

"If you're at all interested in 'youth-ing' and want to save thousands of dollars a month on drugs and supplements... drop everything else and give this book your undivided attention."
Dr. Joe Vitale, author of **Zero Limits**

GROWING YOUNG

A Doctor's Guide
to the
NEW Anti-Aging

look younger... feel younger... be younger!

Marcus L. Gitterle, M.D.

The information contained in this book is based upon the research and the personal and professional experience of the author. It is not intended as a substitute for consulting with your physician or other healthcare provider. Any attempt to diagnose or treat an illness should be done under the direction of a healthcare professional.

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Youth-ing Made Easy

by Joe Vitale

I'm 57 years old. I'm one of those desperate to live forever folks who has spent as much as seven thousand dollars a month to be pampered by an anti-aging clinic.

I found the experience lacking, and even unhealthy. In order to sprint towards youth, I took prescribed drugs and buckets of supplements that actually made me feel worse. No one close to me liked the experience, either. Apparently I was too high strung to enjoy being around. I quit.

Which is why I'm so grateful that Dr. Marc Gitterle has written this brilliant book. It's packed with affordable ways to take care of your health so you can live longer, happier and healthier. Some of his secrets and insights are breathtakingly simple, yet backed by science. All of the tips are doable by anyone who can read this book. You don't need anything else, either. Far too many health books are teases to get you to buy into some expensive program or auto-ship of supplements. Not this book. Everything you need is right here.

I've personally known Dr. Gitterle for a decade. He's a multi-talented Renaissance man who can talk about music as easily as he can medicine, or discuss spirituality as confidently as he can science. He's also got a wonderful family, lots of friends, and a busy schedule. Yet he took time to write this eye-opening book for you and me.

If you're at all interested in "youth-ing" (the opposite of aging), and want to save thousands of dollars a month on drugs and supplements, and would like to stay out of the hospital so you have more time for the fun things of life, drop everything else and give this book your undivided attention.

It's what the doctor ordered.

To Your Health,
Joe Vitale, Msc.D.
Author, Zero Limits
www.MrFire.com

Cellular Anti-Aging : An Introduction

Anti-Aging Medicine is still in its infancy, but it is already undergoing a revolution. Up to now, we have seen only “baby steps.” Therapies such as hormone replacement, which while helpful, are not really “age reversing.”

This book is about the next generation of anti-aging: Cellular Anti-Aging. Whereas the first generation of anti-aging therapies produced some impressive effects, they were superficial effects.

Therapies such as HGH replacement produced changes that were “suggestive” of anti-aging, but were they really reversing our biological age? Not really. Hormone replacement in a sense is a way of treating one of the symptoms of aging, hormonal decline.

Replacing hormones makes our systems grossly behave “as if younger,” but our cells - our very building blocks, don’t get any younger. It’s like asking our cells to “dance faster.” They may look a bit younger from distance, but up close, and biologically speaking, they are the same tired, old cells.

What we have needed is a new generation of anti-aging therapies; therapies that actually reverse cellular age, not simply make old cells “dance faster.”

That science is now here, but you probably have not heard very much about it yet. That’s partly because this science is moving so quickly, clinical medicine just can’t keep up, but there are other reasons as well.

For one thing, there is a vast movement to figure out how to profit from these new discoveries. I mean, think about the value of this knowledge; how much would it be worth to you to actually make your cells become younger, transforming you into a younger version

of yourself?

Such knowledge is literally priceless, and fortunes will be created from these revolutionary discoveries. I write this book to share the secret of this new science of cellular anti-aging; this science is already accessible, and it needn't be expensive.

Why not? Because some of the most powerful anti-aging tools in the world sat unrecognized on the shelf for a few years - putting them in the public domain - and now they can't be patented. Without patents, there can be no high-priced therapeutic monopoly. It's really that simple.

That is also the major reason you haven't heard about most of these amazing secrets yet; there's no profit in it for anyone! There is no incentive to tell anyone about these new therapeutic tools, even though they are in fact priceless. This is only appropriate, really, as public research dollars paid for many of these discoveries.

Even though pathbreaking science is being done in the area of aging - paid for by public funds - unless a drug company gets involved, and "owns the treatment," most of that research will never see the light of day!

We can be cynical about all this, but we can also take advantage of it! I count my blessings every day as a physician, that I am now able to recommend tools that can literally turn around age-related diseases, thanks to this research.

As a physician, I am in a unique position to understand and filter the plethora of research papers that come off the scientific presses every month. It is so hard to keep up with the flow of new information now, even in a narrow specialty, it's no wonder that most doctors have never read any of the material I am going to be presenting to you in this book.

Medical science is my passion, and I read voraciously, scouring the

medical literature for actionable breakthroughs in natural therapeutics, especially in this area of cellular anti-aging.

More importantly, I have been applying natural protocols to reverse aspects of the aging process for more than 15 years. I have an unusual perspective, being privileged to treat some of the most horrific life and death emergencies, as well as helping individuals experience profound, gradual change, toward better health, using natural methods

This science is amazing, and it is spawning a revolution, because it is showing us the way to reverse the clock at the cellular level, and in so doing, make us biologically younger.

As we become biologically younger, we distance ourselves in the best possible way from diseases and risk factors that have been part and parcel of the experience of aging up to now.

This book is about that new generation of anti-aging therapies. These therapies actually make cells functionally younger. In fact, it is about a comprehensive program for accessing the best of what science has revealed about age-reversal at the cellular level.

Using the methods of cellular anti-aging, cells literally become more youthful. In fact, they even become younger in appearance, when viewed under a microscope.

They become indistinguishable from much younger cells in function. They become more hardy, and less vulnerable to environmental stresses, and they protect their precious allotment of DNA more carefully.

Such cells don't need to divide as often, which as we will see, is the key to longevity. Most importantly, newly "younger" cells fulfill their primary mission more effectively. This is key to experiencing the effects of anti-aging at the level of the "organism," meaning the whole body.

What does this mean from a health perspective? With age-reversal, heart cells contract better. Brain cells do the work of signaling, processing and memory making, like young cells. Skin becomes more supple, and youthful, because skin cells *are* more youthful again.

And these effects carry through every tissue and organ system, helping each key system return to a more youthful functional status. These effects are not theoretical; they are practical, deep and obvious for those who apply the techniques presented in this book.

Now, it's time to get started. First, we will cover some key background material. Then, we will move straight into the practical techniques of the Synergy Matrix™ program for cellular age reversal.

I present this book to you as the best of what I have gleaned over the past 15 years, working with folks like you, from age 35 to 97. I dedicate this to your success in meeting your health goals, and I hope that reading it gives you the motivation to set those goals very high.

Marcus L. Gitterle, M.D.

1

Sustained Wellness

*“We turn not older with years, but newer every day.”
~Emily Dickinson*

I want to dramatically expand your view of anti-aging. I want to take you beyond the marketing claims and sales gimmicks, and show you an emerging science that can become the solid foundation of your own, sustainable wellness program.

There is a bedrock science that goes beyond the health fads that come and go, the latest “new formula” dreamt up by the best and brightest in supplement marketing, and even beyond the fancy clinic facade, behind which stylish and perfectly groomed health professionals want to sell you the latest hormone replacement miracle.

I have a unique perspective in this regard. For more than 15 years, I have made it a personal goal to stay abreast of the cutting edge in this emerging specialty, for three reasons:

1. I want to know how to best keep my loved ones and close friends healthy and vital for as long as possible. I want to do the same for myself.
2. I write about these topics, and regularly serve as a

consultant to other physicians, who want to make certain that they are staying abreast of the state-of-the-art in anti-aging medicine, for their patients, and also for their own wellness.

3. I have a passion for deepening my knowledge of wellness, and staying abreast of the most important developments in medical science.

Most people see anti-aging medicine through the lens of marketing - what other people are marketing to them. Whether this is in the form of a new supplement, or an anti-aging clinic seeking new patients. That does not mean that what is being offered is inaccurate, or less than helpful, but it means it is going to be limited to what can make other people money, sell a supplement, or get you to buy an expensive hormone replacement therapy plan.

Even if money is no object, as you will soon see, by getting all your anti-aging information from these marketing-oriented sources, it is possible to miss out on some of the best developments going on right now; developments that you can take advantage of, at low cost, today.

I see anti-aging medicine very differently. I see it through the lens of medical research that might not make it to the anti-aging clinics for a long time to come, simply because those clinics are focused on a few, very lucrative therapies.

Soon, you will be in a position to create your own anti-aging action plan, and begin to track your own progress while saving quite a bit of money in the process.

Chances are you can also stay with your own family doctor who will most likely be learning from you, the reader, very soon. I wouldn't be surprised if they adopt some of these strategies themselves.

The Empowered and Informed Patient

Imagine the scene: Palm Springs, Beverly Hills, Las Vegas, or any other destination of the rich and famous. The clinic has a fancy, carved marquis, a high-design lobby with a custom-made fountain, and a pert, young receptionist ready to make you feel that your hard earned money is at least earning you some exclusive treatment.

The doctor is well spoken, and wearing a freshly starched, white coat. Their demeanor is relaxed but professional. An efficient staff guides you through a series of activities, some of which are reminiscent of any doctor visit, though some of them are a bit out of the ordinary.

This is probably the first time you've had so many different tubes of blood drawn. This is the first time you have been asked to complete special reaction time tests, perform muscle strength testing, and most likely, the first time measurements have been taken of your chest, biceps, waist, and thighs in a physicians office.

It feels a bit like your tailor and your doctor may be sharing office space. Probably, you will have vision testing, and auditory acuity tests, as well as flexibility and muscle strength tests.

By mid-day, you know this is no ordinary doctor visit. These people know more about you than most people who have ever known you, and they should. That is what real, and really expensive anti-aging medicine is all about: super-detailed, highly measured, carefully tailored, to you.

No wonder it costs so much! When you stop and think about the fact that all this care can tie up the entire staff of such a clinic for most of a day, and requires specialized equipment not found in your regular doctors' office, it all makes sense.

But, does it make sense for you? Well, if money is no object; if you can afford the \$5000+ initial fees without breaking a sweat, maybe it

does. It might be the best investment you've ever made. If everyone had access to this sort of highly-focused, tailored, preventive and rejuvenating care, we would have only a fraction of the chronic disease burden that now afflicts our society.

On the other hand, most of us just can't afford this kind of care right now. In fact, most people who can afford that care, don't even choose to take advantage of it!

Why? Well, first and foremost, we have become a society geared toward saving money on anything and everything. And, in this kind of economy, who can blame us? We want it all, but we want to pay as little as possible for it, even when it comes to our health.

Guess what, it's even true for me, so I won't claim to be surprised if you say it is for you, as well. So, are we short changing ourselves by not scrimping, or doing whatever it takes to afford the clinic we just described, above?

Not necessarily, and that is why I wrote this book. You see, while I fully recognize the value inherent in that sort of "Platinum Class," medicine, I recognize something of even greater value: the empowered and informed patient.

I believe that sort of empowerment can be attained by any intelligent, motivated person. Such a person possesses something that even the best anti-aging and wellness clinic cannot give them: a deep knowledge of wellness strategies that are pertinent to their own body, and the empowerment to apply them and to plot and track their own anti-aging and wellness course.

Powerful, Yet Affordable

This book describes in detail, a multi-system anti-aging program that can provide comprehensive anti-aging benefits to just about anyone.

By taking anti-aging out of the realm of ultra-expensive clinics designed for hollywood stars and ultra-rich CEO's, it can enable a person who is seriously committed to their own wellness with the tools to change their own health trajectory dramatically.

What is more, this program can be largely self-managed, enabling one to stay with a trusted family doctor, yet experience many of the same benefits of being a patient at one of the high-profile, anti-aging clinics.

Anti-Aging clinics often charge more than \$5000 for an initial consultation, and more than \$1000 per month for ongoing care. Can our self-managed program really compete at that level?

As you will see, based on well documented research in humans very similar to you and me, it is very likely to provide powerful benefits that can compete very favorably with the best clinics out there. The reason for this may not seem obvious, but it is really pretty simple.

Anti-Aging Clinics are in business to sell you stuff. If there is an area of anti-aging medicine that does not involve something they can sell you, they have no incentive to tell you about it.

For instance, in the chapters where we look at hormone optimization, we will cover proven techniques that will enable your body to balance hormones on its own, keeping all the necessary regulatory machinery in place.

Generally, the approach in an anti-aging clinic is to immediately prescribe hormone replacement as the answer, even before allowing the body a chance to do its own, self regulation. This is unfortunate, because it circumvents natural regulatory processes. It also fails to address the underlying causes of aging, which are at the cellular level. The focus of anti-aging clinics tends to be on things that cause superficial, cosmetic changes - such as hormone shots - rather than the cellular anti-aging that produces profound and lasting effects throughout the body, in every organ system.

The complementary techniques we will cover in this book will cost you very little, and some of them are free, yet they deliver amazing gains, from head to toe. But they will not make a clinic lots of money. So, it is likely you will not hear about them from folks who would prefer to circumvent nature, and go straight to strategies that are unnatural, but very lucrative.

Something else you will not hear about, for the same reason, is that there are lifestyle “tweaks” that can strongly boost your anti-aging plan, multiplying your results. Why? Again, clinics do not bill for “results.” They bill for testosterone shots, HGH, and expensive supplements.

By implementing the program described in this book, you can incorporate each of these key methods and lifestyle “tweaks,” dramatically reducing your risk of many of the most dreaded diseases, keeping them from stealing valuable, healthy years from your life.

This is key, because part and parcel of anti-aging medicine is the recognition that no matter how youthful you feel or how young you look, it is important that you reduce your vulnerability to common, tragic diseases, such as heart attack, stroke, and cancer, if you are to have a true, comprehensive and synergistic anti-aging program.

What is more, you will experience new levels of vitality and satisfaction. This is the New Anti-Aging; helping to create a new you at the cellular level, with functional benefits extending to every system in the body and visible, palpable rejuvenation.

2

What Is Anti-Aging?

“Know your enemy and know yourself; in a hundred battles, you will never be defeated.”

Lao Tzu, The Art of War

What is anti-aging? That is a very good question, and I want to give the reader a great answer. To do that, I need to shed some light on exactly what aging really is. Once we have an understanding of aging, we can dive right in and look at how the aging process can be slowed, and even pushed back.

We will be breaking the aging “process” into what it really is, a set of separate processes, which conspire together, to create the visible and palpable signs and symptoms we call “aging.”

We will lay out a framework for understanding the critical importance of each piece of the program for “age management.” As a result, you will be in a much better position to participate in your own care, track results, and steer clear of the many anti-aging scams out there.

It is my goal for you to become your own, anti-aging expert, so you never again fall prey to the latest marketing scheme. You will also, most likely become the “go-to” person among your friends, who will want access to this information themselves.

I make this easy for you, so don’t expect getting up to speed on anti-aging to be anything like the science classes you struggled with in school. It will be as straightforward and practical as possible, and

pretty darned interesting.

On the other hand, if you enjoyed your science classes, I make sure there is enough detail here to dig into, if you want to go further. Most importantly, this is action oriented with simple, clear steps that will get you on the path toward a solid, comprehensive wellness program.

We will begin with some definitions of aging to help us better understand what we are up against. It is my hope that you will know yourself better, the needs of your body, and how to support it. You will also know your “enemy,” the aging process in all its forms, and how to keep it at bay.

Enjoy this learning process and experience the satisfaction of entering a new phase of personal health empowerment.

Multi-System Decline and Negative Synergy

Aging has been defined in a lot of ways, but for our purposes we will use this definition from one of the first scientists to study aging from a biological perspective:

“Aging has been defined as the collection of changes that render human beings progressively more likely to die”.

Nobel Prize Winner, Sir Peter Brian Medawar

Since Dr. Medawar delivered his now-famous lecture on aging decades ago, a great deal of research has taken place. We now know the answers to questions we did not even know to ask, back in the mid-twentieth century. Nature is now yielding many secrets, to our benefit.

I would like to quickly summarize pertinent aspects of that research, to give the reader a foundation of facts upon which we can build our personal anti-aging program.

The take home message is this, aging is not one single process. Instead, aging is a negative synergy involving several factors, each of which inexorably “winds down” over time.

When synergy occurs, forces that might be more or less minimal in impact, become much more serious. Synergies, by their nature, mean that the whole or end result is much bigger than the sum of the parts.

In the case of aging, none of the individual processes which together produce “aging,” would be very impressive or obvious by themselves.

For instance, on their own, sex hormone imbalances might be simply troublesome, but when combined with a decline in growth hormone (HGH) secretion from the pituitary, the synergy is dramatic and quite noticeable, across many body systems.

Insulin resistance might be something we could effectively deal with, using diet alone, but combine it with the loss of muscle tissue that occurs as a result of the negative hormone synergy just discussed, and the problem becomes nearly intractable.

This list goes on, as we will see in a moment, and each additional declining system, however trivial in individual effects, becomes magnified by these multi-system, negative synergies.

When these individual changes conspire together over decades, the end result is what we refer to as “the aging process.” As Dr. Medawar said in his famous, 1952 lecture, they “Ultimately, render human beings progressively more likely to die.”

Not a cheery thought.

While this sounds very depressing, it is not meant to be depressing at all. In fact, this very fact of multi-system synergy will become the secret of our success, and the crux of our Synergy Matrix™ program.

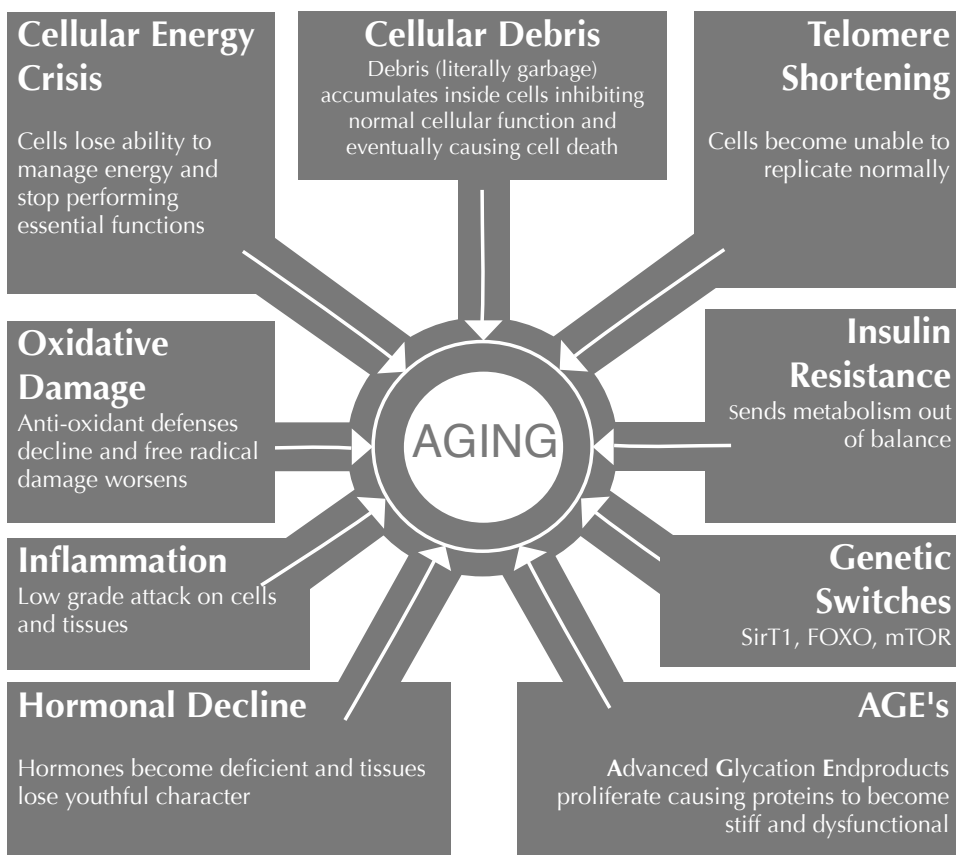
We will turn these powerful negative synergies around, and leverage the power of small, safe, inexpensive “tweaks” into a set of positive synergies, reversing a tide that would otherwise fail to respond to any of these changes, individually.

The Power of Positive Synergy will be at the very heart of our approach to anti-aging. Instead of trying to use brute force, as has often the case in anti-aging - attempting to circumvent nature, using heavy handed, expensive and potentially unsafe manipulations - we will be using the power of multiple, gentle, proven-safe, natural techniques.

These techniques will become for us, an army of internal changes, working together in our favor, across all body systems, helping us harness the same power of synergy that was forcing us too rapidly down the path of aging, decline and chronic disease, only this time, the synergy will be aimed in the right direction.

The Synergy Matrix™

We just looked at the aging process in a very general way, focusing especially on the way that negative synergy multiplies otherwise subtle, negative changes, producing very noticeable, unpleasant results.



The Nine Causes of Aging

We have seen that these results occur across every body system, and cell type. As a person ages, these nine processes are inexorably at work, slowly changing us from sleek, young creatures, into the im-

ages of aging that we are all familiar with.

When we read a list of these processes that together produce “The Aging Process,” a light goes on, and we say, “no wonder I don’t feel like I did when I was 20!”

While we could add more processes and system failures to this list, it is actually pretty comprehensive in terms of our current understanding of the multiple processes, or causes, of aging. This list will provide a framework, as we look more closely at what can be done to counter these effects.

Each of these items seems bad enough on its own. But every single one of these processes, though truly separate in its origin, is deeply interrelated, and over time, each synergistically multiplies the negative effects of the others.

The conventional approach to anti-aging has often been to strongly attack one or two of these areas, in an attempt to reverse the effects of the whole process. For example, I venture to guess that every one of us takes some sort of “anti-oxidant,” most days. Are you getting any younger doing so? If you are like me, you probably never noticed a very substantial effect, over time, from simply taking extra vitamin C, or E, right?

Fortunately, we will be looking at much more powerful anti-oxidants, later in this book, but this truth still holds; I would not expect this single strategy by itself, to do the job of anti-aging.

Perhaps you have been prescribed a hormone replacement program? If you are a woman, this might take the form of natural, micronized estrogen, with progesterone. For men, testosterone replacement strategies can create very beneficial effects, but they don’t stop the aging process.

The effects of hormone replacement are powerful, but overall, this strategy alone won’t retard the aging process very much. In fact, sim-

ply going after any one or even two of the processes listed above, won't take one very far toward improving your "healthspan" (the number of healthy years available to you).

Why? Because there are too many negative synergies going on inside every cell, and across every body system, for this one, single measure to hold back the tide.

I call the program we will be embarking on, the Anti-Aging Synergy Matrix™. Our goal with this program, is to use clinically proven strategies, to counter as many of these processes as possible. This way, we break the cycle of negative synergies at as many points as possible.

In fact, we will be calling into play positive synergies, as we reverse decline in these key processes. As positive synergies take hold, the effects will become readily apparent.

This is one program that will not need to be followed simply on "faith." The rewards will be so numerous and clearly evident, that a positive feedback loop will be established early on, encouraging an "I'm sticking with this from now on!" approach.

