

## Preface

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My work has taken me around the world researching aging and discussing with many different kinds of health professionals, (particularly at the numerous conferences and meetings that today have become so popular) that eternal question—what causes aging? Perhaps even more importantly the other question that is always posed after it, how can we conquer aging?

Today the preference is to describe various remedies that can alleviate and in some cases even reverse aspects of aging, but unfortunately do not- by themselves- get to the core of the problem. The issue with this approach is that if we can't agree on the problem, with a clear understanding of "the disease of aging" then how can we expect to find a cure?

What is so enjoyable about Dr. Pierpaoli's work is that it does get to the core of the problem; it is, as he is fond of saying—"the spider behind the web." Dr. Pierpaoli's extensive research background, coupled with his contact to patients gives him a unique insight which is clearly visible in his new book- the key of life.

Dr. Pierpaoli describes and details his work with immunology which leads to the discovery of the aging clock in the pineal and the role of melatonin as the protector from aging, both of which were, until fairly recently thought to be useless substances!

Here you will find a concise and practical account that expands upon a logical but previously unseen path; it provides an understanding of the reasoning behind human aging. But this is no dead end road; Dr. Pierpaoli also describes the whys and wherefores, indeed how his patients have benefited from adjusting their biological aging clocks with melatonin.

At the end of the day I can't help comparing Walter Pierpaoli with another famous Italian- Christopher Columbus. After many

years of woes, both set out on a voyage of discovery, only to face even more problems when they returned to tell the truth! In 1492 Christopher Columbus said; “*Human progress has never been achieved with unanimous consent. Those who are enlightened first are compelled to pursue the light in spite of others.*” I expect Dr. Pierpaoli could say exactly the same thing today.

But now you are invited to become a member of a small band of followers, people who appreciate that here is a breakthrough to understanding the body as a whole, to help prevent disease and to conquer aging by living full optimal health spans.

I invite you to take the opportunity today to discover the key of life and learn how to turn back your aging clock.

*Phil Micans*

MS, PharmB

## A Note To Readers

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When I studied the hundreds of papers about melatonin that were published after 1995, I was delighted to find that they have confirmed my work regarding the anti-aging activity of melatonin and the significance of its nocturnal administration which preserves the integrity and function of the “biological clock.”

Alas, there has been a conspiracy of silence surrounding these events. I therefore encourage all those who are curious (either for scientific motivation or for sheer personal interest), to study the history of the discovery, to see for themselves the significance of this molecule; they may start at my new website: [www.drpierpaoli.ch](http://www.drpierpaoli.ch).

## Foreword

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Dear colleagues, friends, patients and readers, 13 years have elapsed from the publication of the scientific papers which illustrated my observations on the existence of a “biological clock” in the pineal gland, and 14 years have elapsed since the 3<sup>rd</sup> Stromboli Conference on Aging and Cancer which made the first announcements. But in spite that this fact may seem totally incredible, my numerous, difficult and I may say “dramatic” experiments of pineal grafting have never been replicated, in the way I made them. Like the times of Galileus, (to whom I immodestly confront myself—fortunately without being tormented by the Holy Inquisition) great discoveries encounter huge hurdles because they destroy in its fundament, a system based on lies and false hopes.

I deem what happened to me to be crystal-clear evidence that the world was not prepared at all and that it has not yet recovered from the psychologic trauma I produced. This queer situation appears flattering to me and now my ego has retreated into a joyful consciousness, I am not worried.

Until now there has only been a tiny entity that has taken advantage of my discovery, but we are not in a hurry. I remain curious about those unremittingly obstinate people who refuse my discovery neither to be acknowledged nor to allow it to enter the public domain and property. As I said to a newspaper many years ago: “During the day they denigrate melatonin but they secretly swallow it in the evening!”

*Walter Pierpaoli*

July 2007

## Nature's Age-Reversing Molecule

## The Melatonin Miracle

Picture this. It's your ninetieth birthday. You love your work, but you cancel your afternoon appointments in order to leave the office early to celebrate. You meet a friend at the club to play squash. Later, you head home to meet your spouse of sixty years. You know a special evening is in store for you—dinner at your favorite restaurant, a show, and then nightcaps or espresso at an after-hours jazz club. But the best is yet to come. You'll be spending the night at the same quaint but luxurious inn where you celebrated your fiftieth wedding anniversary. You've reserved the honeymoon suite, which features a Jacuzzi for two. Tomorrow will be a busy day as well. You promised your great grand-children that as soon as you finished your morning errands you would go roller blading with them in the park.

