www.LifeExtension.com)

No.		Retail Each	Member Each	Qty	Total
01225	<b>VITAMIN K2 (LOW-DOSE)</b> - 45 mcg, 90 softgels	\$18.00	\$13.50		
	Buy 4 bottles, price each	16.00	12.00		
<b>Z</b>					
01585	<b>ZEAXANTHIN W/LUTEIN &amp; MESO-ZEAXANTHIN AND C3G (SUPER)</b> - 60 softgels	\$22.00	\$16.50		
	Buy 4 bottles, price each	19.80	14.85		
01586	<b>ZEAXANTHIN W/LUTEIN &amp; MESO-ZEAXANTHIN PLUS ASTAXANTHIN AND C3G (SUPER)</b> - 60 softgels	42.00	31.50		
	Buy 4 bottles, price each	38.00	28.50		
00061	<b>ZINC LOZENGES</b> - 75 lozenges	9.50	7.13		
	Buy 4 bottles, price each	6.75	5.06		
01051	<b>ZYFLAMEND</b> - 120 softgels	60.95	45.71		
01029	<b>ZYFLAMEND EASYCAPS</b> - 180 softgels	31.95	23.96		

**SUB-TOTAL OF COLUMN 19**

\* These products are not 25% off retail price.

\*\*Not for sale to wholesalers or retail stores.

\*\*\*Not eligible for member discount or member renewal product credit.

†Due to license restrictions, this product is not for sale to wholesalers outside of the USA or Canada.

††Can only be sold in the USA.

†††Member pricing not valid on this item.

††††Due to license restrictions, this product is not for sale in Canada.

^ These products are not 25% off retail price. These products are not for sale to wholesalers or retail stores.

^^Can only be sold in USA and Canada.

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SUB-TOTAL COLUMN 14	
SUB-TOTAL COLUMN 15	
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SUB-TOTAL COLUMN 18	
SUB-TOTAL COLUMN 19	

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C.O.D.s (Add \$7 for C.O.D. orders)	
Shipping <small>UPS OVERNIGHT add \$16, UPS 2nd DAY AIR add \$7. For Puerto Rico, US Virgin Islands, Alaska &amp; Hawaii, add \$7. CANADA UPS EXPRESS Flat rate \$17.50, UK Flat rate \$25 USD. ALL OTHER INTERNATIONAL AIR WILL BE ADDED.</small>	
<b>GRAND TOTAL</b> (Must be in U.S. dollars)	