3

Understanding The Causes of Aging

“All diseases run into one, old age.” ~Ralph Waldo Emerson

Cellular Garbage

Some of the most important pathways involved in the aging process have not gotten a lot of media attention, and this is very much the case with cellular debris accumulation. But this area is now known to be key to understanding why some cells and organ systems fail earlier than expected. It is also key to understanding a number of chronic diseases, and some of the skin changes associated with aging.

Many have seen reality TV shows where reporters enter the houses of people whom might affectionately be nicknamed “pack rats” or “hoarders.” The appalling images of garbage stacked from floor to ceiling along with old magazines, weird collections and numerous broken and obsolete items, are shocking to see. One wonders how these people even get from one part of their house to another, with so much in the way.

Amazingly, our cells have the capability of storing “junk” in this same

way, in cellular “garbage bags” called lysosomes. These cellular containers function well to keep the debris from causing harm, but if too much accumulates, normal cellular processes can be affected. Such cells become “sick” and dysfunctional. Tissues with lots of such cells can exhibit dramatic signs of aging.¹

This aging mechanism is now known to be a key factor in such common diseases as Alzheimer’s Disease, Parkinson’s Disease, ALS, and even Chronic Obstructive Pulmonary Disease (COPD). Macular Degeneration (a very common cause of age-related blindness), is caused by the same mechanism.²

What is important to realize is that this mechanism probably produces a lot more, “subclinical,” or never-diagnosed, disease than we realize because this mechanism, or problem, is a key feature of aging. As with many of the basic mechanisms of aging, even though it is quite damaging, it is still viewed as “something that happens as we get older,” by many scientists and physicians.

The garbage will begin to pile up faster than it can be processed. Pretty soon there is so much garbage that the “cleanup crews” and “recycling teams” in our cells cannot even function to get at the accumulated debris. At that point a downward spiral is created - a Negative Synergy - which eventually leads to the death of the cell.

That sort of thinking - taking a disease-causing process as a given simply because it is associated with “normal aging” - is something we expressly want to turn on its head! Instead, we want to see each of these mechanisms, understand them and find ways to manage them.

The fact that materials have to be processed and “recycled” inside cells, is itself a normal part of cellular functioning. Cells are busy places, filled with machinery in the form of specialized proteins

which perform the work needed to keep the processes of life running. These proteins routinely become damaged by oxidation.

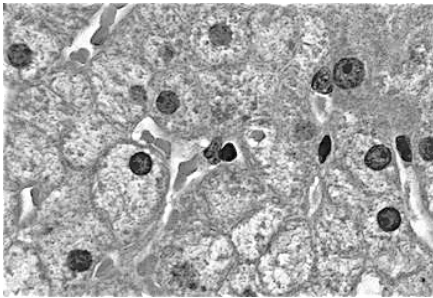
Damaged proteins need to be taken out of commission, where they can't cause harm. Our cells have the capacity for storing reasonable amounts of such debris, just like our houses have the capacity to store a reasonable amount of garbage between weekly curbside pickups. But what if our proteins begin "breaking" more often due to other aspects of the aging process, like uncontrolled oxidative damage?

In that case, the garbage will begin to pile up faster than it can be processed. Pretty soon, there is so much garbage that the "cleanup crews" and "recycling teams" in our cells cannot even function to get at the accumulated debris. At that point, a downward spiral is created - a negative synergy - which eventually leads to the death of the cell. Multiply this by millions of cells within a delicate tissue, and it is easy to see how it can accelerate not only aging, but be a catalyst for serious diseases. Unfortunately, this process is going on within each of us, as we speak.

Lipofuscin, one substance that piles up in our cellular "garbage bags" is brownish-yellow in color. Some body tissues, literally become permanently stained a dark brown color as lipofuscin accumulates. "Age spots," a typical sign of skin aging, are caused by a buildup of such pigment inside skin cells.

The heart of a 70 year old, for this reason, will often literally appear brownish-black due to accumulation of pigmented garbage inside cardiac cells. This accumulation is now known to lead to the death of cardiac muscle cells as they become overburdened with waste.³

The same pigment also accumulates in the kidneys, liver and the brain. The human brain tends to become darkly stained over a lifetime, through this mechanism, by both lipofuscin and a related substance, neuromelanin.



Micrograph of lipofuscin granules
or "cellular garbage"

Uncontrolled, the cellular debris mechanism contributes to a negative synergy, with several other mechanisms of aging. Remember that negative synergy is at the heart of aging. Since this process is known to occur in the adrenal glands⁴, it is likely to contribute to adrenal decline, and thus hormonal decline (a cause of aging). Secondly, by causing cells within a tissue to reach the end of their useful lifespan, more quickly, it leads to shortening of telomeres (another cause of aging).

It contributes to Oxidation (a third cause of aging) by leading to impaired mitochondrial recycling, which then leads to increased amounts of damaging free radicals inside cells. Finally, cells lose the ability to manage energy functions as the cells' power plants (mitochondria) fail to be recycled adequately.

The challenge in dealing with both intra-cellular (inside cells) and extra-cellular (outside and between cells) debris is three-fold.

- Reducing the rate at which cellular garbage is produced
- Assuring adequate cellular energy (mitochondrial function)
- "Turning on" our cells' remarkable cellular debris recycling system

Once again, the key to aging, and thus anti-aging, can be seen as an interplay of synergies. When oxidative damage (another aging pathway to be covered shortly), is allowed to go unchecked, cellular and

tissue structures are continually battered by free radicals. Much like mechanical equipment that wears out more quickly when put to punishing abuse, things break prematurely.

Fortunately, there are excellent options available now to slow and even reverse the processes that cause our critically important tissues to become stained and clogged with garbage.

We can reduce the rate of such damage, by influencing the pathways of aging that control oxidation, and glycation, as we will soon see. By taking specific action against free radical damage, we can make tremendous progress toward preventing the accumulation of cellular garbage. As you will see, we have a plan capable of meeting this need.

Some “turnover” or recycling of cellular components is inevitable, and normal. Such “normal” levels of garbage formation, and recycling, can be easily handled by a cell with energy to spare, and that’s why methods for enhancing cellular energy levels are key. We will be looking at this mechanism later in detail.

The third key to addressing cellular debris, is to harness the remarkable ability of our cells to “recycle” this debris, internally. Until very recently, it was not known that this process could be influenced or stimulated. New research has pointed the way to methods which literally “turn on” this function, almost like pushing a cellular “clean-up button.”

¹ Douglas A. Gray et al, *Sci. Aging Knowl. Environ.*, 2 February 2005 Vol. **2005**, Issue 5, p. re1

² Dorey CK et al *Invest Ophthalmol Vis Sci.* 1989 Aug;30(8):1691-9

³ *Curr Cardiol Rev.* 2008 May; 4(2): 107–115.

⁴ *J Gerontol A Bio Sci Med Sci* 1998 53A (1): B49-B51

Epigenetic Aging

We often think of genetics as analogous to a hand of cards, dealt at the beginning of a card game. We are dealt a hand that may be lucky or unlucky, and we are left to play it out, win or lose. The truth has turned out to be a lot more interesting, and hopeful, to those of us interested in controlling the aging process.

As it turns out, we get dealt a much bigger hand than we ever appreciate, but many of the cards are kept hidden from view in the form of dormant genes. They are “genetic switches,” much like cards dealt but never played.

Epigenetics is the scientific term used to describe such changes in gene expression without any corresponding change in the gene sequence, and it has a huge impact on the aging process. This impact, by default, seems to be in the wrong direction; it pushes our cells to adopt “elderly” cell behaviors¹.

The science of epigenetics is showing the way toward helping us win at the game of life, health and aging by simply changing which epigenetic cards get played. Some of the most exciting anti-aging research over the last ten years has revealed this avenue to hold the secret to longer, disease-free lifespans.

To better understand the impact of genetics on aging, it is helpful to look at the naturally long-lived. We formerly believed that those among us fortunate enough to live past 100 were simply blessed with an absence of disease causing genes, it has now emerged that this is not true in the least².

In fact, many of these folks seem to have about the same genetic susceptibility to a wide range of heart, lung, kidney and brain diseases as everyone else, yet they do not succumb! In fact, studies show that in spite of similar susceptibilities, these folks rarely become seriously af-

fected by disease or disabled, until after age 90.

Instead, these fortunate few often live past one hundred, sometimes touting their pack-a-day smoking habit, bad diet, carousing or liquor consumption as key to their longevity. Of course, we know their bad habits can't actually be credited with this longevity boon. Something else is at work in these naturally healthy, long-lived people; these folks possess genes that put into play natural, disease suppressing, longevity-promoting mechanisms.

While the mystery of the centenarians is still being sorted out, the science of epigenetics has yielded actionable secrets of age-reversal, perhaps more than any of the other causes we will be looking at. This is a real, scientific adventure story, and we are starring in it.

For thousands of years, explorers and lonely researchers searched for a mythical "fountain of youth" when much of what they were seeking was within their very cells in the form of a veritable swiss army knife of genetic "switches."

These switches have enigmatic sounding acronyms and abbreviations for names, like Sirtuin, mTOR and FOXO. We will be looking at these three, in particular, as they hold the key to significant benefits that are readily accessible using the Synergy Matrix program.

Sirtuins are a class of proteins found in all human cells, whose functions are now known to be intimately related to the aging process. There are seven different sirtuin proteins, each active in different areas of the cell.

The member of this family we are interested in is called Sirtuin 1, or SIRT1 for short. We now know that the function of SIRT1 is intimately linked to aging and longevity in mammals, including humans³.

In fact, SIRT1 is responsible for conferring the benefits of calorie re-

striction, which up until recently was the only known way to consistently extend the lifespan of a mammal. Some people are practicing calorie restriction as an anti-aging tool.⁴

These individuals eat less than 1/3 of the normal amount of calories, as a proven strategy to engage anti-aging genes. For many years, it was not known why eating a starvation diet slowed aspects of the aging process. We now know that it works by activating SIRT1. Starve yourself, and you can flip this particular genetic switch, with guaranteed, scientifically verified anti-aging benefits. However, the reader will be glad to know that I am going to propose a much easier way of activating this powerful ally, without starving yourself. It turns out that other mechanisms exist for bringing this mechanism into play!

What benefits does SIRT1 confer? A separate book could be devoted to the powerful benefits conferred by activating this particular genetic “switch.” One of these benefits is a significant upgrade in DNA protection and repair.⁵

When SIRT1 is active in a cell, precious genetic material is cared for more meticulously, leading to less DNA damage. Moreover, a number of other changes are initiated at the genetic level.

These changes amount to turning off banks of genetic switches that put our cells into “old fogey” mode. These pro-aging switches would normally be set to turn our cells “out to pasture” but SIRT1 steps in and says, “no thank you, I think we will keep this cell “young” until I say otherwise.”

The Sirtuin “switch” - SIRT1 - literally reprograms our cells for youth. The benefits of this are now known to extend to Alzheimer prevention, and improved cardiac function, but we have only just begun to elucidate all the powerful benefits inherent in this amazing, built-in anti-aging system.⁶

MTOR and FOXO

The other two genetic switches we will consider are mTOR and FOXO. The first, mTOR stands for “Mammalian Target of Rapamycin.” This is a pretty arcane sounding name for what is emerging as a powerful pathway toward cellular age reversal.

FOXO, another epigenetic switch, is capable of switching on and off cellular mechanisms that either contribute to aging when they are off, or contribute to hardiness, stability and youth when on. Like SIRT1, it can be “activated,” regardless of our chronological age, producing beneficial effects.

Each of these, like SIRT1, represent genetic switching mechanisms that don’t do just one thing. Each of them unleashes a cascade of effects that make our cells functionally younger. Cells in which these mechanisms are activated begin to use energy differently. They also begin to clean up garbage, much as we discussed in the section on cellular garbage accumulation.

In addition, mTOR and FOXO change the way insulin affects cells, in a way that is powerfully beneficial and age-reversing. In a similar way, both also change the way IGF-1 affects cells.

IGF-1, also called Insulin-like Growth Factor, is now known to be intimately involved with the aging process. While it is needed to promote a certain amount of protein synthesis in cells, beyond a certain point, it promotes aging.

FOXO and mTOR powerfully blunt the pro-aging effects of IGF-1 and Insulin, dramatically affecting the rate of aging at the cellular level. It is at the cellular level that aging begins to take its toll. Cells continue to do everything they would normally do, but with far less of the “overhead” damage that would normally be pushing them toward a more aged state. At the tissue and organ level, this means more youthful function.

In addition to these benefits, there is also an upgrade in cellular ability to respond to free radical attack, as well as a reduction in production of damaging free radicals. It's like lowering household expenses and increasing income at the same time. Cells become dramatically better off, and the benefits extend to the whole organism.

Other pro and anti-aging genetic mechanisms have been discovered, but SIRT1, FOXO and mTOR are the three heavyweights. Activating all three of these is a health boon that is really without parallel, with a list of benefits too long to enumerate. And, activating them is exactly what we will cover in the next section, where we will look at tools for doing just that.

¹ Bocklandt S, Lin W, Sehl ME, Sánchez FJ, Sinsheimer JS, et al. 2011 Epigenetic Predictor of Age. PLoS ONE 6(6): e14821.

² Paola Sebastiani et al, Genetic Signatures of Exceptional Longevity in Humans. Science, July 1 2010

³ Genes Dev. 2006 Nov 1;20(21):2913-21.

⁴ Nat Rev Mol Cell Biol. 2005 Apr;6(4):298-305.

⁵ Exp Mol Med. 2007 Feb 28;39(1):8-13.

⁶ Christopher L. Brooks & Wei Gu

Nature Reviews Cancer 9, 123-128 (February 2009)

Advanced Glycation End Products or AGE's

“The human body might be viewed as an extraordinarily complex mixture of chemicals reacting in a low temperature oven with a 76-year cooking cycle.”¹ Just as gluten proteins react with sugars inside a lump of bread dough as it bakes, taking a supple ball of dough and creating a firm, crusty loaf of bread, similar sugar molecules are - albeit more slowly, reacting in the same way inside you now.

Sugar, in its many forms, has gotten a bad rap for some time and it's about to get worse. Not only is sugar intake responsible for causing elevated insulin levels, increased body fat, elevated triglycerides and a host of other problems, it also causes damage to our protein “machinery” that performs the essential functions of life, both within and outside our cells.

“Glycation” is what we are talking about, and it is the third “process” of aging that we will briefly look at, as we continue to build a picture of the way aging, overall, is a negative synergy, or multiplying interaction, between many different body processes. Advanced Glycation Endproducts (literally referred to as AGE's) are the result of this particular process, and as we will see, they are a huge contributor to the aging process overall.²

The process of glycation is really pretty simple: sugar molecules (such as fructose and glucose) become stuck to important, functional proteins and lipids (functional fat molecules). When this happens, the protein or lipid molecule becomes permanently damaged. Such a protein, for instance, must be “recycled” or stored out of harms way. In addition, that protein or lipid must be replaced, so that its function can continue to be performed.

Glucose, one of our main internal fuel sources, can cause this kind of damage, but fructose has 10 times the capacity to do this kind of damage! Given the level of fructose intake in our “Standard American

Diet,” this is a very disturbing fact, because as you are about to see, virtually every serious disease of our time involves AGE’s in some way. AGE complexes are damaging to tissues in and of themselves. Now, we have more than just a cleanup and replacement problem: we have serious toxicity.

Multiply this potential for AGE-related damage, by the billions of fructose molecules we tend to consume in a relatively short period of time. What is the toll? To what extent does this contribute to aging and disease? While AGE’s have not gotten due exposure in the media, they represent a huge burden, in terms of contribution to chronic disease.

Unfortunately, this problem is no longer limited to those unfortunate folks diagnosed with diabetes, for we now know that undiagnosed, “pre-diabetes,” and “glucose intolerance,” are epidemic phenomenon, and that nearly 70 million Americans are probably experiencing the ravages of excessive amounts of these AGE’s on a daily basis.

In addition to AGE formation inside the body, it is now known that these highly toxic compounds can be absorbed in food, after being formed during the process of cooking.³ This is because any sugar, and especially fructose, when heated with animal OR vegetable protein, will form large amounts of AGE’s (for instance gluten, during baking).

We now know that highly reactive AGE’s are directly responsible for heart disease, tightly interwoven with the processes of Alzheimer’s Disease⁴, direct nerve damage, as well as key to the processes of cancer. Much of the damage produced by Type II Diabetes (leading to stroke, heart attack, kidney failure, blindness, loss of nerve function, and many other disease processes), is directly due to AGE’s.

It is also clear that inflammation is directly stimulated by AGE's, strongly accelerating the processes of aging and chronic disease. Many of our cells contain receptors capable of directly binding AGE's, called RAGE receptors ("Receptor for AGE's"). These are aptly named, as once this binding occurs, inflammation is stimulated⁵ creating another negative synergy.

It is very likely that glycation and AGE's are some of the leading causes of high blood pressure, due to the stiffening effect that glycation has on tissues. Glycation directly damages delicate artery linings causing impaired blood flow. AGE's sensitize the lens of the eye to photodamage, accelerating the process of cataract formation.⁶ New evidence of glycation-related damage is found on a regular basis.

Unfortunately, this problem is no longer limited to those unfortunate folks diagnosed with diabetes, for we now know that undiagnosed, "pre-diabetes" and "glucose intolerance" are epidemic phenomenon, and that nearly 70,000,000 million Americans are probably experiencing the ravages of excessive amounts of these AGE's on a daily basis.⁷

What of the rest of us? Are we at risk? I believe that the best evidence indicates that everyone who consumes even so-called "moderate" amounts of fructose, or excessive amounts of glucose, galactose, lactose or other sugars, will experience accelerated aging. Clearly, keeping glycation under control, and slowing and even reversing AGE buildup, is key to a successful anti-aging program.

In the next chapter, we will see that the Synergy Matrix™ Anti-Aging program addresses AGE's in several ways, impacting not only the pace of aging, but also reducing the risk of many of the specific diseases of aging. In addition, the Synergy Matrix™ program dramatically reduces the risk of developing Type II Diabetes and Metabolic syndrome.

¹ JW Baynes Experimental Gerontology.

Volume 36, Issue 9, September 2001, Pages 1527-1537

² Biogerontology. 2004;5(6):365-73.

³ J Am Diet Assoc. 2010 Jun;110(6):911-16.e12.

⁴ Curr Alzheimer Res. 2004 Feb;1(1):39-46.

⁵ Curr Mol Med. 2007 Dec;7(8):743-51.

⁶ J Diabetes Complications. 2009 Sep-Oct;23(5):343-8. Epub 2008 May 27.

⁷ http://www.cdc.gov/diabetes/pubs/pdf/ndfs_2011.pdf

Telomeres - 101

Explorers of old traveled across oceans and continents, searching for the fabled fountain of youth, sometimes giving up everything to seek after the elusive secret of immortality, when all along, it was lurking right inside their own cells.

The discovery of telomeres, and telomerase is one of the most important breakthroughs in the history of science, not to mention anti-aging, so it is important to understand some bedrock facts about them. In a short time, you will be well versed enough to spice up your next get-together with some actionable information that is already leading to long-term breakthroughs in age management.

In the late 1990's, one of the deepest secrets of aging was laid bare. We have known since the early 1960's, that each cell type in our bodies can undergo only so many cell divisions before that cell type is unable to replicate.

The importance of this is that cell division is key to maintaining a population of healthy, youthful cells in each tissue and organ. Once a cell line is incapable of dividing, the tissue or organ made up of those cells rapidly deteriorates, and dies.

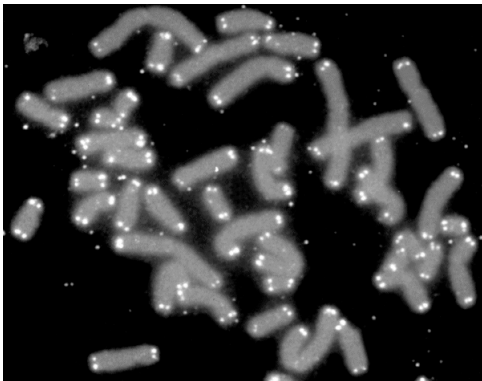
The discovery of telomeres and telomerase, perhaps more than anything in the history of the study of aging, has made otherwise cynical researchers believe that radical increases in the human lifespan may be possible.

In every organ system in our bodies cells are doing complex jobs 24/7. These little machines don't sleep. Imagine a cardiac muscle cell contracting more than once a second. That cell not only has to do its job of contraction so that the heart can pump blood, it also has to process energy, do constant house-cleaning, adapt to changing extra-

cellular conditions and make certain that its sodium/potassium balance is perfect.

It's not just cardiac muscle cells that never stop. This is true of every cell population in the body. Even our skeletal muscles, which do not move much during sleep, are doing extensive rebuilding and house-keeping during the night. All of these cellular actions take their toll, and eventually, each cell wears out.

Fortunately, some of our cells can simply divide and make a new clone (literally) of itself to carry on its work. If all our cells could do this ad infinitum we could, literally, avoid most of the aging process because our bodies would be substantially rebuilt of new cells every few weeks.



Telomeres are visible here as bright spots at the ends of chromosomes.

That's where telomeres come into the picture. Remember that in the 1960's, we learned that each type of cell has a very specific limitation on the number of times that it can divide. Intestinal cells have one limit, and skin cells another, but each has a limit. That is, every cell except an exclusive few called "embryonic stem cells" that can literally divide forever.

Embryonic stem cells are truly immortal. These cells form a small population in our bodies, which serve as repair cells going to a site of trauma and facilitating re-growth of tissue after injury. For many

years, scientists struggled to understand how these cells evaded the signs of aging - called "replicative senescence" - that plague every other cell type in the body.

In the late 1990's, the breakthrough came. It turns out that the answer lies in small "end caps" that cover the ends of chromosomal DNA strands. DNA strands are delicate, complex structures, that contain the information required to replicate a cell and to make all the proteins that a cell needs to do its job. This information must remain perfect and uncorrupted at all times.

Even one "bit" of corruption, a one "base pair" error in DNA parlance, can render a gene incapable of encoding the protein that it was meant to. Our cells guard DNA more closely than our government guards the gold in Fort Knox. When the data is not being read, it is tightly coiled up and protected by complex sheaths of specialized proteins.

When it is being read, or copied, it is very carefully uncoiled, and the delicate ends of each chromosome are guarded by special DNA sequences called "telomeres." Telomeres are very simply, repeating sequences of the DNA "letters" TTAGGG, over and over.

What is key is that every time a cell divides, these repeating sequences are shortened. This is the reason that cells can only divide so many times; when the telomeres become too short, DNA cannot be copied perfectly. Cells that enter this "elderly phase" become very different from their counterparts which still have adequate telomeres.

Cells with "short telomeres" begin to look "elderly" under the microscope. They become misshapen, and stop performing their jobs adequately.¹ Soon after this, these cells actually go into an automatic shutdown mode, committing a kind of "cellular suicide." The reason for this seems to be to prevent such cells, with damaged DNA, from replicating themselves, or otherwise going haywire.