Does this sound fantastic? Do you have trouble believing that, when you are ninety years old, you can be working, living, and loving in much the same style and with much the same strength and vigor that you enjoyed at age thirty-five or forty?

Well, believe it.

Three decades of research and practice in the fields of immunology, oncology, biochemistry and pathology have taught me that aging does not have to be the inevitable downward slide that we have grown resigned to facing. On the contrary, scientific evidence supports my belief that this discouraging vision of ageing is a thing of the past.

This book does not present some futuristic vision of what your great-great-grandchildren's lives will be like a hundred years from now. This book is about what *your* life will be like when you are

a hundred... and spending time (when you're not otherwise committed) with your great-great-grandchildren. This book is not a work of science fiction either; rather, it is a work of science. Thirty years of research have led me to an extraordinary discovery. What I have learned will not merely add decades to your life, but will enable you to live those years in a strong, healthy and youthful body.

How do you view aging? If we ask you to close your eyes and picture yourself when you are "old," what image do you see? Chances are, you are picturing yourself bent and frail, and with passing years you imagine yourself growing weaker and progressively sicker, someone whose birthdays bring forth a flood of wistful reflections about the way things used to be, about the way *you* used to be. In short, you are picturing yourself as nostalgic for your lost youth, strength and vitality.

It is time to discard this stereotype. My discovery has taught me that the inexorable physical and mental decline that we have become all too accustomed to associating with aging need not occur. Thanks to what I have discovered, when you do reach your upper decades, you will not be sitting around bemoaning the loss of the health and vigor that you possessed in, say, your forties. You won't have any reason to do so, because you will not experience such a loss.

I am not suggesting that we can stop aging altogether. The years will continue to pass, so will the decades. But, as they do, the transitions from our sixties to seventies and eighties to nineties, and even to our hundreds, will be no more eventful than was our passage from our twenties to thirties to forties. Each passing year will not leave its stamp of decay. We will not fall apart and wither.

My vision, of course, represents a radical departure from the traditional view of aging. For thousands of years, scientists have considered the process of aging to be as inevitable as the passage of time itself. Today the aging process is synonymous with "senescence," a dismal, discouraging medical term used by doctors to describe the physical and mental deterioration that we have grown to accept as part and parcel of aging. According to the traditional

view, aging is a downward spiral through a series of degenerative illnesses terminating in death. Physicians who care for aging patients tend to regard their patients as travelers on a one-way ticket, with each disease an unpleasant but unavoidable stop along the way. As one system breaks down after another, patients are referred to one specialist after another. Each specialist deals with his or her own small piece of the aging puzzle—trying to patch his piece up or replace it.

But these doctors, talented though they may be, do not view the puzzle, or the patient, as a whole. They aim to treat each symptom as it comes along (and, if they are worth their sale, they also aim to treat their patients with consideration and respect). But I have to say, with due respect in every direction, that their aim, to put it bluntly, is off the mark. I think that in addition to focusing on each symptom, we ought to be focusing on the underlying disease itself.

The underlying disease—indeed the ultimate disease—is aging. This book is about how to treat it.

We regard aging as the “ultimate disease” because, as the body ages, breakdown in bodily systems make us more susceptible to disease. Disease, in turn, causes the body to age. I believe that there is a way to intervene and break this aging-disease-aging cycle. When we do, we stave off both a major cause and a major effect of what we know as aging. In other words, when we treat aging itself—rather than its unfortunate symptoms—the frequency and effect of those symptoms will diminish.

This concept—revolutionary though it may seem—is the product of an evolution in my thinking that occurred as a result of the work I was doing in several fields, including immunology, pathology, and oncology. I am not a gerontologist, and to be perfectly frank, I did not set out to test entrenched theories about how we age. Ironically, I think that it is precisely because my research was multidisciplinary that I developed a broader view of how we age, and was able to perceive connections that other researchers whose focus was narrower did not see. My work led me to the discovery

of how and why we age, and more importantly how to control the process of aging itself.