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EXP. DATE

SIGNATURE

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33833	THE LIFE PLAN • by Jeffrey S. Life, MD, PhD	2011	\$26.00	\$19.50		
33832	YOUR BONES • by Lara Pizzorno, MA, LMT	2011	\$12.00	\$9.00		
33830	SEXY FOREVER: HOW TO FIGHT FAT AFTER FORTY • by Suzanne Somers	2011	\$25.99	\$19.49		
33829	THE IMMORTALITY EDGE • by Michael Fossel, MD, PhD, Greta Blackburn, David Woynarowski, MD	2011	\$25.95	\$18.17		
33827	FOREVER YOUNG • by Nicholas Perricone, MD	2010	\$26.00	\$18.20		
33825	THE EMPOWERED PATIENT • by Elizabeth Cohen	2010	\$15.00	\$10.50		
33824	VITAMIN D SOLUTION • by Michael F. Holick, PhD, MD	2010	\$25.95	\$18.17		
33822	BREAKTHROUGH: EIGHT STEPS TO WELLNESS • by Suzanne Somers (paperback)	2010	\$15.00	\$10.50		
33823	WEIGHT LOSS GUIDE • by Steven V. Joyal, MD and William Faloon (hardcover)	2010	\$29.95	\$8.99		
33820	YOUR BLOOD DOESN'T LIE! • by Sergey Dzigan, MD, PhD	2010	\$24.95	\$17.47		
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33818	STAY YOUNG & SEXY WITH BIO-IDENTICAL HORMONE REPLACEMENT • by Jonathan Wright, MD	2010	\$19.95	\$14.96		
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33812	LIFE OVER CANCER • by Keith Block, MD (hardcover)	2009	\$25.00	\$17.50		
33811	THE GREAT AMERICAN HEART HOAX • by Michael Ozner, MD, FACC, FAHA	2009	\$24.95	\$17.47		
33810	THE ULTRAMIND SOLUTION • by Mark Hyman, MD	2009	\$27.50	\$19.25		
33809	TESTOSTERONE FOR LIFE • by Abraham Morgentaler, MD	2008	\$16.95	\$11.87		
33808	BREAKTHROUGH: EIGHT STEPS TO WELLNESS • by Suzanne Somers	2008	\$25.95	\$18.17		
33599	YOUNGER YOU • by Eric Braverman, MD	—	\$24.95	\$15.75		
33598	AGELESS • by Suzanne Somers	2006	\$25.00	\$17.50		
33666	ULTRAMETABOLISM: THE SIMPLE PLAN FOR AUTOMATIC WEIGHT LOSS • by Mark Hyman, MD	2006	\$25.00	\$15.35		
33422	BRAIN LONGEVITY • by Dharma Singh Khalsa, MD, with Cameron Stauth	1997	\$14.95	\$11.21		
33677	DANGEROUS DOSES • by Katherine Eban	2005	\$25.00	\$16.25		
33600	DISEASE PREVENTION AND TREATMENT, EXPANDED FOURTH EDITION (hardcover)	2003	\$49.95	\$37.46		
	Price per book when 4 books purchased	—	\$44.00	\$33.00		
33594	THE EDGE EFFECT • by Eric Braverman, MD (paperback)	2004	\$12.95	\$9.71		
33700	ENDING AGING • by Aubrey DeGrey with Michael Rae	2007	\$28.94	\$17.75		
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33906	THE MIGRAINE CURE • by Sergey Dzigan, MD, PhD	2006	\$24.00	\$15.60		
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# Omega-7: The Skin & Hair Secret of the Ancients

Sea Buckthorn, the natural botanical source of omega-7 oil, has been used for centuries to promote healthy skin and radiant hair.\*

## Discovered in Ancient Greece

One source of omega-7's powerful attributes is initially believed to have been discovered in Ancient Greece. The legend unfolds that after a successful military campaign, the victorious Greeks were amazed to discover that the deserted and wounded horses of their enemy survived miraculously after taking shelter in a nearby jungle. The horses emerged from this area, which was abundant in Sea Buckthorn (*Hippophae rhamnoides*), stronger than ever with a striking feature: shiny and radiant hair. It is from this legend that the Latin name for Sea Buckthorn, a natural botanical source of omega-7, gets its name — Hippophae, which translates into "Shiny Horse."

## Used for Centuries

Revered for its anti-aging properties, Sea Buckthorn oil, comprised of both palmitoleic and cis-vaccenic acids, is sourced from a 100% natural botanical and has been used for centuries to promote skin, urogenital, and digestive health.\*

While horses may have been the first recorded beings to benefit from the internal moisturizing and anti-aging effect of this superfood botanical, it wasn't long before many cultures began using Sea Buckthorn for human health — in particular for the support of skin and the digestive tract.\* Ancient Greek health texts attributed to Theophrastus and Dioscorides first discussed the many health benefits of Sea Buckthorn. Its use was also lauded in classic Tibetan herbal texts including "the RGYud Bzi" (The Four Books of Pharmacopoeia).

## Part of an Essential Fatty-Acid Health Regimen

Finally, it's reassuring to know that natural omega-7 nicely complements any essential fatty-acid health regimen. The berries and seeds of Sea Buckthorn are also a source of traditional omega-3, -6 and -9 — making it the optimal form of essential fatty acid supplementation and one that everyone should consider incorporating into their skin and membrane health routine.

## Supercritical Omega-7™

The natural botanical source of Supercritical Omega-7 oil, Sea Buckthorn, has been used for centuries to promote skin, urogenital, and digestive health.\* The key source of Supercritical Omega-7's lauded skin support properties comes from a specific fatty acid. Palmitoleic acid is a naturally occurring component of healthy skin and is a highly effective antioxidant providing strong anti-aging support because of its ability to rein in free radicals.\* This key constituent of Supercritical Omega-7 is also a strong emollient — a substance that soothes and moisturizes the skin and promotes the regeneration of tissues.\*

Item #01381  
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Member Price: \$42.71



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A powerful probiotic, Theralac® delivers clinically tested, compatible, Lactobacillus and Bifidobacterium strains alive and deep into the intestinal tract where they colonize intestinal surfaces and help maintain regularity and absorption.