In a new twist, Dr. Maria Blasco of the Telomeres & Telomerase

Group at the Spanish National Cancer Center in Madrid, recently discovered that short telomeres also signal cells to go into a special “instant aging” mode, turning on a whole system of genes that make cells “act old” overnight.²

The bottom line is this: we have a built-in limitation on the number of times we can create needed spare parts (new cells) for our organ systems that is based on telomere length. In each organ, once the last card has been dealt, cells stop dividing, and the function of that organ system must decline.³

This is true for skin, the kidneys, lungs and blood vessels; in virtually every body system a limit is reached where cells can no longer renew themselves. At this point their associated, vital functions can no longer be performed.

Here is the great news: shortly after the discovery of telomeres, and the reasons for this seeming “cellular brick wall,” another discovery was made that has created a stir across the world of biology, aging and even among philosophers. That discovery is called “Telomerase.”

It turns out that our telomeres are not “fixed” in length. We actually have a built-in method for lengthening them. This enzyme, called telomerase, is normally not activated in most cells, but it can be activated, or “turned on,” by certain nutrients, lifestyle factors, and even certain herbal extracts.

What we also know is that the rate at which telomeres shorten can be influenced. No matter what kind of telomeric “hand” one was dealt at conception (telomeres begin shortening in the womb!), we can ultimately influence the rate at which we use up this genetic allotment.

So, the take home message is that this key mechanism of aging is modifiable. Research in this field is intense. Many studies are underway, looking at factors which reduce the rate of telomere shortening as well as interventions that might actually allow us to lengthen them.

We will be looking at things that are already known about these two ways of managing telomere shortening. We will look at lifestyle and dietary factors, as well as supplements, and even herbal products that address this mechanism of aging.

The discovery of telomeres and telomerase, perhaps more than anything in the history of the study of aging, has made otherwise cynical researchers believe that radical increases in the human lifespan may be possible. Why? Simply because the concept of “replicative senescence” and the telomeres is what might be called “low hanging fruit” in the realm of anti-aging, an area where sensible action can yield very large benefits.

¹ Nucleic Acids Res. 2007 December; 35(22): 7505–7513.

² Methods in Molecular Biology, **Vol** 371 Apr-05-2007, 45-72

³ Pflugers Arch. 2010 January; 459(2): 259–268.

Insulin and Aging

Insulin may be the single, most controllable factor in aging. That probably comes as a big surprise because even most physicians today are still unaware of the central role insulin plays in the aging process. Control insulin, and you can dramatically slow the aging process.¹

Insulin is a hormone that most of us think very little about. We all know that it has something to do with diabetes. Type I diabetics (and more and more Type II diabetics) have to take insulin every day, or they soon get very ill and die. So, if insulin is what makes it possible for them to live, it's a good thing, right?

Yes, insulin is absolutely needed for life, but we have been abusing this, otherwise essential substance. How can we abuse something that is made by our own body? Let's look at what insulin does in a healthy body, and then examine what happens when levels go beyond a healthy threshold.

“Age does not diminish the extreme disappointment of having a scoop of ice cream fall from the cone.”

~Jim Fiebig

Insulin, a “peptide hormone,” made up of a string of 51 amino acids, regulates some very critical processes and controls things that have life or death implications. Without it blood sugar builds up, relentlessly causing untold havoc and eventually producing a comatose state called a “Hyperglycemic Coma.” I know all too well, having treated many patients with this condition.

Insulin, itself, is very tightly regulated in a healthy body. However, it is only very recently that insulin levels have come to be examined as a parameter of health. When we physicians started looking, we were

shocked at what we found. Personally, I have been stunned by this new phenomenon, for example, when I was asked to treat a ten year old boy with insulin levels that were 500% higher than the upper range of normal, for an adult!

This is becoming a hot topic in medicine, especially in the study of obesity, in particular childhood obesity. But what does it have to do with anti-aging? Everything, as we will soon see. The ten year old I mentioned earlier, had the chronological age of a 25 year old, as a case in point. I had to recheck his age, several times, to satisfy myself that his age had not been transcribed incorrectly; indeed, he was in fact, only ten years old. Instead of the clear, perfect skin that most youngsters have, this patient had dusky, leather-like skin. He looked distinctly unwell, in a way we normally associate with the very old and very ill, which was not a surprise, as this unfortunate boy was already developing congestive heart failure and kidney disease, something we normally don't see in patients under age 50-60!

Aging was so accelerated in this patient, that it broke my heart to see it. I could easily picture him dead at 30, of any number of causes normally reserved for the "aged." In fact, this boy was already "aged" at ten years of old age! But the fact is, all of us are at risk for this same sort of accelerated aging, we just aren't aware of it.

It all comes back to insulin and what it controls and affects. We will take a look at the ways it controls blood sugar. Then, we will examine the ways it modulates or controls aging, and the ways that we tend to thwart our body's best efforts to keep it under control.

Insulin Regulation: The Good, The Bad and The Ugly:

Soon after we eat anything, from a tiny snack, to a large thanksgiving meal, our pancreas (assuming we are not Type I diabetics), begins secreting tiny, staccato bursts of insulin. This insulin enters the bloodstream, and quickly sends a signal to several kinds of body cells,

telling them to open the gates and absorb the fats and sugars that were just eaten.

This rapid response is imperative because over a 3-4 hour period following a meal, blood sugar and triglyceride levels could become dangerously high, without fat and muscle cells immediately doing their part to absorb this caloric intake.

What is key, is that the pancreas is readily capable of quickly sensing the types of calories ingested: are they mostly fat? Protein? Carbohydrate? The insulin secreting cells can then carefully tailor their secretion to suit the types of food ingested, as each requires a very different response.

In an ideal situation - when healthful food has been consumed in a moderate quantity - the pancreas can match the need with the ideal amount of insulin, resulting in a steady, sustained cycle of carbohydrate and fat absorption where appropriate proportions of calories enter the right cells, fueling the needs of muscle, and not over-storing calories in fatty or "adipose" tissue.

There was a time when it was thought that all insulin did was perform this "garage door opener" function, telling cells when to "open up." But we now know that a lot more is going on, even down to the level of turning on and off genes inside the nuclei of our cells.

It turns out that all this time, we thought insulin was just the "door man" - big mistake. In fact, we were starting to think that we - as a society - had this whole insulin and calorie thing figured out "just eat less" - wrong. "Just make sure you exercise enough every day to burn the calories you take in, it's so simple" - wrong again.

Forget everything you know about insulin and calories. Let's take a ride down the rabbit hole of metabolism. When we come back, you are going to want to make some radical life changes. I guarantee it. Because, you have been probably been getting some world class, bad advice, from people who don't know better.

It all starts with flat worms. You see, we found out in the 1980's and 1990's that they lived a lot longer if we starved them. But, don't worry, I am not going to tell you to starve yourself. Far from it.

Generations from now, we just might build a monument to them, because not far in the future, thanks to the gifts of knowledge we obtained studying them, we might just be living to be 200, 300, or even 400 years old. This is not idle speculation. This is hard science, and we learned it from the nematodes, first.

These little guys may seem so vastly different from us that we have very little to learn from them. However, thanks to these tiny creatures, we now know that lifespan is controlled by actual, genetic switches, and that these switches - under certain circumstances - can be "flipped" in our favor, while we are alive.

In fact, we are "flipping them" all the time, just in the wrong direction.

Cynthia Kenyon, PhD, is perhaps the most famous researcher among the thousands of scientists studying aging right now. She found, back in the 1970's, that many of the genetic switches she identified in nematodes - the little worms - were virtually the same switches found in larger animals, including humans. It sounds implausible, but it is bedrock scientific fact.

What she also found is that, while these creatures have a very different metabolism and diet than our own, the correspondences between what makes these little worms live longer and what makes us live longer, are remarkably similar. How similar? So similar, that Dr. Kenyon has radically changed her own health practices, to take advantage of this.

This fundamental anti-aging work is so important, she won the Nobel prize for it. We are going to take advantage of this work, in our own anti-aging program.

The bottom line is that it has been possible to double the lifespan of these laboratory creatures by taking advantage of these genetic switches.² We now know that some of the most important “switches” related to the aging process are controlled by insulin in humans. In other words, the level of insulin determines if these are “flipped” in the right direction.

Control insulin, and we can keep many of the diseases we normally associate with aging - hypertension, coronary artery disease, hypercholesterolemia, dementia, and many more - from manifesting.

The bottom line turns out to be this: every time insulin is secreted by the pancreas, it is sending pro-aging signals to the cells it binds to. Insulin literally drives the aging process by turning on a veritable cascade of effects, which together mean accelerated aging.

Control insulin, control aging, it's that simple. Keeping these key genetic switches “flipped” in the right direction is fundamental to preventing many disease processes. Control insulin, and we can keep many of the diseases we normally associate with aging - hypertension, coronary artery disease, hypercholesterolemia, dementia, and many more - from manifesting.

This is some of the highest value territory in anti-aging, and it all relates back to maintaining appropriate insulin levels. But, you might say, “my doctor tested me and told me I don't have any signs of diabetes, so my insulin levels must be fine, right?” Not true. Not by a long shot.

A big part of the problem is Insulin resistance. Insulin resistance is closely related to the hyper-secretion of insulin that has become typical for our society. The average person over 40 in the U.S. has such a high insulin level that some of our cells simply “stop listening” to the

insulin signal. They can't take the pressure to absorb more calories and store them. Instead, this job falls entirely on the liver and fat cells of our body to take up the slack.

Our fat cells are only too happy to keep taking orders from insulin, in fact, they are the Energizer Bunny in this process; they never stop listening to insulin, and are only too happy to store anything and everything that insulin tells them to. The more these fat cells store, the worse the overall insulin resistance becomes. The liver, too, turns much of the insulin stimulus into a tendency to make triglycerides (a kind of fat), sending them into the bloodstream to be stored in our adipose (fatty) tissue.

"Typical" insulin levels these days, are running quite high. The "upper limit of normal" is common territory for most of us. Where we need to be setting our sights is well below the 50th percentile. How do we get there?

We will get there by doing two things:

- Reducing the stimuli that create exaggerated insulin output from the pancreas.
- Reducing Insulin Resistance

The Anti-Aging Synergy Matrix will enable us to accomplish both of these things, easily, and without drugs. Within a short time, the changes produced by keeping insulin under control will be quite obvious. This is not idle speculation, or alternative medicine hype. Of all the options I am presently aware of for bringing anti-aging science to bear in ones own life, lowering insulin levels and counteracting insulin resistance can deliver world-class benefits on its own. Bear in mind, we plan to multiply these benefits many times over using synergy.

What can reduced insulin levels, and reversal of insulin resistance accomplish? Here's what we know right now, from recent studies in hu-

mans, just like us.

- Those on high blood pressure medicine will probably be able to discontinue some or all of them (under close supervision, of course)
- HDL cholesterol (the “good kind”) will rise to new high levels and stay there
- LDL levels will naturally fall, very quickly, allowing statins to be discontinued in many cases (again, under close supervision)
- Triglycerides will fall, naturally, to very low levels
- Inflammation, and conditions related to it, will begin to resolve and disappear
- Muscle strength and endurance will improve
- Hormone levels will begin to normalize
- Cancer risk will drop 30-90%
- Vascular smooth muscle will be able to relax, lowering the work load on your cardiovascular system
- Immune System function will significantly improve and you will find you catch less of “what’s going around”
- Your adrenal glands will produce more of the beneficial, master hormone, DHEA, enabling benefits throughout all body systems
- You will return to your ideal body weight without cutting calories (you may not have been able to do this since college)

This is beyond exciting for me, as a physician, as most of these goals

have eluded us, even with the armamentarium of prescription drugs available to “modern medicine,” such as statins, and other, side-effect prone prescription drugs. It is a delight to be able to help folks achieve the health benefits we just reviewed, via such a simple and affordable method. I can’t wait to show you how!

¹ *Nature* 366(6454), 461-464 (1993)

² *Disease Models & Mechanisms* 3, 000-000

Oxidation

Everyone thinks they are familiar with the concept of “anti-oxidants” these days. We key our purchasing decisions to them, buying products preferentially, when we see this buzz phrase emblazoned proudly on a label, whether we are buying a sports drink or a shampoo.

This popularization of anti-oxidants and the role of oxidation in health, is mostly good, but there is a hidden danger in our tendency to think that we have built some sort of protective wall around ourselves by adding these “pop” anti-oxidants to our lives in every possible way.

Bravo for seeing the value of anti-oxidants, but after reading this section, I guarantee that you will never see anti-oxidants in the same way again. The crux of the matter is this, oxidation is hugely important and fundamental to the aging process and most chronic diseases at some level, but the substances most often touted as being anti-oxidants are so wimpy as to barely hold a candle to the oxidative effects that we expose ourselves to.

Free radicals - substances with an extra “unpaired” electron - are found in extraordinary amounts inside our cells.

Oxidation is all out war against every structure in your body. Free radicals are trying to kill you, right now. Several million times per second, critical cellular machinery in your body is being assaulted by a range of free radical molecules that have the capacity to destroy proteins, cell membranes, critical lipids, and worst of all, the very DNA that holds the codes needed to make spare parts and replace damaged cells.

Fortunately, you are being protected, but not by the multi-vitamin you took this morning, or the green tea you washed it down with, or the ultimate-super-food-smoothie you chugged on the way in to work.

These didn't hurt, by any means, and we won't dismiss their contribution to the cause. However, most of the so-called anti-oxidants we take as supplements, or fortified foods, don't find their way into the body compartments most in need of anti-oxidant protection. One of these areas is the mitochondria, or cellular power houses. This is where most free radicals are generated, and it's where protection is most needed.

Free radicals are so numerous, and so potentially destructive to our cells and systems in so many ways, if it were up to the typical anti-oxidants most often touted, we wouldn't last very long, our lives would be measured in hours. This job requires an elaborate system of free-radical quenching defenses, capable of absorbing a round of attacks, neutralizing offending pro-oxidants and then recycling itself for more, constantly.

What you need to know about free radicals is that our main defense against them is in the form of a built-in paramilitary force that makes the smoothie, green tea and multivitamin combo look like a bunch of rank amateurs. Comparing it to those garden variety antioxidants would be like sending the neighborhood watch team to Iraq to help out.

Oxidation is all out war against every structure in your body.
Free radicals are trying to kill you, right now.

This army is composed of several systems, which work together to "quench" free radicals, using purpose-built "scavenger" molecules, which are, under ideal conditions, continually recycled. The main system - and the one we will be basing our program on - is called the glutathione system.

This "glutathione system" is critical for cellular functioning. Without

it, our cells would quickly shut down. It is also integral to the immune system, with multiple immune functions, including enabling the killing activities of Natural Killer cells, as well as facilitating antibody production.

Glutathione can also grab and hold onto heavy metals, such as Mercury and lead, keeping them from doing harm, and allowing them to be removed from the body.¹ This remarkable substance plays dozens of other essential roles inside our cells including critical DNA repair functions.

Glutathione is produced internally by all of our cells, and is a very powerful free radical scavenger that can not only neutralize free radicals, but unlike most “anti-oxidants” (which become free radicals themselves and can become dangerous after their job is done), glutathione has the ability to quench itself and recycle.

Thus, this molecule, and the supporting enzymes that create and recycle it, form a perfect army, in the critical battle to protect cells from oxidative damage. The real key to anti-aging when it comes to controlling free radical damage, is keeping our built-in army in fighting shape. ²

Like the other systems and processes we have looked at, the glutathione system declines dramatically in function, as we age. We produce less of it, but what is key, is that we fail to keep our glutathione molecules in their critical, “reduced” state - the state of readiness. In a 60 year old, a far lower percentage of glutathione is in the “ready” state.³

Our mitochondria are where most of the “action is,” when it comes to fighting this, free-radical battle. This is where glutathione normally shines, but as we age, our mitochondria have far less of the critical, reduced form of glutathione.

Since mitochondria must keep running to provide the energy for life, these cellular power plants continue running in “unsafe mode,” re-

sulting in rapidly cumulative damage to critical cellular systems, especially mitochondrial DNA. When this happens, the mitochondria must shut down, and be recycled.

When this problem is multiplied across every body system, the damage (in terms of cumulative free radical damage) and loss of mitochondrial function, is considerable. It is in fact the basis for many chronic diseases, including dementia, congestive heart failure, many kinds of nerve damage, liver dysfunction, chronic lung disease, and many other diseases of aging.

The negative synergies produced by this cumulative, free radical damage are obvious. Free radical damage, creates a direct or indirect, negative synergy with these other causes of aging:

- Cellular Garbage Accumulation
- Glycation
- Telomere Shortening
- Hormonal Decline
- Cellular Energy

The great news is that, as with the other aspects of the aging process we have looked at, it is now possible to dramatically improve the functioning of our internal, anti-oxidant army. A key part of our Synergy Matrix Anti-Aging program will involve strategic support for this fighting force, restoring it to youthful capability, and provide powerful, positive synergies with the other systems we have looked at.

As is the case with most of the other processes of aging, upgrading the glutathione anti-oxidant system, creates benefits that manifest very quickly, across multiple systems. How do we upgrade our internal defense systems? We will see in the next chapter.

¹ J Postgrad Med. 2011 Jan-Mar;57(1):72-7.

² J Nutr. 2004 Mar;134(3):489-92.

³ Free Radic Biol Med. 1998 Mar 15;24(5):699-704.

Hormonal Decline

Many hormones in the human body begin a process of decline or impaired regulation, beginning around age 25. This matches up, subjectively, with the time when many of us recall feeling in “peak health.”

Many people report that, “back then, I could eat anything and not gain weight”, “I was invincible”, “I could get by on almost no sleep and still function.” And the list goes on. Much of the resiliency that we perceive before age 25 is a function of optimal levels of every, major hormone, along with very tight regulation.

In most men and women, before age 25, sex hormone regulation is tight, and glands are able to produce abundant hormone levels, because the cells that make up those glands are functioning at peak ability, with no compromise related to cellular aging.

As we will see, after age 25, regulation of most hormone systems becomes looser, and it becomes harder and harder for glandular cells - the cells responsible for making, storing and releasing hormones - to do their job of releasing optimal amounts of their particular hormones to the body.

This is true across virtually every hormone type examined, from the pituitary and thyroid, to the adrenal glands, to the testes and ovaries; every year after age 25, these glands become a bit less efficient, and regulation becomes a bit more loose.¹

“There is always a lot to be thankful for, if you take the time to look. For example, I'm sitting here thinking how nice it is that wrinkles don't hurt.” ~Author Unknown

What is key, is that the way we process hormones also tends to change; we don't break them down, utilize them, or respond to them

as optimally as when we are younger.

For many years these alterations in our hormones, that occurred over time, were viewed as an inevitable function of age, and well, aging. All that began to change in the mid to latter part of the 20th Century when it became clear that we could isolate these hormones and even make them from scratch in the lab.

Pretty soon, hormone replacement therapy became common. Premarin, an extract of estrogens from the urine of pregnant horses (literally: “Pre,” for “pregnant, “mar,” for “mare,” and “in” for “urine!”) became one of the most popular drugs of all time by the early 1990’s.

It became unusual to find a woman over 50 who was not on Premarin. But then, a very inconvenient study conducted by the World Health Organization, showed a very disturbing link between hormone replacement with Premarin, and breast and endometrial cancers.

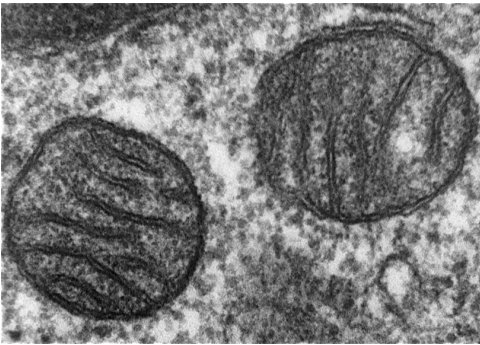
The party seemed to be over for female, sex hormone replacement. Fortunately, it’s not that simple, and clarifying research is pointing toward safer avenues to address hormone-related aspects of aging. New options are emerging, other than direct hormone replacement, to address the problems and challenges caused by hormone decline and dysregulation. I am excited about these newer options, since many of them are naturally-based, and complementary by nature, working with the body’s own mechanisms and systems.

What we will be focusing on is high-value, simple changes, that enhance our own ability to regulate pituitary hormone secretion, naturally. In addition, we will look at ways that men and women can prevent some common problems and diseases associated with aging, by preventing undesirable hormone metabolism.

¹ Clinical Chemistry. 1999;45:1369-1376.

Cellular Energy

Our cells never sleep. Every second of every day, millions of critical functions are being performed at the cellular level, in every body tissue. Each of these functions requires a continuous supply of energy. The fuel that powers virtually all cellular processes - our cellular gasoline, if you will - is called Adenosine Triphosphate (ATP). Without adequate amounts of ATP, cells literally shut down and die, within seconds.



Mitochondria: The power plants providing our cells with the energy needed for life.

Mitochondria, our “cellular power plants,” are constantly engaged in the process of making more ATP. Fuel comes in, in the form of glucose and other molecules, and is turned into ATP, a common, consistent fuel that can be utilized to power all the essential functions of the cell, including replication, housecleaning, making new proteins, maintaining the cell membrane, and thousands of other tasks.

We could turn glucose into fuel without mitochondria, through a process called glycolysis, but we would be taking a huge energy hit. Glycolysis gives us 2 ATP per glucose molecule. Mitochondria increase ATP production by 1700%, giving us 34 additional molecules of ATP for the same glucose input.

These amazing machines actually have their own genome, and that is part of the challenge of understanding and supporting them. DNA

represents a library of plans from which our cells draw to create all of the key proteins that form our cellular sub-systems, membranes, enzymes and so forth. Unique among cellular “organelles,” mitochondria have their own DNA library.

During the process of making ATP and supplying our functional energy needs, free radicals are created in abundance. Much like what might occur inside a coal-fired power plant, where protective gear are required, mitochondria are the “hard hat areas” of our cells.

As we age, the all-important DNA stored inside these machines, can become damaged, preventing critical proteins from being replaced, ultimately preventing a mitochondrion from replicating itself when it wears out.¹

These are the energy rock stars of our cells. When these organelles are fully functional, and abundant within our cells, we can manage just about any energy need. Our cells get the full maintenance program, remaining clean, organized and fully functional. DNA is protected, and carefully transcribed into the proteins we depend on for spare parts and performing the work of the cell.

As we age, the number of mitochondria steadily declines with each decade. Unfortunately, cellular workload remains the same whether we are 20 years old or 100. Declining mitochondrial populations mean a guaranteed, chronic energy shortage.

“You know you're getting old when all the names in your black book have M.D. after them.” ~Arnold Palmer

When this happens, cells have to “ration” energy, allocating it to only the most essential functions. As we have already seen in earlier sections of this book, this means a predictable increase in glycation

bonds, an increase in cellular garbage, a shortening of telomeres, and many other forms of cellular decline and dysfunction.

For many cells, it means “apoptosis” or cellular suicide, a process designed to keep an impaired cell from trying to reproduce itself, which can lead to cancer. Until very recently, while we knew the dramatic importance of mitochondria and their starring role in the aging process, we could only dream about doing something about their inevitable decline.