I have identified the precise point in the brain that controls how we age—I call it “the aging clock”. I have determined how it works, and I have discovered the key to turning it back. In this book, I will describe in detail my research, which until this point has been published only in scholarly journals, revealing to the public at large how I discovered the aging clock, and how it functions. In the process, I will show you:

- How melatonin, a safe and inexpensive supplement, can turn back your aging clock, so that you can begin to slow down or even reverse the aging process, starting today.
- How you can extend your life span from the commonly projected seventy-five years to 120 years.
- How to reinvigorate your sex life, (whether you are thirty, sixty, or ninety).
- How to revive your immune system so that you can live well and disease-free for a century or more.

My research—which has been the focus of several international scientific conferences and which is described here in a nutshell—has taught us that the pineal gland, a pea-sized structure embedded deep within our brains, is the key to understanding, and controlling, how we age. The pineal gland is a part of the body that, until recent years, has been little studied but long revered. For example, the Hindus attached mystical importance to the pineal, referring to it as the body's “third eye,” and, in a sense, that's what it is. The pineal gland, which contains pigment cells similar to those found in our eyes, is light-sensitive and reacts to periods of light and dark transmitted to it through our eyes. The pineal controls the body's biological clock, the internal mechanism that tells us when it's time to sleep and when it's time to wake up. Scientists refer to this daily sleep/wake cycle as our circadian rhythm. The pineal exerts its control through a peculiar bioactive molecule called melatonin, er-

roneously defined as “hormone”, which it produces primarily at night when we are asleep.

But the pineal regulates more than our sleep patterns. It regulates the rhythms of life itself, and nowhere is this more apparent than in the animal kingdom, because the natural rhythms of animals’ lives are not disrupted by alarm clocks or beepers. In spring, the pineal awakens lustful feelings, signaling to animals that it’s the season to mate. As summer gives way to autumn, the pineal signals to birds that it’s time to migrate. The pineal gland even functions as an internal navigational system, keeping them on course as they traverse the globe. As winter approaches and daylight hours grow shorter, the pineal alerts animals that it’s time to take shelter and hibernate. Months later, as days begin to lengthen; the pineal awakens them from winter’s sleep.

In humans, the pineal’s role is more subtle, but equally profound. I call the pineal “the regulator of the regulators”. It is the master gland that oversees the operation of our other glands, and, as a result, its influence is felt by every cell in our bodies. It helps us to maintain normal daily and seasonal hormone levels, and it oversees and superintends our growth and development from infancy through adulthood.

The pineal gland manufactures, and operates through, a molecule called melatonin. Melatonin is instrumental in establishing our daily rhythms, from infancy on. Expectant mothers pass melatonin to their developing babies through the placenta. Although infants don’t manufacture their own supply of melatonin until their third or fourth day of life, melatonin is present in breast milk. Melatonin levels peak during childhood. During adolescence, melatonin levels drop, triggering a rise in other hormones, which in turn signal to the body that it is time to enter puberty. As we age, our melatonin levels continue to decrease, with the steepest decline occurring from about age fifty on. By age sixty, our pineal glands are producing half the amount of melatonin they did when we were twenty. Not so coincidentally, as melatonin levels drop, we begin to exhibit serious signs of aging.

For reasons that we will explain in more detail in later chapters, we believe that this drop in melatonin levels happens, and the downward spiral known as aging occurs, because the pineal gland—the aging clock—breaks down. When the aging clock begins to show signs of aging itself, it signals to other parts of the body that it is time for them to grow old too. What ensues is the all-too-familiar progressive, system-by-system breakdown that leads to disease, disability, and ultimately death. The aging process strikes some of us earlier than others. However, even the hardest of the elderly eventually fall prey. Few of us manage to stay healthy and disease-free throughout our entire lives, and only a very lucky few manage to endure—let alone enjoy—our full living potential.

But my studies have shown us that it is possible to stop the aging process dead in its tracks. I have discovered how to “fix” or reset the aging clock so that we can remain vigorous and strong throughout our entire lives, and certainly well into our ninth and tenth decades. I also believe that we can fulfill our biological potential of living to be 120 years old and perhaps even longer than that. Although death is still inevitable, I am confident that we can forestall it, and not merely by adding dismal “golden years” that will be spent in bleak retirement villages, hospitals, and nursing homes. What I am talking about is years that are productive and enjoyable; years that any of us would rightly regard as among the best of our lives.