Theralac's 30 billion CFU/capsule survive stomach pHs as low as 1.6 and are stimulated into action by LactoStim®, a unique prebiotic that works in milligram doses. Don't be fooled by probiotics that have been tested at pH 2.5 or higher as these conditions are 10 times or more less acidic and not indicative of complete survival in the stomach. Don't trust probiotics that contain prebiotics like FOS or inulin in milligram quantities when 3-4 grams is a minimum effective dose. Theralac®, natural biotechnology you can trust, is protected by US patents 7,122,370 and 7,229, 818; LactoStim® has four patents pending.

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One Theralac® capsule is a powerful dose, **guaranteed through expiration at 30 billion CFU** and formulated at > 40 billion CFU. It only takes one capsule daily for 2 weeks to restore a positive probiotic balance in most people. Then, many find they can back off to **2 or 3 capsules weekly** to maintain that balance while enjoying a huge **cost savings**. Here are some helpful hints that will power-up Theralac® – even more – at any dose:

- ▶ **Take Theralac® with calcium and magnesium supplements as these assist probiotic adhesion.**
- ▶ **Eat fruits containing prebiotics. Good ones are: Apples (apple-sauce too), pears, bananas, dates, figs and prunes.**
- ▶ **Eat cobiotics, foods that both people and probiotics utilize: Oatmeal, eggs, fish, asparagus, whey or soy protein drinks, spinach, tomatoes, rye bread, low fat cottage cheese, skim milk, yogurt (not a strong probiotic alone).**
- ▶ **Take Theralac® at bedtime because intestinal motility slows down.**

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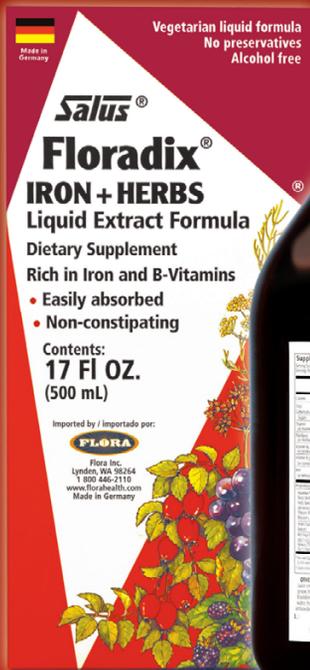
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# Enhanced Night Vision!

# EYE PROTECTION FORMULA



Falling down is responsible for 70% of accidental deaths in older people.<sup>1</sup> Poor lighting conditions are often the culprit.

Fortunately, **C3G** derived from **black currant** supports eyesight in **dark** conditions by promoting the healthy function of delicate structures within the retina that support **night vision**.<sup>2</sup>

**Super Zeaxanthin** contains a potent dose of **C3G** to nourish cells throughout the body.

## Maintain Macular Density

The **macular pigment** is composed of lutein, zeaxanthin, and meso-zeaxanthin. The *density* of the macula is essential to proper vision. Macular density declines naturally over time.

Eating lots of lutein- and zeaxanthin-containing vegetables can help maintain the structural integrity of the macula. However, since **meso-zeaxanthin** is not part of the typical diet, it cannot be easily replaced. Young people convert lutein into meso-zeaxanthin inside their macula. Some aging people, however, lose their ability to convert lutein into **meso-zeaxanthin**.

The **Super Zeaxanthin** formula provides **zeaxanthin, lutein and mesozeaxanthin** to help maintain macular density.

## Combat "Eye Fatigue"

Staring at a fixed-distance object such as a computer screen for a long period of time can cause the muscles that focus your eyes (called the ciliary body) to tire or go into spasm. This can result in physical symptoms such as head discomfort, sensitivity to glare, tiredness, soreness, dryness, and blurry vision.