Methods of up-regulating mitochondrial function have been a dream project for many scientists for many years. Complicated schemes have been proposed to protect them, improve their functions, help them replicate, and even to help them do their jobs without producing so many free radicals. Most of these schemes remain pipe dreams. However, in a remarkable turn of events, this “Holy Grail” of anti-aging is now within reach. New research has pointed the way toward what will become the Cellular Energy piece of our Synergy Matrix Anti-Aging plan.

¹ J Aging Res. 2011; 2011: 257093.

Inflammation

In youth, an aggressive immune system is a survival mechanism, but as we age, it can become a liability. We humans are equipped with some incredible survival mechanisms, designed to help our species prevail over the worst of odds - famine, harsh living conditions and the like - and still bear offspring.

Unfortunately, sometimes the very multifaceted swiss army knife of survival mechanisms can be detrimental to our health as we age. This tendency of built-in mechanisms to promote species survival and reproduction at the expense of extended, healthspan (healthy lifespan), has a name: "Antagonistic Pleiotropy." Don't worry, there won't be a pop quiz.

All of this may sound abstract and fairly uninteresting, but hang in there for a moment, as the information presented here may revolutionize your "golden years." I am going to show you some newly discovered techniques for reversing the effects of antagonistic pleiotropy, creating a powerful synergy with the other Synergy Matrix tools.

Immune function is a two-edged sword. The concept of auto-immune disease is all too familiar to most of us. The notion of our "immune cops" gone bad, attacking our own tissue is not hard to visualize any more, now that it is popular knowledge that so many common diseases are caused by variations on this mechanism.

Inflammation shares many traits with auto-immune disease, even when there is no directed attack by immune cells or antibodies on our own tissue. Even though the immune attack is not "directed" at our own tissue, as in the case of autoimmune illness, our tissues get "caught in the crossfire" as our immune system gets increasingly reckless, and un-regulated.

The effects of this extend into every tissue in the body. This is no "in-

cidental” or minor phenomenon. It is now known to be a feature of nearly every chronic disease of aging, such as:¹

- Metabolic Syndrome and Type II diabetes
- Alzheimer’s Disease
- Parkinson’s Disease
- Coronary Artery Disease (CAD) and Cerebrovascular Disease (CVD)
- Cancer (it is likely to be the most significant cause of cancer!)
- Osteoporosis (bone loss)

That list is abbreviated. It is likely that every chronic disease that becomes more common with aging, has at least a partial inflammatory component. But here’s the rub: even those of us who do not have an overt disease process like those listed, still suffer the effects of accelerated aging due to inflammation.

So, even if you appear to have escaped the ravages of these dread diseases, your aging clock is still ticking faster because of inflammation, guaranteed. There is even a new, scientific term, coined to capture the importance of this mechanism or cause of aging: Inflamm-aging.

Inflamm-aging is an ongoing, low-grade attack on every body tissue, which places a constant burden of repair, as well as causing malfunctions in key body processes and hormonal dysregulation, as receptors are often caught in the crossfire of the inflammatory process.

As we age, and the various processes of aging cause declining cellular function, we manifestly cannot sustain the burden of inflammation without cellular and then tissue and organ level dysfunction.

The repair burden produced by inflammation puts stress on cellular energy supplies, which as we know are already strained by aging. Delicate tissues often breakdown, and scar. A key example of this is atherosclerosis. Whereas the popular conception of artery narrowing is that it is due to deposits of cholesterol in artery walls, in fact, atherosclerosis - artery narrowing - starts with inflammation of artery walls, causing scarring. It is only at this point that cholesterol is deposited, forming arterial plaques. These blockages which lead to heart attacks and strokes, are in fact scars caused by inflammation².

Some recent breakthroughs in our understanding of the mechanisms underlying this destructive process have provided the keys that we will use to unlock chronic inflammation. One of these is NF-KappaB (NF-kB), a master “transcription factor” controlling genetic switches related to inflammation.

Like a crime kingpin controlling a host of minor mobsters, NF-kB calls the shots in an extensive network of inflammation causing processes, genetic “switches” and signaling proteins.

Control NF-KappaB and its minions, and we can put a lid on a large measure of the inflammatory portion of the aging process, shutting down disease causing mechanisms, and reducing the chronic repair burden on virtually every organ system.

Furthermore, by controlling “Inflamm-aging” and other mechanisms affected by the Synergy Matrix system, we gain yet another positive synergy in favor of reversing the aging clock.

Just how powerful is this inflammation “crime kingpin” - NF-kB? Metaphorically speaking, it is powerful enough to make a human mob boss jealous! Like a biological Tony Soprano, it seems to have a hand in just about every chronic disease of aging yet studied, and a big hand in the most feared diseases, Cancer and Alzheimer’s Disease.

Thanks to breakthrough research into this substance over the past

decade, these diseases are far better understood, and new avenues of prevention are opening up.

Because it is a “transcription factor,” NF-kB can turn on a cascade of powerful genetic, inflammation switches. These tissue-attacking signaling molecules and genes have arcane names like, TNF- α , Cyclin D1, VEGF, IL-8 and COX2, and MMP9, several of which are becoming “The Usual Suspects,” as the mystery of cancer is unravelled.

The encouraging fact in all this is that a common pathway is becoming apparent - NF-kB - allowing the focus to shift upstream to controlling one signal, rather than dozens of downstream targets.

We have painted an ugly picture of this molecule, which begs the question, “why does our body make it in the first place?” Remember “Antagonistic Pleiotropy?” The theory that what makes us “invincible” in youth, makes us vulnerable in old age?

NF-kB seems to fit the bill as well as any mechanism so far found for illustrating this idea. In fact, it seems to be a kind of Jack Bauer mechanism, waiting silently for any indication that there has been a toxic invasion, or infection. Then, it springs into action with a rapid strike force, declaring martial law.

So, while the crime boss analogy seems apropos in old age, in our youth, NF-kB is a super-cop, determined to thwart all invaders at just about any cost. In youth, we can handle the inflammation, because our cells are more resilient, for all the reasons we have looked at so far in our survey of cellular aging.

When we are young, our telomeres are long, so cells damaged by NF-kB-induced inflammation can simply be replaced. What’s more, cellular energy stores are higher in youth, making it possible for cells to endure the heavy metabolic demands caused by activated inflammation.

As we age, and the various processes of aging cause declining cellu-

lar function, we manifestly cannot sustain the burden of inflammation without cell tissue and organ level dysfunction.

Many of the diseases of aging, such as arthritis, cancer, neuro-degenerative diseases, chronic lung disease, inflammatory bowel disease, etc., would not occur, absent the inflammatory process OR the impaired cellular function caused by the other processes of aging.

Once again, negative synergies are playing out, leading to many of the obvious manifestations of aging - in this case, some very serious diseases. Fortunately, understanding the Inflammatory Process of Aging - Inflamm-aging, opens the door to being able to manage it!

¹ Claudio Franceschi, et al; Ann N Y Acad Sci. 2000 Jun;908:244-54.

² Chung HY, Cesari M, Anton S, Marzetti E, Giovannini S, Seo AY, Carter C, Yu BP, Leeuwenburgh C: Molecular inflammation: underpinnings of aging

4

The Secret Keys of 'Youthing'

"Life would be infinitely happier if we could only be born at the age of eighty and gradually approach eighteen." ~Mark Twain

The Synergy Matrix™ Strategy

Key to our strategy of positively influencing as many of the processes of aging as possible while staying within a budget, is using multi-function interventions. By using nutrients and lifestyle interventions that have high impact for low cost, we will put together a program that will positively impact each of the processes of aging that we just covered.

Because we are leveraging synergy - not trying to get all of our benefits from one or two interventions - we can make "real world" changes and utilize readily available nutraceuticals, and lifestyle practices to form the core of our anti-aging "system."

As we cover each of the interventions, supplements or techniques that make up the program, I will try to give an estimate of the cost of adopting that particular aspect of the system. My hope is that you will implement every element of this program, because that is the way to access maximum synergy - the amplifying effect of each element on all of the others.

Read each section carefully, until the recommendations are clear, then write down the action steps necessary to implement them. I suggest starting a notebook that contains the details of your program, including sources for nutraceuticals, etc. This will make implementation a lot easier, and insure that this doesn't become a forgotten plan, gathering dust.

I also suggest reviewing this guide, frequently, as you begin implementing the Synergy Matrix™ Anti-Aging Plan, as it will reinforce the rationale behind the process, getting you “over the hump” of developing new habits by accessing the force of determined will. By reviewing the aging processes, and the “keys” to these processes - our anti-aging plan - you will create that sense of determined will.

I believe that there is power in that very determination. While we are not dealing with the subject directly, visualization, and the power of intention, are incredibly powerful anti-aging tools. In my opinion, they can produce changes every bit as powerful as hormone replacement therapy. Add them to your anti-aging arsenal.

You might even choose a photo that captures an earlier version of yourself, or someone else who represents peak health and wellness. Post that picture where you can see it every day. You might even make an Anti-Aging vision board, containing images and icons that call to mind the activities, qualities and adventures that will be a part of your new, younger self!

Key #1

Controlling Oxidation: Upgrading Your Built-In Anti-Oxidant Army

Cost: \$16.00 Per Month

Benefits:

- Reduced Incidence of Heart Disease
- Effectively lowers levels of Lp(a), significantly reducing coronary disease risk
- Lowers homocysteine levels, reducing risk of coronary disease and stroke
- Reduced Incidence of certain kinds of dementia
- Reduced vulnerability to infections of many types
- Faster recovery From major and minor illnesses
- Removal of toxic, heavy metals from the body
- Improves skin quality
- Can make “age spots” disappear over time
- In solid clinical studies, prevents influenza (Flu)
- Effective treatment for Bipolar Disorder, OCD and Schizophrenia
- Has shown the ability to stop several types of cancer cells from proliferating
- Helps liver remove key toxins
- Reduces systemic inflammation
- Can Improve health status of chronic lung disease patients

Our Oxidation Control Plan

To conquer oxidation, we must upgrade the functioning of our built-in antioxidant army, glutathione. As you may recall, glutathione is the substance, produced in all of our cells, which performs the critical function of neutralizing free-radical attackers. Garden variety anti-oxidants, such as vitamins, and the substances found in fruits and veg-

etables, are minimally effective, by comparison.

Since we have an anti-oxidant army already, what we need to do is resupply it and upgrade it with more soldiers. The evidence-based way to do this is NAC. N-Acetyl Cysteine, a truly natural substance but one which is not found in adequate abundance in any food, when taken as a supplement, directly and measurably increases glutathione concentrations in all of our cells.

When taken at the proper dose, NAC has been shown to powerfully, rapidly upgrade glutathione production in our cells. ¹ We often hear dubious health claims for various substances, and consumers are at a loss as to how to evaluate the “latest and greatest” supplement claims. I am very sympathetic to this frustration. As is the case with every supplement I am recommending in this book, I assure you, there is no hype involved in recommending NAC. This may be the single, most powerful nutritional supplement available.

Why not just take a glutathione supplement? Because glutathione is broken down during digestion, none of it actually gets into your cells where it is needed. In contrast to this, NAC is proven to be absorbed to a great enough extent to significantly upgrade our stores of glutathione. Simply stated, NAC works, and is proven safe in thousands of clinical studies.

By upgrading glutathione with NAC, we set in motion a dramatic cascade of intra-cellular, and then systemic improvements in body functioning. Most people take NAC to deal with health challenges, and many have come to rely on this supplement as a mainstay for treatment of diseases ranging from Chronic Fatigue Syndrome, to various kinds of heart disease, to Parkinson’s disease.

As powerfully beneficial as the effects of NAC have been for disease sufferers, imagine what it can do for a healthy individual, who takes it to maintain peak wellness. I believe it is going to revolutionize anti-aging, and that is why we include it as a key element in our Synergy

Matrix™ Anti-Aging Program.

NAC is one of a handful of supplements that I take, daily. Here are my dosing recommendations, as well as additional information, to help you take advantage of this revolutionary substance.

How To Take NAC

- 500 or 600mg capsules or tablets - taken twice daily
- Take them first thing in the morning, and before bedtime
- Newer, slow release forms of NAC may be better

Recommended Products (each represents a high-quality, dependable NAC supplement) contains selenium and molybdenum - an added bonus)

- Jarrow Slow Release NAC 600mg, 100 Tablets
- TwinLab NAC 600mg, 60 Capsules

Are there folks who should avoid NAC? I don't think so. Even pregnant women can benefit from this remarkable supplement.

What About Drug Interactions?

There is only one drug interaction to be aware of, and that is with nitroglycerine, a medication used to control angina symptoms (chest pain caused by coronary disease). NAC seems to increase the effects of nitroglycerine, which can lower blood pressure.

If you are on a nitroglycerine patch or tablets, you should let your doctor know you would like to begin taking NAC, so they can be ready to adjust the nitroglycerine dose, if needed. NAC is being used, by cardiologists, along with nitroglycerine, to protect the heart, so the combination is not harmful, it simply requires care and possible dose adjustment.

Are There Side Effects or Dangers?

Some people experience mild flatulence at first, which will subside and is rarely serious.

NAC does not cause pulmonary artery hypertension (PAH). If anything, it should prevent it. Rumors to this effect were based on studies in mice, using about 80 times the human dose. In fact, it most likely protects against PAH.

¹ J Appl Physiol. 2004 Oct;97(4):1477-85. Epub 2004 Jun 11.

Eur J Clin Invest. 2000 Oct;30(10):915-29.

Curr Opin Pharmacol. 2007 Aug;7(4):355-9. Epub 2007 Jun 29.

Key #2

Reversing Glycation

Cost: Less Than \$10.00 Per Month

Benefits:

- Prevents formation of age-promoting Advanced Glycation End Products (AGE's)
- Reduces stiffening of functional proteins, both inside and outside cells
- Slows skin aging
- Reduces cellular energy needed for maintenance tasks
- Prevents and possibly reverse cataract formation
- Dramatically improves muscle strength
- Improves heart and lung function
- Dramatically increases production of carnosine, a powerful cellular protectant
- Lowers oxidized LDL (the most damaging kind of cholesterol)
- May help fight ulcer causing H. Pylori
- Helps "chelate," or remove toxic heavy metals
- Has extremely powerful anti-oxidant benefits
- Elevates GABA, a key brain neurotransmitter

Glycation and AGE Management Plan

In order to control glycation, we are going to make use of a built-in system capable of managing the ravages of glycation and AGE formation. In a fashion very similar to the way we upgraded glutathione, by providing a substance capable of increasing its formation, we are going to be upgrading our innate ability to produce a powerful, anti-gly-

cation substance with multiple benefits.

The built-in system we are talking about, is our system for producing and utilizing Carnosine, a natural, essential substance that is made inside all of our cells, from head to toe. Like glutathione, stores of carnosine decline with age in a very predictable fashion. Because of this, our cells become increasingly subject to the ravages of glycation.

While carnosine supplements are available, they, like glutathione, are completely broken down in the digestive tract. We need another strategy, and with the Synergy Matrix Anti-Aging system, we have one. We are going to make use of a powerful but natural substance - an amino acid - called Beta Alanine.

Beta alanine is a remarkable substance, capable of significantly increasing the amount of carnosine our cells make¹. By taking appropriate amounts of it, we can gain the health benefits listed above, and begin harnessing positive synergies with the other parts of our Synergy Matrix plan.

The elevated carnosine levels produced by beta alanine supplementation provide not only the anti-glycation benefits we are seeking, but many other remarkable benefits, most especially anti-oxidant capacity that is significantly greater than that provided by many garden variety anti-oxidants. It is this anti-oxidant power that is thought to be responsible for some of the benefits listed above.

For diabetics this substance is a godsend, protecting these individuals from many of the ravaging effects of elevated blood sugar². What's more, Type II diabetics who follow the dietary recommendations in our section on Reversing Insulin Resistance, can sometimes see major reversals of pathology associated with this disease. I certainly recommend that all diabetics take this supplement. I believe it can add healthy years to their lives.

Best of all, beta alanine is safe, and very affordable. It's another one

of my “desert island” supplements, substances so beneficial, I would take them in lieu of dozens of others if I had to choose. It may not be available in your local health food store yet, but as with the other supplements in our plan, it is available at [Amazon.com](https://www.amazon.com).

Like niacin, beta alanine can cause a tingling sensation, when you first start taking it. This is not an indication that it is doing anything harmful, and it will go away with time. In order to prevent this, I recommend that you take beta alanine at night, right before you go to bed. This is what I do, and I have not been troubled by the “beta-alanine flush,” when I take it before bed.

Beta Alanine dosing is quite simple. I recommend starting with 750mg every night before bed, for 3 weeks, then going up to 1500mg taken before bedtime, after that. These levels of supplementation will give you a significant boost in carnosine production, and you should begin to notice the effects very quickly after you begin taking it.

Some people take much higher doses, as with many supplements, even up to 10 grams or more per day (10,000mg). However, moderation is key to our plan, so I don't recommend going over 1500mg per day. Our moderate dose has the potential to reverse the decline in carnosine levels due to aging, and give a 60 year old, the intracellular carnosine levels of a 10 year old. The benefits of this cannot be overstated.

Does this work for the human brain, as well as it does for the rest of the body? Yes, because while the brain prefers its own form of carnosine - homocarnosine - brain cells can interchangeably make homocarnosine using circulating carnosine. Thus, by elevating levels of carnosine outside the brain, we can also raise levels in the most important organ in the body, providing the same, remarkable anti-aging benefits there.

You can save a great deal of money, by purchasing beta alanine powder, instead of capsules. To obtain a 1500mg nightly dose, you will

use three (3), level 1/8th teaspoon scoops. Just add the three scoops to a small glass of water, stir and drink. It has almost no taste, so you should not find it unpleasant in the least. I don't recommend adding it to juice, since we avoid sugar on the Synergy Matrix Diet.

Recommended Products

- Now Foods Beta Alanine 750mg, 120 capsules
- Now Foods Beta Alanine Powder, 500g

Are There People Who Should Not Take Beta Alanine?

There are no known contraindications (reasons not to take) beta alanine for adults. As with all other elements of this plan, the reader is assumed to be an adult. There are no known drug interactions with beta alanine. As with all supplements, it is important to let your doctor know what you are taking.

¹ Med Sci Sports Exerc. 2010 Jun;42(6):1162-73.

² Adv Food Nutr Res. 2009;57:87-154.

Key #3

Reversing Insulin Resistance

Cost: Can be made cost-neutral, with careful, bulk shopping

Benefits:

- Dramatically reduces risk of heart disease and stroke
- Protects against dementia
- Reduces overall body fat
- Reduces waist circumference
- Gives greater satisfaction with body image
- Reverses Type II diabetes
- Reduces incidence of blindness due to Age Related Macular Degeneration
- Protects against many types of cancer

Synergy Matrix™ Insulin Resistance Diet

The Standard American Diet is one of the most powerful enemies of anybody's anti-aging program. It is like having a veritable army lined up dedicated to defeating you in your best efforts to slow the aging process. Whereas diet should be our greatest ally in our quest to add healthy years to our lives, it has become our biggest foe.

Here's how to defeat that army, and send those troops packing, for good. Let's start by looking at the ways our Standard American Diet (SAD), circumvents our anti-aging efforts, and finish up by looking at a new way of thinking about diet that won't require you to eat like a monk, or be the brunt of jokes at your next lunch meeting.

This information is key. Please, do not think this section is optional. This is “core” information. In many ways, you will find that changing just a few principals of diet, will empower every other decision you make toward a comprehensive anti-aging program.

You will soon see that these “diet tweaks” will augment your efforts to balance sex hormones, maintain optimal HGH secretion, prevent the glycation bonds that gum up your cellular machinery, ease the load on your critically important, built-in anti-oxidant system, provide micronutrients which slow cellular aging and protect your precious DNA - and so much more.

Do we really have to make dramatic dietary changes? What if we simply reduce our consumption of toxic and metabolically destabilizing foods and beverages, but take supplements to make up for the bad things we are eating? Many of us subconsciously use a basket of supplements to try to “cancel out” our dietary sins. So, I feel it is imperative that we get clear on the fact that diet must be at the core of any anti-aging program, for multiple reasons.

There are no half measures. If you eat toxins, you will develop toxin-related diseases. If you eat a diet that overcomes your body’s compensatory mechanisms and detoxification strategies, you will age quickly, and you will soon be in a situation where you must either reverse your course or buy time using side-effect prone, relatively ineffective prescription drugs.

The first and perhaps most important reason we must adopt a new way of eating is “Insulin Resistance” and the closely related, “Metabolic Syndrome.” By understanding these concepts, and how to avoid and reverse them, you will be gaining back a youthful, vibrant metabolism, and with diet alone, avoiding the most common diseases of our time.

It is common knowledge that insulin is necessary for life. Without the right amount of insulin, metabolic processes rapidly spiral out of con-

trol. In Type I Diabetes (also called Juvenile Diabetes), the pancreas loses the ability to secrete insulin.

Insulin is the key that unlocks the ability of many of our body's cell-types to allow glucose, as well as fat (a sugar, and fuel source), to enter. Without this key, sugar can't get into cells, and it relentlessly rises, causing havoc.

A Type I Diabetic is forced to use an "alternative fuel" called ketones, to provide for its energy needs. This can cause the infamous crisis that sometimes plagues these folks, called DKA (Diabetic Ketoacidosis). But, there's much more to the story, for both Type I, Type II, and very importantly, for "non diabetics."

As you will see, the "non diabetic" by no means gets off easy in this game. We are all, in fact a lot more like Type II Diabetics than we would care to believe.

You see, insulin is a two-edged sword. The concept of balance has come up again and again in this book, and nowhere is it more key than in the case of insulin.

Non-diabetics, with "normal" pancreatic function, can and do make plenty of insulin, unlike the Type I Diabetic, but more is not always better. In this case, more is worse. It turns out that most of us are experiencing "insulin overload" without even knowing it.

Our pancreas is programmed to scan constantly for rises in blood sugar and release insulin, to make certain that the extra sugar is rapidly taken up by our cells. In a normal person, after a meal it's levels range up and down in a carefully orchestrated series of pulses, from 100 pmol/l to more than 800 pmol/l. A pmol is a very small amount (pico is the abbreviation for "billionth"). Insulin is pretty potent stuff!

Unfortunately, the Standard American Diet makes our pancreas work overtime. A typical meal is so stimulating to insulin production nowa-

days, that a “well fed” American has an insulin secretion curve that is very skewed toward hyper-secretion. A typical American meal often includes more than 100 grams of carbohydrate, and total daily intake often exceeds 300g.

So why is this such a big deal? It is key to every facet of what drives pathological or accelerated aging in humans. Insulin is like a megaphone, shouting to our body cells to “soak up” excess fat and glucose. Carbs make the pancreas shout so loudly that some of our cells are rapidly losing the ability to hear.

Unfortunately, it is our muscle cells that lose this ability to “hear insulin” first, and our fat cells that keep on listening intently. As we age, rather than our muscle cells BURNING fat, our fat cells - the adipocytes - simply STORE it. Thanks to our large carb intakes which cause the pancreas to “scream,” our fat cells quickly suck in all the calories within hours of a meal.