In order to understand how to fix the aging clock, you need to know why the clock breaks in the first place. I consider this in greater detail later on, but an overview is helpful here. We humans are highly socialized animals who, unlike our wilder counterparts, have evolved beyond the purely biological role that nature assigned us. We think and we dream, and we create and we pursue goals. As far as nature is concerned, however, we are here for one reason, and that is to reproduce. Consequently, when we reach a particular age and have, in theory or fact, reproduced, we are in nature's eyes expendable. Nature is not concerned with our lifetime dreams and ambitions that we have yet to fulfill. This may sound harsh, but it

is, if you think about it, perfectly logical, and it is true not only for humans, but for other animal species as well. Salmon, for example, die shortly after they spawn. The female octopus literally starves herself to death after she reproduces. Male marsupial mice, related to the kangaroo, die after mating season. Of course, as you can see, we fare a lot better than these animals. Even after our reproductive years have passed, we still have quite a few left to go. But, clearly, we begin to wind down.

We wind down because the pineal gland—the aging clock—winds down. This happens because the pineal gland is constantly monitoring our bodies for signs of decline, such as a decline in the production of sex hormones. When the pineal detects that we are past our reproductive prime, it, in turn, begins to break or slow down, signaling our bodies that it is time to age. I have identified a simple way to “trick” the pineal gland into thinking that we are still young and vigorous. I have found a way to halt and even reverse the process that we have been taught to believe is normal aging.

Melatonin is the key to “resetting” the clock. In many animal studies I have shown that melatonin supplements, given at the right time, can stop and reverse the aging process. In one early study, I gave one group of old mice melatonin in their night drinking water, and compared their physical characteristics and behavior to an identical group of mice who did not get melatonin. Six months later, the untreated mice continued to show signs of aging—they developed patchy bald spots, they grew shriveled, they lost neuromuscular coordination, they lost immune and thyroid responsiveness, and they slowed down until they eventually died of cancer, which is the typical pattern of aging and death for this particular breed of mice. The melatonin-treated mice experienced a dramatically different fate. To my astonishment, they seemed to “grow young,” practically overnight. Their fur grew thick and lustrous, their bodies grew slim and supple, and their youthful motor activity returned. Tests showed that their immunity against disease had vastly improved. Their energy levels increased, and much to my amazement, their sexual vigor was restored. What’s even more

exciting is that the melatonin-treated mice lived an average 30% longer than the untreated mice, which in human terms is a gain of about twenty to twenty-five years. Even more astounding was the fact that the melatonin mice did not succumb to the deadly cancer that invariably affects their breed.

Since my early work, I have performed other studies that even more dramatically identify the pineal gland as the body's aging clock and melatonin as its messenger. In a series of groundbreaking studies that attracted the attention of the international scientific community, I transplanted pineal glands from young animals into old animals. I was excited to find that the old animals with the young pineal glands began to rejuvenate. They looked, and also acted, like young animals. I then transplanted pineal glands from old animals into young animals. The young animals with the old pineals began to age rapidly—they looked and acted like old animals, and they died well before their time. Later in the book, I will talk more about these experiments and what they can teach us about the aging process.

Based on more than thirty years of research and experimentation, I am convinced that, at the present time, melatonin is the key to health and longevity. I take it myself, and so do my family members. I recommend it to our friends and loved ones. I have given melatonin to Emmy, my former mother-in-law, since 1984, when she was 74, to help stave off the early symptoms of Parkinson's disease, a common neurological disease among the elderly that can cause tremors and can make it difficult to perform such simple tasks as holding a teacup. Now 23 years later, at 97, she is sharp, active and free of Parkinson's symptoms. I do believe this is related to her melatonin treatment. I should also add that her skin is as smooth and practically wrinkle-free as it was twenty years ago. As word got out about my experiences with melatonin, and as more experiments began to document melatonin's remarkable effects, many other researchers in the field of aging began to take melatonin as well. From these and other studies that I will discuss later in the book, I have determined that the aging process can be

postponed, and even reversed, simply by restoring melatonin to youthful levels.