**Super Zeaxanthin** contains a potent dose of **astaxanthin**, a carotenoid found in red algae. Studies show that taking astaxanthin with other carotenoids protects against free radical-induced DNA damage, repairs UVA-irradiated cells, and inhibits inflammatory cell infiltration.<sup>3-6</sup>

Astaxanthin also helps support vascular health within the eye and improves visual acuity.<sup>5</sup> Its fat-soluble nature offers protection to sensitive cells inside the eye.<sup>7</sup>

## Comprehensive Ocular Protection in One Daily Capsule

The new **Super Zeaxanthin** formula provides natural plant extracts that have been shown to promote healthy eyesight. Just one softgel of **Super Zeaxanthin with Lutein, Meso-Zeaxanthin Plus Astaxanthin and C3G** provides:

<b>OptiLut<sup>®</sup>, Lutein Plus<sup>®</sup> and MZ<sup>®</sup></b> .....	<b>38 mg</b>
Marigold ( <i>Tagetes erecta</i> ) Extract (flower) [free lutein equivalent 10 mg]	
<b>Zeaxanthin &amp; Meso-zeaxanthin blend</b> .....	<b>3.75 mg</b>
[micronized zeaxanthin, <b>OptiLut<sup>®</sup>, Lutein Plus<sup>®</sup></b> and <b>MZ<sup>®</sup></b> Marigold Extract (flower)]	
<b>Natural Astaxanthin</b> .....	<b>6 mg</b>
(AstaREAL <sup>®</sup> and Zanthin <sup>®</sup> CO2 extracts of <i>Haematococcus pluvialis</i> algae)	
<b>C3G (Cyanidin-3-glucoside)</b> .....	<b>2.2 mg</b>
[from European black currant ( <i>Ribes nigrum</i> ) extract (fruit)]	

The retail price for a bottle containing 60 softgels of **Super Zeaxanthin with Lutein, Meso-zeaxanthin Plus Astaxanthin and C3G** is \$42. If a member buys four bottles, the price is reduced to just **\$28.50** per bottle.



Item # 01586

To order **Super Zeaxanthin with Lutein, Meso-zeaxanthin Plus Astaxanthin and C3G**, call **1-800-544-4440** or visit **www.LifeExtension.com**

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## WHAT'S INSIDE

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# LifeExtension® Magazine



### 38 WHY DON'T MORE WEALTHY PEOPLE FUND ANTI-AGING RESEARCH?

**Aubrey de Grey** summarizes how **regenerative medicine** may someday **reverse** aging and explains why this critical research has relatively few wealthy supporters. The generous contributions of **Larry Ellison** and **David Murdock** are profiled.



### 30 LIFE EXTENSION FOUNDATION SUPPORTS AGE-REVERSAL RESEARCH

A **Life Extension**-funded project may someday transform aging human cells into young cells and rejuvenate the **vascular** and **immune systems**.



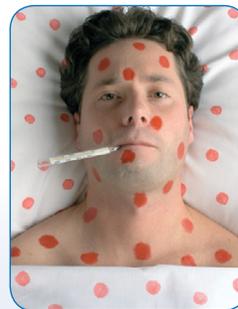
### 52 NEW INITIATIVE TO ACCELERATE ANTI-AGING RESEARCH

An ambitious plan is launched to present research projects to interested parties with the objective of accelerating an **aging cure**.



### 20 PROGRAMMING GENES TO EXTEND LIFE SPAN

Restoring **youthful gene expression** dramatically extends healthy life span in experimental models. Results of these findings are discussed in the context of how reprogramming the genes of aging humans could result in indefinitely extended life spans.



### 7 HOW SMALLPOX RELATES TO AGING

Smallpox killed 300 million people in the 20<sup>th</sup> century alone. Today, most die of age-related diseases. Just as smallpox was eradicated, enlightened people can take steps to protect against degenerative disease while participating in research to slow and reverse aging.



### 54 REDUCE RISKS OF HIGH CORTISOL

Excess cortisol from chronic stress is linked to everything from diabetes, bone loss, weight gain, and insomnia. The supplement **rhodiola** helps combat cortisol's lethal effects.