After these energy sources have been soaked up by our body fat, another alarm bell goes off: the hunger bell. By over-driving our insulin secretion with too many carbs, we enter a roller-coaster cycle of feasting, and rapid-onset hunger. Over time, fat mass grows, so there are more fat cells to act as a vacuum cleaner, sucking in potential calories. With more fat cells come more insulin receptors, driving the pancreas to release even more insulin.

All the while, muscle cells, capable of burning the extra energy, begin to go deaf, and instead of helping us burn the additional caloric load, they sit silently as the cycle worsens. This is what we refer to as Insulin Resistance. It is a vicious cycle, which worsens with each passing year, causing our lean body mass to decline while our fat body mass relentlessly increases. This causes a cascading series of metabolic and hormonal problems.

Metabolic Syndrome

- Elevated Blood Pressure

- Fat Accumulation Around The Waist
- Fasting Blood Sugar Over 100 mg/dl
- Abnormally Low HDL (commonly called “good cholesterol”)
- Elevated Triglycerides

We now know that this “syndrome” causes cancer, Type II Diabetes, Hypertension, Atherosclerosis, Strokes, and even Dementia. Virtually every common, chronic disease today can be traced, in large measure, back to insulin resistance and Metabolic Syndrome.

We also know that insulin resistance and the oxidative stress associated with it, shortens telomeres faster - a very interesting fact which emerged from the famous Framingham Heart Study.¹

Metabolic syndrome, and Type II diabetes, are in many ways, simply grossly magnified versions of a process that is accelerating the aging process for everyone who eats the SAD diet. By eliminating the cause of Metabolic Syndrome, we eliminate the cause of the accelerated aging associated with it, protecting every cell in a way not possible through any other means. There is no pill that can protect against the ravages of SAD. It is metabolic destiny.

Change the way we eat, and we change our metabolic destiny. By changing our diet, we alter numerous disease risk factors, dramatically. What is key, is that by making a few “diet tweaks” that anyone can accommodate and afford, we can slow aging so dramatically that our friends and loved ones will notice in just a few, short weeks.

To go back to the military analogy, when we eat a Standard American Diet, it’s as though every meal were a freshly equipped metabolic army, ready to attack our body cells, with insulin playing the part of The General, leading the charge against us.

Let’s take a look at how we can defeat this metabolic army, and put its General into a new, more diplomatic role, a role supportive of sus-

tainable wellness, and our anti-aging goals. First, we have to cutoff their supply lines, and we do this by dramatically lowering the proportion of our calories that come from carbohydrates.

The problem for most of us when it comes to getting a handle on the issue of diet and its role in wellness, is just how far off the beam the Standard American Diet (SAD) is. Because the diet we have been raised on is so far off the mark, most of us only ever take small steps toward correcting its gross imbalances.

For the most part, we think in terms of half measures and tiny changes. We strain out the gnat and let the dietary elephant fall through. By significantly lowering the carbohydrate content of our diet, we can lower insulin to healthy levels, preventing the metabolic problems that excess insulin is causing. It's a simple, sound approach that takes care of many problems with just one change.

We will accomplish this by changing the focus of our diet, eliminating some food choices, and emphasizing others in a way that still allows us to thrive in a world of often-bad food opportunities.

The diet that will help us meet our anti-aging goals by normalizing insulin levels is called the Synergy Matrix™ Anti-Aging Diet. This diet will allow us a moderate amount of very specific carbohydrates, whereas most of our energy will come from healthy fats and proteins.

The diet is designed so that we will nearly always have an allowable food option, even when eating out, so we won't feel deprived.

We will discuss the very simple rules of this diet, in just a minute. But before we do, I would like to review the benefits that this diet provides, as early as the first few days.

Synergy Matrix™ Diet Benefits

- Improved energy (chronic fatigue often resolves)
- Better sleep
- Improved mood and memory function

- Immediate, natural and sustained weight loss
- No need to “count calories”
- No need to engage in obsessive exercise to try to “burn off calories”
- Lower insulin and leptin levels
- LDL particle size increases, more like HDL
- Reduced inflammation
- Blood pressure normalizes quickly
- Triglycerides fall dramatically
- HDL (Good Cholesterol) goes up, naturally
- Many people can discontinue statins and other medications

OK, so the benefits are pretty impressive. Above all, after 2-3 weeks on this diet, compliance with it will be second nature. You won't want to go back to a SAD diet because you will be enjoying the gains in energy, the steady loss of body fat, and overall sense of wellness.

Here are The Rules of The Synergy Matrix™ Diet

1. Eliminate all Grains and Potatoes (6 Days Per Week)

- No pasta
- No breading
- No rice
- No wheat, oats, barley, quinoa or corn
- No grain cereals, such as Cream of Wheat, granola, or oatmeal

2. Eliminate Concentrated Sugar Sources (6 Days Per Week)

- No fruit juices
- No “energy bars”
- No “energy drinks”
- No sugars or syrups
- No honey
- No Agave nectar

- No sweetened beverages (artificial or natural)
 - High sugar fruits (melon, banana, grapefruit, oranges, mangoes, peaches, etc.) are allowed, but only two servings per week
 - Chocolate and other candy bars
3. Eliminate Unhealthy Fats (6 Days Per Week)
- No margarine
 - No corn, soybean, peanut or sunflower oils
 - No vegetable shortening (Crisco)
 - No hydrogenated fats or oils
4. Read Labels Very Carefully!

What We CAN Eat (assuming no allergies to the listed foods)

1. Healthy Proteins - As much as desired 7 days a week
- Grass Fed Beef, Pork and Bison
 - Look for locally raised, natural meats
 - Grass fed beef is best, not just “grass finished”
 - Look for meats given a vegetarian only diet and no hormones or antibiotics
 - Wild Caught, Low-Mercury Fish
 - Wild-caught Alaskan Salmon in cans is a bargain
 - Sardines in olive oil are an excellent choice
 - Avoid tuna (unless labelled low in mercury)
 - Free Range Chicken and Turkey
 - Truly free range is best
 - “Organic” is NOT appropriate, organic poultry is fed grain, and will have a poor fatty acid profile
 - Look for meats, if not free range, given a vegetarian only diet and no hormones or antibiotics
 - Eggs

- Eggs are an excellent and inexpensive protein source
 - Easy to digest
 - They will not raise your cholesterol! You would need to eat 34, large eggs PER DAY to raise your LDL cholesterol 10 points!
2. Fibrous Vegetables -
- Greens, such as lettuce, spinach, kale, arugula, celery, basil, sprouts
 - Tomatoes and peppers
 - Broccoli and cauliflower
 - Asparagus
 - Cucumbers
 - Mushrooms
 - Onions
 - Fermented vegetables are encouraged, such as pickles and kimchee
3. Healthy Sources of Fats - As much as desired, 7 days a week
- Nuts, nut butters and seeds (keep these around for between meal snacks)
 - Olives
 - Olive Oil, Coconut Oil, Sesame Oil
 - Butter or Ghee - in moderation (for sauteing and cooking)
4. These Foods Are Allowed in Moderation as specified
- Organic Whole Milk (less than 2oz per day, averaged over 6 non-splurge days)
 - Organic Tofu, up to 8 ounces per week
 - Organic, unsweetened yogurt, two 8 oz. servings per week
 - Organic, raw milk cheese in small servings, such as an appetizer
 - Apples (up to one per day)
 - Blueberries and Blackberries (1/2 – 1 cup of blueberries per day is very beneficial)
 - Strawberries, up to 1/2 cup per serving, twice

weekly

- Goji Berries (make sure they are unsweetened)
- Beans, such as Pinto, Black, Lima, etc., may be eaten up to one serving daily
- Red wine, up to two glasses per day

Anything Goes Day

Once per week, eat anything that can reasonably be called food, and as much as you like, even the items on the “elimination” lists. I credit Timothy Ferris with impressing upon me the importance of having a safety valve day, when anything goes. Psychologically, you know you are never more than six days away from eating anything that appeals to you.

Remember that this diet does not restrict calories, instead, it eliminates harmful, insulin-stimulating foods. This makes it easy to stick with, over the long haul. It prevents bouts of severe hunger. If you get hungry between meals, have any of the allowed foods as a snack. It’s that simple; no calorie counting!

This diet seems too simple perhaps, but the simplicity belies its many, far reaching benefits. This is a diet that you can trust to support your health goals for the rest of your life.

It also doesn’t cost a lot. Remember the additional costs associated with buying healthy proteins (beef, fish, etc.) are offset by the money we’ve saved, by not buying processed foods. Processed food is even more expensive than most of us realize when we add up its toll on the body, as well as our environment.

Give this diet a solid chance, and I believe you will find, as I have, that you can stay with it forever. The once-per-week, splurge day is key. It’s not an absolute requirement, but I believe it is a safety valve, allowing you to stay on this diet long-term, without feeling like you are missing out on anything. Remember, this is not something you go “on and off of.” Rather, it’s a new lifestyle, an anti-aging and wellness

lifestyle.

This diet is in many ways similar to what is called The Paleo Diet. Because of this similarity there are many excellent books on this subject which will be of help in adopting this new diet, and several great cookbooks. Here are some suggestions:

[The Paleo Diet: Lose Weight and Get Healthy by Eating the Foods You Were Designed to Eat](#)

[The Primal Blueprint Cookbook, By Mark Sisson \(one of my favorite bloggers\)](#)

[Everyday Paleo, By Sarah Fragoso](#)

Bear in mind that these books cover the Paleo Diet, which our diet deviates from in some respects, for instance, in allowing a small amount of dairy. But, they are a big help in terms of visualizing creative ways to use your new ingredient choices.

Everyone I know who has taken the time and effort to eat in this new way, has benefited immensely. They no longer have to think in terms of calories, and their bodies naturally change toward more youthful status, in myriad ways, effortlessly. Many of them have been able to eliminate medications that had been needed before the diet change, such as blood pressure and cholesterol lowering drugs.

Blood test results commonly normalize on this diet, including measures of inflammation (CRP), homocysteine, hormone levels, HDL, and triglycerides. If you have been diagnosed with Type II diabetes in the past, you will very likely be told at some point that “you are no longer a diabetic.” That’s how powerful this lifestyle change is. LDL levels may rise a small amount but what is not shown on most lipid panels is that on our diet, LDL particle size will increase, which is key to heart health. Your LDL will become more like HDL!

Food Sensitivities

I would also like to add a few comments on food sensitivities and anti-aging. I believe that many of us, perhaps the majority, have at least one or two food sensitivities that have never been diagnosed. By this I don't mean "food allergies." Food sensitivities, unlike food allergies, don't show up in any immediate, spectacular way.

Food sensitivities are chronic, and by their very nature, subtle. We tend to live with them for years, even for a lifetime, without ever noticing that they are at the heart of some of our most serious symptoms and problems, such as joint pain, "brain fog," fatigue, autoimmune disease, nutrient malabsorption, hormone imbalance - the list is extensive.

What is key about the Synergy Matrix™ Diet, is that it tends to eliminate, six days per week, the most common offender, which is gluten. Because of this fact, many people who adopt the Synergy Matrix™ diet, or the Paleo Diet, find that some or all of their chronic symptoms go away, within just a week or two.

If you fall into this category, you may have an sensitivity to one of the eliminated food groups, such as gluten, or any of the other eliminated items, such as cane sugar, corn syrup, or potatoes. Without a formal elimination diet, there will be no way to tell for certain. Elimination diets are medically supervised, very special, temporary diets, used to detect food sensitivities.

My wife recently went through this process, and it has dramatically affected our lives, in a positive way. She found out that she had several, unsuspected food sensitivities. Eliminating these foods brought a chronic problem she had been taking prescription medicines for, completely under control. I only share this, because she has given interviews on the subject that are publicly available.

You can help confirm your suspicions and narrow down the possibilities by utilizing your "splurge day" to reintroduce each of these food types, one at a time, to see if your symptoms come back with re-ex-

posure to that food type. Bear in mind, it can take up to three days, after eating them on a splurge day, to see recurrent symptoms.

In addition, you may want to find a health care provider who can provide a formal, elimination diet program, and food sensitivity testing. It may turn out to be the best investment in your health that you have ever made. To help you find such a healthcare provider, and learn more about food sensitivities, here is a resource that will point the way: FoodPowers.com

Oh, and one more thing, enjoy those splurge days!

¹ [Aging Cell](#). 2006 Aug;5(4):325-30.

Key #4

Cellular Energy Boost

Cost: \$15.00 Per Month

Benefits:

- Extends life of every cell type (Telomeres)
- Reduces production of free radicals (Oxidation)
- Provides energy reserves for cell cleanup and maintenance (Cellular Garbage)
- Prevents many chronic diseases
- Cardio-protective effects
- May protect against Parkinson’s Disease
- Reverses age-related memory decline
- Prevents brain injury caused by “excitotoxins”
- May protect against Alzheimer’s Disease
- Markedly improves memory function

Synergy Matrix™ Cellular Energy Upgrade Plan

The key to upgrading cellular energy levels is to protect the “power plants” which power our cells, the mitochondria. By facilitating mitochondrial function and enabling mitochondria to do their jobs without creating high levels of harmful, free radicals, we will gain numerous benefits.

We will be making use of an exciting, new nutraceutical called PQQ to do this job and provide many other powerful, health enhancing effects. PQQ, like other supplements on our list, may not be available at your local health food store, but there are sources that can provide it at low cost, no matter where you live.

Discovered over 3 decades ago, the significance of PQQ was completely missed at the time. Recently however, this substance was found to be the most powerful enhancer of mitochondrial function yet discovered. It activates cell signaling mechanisms which actually enable cells to create more mitochondria.¹

It also protects existing mitochondria from oxidative damage caused by free radicals, providing powerful synergy with other aspects of our plan. How powerful is PQQ in terms of up-grading mitochondrial efficiency? One study showed improvements ranging from 30 to 5000 times. These numbers are mind boggling.

Long considered one of the most sought-after anti-aging goals, the ability to protect, functionally enhance and preserve mitochondrial function at these levels, is nothing short of game-changing for anti-aging medicine. What is more, this substance is natural and some scientists are now calling it an essential nutrient.

A substance capable of so dramatically improving cellular energy would be expected to produce very dramatic and measurable effects, and this is indeed the case. In one study in persons between 40 and 70 years of age, memory function in the PQQ group doubled compared with the control group.²

Another study, looking at heart function in the post-heart-attack period, found that PQQ - a nutritional substance - was more powerfully protective of heart function, than the standard cardiac drug normally used.³ As a physician who has treated numerous of heart attacks in the hospital setting, the potential for this is very exciting.

PQQ does things that no supplement before has been able to do, in-

cluding directly activate cellular signals, such as the recently discovered DJ-1, a cellular protein that prevents cells from succumbing to severe stress that would ordinarily lead to cell death.⁴ In particular, this has strong implications for prevention of common, neurological diseases, such as Alzheimer's and Parkinson's.

In addition, PQQ has been shown to activate DNA protection mechanisms, which are likely to be very important. Other functions are related to an exciting cell signal called PCG-1-alpha, which has potential for directly improving many common diseases.

There is no question that PQQ is one of the most remarkable nutraceuticals ever discovered. I would be recommending it, even if it cost 500 dollars per month to access these effects. Fortunately for us, however, this substance is extremely affordable!

I recommend that you take 10mg per day. This dose is perfectly adequate to secure all the benefits of PQQ. More will not create an enhanced effect.

Recommended Product

- Life Extension BioPQQ 10mg, 30 capsules

Something to consider, if your budget permits, is to take PQQ along with Ubiquinol, which is an enhanced form of CoQ10. These two create a natural synergy, that has been shown to be very powerful, in clinical studies. For instance, in studies of brain function, these two supplements produced a much more dramatic effect when taken together.

- Swanson Ubiquinol 100mg, 60 gel caps

Bear in mind, the basic Synergy Matrix Anti-Aging plan requires only PQQ. I personally take Ubiquinol 100mg daily, in addition to PQQ, as I feel that the added benefit justifies the cost. Regular CoQ10 will give this synergy, as well, but higher doses are required (200-300mg per day).

By adopting the Synergy Matrix Cellular Energy Boost plan, you will gain myriad benefits, and moreover, you will experience powerful synergies with all other aspects of the Synergy Matrix Plan.

¹ J Biol Chem. 2010 Jan 1;285(1):142-52. Epub 2009 Oct 27.

² FOOD Style 21 2009;13(7):50-53

³ J Cardiovasc Pharmacol Ther. 2006 Jun;11(2):119-28.

⁴ *Free radical research* **35** (6): 885–93 *EMBO Reports* **5** (2): 213–8

Key #5

Telomere Health Support

Cost: \$30.00 Per Month

Benefits:

- Extend the ability of cells to replicate in a healthy fashion
- Prevent senescence of tissues
- Prevent development of chronic disease
- Support health and function of heart, brain and skin and other vital organs
- Improve immune function
- Potential to extend individual lifespan

Synergy Matrix Telomere Support Plan

As you will recall from the earlier section on the importance of telomeres in aging, this area is perhaps the hottest topic in all of anti-aging, and that is saying a lot. To underscore just how “hot” this area is, here is a quote from a recent study, published in one of the most prestigious scientific journals in the world, Nature.

In this study, published in November 2010, in which the telomere length of old mice was restored to youthful levels, the authors commented that they had achieved “unprecedented reversal of age-related decline in the central nervous system and other organs vital to adult mammalian health.”¹ The point is that aging wasn’t merely

slowed down, it was reversed.

In that same study, every tissue examined was dramatically restored from an extreme state of degeneration, much as in a very elderly human, to a truly youthful state, in 30 days. What's more, the lifespan of the treated mice was substantially lengthened. This was the stuff of science fiction and idle speculation just a few years ago.

But how close are we to achieving telomere lengthening in humans - us - now? I think the evidence shows that in many ways, we are already there. Very promising studies are showing that it is possible to slow the rate of telomere shortening, and even to lengthen telomeres, which was formerly thought to be impossible.

Let's look at some recent studies that provide the rationale for our own program. First, we note that it was recently shown that telomere length is proportional to Omega 3 fatty acid intake. Those in the group with the highest intake of Omega 3's lost telomere length half as fast, over a 5 year period.²

A very recent study looked at the effects of stress on telomere length, showing that telomeres shorten very quickly in response to life stress. Perhaps the old expression that someone or some experience "gave me grey hair," has more than a strand of truth in it?

Another study recently showed that vitamin D intake is positively associated with longer telomeres. Those who have read my articles on vitamin D know that I am a big proponent of adequate supplementation with this key nutrient. In that study, those with the highest vitamin D intakes were, on average, 5 years younger in terms of telomere length.

In a very interesting study from 2009, it was shown that women who simply take a multivitamin, had telomeres that were, on average, 5% longer than those who did not. Yet another reason to consider taking a good multi-vitamin.

And finally, a couple of studies have clearly shown the benefits of exercise, related to telomere maintenance. One study showed much longer telomeres among older runners. The runners who ran the furthest on a weekly basis had telomeres which were 75% longer than their sedentary peers!

Aside from these studies correlating telomere length, nutrition and lifestyle, there have been some very tantalizing research reports about Astragalus extracts. One of these extracts, called TA-65 from TA Sciences, was recently shown to reduce the incidence of what are called “ultra short telomeres,” which are now thought to be more indicative of aging, than average telomere length.

Furthermore, this supplement has shown the ability to lengthen telomeres in human leukocytes among AIDS patients, who are noted for having shorter than normal leukocyte (white blood cell) telomeres. This is a very significant finding, as it shows that we are truly in a new era of anti-aging.

Unfortunately, I wish I could recommend TA-65 to readers. On a health basis, it looks like a worthwhile supplement, but it costs about \$200.00 per month.

Synergy Matrix Telomere Health Support

Our plan involves a strategic combination of factors shown to facilitate telomere health.

- Vitamin D - 2000 IU per day
- Fish Oil - 1 teaspoon per day
- Exercise Program - see Chapter 7
- A high-quality multi-vitamin

My Recommendations

Supplements

- [TwinLab Daily One Caps Without Iron](#)
- [Pure Encapsulations Vitamin D3 Liquid 1000 IU](#)

Per Drop

- Carlson's Labs Fish Oil 500ml

Exercise Program

While it is beyond the scope of this book to recommend an entire exercise program, I will point the reader to some resources that can help get you started:

- Mark Sisson's Free, Primal Blueprint Fitness Guide,
www.primalblueprint.com
- Power of 10: The Once-A-Week Slow Motion Fitness Revolution

If you will implement one of the workout plans presented in either one of these books, you will be the better for it, in every way. Since I began my own resistance training program, I have regained an immense sense of personal mastery, lowered my body fat content and increased my sense of overall wellbeing. We will be looking at exercise in more detail in Chapter 7.

¹ doi:10.1038/news.2010.635

² AMA. 2010 Jan 20;303(3):250-7.

Key #6

Activate Your Anti-Aging Genes

Cost: \$15.00 Per Month

Benefits:

- Activation of SirT1 gene system
- Offsets adverse effects of high dietary fat intake
- Improves glycemic control (helps prevent metabolic syndrome)
- 1000% increase in intracellular anti-oxidant function
- Strong potential to extend individual lifespan

Activating Your Anti-Aging Genes

Around the same time that the discovery was made that eating the equivalent of a starvation diet could turn on genetic switches capable of making mammals, from mice to humans, live longer and more resiliently, we were also beginning to elucidate another fascinating phenomenon.

The “French Paradox” is a name used to describe the fact that people living in the countries surrounding the Mediterranean Sea, particularly the French, live longer, and have significantly less heart disease and stroke, as well as cancer, and a number of other chronic diseases.

What befuddled researchers is that the people living in these regions ate more of some of the foods that were “supposed” to be bad for us, and yet they were healthier (not to mention, happier). Much research

went into efforts to find out what might be protecting these populations from such diseases even while they enjoyed rich foods.

In the last few years of the twentieth century, one of the causes was determined to be a compound found in red wine called Resveratrol.¹ This is where things get really interesting, because shortly after the turn of the new millennium, science would determine that Resveratrol might be all that, and a lot more.

We now know that Resveratrol is capable of activating the same “superhuman” gene system that is activated by starvation diets, making this compound one of the most exciting discoveries in anti-aging medicine.

What about mTOR and FOXO? You may recall that we discussed these in our chapter on Epigenetic Aging. The good news is that Key #8, Curcumin, activates mTOR effectively, giving us epigenetic benefits in addition to inflammation control.

FOXO is now known to be activated by Resveratrol via SIRT1. Thus, resveratrol gives us the benefit of two, powerful gene systems which promote sustained wellness and strong protection from heart disease, stroke and cancer.

In addition to activating SIRT1 and FOXO, Resveratrol has proven to be a powerful ally against cancer. Resveratrol possesses the unique distinction of making normal cells more hardy, while killing cancer cells. This is a remarkable compound, and one very much worthy of inclusion among our Anti-Aging Keys.

Forms of Resveratrol

Like many natural substances, Resveratrol exists in two forms, which represent molecular mirror images of each other: “CIS” and “TRANS.” The TRANS is more biologically active, and thought to be responsible for most of the benefits.