Although melatonin is something that most people have not heard of before, the theory of “hormone replacement” is not new or untried. On the contrary, today, millions of women, after menopause, routinely take hormone replacement therapy to restore their estrogen to more youthful levels. The theory here is very similar. I recommend that when melatonin levels naturally begin to decline (usually around age forty-five), people should begin to take melatonin supplements in order to boost their levels back to what they were at age twenty. I want to stress that we are not telling people to take melatonin indiscriminately. I recommend doses that are considerably more conservative than what is usually found in commercial melatonin supplements. In Chapter 14 “How to Take Melatonin: The Right Dosages,” I will tell you how to take melatonin safely and effectively, and how to determine the dosage that is right for you. I believe that, armed with the information about the mechanics of aging and the role that the pineal gland and melatonin play in the process, you will be able to do simple things that will enable you to turn back the hands of time and postpone the aging process.

Let me be clear on something: melatonin is neither a panacea nor a “happy pill” that will provide quick fixes or superficial results. Based on what I know about melatonin, its beneficial effects will be felt gradually, over time. For obvious reasons, when we think about aging, we are inclined to focus on its more superficial, outward manifestations. We notice that we are getting older when, for example our hair begins to turn gray, when we notice our first wrinkles, or when we have to be fitted for our first pair of bifocals. But as alarming as we may find those outward symbols of aging, what is happening inside our bodies is far more subtle and insidious. What I am suggesting is that the way to approach aging is to address the inward conditions that give rise to various outward symptoms. Only by curing aging from the inside out, so to speak,

will we truly achieve an effective means of reversing the outward signs of aging.

Aging is actually the loss of the body's ability to adapt to its environment. Our bodies are constantly forced to respond to various stresses and stimuli, such as adjusting to a temperature change, fighting off a virus, or even just knowing when it's time to sleep and wake. Think of your body as a rubber band. When we're young and strong, our bodies can easily bounce back from the force of these stresses, but, as we age, we increasingly lose our ability to rapidly adapt to new situations—in short, we lose our resiliency. Like an old, worn-out rubber band, it takes us longer and longer to bounce back. We can't take the cold (or the heat) as well as we once could. When we get a virus we get sicker and take longer to recuperate. We have trouble falling asleep. Melatonin can restore the normal balance and durability that we lose as we age. It can keep us resilient, and it is that resiliency that keeps us young.

## Melatonin The Age Reversing Molecule

Melatonin is a potent age-reversing compound, and we are confident that melatonin's primary benefit is in its ability to prevent disease by preventing the downward spiral that leads to illness. Scientists in laboratories all over the world are also investigating the role of melatonin in treating specific ailments. For example:

- Researchers in Tulane University School of Medicine in New Orleans have shown that melatonin can inhibit the growth of human breast cancer cells.
- Oncologists in Milan have actually been using melatonin to treat cancer patients in conjunction with traditional chemotherapy and immunotherapy. They have reported that melatonin-treated patients showed tumor regression and lived longer with fewer side effects than those who did not receive melatonin.

- Several studies have shown that melatonin is a safe, effective treatment for insomnia. Unlike other sleeping pills that disrupt REM (dream) sleep, melatonin actually restores normal sleeping and dreaming patterns.
- Melatonin is an excellent cure for jet lag. Melatonin pills taken at the right time can help restore normal sleep/wake cycles that are disrupted by flying across time zones.
- Melatonin may help prevent heart disease, the number one killer of men and women in the United States and many other Western countries. Studies show that melatonin can lower blood cholesterol levels in people who have high cholesterol, helping to control a major risk factor for heart attack and stroke.
- Melatonin can halt and even reverse the condition of age related macular degeneration, the number one cause of deteriorating eye sight as we age.

All of these, and other exciting applications for what is truly the miracle hormone of our lifetimes, will be covered in later chapters of this book.

### Why This Book, Why Me, Why Now?

I am writing this book for several reasons. Firstly, I am excited about my research and its potential for improving people's lives and lifestyles. I want to share it with others, and feel it is important that I do so now, not in ten or twenty years. Some of my more conservative colleagues may accuse me of jumping the gun and reporting my findings prematurely, before melatonin has undergone a battery of "official" tests, including the rigors of human clinical studies. Frankly, by the time melatonin (which, to repeat, is already available over the counter in some countries) is thoroughly researched and scrutinized by every official panel, time will have run out for most of us.