Most Resveratrol sold today is a mixture of the two, but there are a

few companies which sell products that are pure TRANS resveratrol. I recommend this form, but the conventional, mixed form can bring most of the same benefits. Note that the TRANS form is about twice as potent, so lower doses can provide the same benefits.

Here's how to get the benefits of this powerful supplement

I recommend 100mg per day, taken in the morning (resveratrol can be mildly stimulating). I do not recommend the very high doses taken by some, because, while this is a remarkably beneficial substance, like many botanical “polyphenols,” it is capable of binding copper. Too much Resveratrol can keep us from absorbing needed copper, leading to problems.

How much is too much? I have not heard of anyone developing symptoms of copper depletion while taking less than 500-1000mg per day. Our 200mg per day dose should keep us well within the safe range.

What is the best brand to take? I like these brands for quality and value:

- Doctor's Best Trans Resveratrol 200mg (60 vegicaps)
- Natures Plus Extended Release Resveratrol 125mg (60 or 120 tablets)

How do we know Resveratrol is Safe?

We know that Resveratrol is safe, because it is found in substances like wine grapes and blueberries, with thousands of years of safe use. Testing has shown safety in mice in doses hundreds of times higher than those recommended here. There is every reason to believe that this is a safe supplement, based on very extensive research.

Are there reasons not to take this supplement?

Like other botanically derived supplements, Resveratrol is very safe,

but it is very important that you check with your doctor before taking it if you are taking any prescription drugs. Interactions are theoretically possible, particularly with drugs that inhibit blood clotting, and drugs metabolized by CYP3A4. Please mention the potential for CYP3A4-based interactions to your doctor, as there are many drugs metabolized through this mechanism. Bear in mind that, as of this writing, no actual Resveratrol-drug interactions have been reported to the FDA. In addition, we do not know enough yet to evaluate its safety in pregnancy.

¹ Ann NY Acad Sci. 2011 Jan;1215:16-21

Key #7

Pituitary Tuneup/ Hormonal Regulation

Cost: \$20.00 Per Month

Benefits:

- Promotes healthy protein synthesis
- Improves lean body mass
- Improves sleep quality
- Improves cardiac function
- Enhances cognitive function
- Improves bone mineral density
- Improves kidney function
- Reduces exercise recovery time
- Increases levels of nitric oxide, an essential molecule for vascular health
- Improves libido and sexual function, in men and women

Pituitary Tuneup and Hormone Regulation

Of all the anti-aging interventions we will look at, none is more controversial, or popular, than HGH. No single drug or supplement has

been more hyped, or received more real research attention, than this peptide hormone, for very good reasons.

As anyone will tell you who has experienced HGH therapy, its effects seem unmistakable. In fact, patients on HGH often have their friends begging to know why they seem so much more youthful and vibrant after being on it for just a few months.

It has long been considered an “open secret” of Hollywood stars, who swear by its supposed rejuvenating effects. It is a hormone that has been elevated to near mythical status.

Fortunately, we know a lot more about HGH now than we did two decades ago, when it began its rise to cult status. Numerous studies have clarified the role it plays in a healthy human body. We will take a look at what it can and cannot do, and what this means for our own, affordable, safe anti-aging program. We will then take a look at how we can modulate and optimize levels to achieve and maintain peak health.

The term “growth hormone” is a misnomer. Somatropin is a better terminology for this very important hormone, made up of 191 amino acids. In fact, this hormone doesn’t directly cause growth at all, rather, it is a signal to the body to synthesize the proteins needed for life. It is vitally important, we now know, long after our bodies stop growing.

Individuals who lack the ability to produce this hormone, age very quickly, and develop to a variety of serious ailments.¹ Occasionally, a lack of this hormone is acquired, later in life, for instance through head trauma.

We now know that it is critically important to identify such individuals early and provide replacement hormone, in the form of injections to prevent chronic problems, muscle wasting, and a general reduction in the quality of life.²

What about “normal people?” Is there any value in supplementing this hormone in folks who are simply experiencing the age-related, steady decline in HGH or Somatropin output? The answer to this is very complex. My intent is to explain this in a way that stays true to the key science, without putting anyone to sleep.

On the one hand, several human studies have clearly demonstrated that HGH injections, in the proper dose, can restore many youthful qualities to older, otherwise “normal” adults. In my own clinical experience, when levels of this hormone are optimized (kept in a range more typical of a 25-30 year old), it can have powerful, positive effects across virtually all body systems.

In my experience, patients who have a broad-based anti-aging regimen, such as our own Synergy Matrix™ program, have greater overall health gains when their growth hormone levels are optimized. Does this mean everyone should be on HGH, or Somatropin after a certain age?

Absolutely not. First of all, even if we can be sure that there is no down side or risk (we will talk more about this in a moment) it is extremely expensive to do so.

Secondly, just because we can replace it by injection, doesn't mean that that is the best way to reap its benefits. Just as in the case of a number of other hormones, such as testosterone, the human body seems to be very finicky about the way it likes to secrete its somatropin.

Many studies have looked at the safety of HGH, directly and indirectly, and there is a considerable amount of medical literature on this subject. The only negative studies have been either indirect studies, where a “proxy” measure was used instead of HGH, such as IGF-1 (Insulin-like Growth Factor 1), or where HGH was given in very large doses to very sick people on ventilators in the ICU.

The vast majority of studies have shown that, when present in opti-

mum amounts, somatropin (HGH), exerts a broad range of beneficial effects in the body, changes that normalize our metabolic systems toward homeostasis or overall balance.

In spite of the many anti-HGH screeds, the consensus is pretty clear that in appropriate amounts, this is a very safe substance, remarkably powerful, but also remarkably safe - when used properly. However, much like Goldilocks, our body wants just the right amount, preferably secreted from our own pituitary gland, at just the right time(s) of day or night. In fact, the effects of the same amount of somatropin, given by injection, versus the same amount secreted by the pituitary, are different.

Don't get me wrong on this. HGH injections have played a key role in anti-aging medicine for many years, and my intention is not to be overly critical of this important therapy. I am simply asking, for our purposes, if there might be a better way to gain its benefits. I think the answer is an unqualified "yes."

First of all, let's get some important things out of the way. HGH simply cannot be supplemented orally. I don't care how it is packaged, what super duper "absorption enhancement system" is claimed to be utilized or what clever marketing language is offered in support of a product that is supposed to contain HGH. If it doesn't come from a drug company, and you don't inject it, you are not going to be getting the benefits of HGH. You will be wasting money. This is a simple, incontrovertible fact.

What About HGH Abuse By Athletes?

The fact that young athletes often abuse this substance says nothing about its safety, it is simply a distraction. We are discussing the legitimate, medical use of this substance, not the reckless pursuit of performance enhancement. The athletes who abuse HGH are generally young enough to make plenty of their own, and yet the amounts they inject vastly exceed "physiologic" levels.

Our Plan: Primary Locus Intervention

What we are talking about is very different. Our plan is simply to harness natural methods for helping our own pituitary produce more HGH, on demand, within the control framework of our own, regulatory systems. This approach was recently given a name, in a very interesting review paper called: Primary Locus Intervention: A novel approach to treating age-associated hormone insufficiency³

Primary Locus Intervention seeks to elevate HGH levels by stimulating the hypothalamic pituitary axis at the highest possible level. Doing so allows all the natural checks and balances and control mechanisms to remain in place. In addition, HGH release happens on the tight, specific schedule that our bodies are accustomed to.

Here is one way to do that safely, and also fulfill another, essential tenet of the Synergy Matrix Anti-Aging plan, affordability. This method is downright cheap, especially when compared with the typical, \$500 to \$1500 monthly cost of HGH injections.

What I like about this plan is that it does something else that is key, it has the capability of enhancing production of nitric oxide, or NO, which is essential for the health of vascular smooth muscle. NO Synthase, an enzyme essential for maintaining adequate amounts of NO for vascular health, declines with age.

We will be making use of a safe, proven method for enhancing HGH release from the pituitary. In fact, the biochemical basis for this method is often used as a means for measuring pituitary function. This is not speculative, or dubious, as in the case of so-called "HGH sprays" and most things called "HGH releasers." This is science-based pituitary rejuvenation.

One patient has used this method religiously, beginning 15 years ago. He is now more active than ever, in his mid-eighties. He is as healthy as he was 15 years ago, and fully independent. He also insists that this regimen caused him to re-grow black hair on his head, where he

had lost it completely. I can't assure everyone that they will have equally powerful results, but I believe that this man can attribute a significant measure of his stable, good health, to this simple method.

How We Will Go About Pituitary Rejuvenation?

We will be using an amino-acid combination, known to promote HGH release from the pituitary. Partly, this works by removing an impediment to HGH release - somatostatin - that increases with age. This substance can be thought of as "anti-growth hormone" as its presence blocks HGH release.

By strategically combining certain amino acids in substantial doses, particularly arginine, it is possible to counter somatostatin, and stimulate HGH release from the pituitary. Folks who argue that this is not effective have not looked closely at the evidence.⁴

This works well, and you will be able to detect the effects easily after doing this for two to three weeks. Then, you will want to stick with it. Some folks alternate months - one month on and one month off, to prevent the effectiveness of this method from waning. I don't think this is necessary, but alternate month use still brings considerable benefit, and costs half as much. I leave the decision to the reader.

As with all other products recommended in this book, I have no affiliation with any of the manufacturers, or retailers. Please shop around for comparable products. I offer these recommendations for the convenience of the reader.

Recommended Products

- [Biocentrics Rejuvamax, Sugar Free HGH Booster, 350 Grams](#)
- [NutraBio Arginine Pyrroglutamate & Lysine, 500 grams](#)

Note, the Biocentrics product is best if used first thing in the morning, before putting anything in your stomach. You should then wait at least

one hour before eating, if possible (45 minutes at a minimum). The NutraBio product is designed to be taken at bedtime, on an empty stomach.

The labels on these products will clearly spell out these details, but I offer them here, so that the reader can make up their mind, should they have a preference regarding morning or nighttime dosing.

Are there any drug interactions or reasons not to take products containing Arginine?

- As with all of the Keys presented in *Growing Younger*, the safety of this tool during pregnancy and breast feeding is unknown. It is better to discontinue using this and the other Keys, until after pregnancy and breast feeding.
- As with all of the other Keys, allergic reactions can occur. Bear this in mind and discontinue use of this or any other supplement, should symptoms of an allergic reaction occur.
- L-arginine can lower blood pressure. If you have been told that you have “low blood pressure,” it would be wise to begin using this key under close supervision by your doctor, who can follow your blood pressure response. For most people, this blood pressure lowering is a good thing.
- Because of the concerns regarding blood pressure, it is generally recommended that recent heart attack victims avoid Arginine for two to three months.
- If you are planning to have surgery, discontinue use of any Arginine supplement two weeks before surgery. It should be safe to restart use upon returning home from

surgery.

If you are taking any of the following medications, do not start using the products mentioned in this key, without checking with your doctor first:

- Viagra, Cialis, or any other erectile dysfunction drug
- Blood Pressure Medication
- Nitrates (such as Imdur, Nitroglycerine, etc)
- All of the medications listed above can interact with Arginine, producing lowered blood pressure

¹ Clin Interv Aging. 2007 December; 2(4): 495–497.

² An Pediatr (Barc). 2002;56(Supl 4):101-5

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⁴ J Clin Endocrinol Metab. 1990 Dec;71(6):1481-5.

Key # 8

Taming Inflammation

Cost: \$10.00 per month

Benefits:

- Cancer prevention at multiple levels and tissues
- Coronary artery disease prevention
- Prevention as well as potential treatment for Alzheimer's Disease
- Improved immune function
- Prevention and potential treatment for inflammatory bowel disease
- Facilitate control of metabolic Syndrome and Type II diabetes
- Prevent Parkinson's Disease or improve established disease
- Reverse the process of osteoporosis (bone loss)

Taming Inflammation

Inflammation is such a complex phenomenon, affecting so many cell types, tissues and organ systems, that it is an unexpected boon to find one substance capable of countering it across so many domains.

There is such a substance, and it forms the basis for a simple, safe, inexpensive and impressively powerful “firewall” against inflammation. That substance is called Curcumin.

A natural substance found in Turmeric (*Curcuma longa*), it is the subject of an incredibly wide array of research, simply because it is already known to be capable of doing things no drug or nutritional sup-

plement has done before, particularly in the area of controlling inflammation.

In fact, Curcumin controls inflammation in ways drug makers can only dream of, yet it is a natural substance, and one of the safest compounds ever discovered. Furthermore, it does a great deal more than simply put out the cellular fires of the inflammatory process.

Even normally reserved scientists can't restrain their enthusiasm for this molecule. Case in point, a recent, scholarly paper out of The University of Texas, M.D. Anderson Cancer Center on the subject is called, "Curcumin and Cancer Cells: How Many Ways Can Curry Kill Tumor Cells Selectively?"¹

The answer to the question in the title of that paper is 32, to be exact. That means that Curcumin selectively kills cancer cells - without harming normal cells - by 32 different mechanisms. I know of no other, single substance with that kind of anti-cancer ability. And cancer is just one example of the many health benefits associated with this substance, but these anti-cancer effects illustrate the power of Curcumin to control inflammation, because inflammation is central to cancer initiation, promotion and metastasis.

The fact that this substance can influence these processes is key to establishing that it has meaningful effects, rather than simply theoretical ones.

Another demonstration of the clinical, rather than theoretical effects of this substance, is in the area of osteoarthritis, a disease of aging. This is the "wear and tear" arthritis, and one of the most commonly diagnosed diseases in the world.

Osteoarthritis so commonly appears in the fifth decade of life, that it can be viewed as an "index" of aging. It's so common that we come to expect its effects, and are surprised if we don't experience them, as we approach the sixth decade of life.

Curcumin dramatically changes this dynamic. In reasonable doses, it profoundly reverses the symptoms of osteoarthritis.² The best that pharmaceutical science has to offer is the current breed of “COX-2 inhibitors” (the most selective of the current generation of anti-inflammatory drugs).

These COX-2 drugs work by blocking the binding of cyclooxygenase-2 (a pro-inflammatory signaling molecule), to its receptor. Contrast this with Curcumin, which prevents the formation of pro-inflammatory cyclooxygenase-2 in the first place.

The COX-2 inhibitor drugs have the infamous distinction of being implicated in the causation of heart attack and stroke. Not so with Curcumin, which helps prevent these conditions.

The powerful, real-world effects of Curcumin against the common, debilitating disease of osteoarthritis, illustrates its singular ability to control inflammation at multiple levels, in multiple tissues, in a way that is supportive of overall health.

This is precisely why we are making it the linchpin of the Synergy Matrix approach to controlling inflammation. One natural substance, with powerful and wide-ranging anti-inflammatory effects. By adding Curcumin to our plan, we enjoy not only a diminished likelihood of cancer and arthritis relief, but broad-based reduction in inflammation, providing cellular anti-aging support that is systemic.

With Curcumin, we can keep NF- κ B in check, controlling one of the most significant aspects of the aging process, and one that heretofore has resisted our abilities to control it.

Recall that we compared NF- κ B to a crime boss, giving orders to henchman with names like TNF- α , IL-1b and IL-6? Curcumin down-regulates all of these mediators of inflammation, naturally.

One scientific review paper calls it “an almost universal remedy.”³ This paper goes on to say that “the data so far collected show that

curcumin has a very high activity not only in in vitro experiments, but also at the organismal level.”

It is exactly this ability of curcumin to exert profound effects at the organismal level, on inflammation, that makes this substance so extraordinary. This is no mere, “nice addition to your supplement collection.” This is truly a revolution in preventive medicine, in the form of a single, natural substance. I can assure the reader that it will change the dynamics of aging, and especially age-related diseases, going forward.

That is why it is a key part of the Synergy Matrix plan. Furthermore, space does not permit elaboration, but there are other key benefits that we will be deriving from Curcumin, that go beyond inflammation control.

Curcumin also activates mTOR. As the reader will recall, mTOR is one of several genetic switches, which control numerous cellular mechanisms related to aging. By activating mTOR, Curcumin exerts powerful anti-cancer and anti-aging effects, which are unrelated to its anti-inflammatory effects.

As if all this were not enough, modest doses of Curcumin have been shown to substantially increase HDL (good cholesterol), while lowering apo B, a difficult to manage, independent cardiovascular risk factor.

How do we know Curcumin is safe? First of all, this is a substance with thousands of years of safe use as a botanical substance, and food seasoning. This is one of the reasons I favor botanicals; there is no better way to establish a track record of safety than millennia of safe consumption of a substance in food.

What about the safety of the higher dosages found in modern supplements? Substantive evidence of safety has been established in human clinical studies using dosages far higher than those that found in the Synergy Matrix plan, and no human study has shown any significant

toxicity.

Dosages and Sources

My recommendation is to choose one of the new, enhanced-absorption formulations of Curcumin. If you choose a cheaper brand, as long as it is from a reputable company, such as Jarrow, Now or Pure Formulations, you will still be getting immense benefits. I recommend one capsule daily of:

- Life Extension Super Bio-Curcumin 400mg (60 vegicaps)

Are there individuals who should not take curcumin?

The only absolute contraindications to taking Curcumin at this time would be an allergy to Turmeric or Curcumin, and pregnancy (until safety during pregnancy is better evaluated).

There is a theoretical concern that Curcumin may enhance the effectiveness of blood thinning medications, but I am not aware of clinical reports of this actually causing bleeding. In any event, if you are being treated with a blood thinner, it is important that you discuss taking Curcumin with your doctor in advance.

¹ Ravindran et al, AAPS J. 2009 September; 11(3): 495–510.

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² Panminerva Medica (2010 June;52(2 Suppl 1):55-62).

³ Sikora et al. Immunity & Ageing 2010, 7:1 <http://www.immunityageing.com/content/7/1/1>

Key # 9

Synergy Matrix Cellular Garbage Clean-Up

Cost: \$10.00 per month

Benefits:

- Improves function of metabolically active cells, such as neurons and cardiac muscle
- Frees up cellular energy for other key purposes
- Allows individual cells to live longer without dividing - conserving telomeres
- Enhances memory
- Improves stamina
- Improves mood
- Improves reaction time
- Improves eye-hand coordination
- Protects the brain in multiple ways
- Improves insulin resistance
- Activates Sirtuin gene system (anti-aging genes)
- Enhances fat burning through multiple mechanisms
- Improves synthesis of key neurotransmitters in the brain

Synergy Matrix™ Cellular Garbage Clean-Up

As we have seen, other parts of the Synergy Matrix system are protecting our cells from the accumulation of lipofuscin debris. But what about all the debris that has already accumulated? Can we do something about it?

Based on emerging science, the answer is “yes, we can.”¹ Our answer to lipofuscin and other cellular debris, is based on another multipurpose nutrient, with effects which can revolutionize your health in myriad ways. We will be utilizing a powerful nutraceutical, called Acetyl-L-Carnitine (ALCAR).

Carnitine is a nutrient found most abundantly in red meat. It can be made inside our bodies by enzymatically combining lysine and methionine. Unfortunately, this method is efficient enough to produce only a tiny amount of carnitine - on the order of a few milligrams per day.

That's a tiny fraction of the amount needed to enable our cells to clear out cellular debris, as well as access a host of remarkable benefits that can only be obtained with much larger doses of this substance.

Individuals on vegetarian diets in particular, ingest a far smaller amount of l-carnitine than what is required for optimal health. If the reader falls into this category, this aspect of the Synergy Matrix plan is likely to create a very palpable sense of increased wellness, and many benefits. That said, even those on diets containing a great deal of red meat tend to notice dramatic, positive effects with consistent carnitine supplementation.

We will be focused on a form of this nutrient with enhanced absorption, called Acetyl-l-carnitine (ALCAR for short).

The effect of ALCAR on cellular debris was first demonstrated in animals², but abundant evidence for improved brain and heart function in humans supplemented with this natural substance, indicates that the same beneficial effects occur in humans.

Recall that cellular debris is a problem for every tissue in the body, but it is worst for those tissues, such as the brain, where cells divide slowly or not at all. Cell turnover (creation of new cells by cell division), is so slow in the brain, that for decades, scientists did not know it was happening at all.

Generations of biology students were taught - erroneously - that neurons did not divide. We now know this is not true, but we also know that neurons are some of the hardest working cells in the body and in spite of their very slow division rate, they bear heavy metabolic bur-

dens.

One of these burdens is lipofuscin and ceroid accumulation, which you will recall from our earlier discussion of the impact of “cellular garbage.” This is more of a problem in the brain, precisely because brain cells don’t have the luxury of frequent cell divisions. When cells divide they split the garbage burden in two, quickly lightening their cellular load.

Not surprisingly, supplementation with ALCAR has proven its ability to improve brain function in aging patients, in study after study. I believe this is in significant measure due to the effects it has on cellular debris, such as lipofuscin, and ceroid (the other major form of cellular debris). In addition, ALCAR greatly improves mitochondrial function, providing a much needed energy boost to hard working brain cells.

As a physician, I know that “clinical effects” - meaning things that do something tangible for actual patients, not just in a petri dish - are key to evaluating the power and value of a supplement or drug. Many substances appear exciting in the lab, yet fail to show their promise where the rubber meets the road. This is not the case with ALCAR. There are other supplements that may help remove lipofuscin deposits, such as DMAE, and its cousin Centrophenoxine (trade name Lucidril - a pharmaceutical). Unfortunately, DMAE has side effects, such as headaches and “edginess” or anxiety, and Lucidril, though it can be ordered via the internet, is technically an unapproved drug.

ALCAR on the other hand is very affordable, free of side effects, has a long history of safe use, and has been proven extensively in human studies. It also has many benefits beyond simply helping remove lipofuscin, for example:

- Helps burn fat, by facilitating fatty acid oxidation in mitochondria
- Improves multiple parameters of memory and

learning in animal models and humans³

- Elevates glutathione levels in the substantia nigra region of brain helping protect against Parkinson's Disease⁴
- Improves brain function in patients with senile dementia, including early onset Alzheimer's Disease⁵
 - Improves sexual function in men⁶
 - Improves symptoms of mild depression⁷
 - Improves symptoms of mental and physical fatigue in very old humans⁸

In addition to the impressive effects on brain function, depression and sexual function, ALCAR has abundant, solidly documented heart benefits, including:

- Prevention of ischemic events (heart attack)⁹
- Improvements in cardiac function in patients with congestive heart failure¹⁰
- Shows promise as an adjunctive treatment for angina (ischemic heart pain)¹¹

Clinical studies like these need to be viewed in context. Most often, the study population (the experimental subjects) are far from normal. These folks are often on multiple medications, and have less than optimal lifestyles.

Humans are not lab rats that can be kept under exacting conditions with all variables under strict control, such as diet, lifestyle factors and compliance with the experimental protocol. Did they actually take the substance being tested every day, faithfully?. Did they smoke? Did they eat a terrible diet?

When a nutritive substance passes the test of showing positive effects in a significantly large group of subjects, it means that we are only

seeing the tip of the iceberg. The bar is set pretty high for failure, so when a substance shines under these constraints, I ask, “what can this do for otherwise healthy people, who simply want to slow the aging process?”

In this case, I think the answer is “quite a bit.” Remember, in the Synergy Matrix program, we are not asking any one supplement to do it all. Instead, we are only expecting each supplement to do what it does best, thus creating powerful synergies, with positive effects that would not be achievable with any, single supplement or factor, no matter how powerful.

Dosage Recommendations

How can we best obtain the benefits of ALCAR? For the Synergy Matrix plan, I recommend 1000-2000mg per day. I normally don’t offer such a wide range, but for those under 50, 1000mg per day (500mg twice daily, or two capsules, once daily) is sufficient.

For those over 50, or with an existing heart or brain health challenge, I recommend 2000mg per day, for enhanced effects. For the higher dose, I recommend taking 1000mg, twice daily. If you are a person who has trouble taking supplements more than once per day, it is acceptable to take 2000mg once per day.

Recommended Sources

- [NutraBulk Acetyl-l-carnitine 500mg \(1000 capsules\)](#)
- [Now Foods Acetyl-l-carnitine 500mg \(200 capsules\)](#)

Either of these brands is fine. Both are available at a great price from [Amazon.com](#), as are most of the supplements in this book. ALCAR at these prices is a superb value. This is a supplement par-excellence, with a broad range of powerful, proven effects, that provides tremendous synergy with other supplements in the Synergy Matrix system.

In particular, I am very excited about the potential for dramatic improvements in mitochondrial function, by combining Acetyl-l-carni-

tine with PQQ, which is a key feature of the Synergy Matrix system. That is by no means the only synergy we can take advantage of. In fact, Acetyl-L-carnitine provides powerful synergies with virtually every element of the system.

Are there reasons one might need to avoid Acetyl-L-carnitine?

There are no known or suspected interactions or contraindications to taking this supplement. There are health conditions that may be improved by it, such as hyperthyroidism, angina and others, which may allow the discontinuation of other medications, but this determination will need to be made by the physician(s) who prescribed the other medications. As always, it is prudent to inform your healthcare providers about any supplements that you are taking.

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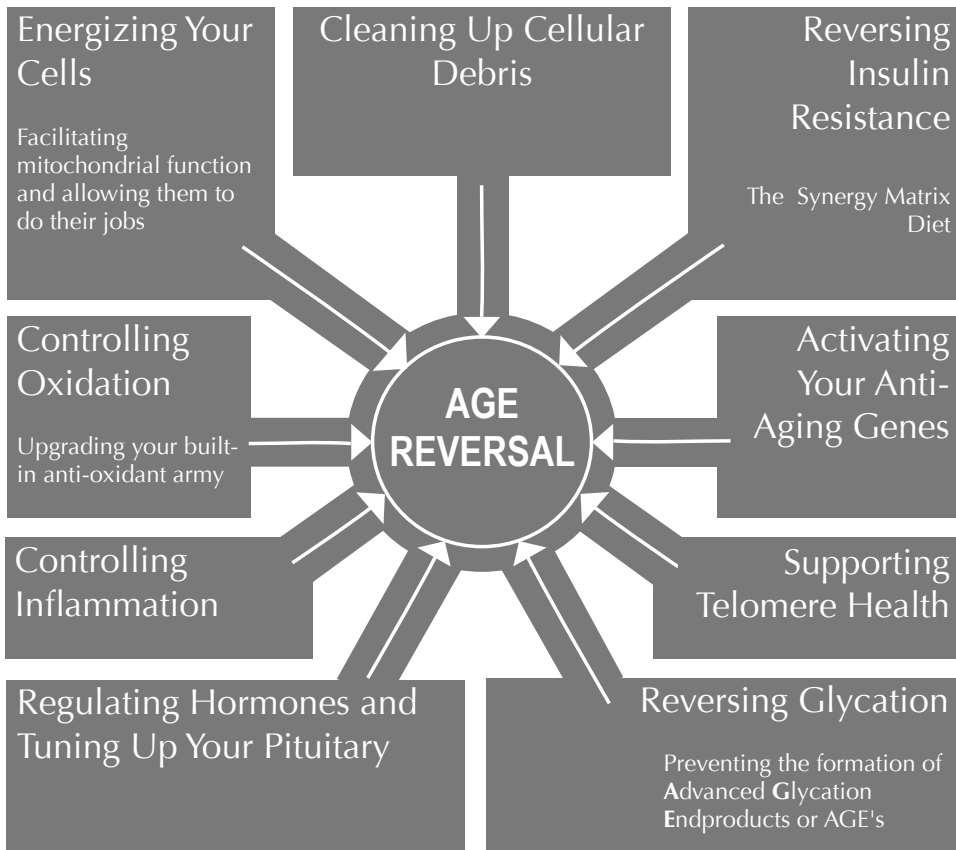
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How The Synergy Matrix System Works

Each of the Synergy Matrix Keys we covered in the previous section are each powerful, and capable of creating dramatic changes, on their own. The key to the revolutionary changes produced by using the entire system, is the interactions between all of the elements.



As we learned in the first part of this book, aging is a complex, negative synergy between several distinct processes. To truly “turn back the clock,” these processes must each be countered by a potent enough countervailing strategy to achieve a new equilibrium, setting in motion positive synergy.

It is easier to visualize with a diagram that emphasizes that every one of these methods, positively impacts every other. Some readers may have already tried one or two of the methods that this system employs. If you fall into this category, I believe you will be quite surprised by what happens when you put all of these methods to work, simultaneously, over an extended period.

For many, each and every one of these methods will be completely new and uncharted territory. If you fall into this category, you are in for a very pleasant surprise, as powerful, positive changes are in store. Your sense of wellbeing is about to take a dramatic, positive turn.

Regardless of what sort of health program you have been on up to now, by taking a bold step, and implementing the full, Synergy Matrix program, you will see results very rapidly.

What can one expect to experience, and over what time frame?

Over the first few days, you will notice sharper, clearer thinking, and most likely an improvement in mood and energy level. Within a couple of weeks, you may notice subtle or significant changes in chronic health problems, such as pain relief.

Sleep quality will begin improving, over the first 2-3 weeks. You may begin to notice improvements in digestion. If you are engaged in regular exercise, you will notice dramatic improvements in recovery time, as well as improved stamina and strength.

Long term health problems will begin to be impacted solidly within one to two months, and by the fourth month, obvious changes ought to be apparent, especially to your healthcare provider, if they have a chance to see you within this timeframe.

The changes continue to improve, the longer you stay on the program. This is not something that is meant to be utilized for a time, and then stopped. That said, if you need to go off of the program for a

period of time, as long as it is less than two or three weeks you should not lose the gains you have made.

But, if you do go on a temporary hiatus from the program, whether due to travel, a family emergency or other event, you will not lose any long-term gains.

Can the results be measured and tracked?

On the one hand, the effects of adherence to this simple program of supplements and lifestyle modifications will produce benefits which are so numerous, varied and obvious, measurement will not really be necessary to provide evidence that the system is working.

Most people will be content to see the changes unfold over weeks, months and years, and happily their body and

The effects of the Synergy Matrix system can most definitely be tracked over time, and doing so is strong reinforcement for keeping up with the program over the long haul. How is tracking accomplished? Here are some suggestions:

Test results will strongly reflect your progress

- CRP (the inflammation test) will drop significantly
- For diabetics and pre-diabetics, Hemoglobin A1c will decline dramatically
- LDL (“bad cholesterol”) will drop
- HDL (“good cholesterol”) will increase
- Triglycerides will drop sharply
- Body fat percentage will decline significantly (about 10% over three to six months)

Stamina and strength will improve

- If you are already a regular runner, with no history of cardiovascular disease, Record the distance which you can cover at a sprinting pace, without exceeding an appropriate heart rate (For Men: $220 - \text{Age}$, For Women $226 - \text{Age}$)
- Do the sprint test again at three months, six months and one year
- If you are doing resistance exercise (weight training, try to determine your current “one rep max” weight for the following exercises:
 - Leg press, Bench press, Bent Row
 - Compare these measures of strength after one, three and six months

These tests will only be valid if you continued with the same fitness strategy between tests. The Synergy Matrix is powerful, but it can't substitute for exercise! If you have continued to exercise, particularly weight training with a personal trainer, which I very much advocate, you cannot fail to notice significant upgrades in strength and stamina.

What body changes should you expect to see?

Consistent compliance with the Synergy Matrix program will bring gratifying changes to your body, including significant weight loss. If you do the entire program, with full dietary compliance, and all supplements, it is likely that you will lose 30 or more pounds, over a six month period, if your starting body fat percentage is greater than 25% (very likely)SIRT1.

After six months of strict adherence to the entire protocol, your body fat percentage should have fallen by at least 10% - for example from

25% to 15% - depending on your initial body fat percentage. This is a revolutionary health change, which will produce more benefits than most prescription drugs.

Since body fat percentage is such a key indicator of health and health-risk, I recommend buying a home body fat analyzer, and taking monthly readings. It will provide strong encouragement to stay with this program over the long haul. While your contemporaries will be happy to maintain body fat percentages above 25-30%, you will be happily enjoying your lowest body fat percentage since college!

What about grey hair? Can it be reversed? It often can, but there is a catch. grey hair is not just a sign of aging, it is also to a certain extent “programmed,” or genetically determined. What this means is that, especially in certain individuals, the onset of greying hair is actually more determined by genetics than biological age.

Some of us have hair follicles “programmed” for early greying. In primates, grey hair is an indicator of social status, and it is “switched on” internally, by genetic control, to send a message to the other animals in the “pack,” that the animals with grey hair have “special status.”

This carries over into human society, as well, as the “distinguished” look of early greying is generally perceived as carrying with it an aura of wisdom and status. For this reason, just because your grey hair doesn’t reverse, doesn’t mean that internal changes are not occurring.

On the contrary, internal changes cannot help but happen, as the Synergy Matrix program provides deep metabolic support, that normalizes cell functions to become more youthful.

That said, many individuals on the Synergy Matrix program will notice a gradual reversal of grey hair. I have noticed a steady reversal of grey hair, myself, and I actually come from a family of people with early onset grey hair!

Will my grey hair go away completely? Only time will tell. I have certainly been enjoying watching my hair change back to its youthful color! This is definitely one of those, "Your Milage May Vary" areas.

Above all, keep in mind the most important reasons for starting and sticking with the Synergy Matrix program:

- Powerful protection against the common diseases of aging
- Recapturing and maintaining youthful vigor and vitality
- Regaining a youthful appearance and body composition
- Reversing muscle and bone loss
- Improved mood and brain function
- Enhanced immune function

If you closely adhere to the Synergy Matrix program, I believe you will find that these goals are met.

5

Sleep: Get Just Enough And Live Longer

“A man ninety years old was asked to what he attributed his longevity. I reckon, he said, with a twinkle in his eye, it’s because most nights I went to bed and slept when I should have sat up and worried.” ~ Dorothea Kent

Anti-Aging Secrets of Sleep Optimization

Sleep, much like hidden food sensitivities, is an elephant in the room that somehow gets lost amid discussion of all sorts of expensive, exotic health measures. Folks will go from doctor to doctor, searching for the elusive cure to their fatigue, brain fog, depression, or obesity, and not once address what is very likely to be up to 75% of their problem: crappy sleep.

Sleep is like the air we breathe; we take it for granted, and rarely acknowledge it. Fortunately, this is changing, but for all the myriad sleep clinics and sleeping medication prescriptions, most people I know are still not treating sleep as the precious health maintenance boon that it can be.

In this section, I want to look at some of the aspects of sleep that can be easily optimized to create great health dividends without turning

one's life upside down. This is certainly an area where everyone's mileage varies a bit, but I suspect that too many of us have been considering ourselves uniquely immune to the need for optimal sleep.

Sleep Duration, Health and Longevity

The impact of average nightly sleep duration on longevity was not known until very recently. What we now know is a bit surprising. As suspected, those who consistently get too little sleep, don't live as long and are not as healthy.

But, the surprising finding of recent, solid research is that those who sleep too much are shortchanging themselves in the longevity department too, and eight hours may be too much!

What is the upshot? Sleeping more than 8 hours per night is associated with a significantly higher rate of early mortality (dying earlier than expected, based on all other factors), while sleeping less than 7 hours has been linked to worsening of many chronic diseases such as coronary artery disease, high blood pressure and diabetes. In fact, sleeping more than 9 hours per night will nearly double the likelihood of premature death!

The magic number used to be 8 hours, but it now looks like that number should be revised to 7 hours! Can one hour really make that much difference? Based on a study of the sleep habits and disease incidence of 1.1 million people, it looks like it can and does. One thing is certain, sleeping over 9 hours on average is just plain bad. It's associated with dramatically worse mortality, as well as a high incidence of depression and daytime fatigue.

Currently, there is a greater likelihood that you, you are under-sleeping, based on pure statistics. Under-sleeping is known to be highly associated with obesity, even while other factors like diet are controlled. Once again, twin studies have been helpful in illumination

this area.

At one time, we thought that, some people were genetically programmed to be lazy, oversleep, and thus get fat. We now know that oversleeping by itself, no matter what genetic hand one is dealt, can make people put on extra fat body mass, as can, oddly enough, sleeping too little!

Extra fat body mass begets inflammation. Inflammation begets more fat, metabolic syndrome and Type II diabetes, cancer, blocked arteries, heart attack and stroke. Wow, can oversleeping lead to all that? Apparently, through the law of synergy and tightly integrated body systems, it can!

The mounting data showing the importance of the “not too little and not too much rule,” underscores the critical importance of sleep for optimal health. We have long known that too little sleep causes a host of problems, now we simply have to allow for some parameters on the long side.

For my own wellbeing, I have opted to begin using my iPhone as an alarm, which allows me to set a “sleep timer,” rather than a set alarm time, when possible. This way, rather than getting up at an arbitrary time each day, I can set the timer to allow me to get 7 to 7.5 hours of sleep.

Of course, this can be done with a regular alarm clock, but it just seems a lot easier with my smart phone. And, I like that I can choose a gentle wake up sound. I sure don't like getting jarred out of bed in the morning!

Is simply over or under-sleeping going to make you fat, or worse? Maybe, but that is not the point. Remember the Synergy Matrix principle: align every possible health factor in your favor, because when aligned, they create positive synergies with all the other good things you are doing, and sleep is no exception.

Sleep Environment: Shun The Light

Did you know that your night light may be a higher cancer risk than most of the other risk factors you have worried over in the past? Seriously, any artificial light in the sleep area is a bad idea when it comes to overall health.

As ridiculous as this may sound, once you understand the relationship of sleep quality to sleep environment, I believe you will take steps to ensure that you are sleeping in a truly dark room!

The initial research on the subject of nighttime light exposure was pretty surprising to most people, but circadian rhythm researchers were not really surprised. They have appreciated for many years, how sensitive we are to the rhythms of light exposure.

Our bodies expect and are calibrated for bright light during the day, and black darkness at night,(excepting moonlit nights). But a tiny, dim little night light won't matter, right? Wrong, research has shown that a dim, blue LED can completely upset your circadian rhythms!

Upset circadian rhythms, and you can get - cancer. Wow. Breast cancer was the first cancer type found to be strongly associated with nocturnal light exposure. But we now know that the susceptibility to many types of cancer, and possibly other illnesses, increases with exposure to light at night.

Look around your bedroom. If it's like so many modern bedrooms, there are probably two or more sources of light, coming from indicator bulbs on electronic devices, cell phone chargers, the laptop charging light on the nightstand (from that late-night memo review....), the power light on the TV, and the list goes on.

The fact is, any of these small, dim lights are shortchanging you in the sleep quality department, and putting you at risk of health problems. Some people have responded to this by putting black tape over all of

these little lights, and unplugging their night lights, for good.

I have another suggestion: turn your bedroom into a sacred space. Reclaim it as the place for nurturing, wellness and intimacy that it was meant to be. Get all those extraneous interlopers out of there, and thrive! You will thank me after a few nights of restful, restorative sleep.

Sleep Timing: It Matters

Another key piece of the sleep/health interrelationship needs to be discussed, the importance of sleeping at a certain time of day. The reader may be familiar with the scary statistics about night shift workers.

We all know these folks, and you may be one of them. You know the type, ER staff members, programmers, and even the folks that simply “burn the candle at both ends” and stay up past midnight on most nights, because that’s when they get their best work done...

The problem is that on average, chronic night shift workers have lifespans 10-15% shorter than those of us who keep to normal schedules. For many years it was assumed that as long as these folks successfully slept during the day, that things would even out, and their health would match that of dayshift worker/night sleepers.

But it does matter when you sleep. No matter how you slice it, sleeping during the day doesn’t cut the mustard. The reasons are now much clearer, as we have a better understanding of the importance of circadian rhythms and their relation to health.

Of foremost interest in the context of anti-aging is that unless you are deeply asleep by 11PM, you probably won’t experience optimal pituitary release of HGH. Imagine that; go to bed by 10PM, and experience optimal pituitary somatotropin release. Go to bed 1-2 hours later, and nada! Minimal or no HGH release.

That's a pretty big deal. And HGH is the tip of the iceberg. It turns out the pituitary is simply wired to a timer in our brain, and right now, we don't have a clue about how to reset it. We simply have to do our best to accommodate the circadian rhythms that support our health, by: getting to bed by 10PM, and getting just the right amount of sleep, in the dark.

The fact is, all of us know these things to be true, experientially. We may try to fool ourselves into thinking we are thriving on 5 hours of sleep a night, that midnight is our optimal time for hitting the pillow, or that it's OK to leave the TV on in the bedroom at night.

If you are regularly doing any of these things, and especially if you have been doing them for a long time, begin to ask yourself if these bad health practices aren't part of the reason you are not meeting your health goals.

The people I know who practice poor sleep hygiene (wrong amount, wrong timing, poor sleep environment), are manifestly not experiencing life to the fullest. They are moping through life as hollow shells of the vibrant people that they could be.

Sleep optimization is a simple way to empower your anti-aging program, why not try it? I did, and I have been grateful ever since!

6

Exercise: Choose Your Practice

“Life is creative. It plays itself into existence, seeking out new relationships, new capacities, new traits. Life is an experiment to discover what’s possible.” ~ Margaret Wheatley

The Keys To Anti-Aging Exercise

The key to exercise is choosing a program that supports anti-aging and wellness goals. There is a lot of misinformation about exercise. Millions of people are spending hours each week demanding exercise programs, without certainty that they are actually meeting their health goals.

The new science of cellular anti-aging puts the emphasis on a slightly different set of health goals that may not be well served by just any exercise program. In particular, we need to know just how the many styles and options for exercise stack up in this regard.

Many of us get our fitness information from personal trainers, friends, and by simply following the latest fitness fads. This is a haphazard way to create a personal fitness program. As a physician, I have often been in the position of consulting on this very question.

A common scenario involves a patient who is frustrated that in spite of hours spent on various kinds of exercise, they are nowhere nearer

to meeting their wellness goals. I will share some common patterns that you might be able to identify with.

Cardio Jane

One pattern is the manic aerobics enthusiast. We will call her, “Cardio Jane.” She can’t find enough hours in the week for treadmill, Stairmaster, biking, Cardio-Kickboxing, Zumba, etc.

Jane was invited to a fitness class by a friend, who insisted that “this is the way I lost 30 pounds, and you can do it to!” Earnestly, Jane started a four hour per week “aerobic” fitness program. Surprisingly, she quickly finds that she likes the activity, and very quickly drops a few pounds.

But after losing 4 pounds the first week, there is no further weight loss. Her friend says, “hey, you plateaued; no one said this was going to be easy, you just need to do more!” Now, at the six month mark, Jane is doing some sort of “cardio” exercise, more than six hours per week.

In total, she has lost 15 pounds, but only after she started “counting calories like an accountant,” using an iPhone app. Her original goal to lose 45 pounds seems like a silly pipe dream. Still, she continues her six-plus hour per week ritual, because she believes that, if she stops, she will be right back where she started, or worse.

“I’m not getting any younger,” she tells herself, as she eats a low-fat muffin on the way out the door to a Zumba class. “Maybe I was dealt a bad hand in the genetics department?” Maybe losing the weight from my last pregnancy 15 years ago, is too much to hope for.”

Jane consoles herself that, “at least I’m doing something about my health, unlike most of the people I work with who gave up a long time ago.” She also prides herself on the fact that her heart, “must be a lot healthier than any of theirs.”

These sentiments hit close to home, because her mother has two coronary stents, after a “surprise” heart attack last year. Determined not to go down that road, she resigns herself to being moderately obese, but better off than she was before. “And at least I am doing something about my heart, unlike mom, who never got off the damn couch.”

In a way she feels cheated, because she has been doing what “everyone says she ought to be doing,” eating a low fat diet, counting calories and exercising enough to burn more calories than she takes in. It was supposed to be so simple.

Jane is “stuck on a treadmill” in more ways than one. Maybe you are, too? In just a bit, we’ll see if we can get both of you unstuck.

Beach-Boy Bob

Another pattern I am starting to see, is the middle-aged guy who decides he wants a “beach body” again. We will call him, “Beach-Boy Bob.” Bob just turned 50, and while he considered himself pretty fortunate in the physique department in college, he admits to his wife that he would be embarrassed to take off his shirt at the beach today.

For the past ten years, he has thought little about his looks, focusing instead on building his business. In fact, he often rationalized that, though he was pudgy, and probably couldn’t do a wind-sprint to save his life, he was doing a lot better financially than most of his peers.

But that was until a close college friend got divorced, dropped 75 pounds, and transformed his physique into a pretty good semblance of its former glory. His friend is now dating a 30-something waif, and though Bob counted his lucky stars that he was happily married and not suffering the vicissitudes of the dating scene, seeing the transformation in his friend had him thinking about his 50 year old frame.

He knew that his wife found him attractive just as he was, but let’s

face it, he was 50 pounds overweight, and had a spare tire big enough for an SUV. Something else had him preoccupied as well. His doctor had just informed him that he has “metabolic syndrome.”

Having never heard of this diagnosis before, he went home and read everything he could find on subject on the internet. One thing that stood out was an article about resistance training and insulin resistance. A lightbulb went off in his head, and within a minute, a plan had already formed itself in his head.

Perhaps because he had seen a close friend succeed at major body-change in mid-life, his new goal seemed completely rational: he would reclaim the “beach body” of his college years, and lower the Insulin Resistance that he now knew was at the heart of his “Metabolic Syndrome.”

In business, when he has a problem he hires a consultant, but only after asking around to find out who’s the “best.” The “best” turns out to be the same personal trainer who helped his friend achieve his spectacular results.

This trainer specializes in a fitness program called “Slow Weights.” Having never heard of anything like this before, he begins to faithfully follow the training regimen. “Once you hire an expert,” he tells himself, “you are wasting your money if you don’t listen to them.”

At first, he finds it a bit strange that the workouts only last about 30 minutes, once a week. But these workouts are not like any thirty minutes he has ever spent before; in short, this workout “kicks his butt.” But he sticks with it, and in six weeks, he has dropped 25 pounds and is already proudly showing off the changes in his physique to his wife.