Science can (by necessity) move at a painfully slow pace, especially in countries such as those of Europe and the United States, where decades may pass before an idea becomes mainstream. The link between diet and cancer and diet and heart disease are good examples. If you're middle-aged, like I am, you don't have the luxury of a twenty-year wait. As of this writing, I feel a youthful seventy. I have a lot to live for: I lead a full, extremely vigorous, and interesting life that I love, and I want to continue to do so for as long as possible. If there is something that I can do today to reverse the aging process, and to push my scientific understanding of aging, I want to do it right now! I am not willing to wait the two and three decades that it will take before melatonin gets the official nod, and I don't think that it is fair to ask the public to wait either.

Besides, there are reasons to believe that with melatonin in particular, there is a need to go public in order to ensure that melatonin will receive all the attention that it rightfully deserves from the scientific community. I readily concede that I am only just beginning to unravel the mysteries of melatonin, and its effect of the aging process. But, given melatonin's promise as an age-reversing agent—and one that may prove to be an effective treatment for cancer and other life-threatening ailments—more research is desperately needed. This will only happen if the public demands it. Because melatonin occurs naturally, (like vitamin C), it can't be patented; therefore, drug companies have little incentive to spend the hundreds of millions of dollars required to study melatonin. That leaves it in the hands of government to fund studies of melatonin—but will it? As government slashes its support for scientific research, researchers are always scrambling for funds. Many good, solid ideas will never be investigated—and tragically, as a result many lives will be lost—due to lack of funding. I hope to create a groundswell of interest in melatonin in order to encourage further scientific melatonin research.

Much of the research that currently does get government and private funding deals with the diseases of aging, but not the aging process itself. Compared to the great leaps made in other branches

of science, such as theoretical physics, biology is still in the Stone Age. We have still not found cures for the same diseases that plagued us hundreds of years ago, and we are helpless when faced with new plagues. We have made great strides in the prolongation of life, but that is primarily due to better diet, improved hygiene and the use of antibiotics or vaccines, not to a better understanding of basic biology, which I believe is the true key to fighting disease. If we intervene and reverse the aging process, we can thereby prevent many diseases from occurring in the first place. Although I don't want to divert precious money from research that may lead to valuable treatment for people who are already sick, I do believe that, in the long run, more people will benefit from my preventive approach.

I am also concerned that greed—sometimes disguised as a misguided desire to “protect” the public—will prevail over the right of the public to know. There are rumors that some pharmaceutical companies, seeking to profit by marketing melatonin as a sleeping pill or other type of drug, are lobbying to convince the Food and Drug Administration to make melatonin available by prescription only. I strongly believe that this would be a terrible mistake. Something as safe and as important to our health and well-being as melatonin should remain inexpensive and easily available to the public. It should be so for everyone—not just for the select few who can get prescriptions, or who can afford to pay the steep price tag typical of today's newly approved drugs. Naturally, there are also legitimate questions being raised concerning such important issues as quality control. However, there is a better solution to the problem of quality control that simply pulling melatonin off the market. For the purposes of safety, hygiene and consistency, I recommend using a synthetic form of melatonin. There are several synthetic brands already available, and I predict, as the demand for melatonin increases, there will be more, and that they will be produced by the same reputable companies that market other high-quality supplements.

Finally, and in many respects most importantly, I am writing this book to change your expectations about how you can and should age. If our society continues to be complacent about aging, if we don't challenge the conventional wisdom that aging is an inevitable downward spiral, we will be cheating ourselves out of decades of life—and not just life in an impaired physical state, but life as we cherish it today: in a strong, healthy, youthful body.

In Part 1 of this book, I will focus on the scientific journey that led to the discovery of the aging clock. That odyssey will take readers around the world—from Switzerland to Italy to Israel to Russia—to a variety of different laboratories where I did my groundbreaking experiments. Readers will learn about the remarkable pineal gland, and how it controls your every action. Readers will also come to learn all that is so far known about melatonin, and how it can literally change your life.

Life, of course, is ultimately what my book is all about. I hope that readers will receive the *Key of Life* as the celebration of life I intend it to be, and that it will encourage and inspire each and everyone to take control of their own destinies and accept our life-affirming message: it is possible to live longer than you ever imagined. What is more important, it is possible to live those extra decades with the same level of health and vigor that we associate with our youth and middle age.