Not all of the weight loss came from the training. Early on, his fitness trainer told him that if he really wanted to lose 50 pounds, it would take some changes in his diet. Once again, having seen the success of his friend, he was more than willing to pay attention. The trainer

spelled out the changes he needed to make in his eating habits, and by the end of the first month, the results spoke for themselves. “I can do this,” he told himself, “I will do this.”

He is hooked. He can already see a path to meeting his fitness goal: to lose 50 pounds, and have a body that he is proud of. Moreover, after six months on this diet and “Slow Weight” program, his doctor tells him, “Your test results look great!” His cholesterol profile had improved dramatically, and his markers of Insulin Resistance were “simply gone!” Moreover, his c-reactive protein had gone way down. Bob was aware of what that meant: inflammation, a key part of the Metabolic Syndrome, was under control.

“What are you doing Bob?” You must be working out like crazy?” When he tells the doctor he is only spending thirty minutes a week in the gym, the doctor thinks he must be underestimating. When he tells the doctor he doesn’t do any “cardio” as part of the program, the doctor is astonished. Above all, he reiterates, “whatever you are doing, keep it up!”

Bob, like Jane, was committed to body-change. He set goals, found a program, and stuck with it. He is very happy with his results, and finds the change in body shape gratifying; he has muscle definition, a tremendous sense of wellbeing, sleeps better, and most interestingly, he feels as though his brain works better.

If there is one thing Bob is not entirely happy with, it’s some nagging musculoskeletal back pain that was actually there before his exercise program, and a relative lack of flexibility; it hasn’t gotten any worse, but his overall improvement has led him to wonder if things couldn’t get even better?

Yoga Sue

Yoga Sue has always considered herself to be fitness conscious. At 55,

she knows her body shape is very different from the lithe form that she enjoyed as a very active thirty-something. Three kids and a demanding career had changed her focus.

It was her oldest daughter that challenged her to begin caring for her body as actively as she cared for her children, husband and work demands. Sue dabbled in running, but didn't find it to be a good fit; it made her feet hurt, and it seemed to aggravate an old back injury - the legacy of a car accident - that had not flared up in many years.

She tried a Cardio-Kickboxing class with a close friend, and while she found the intense exertion gratifying at times, it just didn't have enough appeal to keep her interested. Weight training did not interest her in the least; besides, hanging out in a gym with a bunch of weight lifters seemed like the last thing she'd like to do.

She had to do something, that much she knew. The results of her latest checkup were not good: For the first time, her blood pressure was elevated. Also, her LDL was 20 points too high, and her HDL ("good cholesterol") was at least 10 points too low. Her doctor also told her that "she had some inflammation going on," as evidenced by her CRP being several points too high.

Her Body Mass Index (BMI) was deemed to be the culprit. With a BMI of 32, her doctor informed her that she needed to lose 28 pounds to get it back into line. That sounded like a pipe dream; 28 pounds was just not going to happen! How was she going to lose 28 pounds?

She explained to her doctor that she was already on an incredibly strict diet; "if it doesn't say no fat, I don't buy it! I am practically a vegetarian, except for a boneless, skinless chicken breast now and then, or a small, no-fat, baked fish fillet. I have been hoping to shed these extra pounds for 15 years, and I eat like a bird compared to my girlfriends!"

Nevertheless, her doctor left her with no choice: "you need to get

these numbers under control, and lose some weight!" She knew it was true. Her mother was a Type II diabetic, and she saw herself going down the same road. In fact, Sue had gained 10 extra pounds over the past year, and she had no idea where it came from.

Watching a daytime TV show on a rare weekday off, reminded her of one thing she had not tried yet: yoga. She did a google search, and found a yoga class that met three times a week, right near her workplace. Within a week, she was signed up for 12 weeks of classes, figuring if she paid in advance, she'd be less likely to quit.

Twelve weeks later, her yoga classes were everything she hoped they would be. In fact, if they had offered a fourth class, she would have found a way to make it fit her schedule. On yoga days, she would begin to look at the clock a couple of hours prior to class time, and think wistfully about the workout to come.

The classes had not been nearly as easy as what she had seen on TV. In fact, for the first month, she wasn't sure she could do it. There were a few embarrassing moments on the yoga mat. There were still poses - "asanas" - that she couldn't get close to doing. But as she looked around, she could see herself in about half the women in the class. While there were a few very skinny women, most were carrying a few extra pounds. In fact, there were a couple of regulars who were carrying more than a few. Even these heavier women seemed to be able to do the majority of the postures.

As she got to know one of the women in her class, she learned that some of the moderately obese women had been in the class for more than a year. While this troubled her, given that she had hoped yoga would make her lose weight, the sense of wellbeing and the feeling of "becoming friends with her body again" was more than enough to keep her coming back to class, three times a week.

In fact, over time she did lose 10 pounds - the same pounds she had gained over the past year. It wasn't enough to get her BMI in line, but

“ten pounds is ten pounds.” Not only that, she was beginning to like the new shape her body was moving toward. She had curves again, “where she wanted them,” and it seemed as though her tummy was quite a bit flatter.

At her next checkup, she was informed by her doctor that she was on the right track. Her test results were beginning to come into line - and her BP was well within the normal range again, everything but the HDL, which was still quite low. Also, while her LDL was nearly back within range, the LDL particle size was very small, and her doctor told her that was bad. In fact, her doctor was talking about starting her on a new cholesterol lowering drug. Her doctor seemed to think that if she could get her BMI down a bit lower, that she might be able to get her cholesterol in line without medication.

Exercise Profiling

Let's look at the scientific evidence, and see what various kinds of exercise are actually capable of delivering. First, we will look at some of the goals typically listed by those who commit to an exercise program, then we will profile three different types of exercise, and see how they stack up in terms of proven ability to meet those goals.

Health Goals Often Given As Reasons For Starting An Exercise Program

- Lower HDL
- Reduce Insulin Resistance (IR)
- Reduce risk of heart attack and stroke
- Improve and maintain flexibility
- Improve balance and mobility
- Improve overall sense of wellbeing
- Improve core and extremity strength
- Improve endurance
- Improve bone density

- Weight loss
- Reduce chances of becoming dependent (Nursing Home)

How do these three, very different exercise programs that Jane, Bob and Sue have chosen, stack up in terms of meeting these goals? Very differently, as we will see.

These three idealized health-seekers have earnestly committed to exercise, and their dedication to their respective programs is excellent. Let's look at how they can maximize their health goals and discover how each of them can get "unstuck," Jane and Sue in the area of weight and Bob in the area of pain and flexibility.

Getting Jane Off The Treadmill

Jane has discovered what thousands of other earnest health seekers are discovering; namely, you cannot lose a significant amount of weight by exercising. Our society has heard the popular but baseless health message "to lose weight, you just have to burn more calories than you eat," we are nearly impervious to any evidence to the contrary, although this popular notion is false.

In fact, that evidence is all around us. Those of us who are running, working out in the gym, attending aerobics classes, bicycling or any other serious exercise program, are more and more conscious of two things:

- if we started out overweight, we only lost a bit more weight by exercising (assuming our diet did not change dramatically)
- There are a lot of really overweight people, exercising more and harder than we are.

In fact, folks who have run a marathon recently are often shocked by the increasing number of very obese people, running along side

them. Many of these obese individuals are very conditioned runners, but they are still obese.

We don't want to hear this. We don't want this to be true. "If I exercise, by golly, I want to lose weight. I want it to show!" It won't.

Exercise, in general, will only produce trivial amounts of weight loss for people whose Body Mass Index is over 30 to begin with. Weight loss should not be the primary goal of an exercise program, as counterintuitive as that might sound.

My advice to Jane and folks like her is very simple: use the right tool for the job. The best tool for the job when it comes to weight loss is a low carbohydrate diet. In fact, as we covered in our Anti-Aging Keys section on Insulin Resistance, it is one of the best steps we can take toward overall wellness and heart health.

Jane can dramatically reduce her time on the treadmill, to one or two hours per week. Reclaiming valuable time for other things, she can lose the weight she initially set out to lose. Within six months, she should be at her target weight, as well as reclaiming much needed balance in her life.

Will she be shortchanging herself of cardiovascular or other health benefits by limiting time spent on aerobic "fitness" activities? It's unlikely. Just as in the area of weight loss, exercise programs that utilize conventional, "aerobics" protocols, meaning low-intensity, long-duration exercise don't deliver a lot of benefit for time spent.

Jane worries about following her mom's pattern of cardiovascular disease. Once again, diet is key in this regard. It's not possible to exercise your way away from cardiovascular disease, though many try. Studies show all too well that the major modifiable risk factors for atherosclerosis are only modestly affected by aerobic exercise.

Is there a better workout for Jane?

I would recommend that Jane consider transitioning her exercise program to a High Intensity Interval Training program (HIIT). These simple programs alternate periods of sprinting from 30-40 seconds, with periods of walking, lasting 15-20 seconds, with a total workout lasting from 9-15 minutes, depending on the specific protocol.

What is remarkable about HIIT is that it can deliver the benefits of conventional, long duration aerobic training, using much shorter exercise intervals. Whereas Jane was used to working out for an hour or more at a time, a HIIT session would last only 9-15 minutes! How is it possible to derive comparable benefit from such a short workout?

The key lies in exercise physiology. HIIT engages both aerobic and anaerobic metabolism, in a way that is sustained beyond the workout itself. Unlike steady exercise methods at lower intensity (aerobics), HIIT keeps the body burning fat for 24 hours, by raising the Resting Metabolic Rate! With aerobics, the fat burning doesn't even start until 30 minutes into the workout, and it comes to a halt when you quit. Aerobics just can't touch the benefits of HIIT.

Another area where Jane will benefit by changing her workout pattern is in the area of repetitive injury prevention. Individuals who engage in hours of sustained, low intensity exercise every week, dramatically increase their chances of injury, including fractures, sprains, and repetitive stress injuries. While HIIT does not preclude such injuries, and requires equal care (especially during sprinting phases), the total time spent on the activity is dramatically reduced, lowering risk.

What about Bob?

Bob is meeting and even exceeding his goals for exercise, but there is a hidden dimension to his program that bears looking at. Bob wants to give the credit for his personal transformation to resistance training (his weight lifting program), but most of his fat loss is due to the low carbohydrate diet that his trainer recommended.

Bob got lucky. Not all trainers are so savvy about diet. Until very recently, the majority of trainers had folks counting calories, eating low-fat diets, and even gorging on carbs on the theory that muscles like carbohydrates. We now know this is simply not true. Muscles are very happy to be fueled by healthy fats.

In fact, one of the best ways I have discovered to virtually “remake” ones body in terms of shape and physiology, is to combine a sound resistance training protocol, such as the one presented in *The Power of Ten*, by Adam Zickerman and Bill Schley, or the programs sponsored by The Super Slow Zone, www.superslowzone.com, with a low carbohydrate diet.

These combination programs can take an individual back toward the body of their youth, faster than any other intervention. Furthermore, there is no calorie counting, which will be music to the ears of anyone who has tried to exercise and diet at the same time.

The reason this combination works so well is that it eliminates the impediment to weight loss - carbs, while weight training creates a powerful metabolic stimulus. These combination programs can take an individual back toward the body of their youth, faster than any other intervention. Furthermore, there is no calorie counting, which will be music to the ears of anyone who has tried to exercise and diet at the same time.

Since one is not counting calories, one is free to eat as much as is needed to keep up with the the energy demands of the workout regimen. But the key is that one is eating foods that will not result in fat gain. Contrast this with the typical pattern: frequent exercise, combined with a typical, high-carb, low fat diet. These diet and exercise programs cheat those who adopt them. After a heavy workout, what do these folks have on the way home? “Low fat”, carb-laden food, washed down with sugar containing gatorade. It all adds up to a

recipe for defeat.

Bob started off on the right track with a training program that not only helped him lose weight, but lowered his body fat content, improved his insulin resistance dramatically (both through diet and the resistance training) and dramatically shifted his cardiovascular risk. This is a program he can and should continue for the rest of his life. By doing so, he can expect to add decades of vibrant, vital health to his lifetime.

Sarcopenia - the loss of muscle that occurs with age, is epidemic, and our current over-emphasis on aerobic exercise has not helped counter the trend. Many highly trained endurance athletes, have atrophied upper body and core muscles. By adding a resistance training program to balance things out, such individuals can go a lot further toward maximizing the benefits of exercise.

The one thing I would recommend to Bob is to consider adding two things to his regimen: yoga, for flexibility and many other benefits, and a 10 minute, twice weekly program of HIIT, consisting of wind sprints alternating with walking. Since he has already saved so much time by choosing an efficient exercise program (Slow Weights), Bob has plenty of time left over to add some needed balance to his regimen.

A weekly yoga class should go a long way to giving him core strength, balance, and most importantly flexibility. This should be key to addressing his chronic back pain. In addition, Bob will gain benefits that are intangible, but powerful in the area of relaxation, which can be a key facilitator of things like telomere length preservation, facilitating his anti-aging goals.

Can we help Sue find her way to weight loss and cardiovascular health?

Sue, perhaps even more than Jane, is heading away from her health goals, because of misinformation about proper diet. With a little bit of help, I believe we can get her back on track, and making extraordinary gains.

Her commitment to health cannot be faulted. Like Jane and Bob, she has thoughtfully chosen an exercise program, and stuck with it. It is ingrained habit now, and part of her lifestyle. Moreover, she has chosen a form of exercise that has proven to be extraordinarily beneficial: yoga.

By choosing yoga, Sue has opted for an exercise type that delivers superb, anti-aging benefits. Yoga comes in many flavors, what we are talking about are the various types of yoga that involve “asanas,” or body postures, held for a length of time. As anyone who has attended a class knows, it’s not easy, and it is a real workout.

Yoga lengthens and strengthens muscles, improves joint flexibility, and dramatically improves balance and “proprioception,” which is the signaling that occurs between muscles, joints and the brain. Proprioception wanes if it is not stimulated, and this waning accounts for a great deal of the lost balance, shuffling gait and frequent falls that accompany aging. These are key, anti-aging attributes of yoga. In addition, the stress management benefits of yoga make it shine, and I suspect make it the best form of exercise for preserving telomere length, though this remains to be proven.

What may come as a surprise is that yoga is proving itself in other areas, such as improved cholesterol profiles (elevated HDL and reduced LDL, as well as reduced Triglycerides), and reduced Insulin Resistance. These changes were formerly expected only from resistance training (weight lifting), and to a lesser extent, aerobic exercise. We now know that yoga can deliver them, too.

Unfortunately, no exercise program, no matter how intense or frequent, can counter an unhealthy diet, like Sue’s.

Like Jane, Sue will need to change her diet in order to lose weight. While she describes herself as “nearly a vegetarian,” she does eat some chicken and fish. Adopting the Synergy Matrix diet and lowering her carbohydrate intake, while giving her body the essential fats and much needed protein, she will lose weight naturally and automatically. She will also see dramatic improvements in inflammation, blood pressure, and cholesterol profile. Her overall cardiovascular risk will drop, dramatically.

By continuing her excellent yoga-based exercise program, along with the new diet, Sue will see her results magnified many times over. She will begin to see the power of yoga deliver a remarkable “body makeover,” much like Bob experienced with his resistance training program. Like Bob, Sue might also be well advised to add one or two, 9-15 minute High Intensity Interval Training sessions per week, as well. This will improve her aerobic capacity, and elevate metabolism, helping further enhance her weight loss and reducing Insulin Resistance even more.

Exercise works best when it is part of an overall anti-aging and wellness program.

When we ask an exercise program to deliver only what it is reasonably capable of delivering in the context of a comprehensive wellness plan:

- Health goals can be realistically met
- Results are often surprisingly rapid through positive synergy
- A variety of exercise styles and patterns become viable options
- Injuries are prevented
- Frustration is avoided
- Persistence is encouraged

I encourage anyone who intends to adopt the Synergy Matrix Anti-Aging plan, to choose an exercise program. If the best type of exercise (for you) is not clear from the start, consider a plan to systematically try some of the options we have looked at in this chapter, as well as other viable forms of anti-aging exercise such as:

- High Intensity Interval Training
- Resistance Training
- Yoga
- Tai Chi
- Pilates

Try an option that seems like it might be a good fit for your temperament, fitness goals, schedule, and accessibility. Once you have determined the best option for you, commit to a program, and stay with it. Your anti-aging results will be multiplied, and you will find yourself more deeply in tune with your body, and more aware of the many ways that you are in fact reclaiming youth, and slowing the aging process.

7

So Here's Your Action Plan

"I don't want to achieve immortality through my work ... I want to achieve immortality through not dying." ~ Woody Allen

Action Plan

Here's a "Cliff's Notes" version of the Synergy Matrix™ Supplement program. Along with the Synergy Matrix™ Diet explained in detail in chapter 4, paying attention to your sleep hygiene as explained in chapter 5 and choosing an anti-aging exercise program from chapter 6, here is the list of supplements that I recommend to begin your journey toward a new and younger you.

1. NAC - To Control Oxidation

How To Take NAC

- 500 or 600mg capsules - taken twice daily
- Take them first thing in the morning, and at bedtime
- Newer, slow release forms of NAC may be better

Recommended Products (each represents a high-quality, dependable NAC supplement)

- Now Food NAC 600mg, 240 Capsules (note, also contains selenium and molybdenum - an added bonus)
- Jarrow Slow Release NAC 600mg, 100 Tablets
- TwinLab NAC 600mg, 60 Capsules

2. Beta Alanine - AGE and Glycation Management

Dosing is quite simple. I recommend starting with 750mg every night before bed, for 3 weeks, then going up to 1500mg taken before bedtime, after that. These levels of supplementation will give you a significant boost in carnosine production, and you should begin to notice the effects very quickly after you begin taking it.

You can save a great deal of money, by purchasing beta alanine powder, instead of capsules. To obtain a 1500mg nightly dose, you will use three (3), level 1/8th teaspoon scoops. Just add the three scoops to a small glass of water, stir and drink. It has almost no taste, so you should not find it unpleasant. I don't recommend adding it to juice, since we avoid sugar on the Synergy Matrix™ Anti-Aging plan.

Recommended Products

- Now Foods Beta Alanine 750mg, 120 capsules
- Now Foods Beta Alanine Powder, 500g

3. PQQ for Cellular Energy

I recommend that you take 10mg per day. These doses are perfectly adequate to secure all the benefits of PQQ. More will not create an enhanced effect.

- Life Extension BioPQQ 10mg, 30 capsules

Something to consider, if your budget permits, is to take PQQ along with Ubiquinol, which is an enhanced form of CoQ10. These two create a natural synergy, that has been shown to be very powerful, in clinical studies. For instance, in studies of brain function, these two supplements produced a much more dramatic effect when taken together.

- Swanson Ubiquinol 100mg, 60 gel caps

Bear in mind, the basic Synergy Matrix™ Anti-Aging plan requires only PQQ. I personally take Ubiquinol 100mg daily, in addition to PQQ, as I feel that the added benefit justifies the cost. Regular Co-Q10 will give this synergy, as well, but higher doses are required (200-300mg per day).

4. Telomere Health Support

Our plan involves a strategic combination of factors shown to facili-

tate telomere health.

- Vitamin D - 2000 IU per day
- Fish Oil - 1 teaspoon per day (not cod liver oil)
- Vigorous Exercise - one to three times weekly
- A high-quality multi-vitamin Supplements
- [TwinLab Daily One Caps Without Iron](#)
- [Pure Encapsulations Vitamin D3 Liquid 1000 IU Per Drop](#)
- [Carlsons Labs Fish Oil 500ml](#)

Exercise Program

While it is beyond the scope of this book to recommend an entire exercise program, I will point the reader to some resources that can help get you started:

- [Mark Sisson's Free, Primal Blueprint Fitness Guide](#)
- [Power of 10: The Once-A-Week Slow Motion Fitness Revolution](#)
- Review Chapter 6: **Exercise: Choose Your Practice**

5. Resveratrol - To Activate Your Anti-Aging Genes

My recommended dose is 100mg of TRANS Resveratrol, taken in the morning (as resveratrol can be mildly stimulating).

Here's how to get the benefits of this powerful supplement, and stay within our Cheap Anti-Aging Secrets Budget. I recommend taking it only on alternate weeks. That's right, every other week.

Because we are utilizing resveratrol to turn on a genetic switch, we

only need to make sure that switch is flipped in the right direction, at a regular interval, but it need not be every day. Some believe the interval can be even longer, but then we'd lose out on some of the other, key benefits.

What is the best brand to take? I like these brands for quality and value:

- Doctor's Best Trans Resveratrol 200mg (60 vegicaps)
- Natures Plus Extended Release Resveratrol 125mg (60 or 120 tablets)

6. L-lysine and Arginine - Pituitary Tune-Up

- Biocentrics Rejuvamax, Sugar Free HGH Booster, 350 Grams
- NutraBio Arginine Pyrroglutamate & Lysine, 500 grams

Note, the Biocentrics product is best if used first thing in the morning, before putting anything in your stomach. You should then wait at least one hour before eating, if possible (45 minutes at a minimum). The NutraBio product is designed to be taken at bedtime.

The labels on these products will clearly spell out these details, but I offer them here, so that the reader can make up their mind, should they have a preference regarding morning or nighttime dosing.

7. Curcumin - Taming Inflammation

My recommendation is to choose one of the new, enhanced-absorption formulations of Curcumin. If you choose a cheaper brand, as long as it is from a reputable company, such as Jarrow, Now or Pure Formulations, you will still be getting immense benefits.

- Life Extension Super Bio-Curcumin 400mg (60 vegicaps)

8. Acetyl-L-Carnitine - Cellular Garbage Clean-Up

How can we best obtain the benefits of ALCAR? For the Synergy Matrix™ plan, I recommend 1000-2000mg per day. I normally don't offer such a wide range, but for those under 50, 1000mg per day (500mg twice daily, or two capsules, once daily) is sufficient.

For those over 50, or with an existing heart or brain health challenge, I recommend 2000mg per day, for enhanced effects. For the higher dose, I recommend taking 1000mg, twice daily. If you are a person who has trouble taking supplements more than once per day, it is acceptable to take 2000mg once per day.

Recommended Sources

- [NutraBulk Acetyl-L-carnitine 500mg \(1000 capsules\)](#)
- [Now Foods Acetyl-L-carnitine 500mg \(200 capsules\)](#)

For Your Convenience

On the synergymatrix.info website, you will find an updated list of supplements, as well as links to an Amazon store, where all of the Synergy Matrix supplements are available. These can be purchased with one click, and regular monthly auto-ship can be setup if desired.

The Beginning....

We have now covered all the elements of the Synergy Matrix™ Anti-Aging plan. I wish you the best of luck as you begin your transformation and implement the plan. I will be right alongside you, using these same techniques in my own anti-aging program.

I will do my best to keep interested readers informed about breakthroughs in anti-aging, and developments pertinent to our Synergy Matrix™ plan. Above all, my goal is to empower you. This knowledge and these techniques are capable of revolutionizing health and slowing the aging process!

Thank you for taking the time to read this far. Please visit my health information website, synergymatrix.info, if you are interested in more, cutting edge health information from a Complementary and Integrative perspective.

Godspeed, and Great Health to you!

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Growingyoungbook.com
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