MORE PRAISE FOR SPRING CHICKEN

“You need this book. I grabbed it like a life preserver, and that’s exactly what it is. Spring Chicken demolishes the worst hoaxes in anti-aging treatments—like crushed dog testicles, human growth hormone, and Suzanne Somers—and leaves you with the good news: by adopting a few easy-to-understand, easy-to-follow discoveries, you might just deactivate the time bombs in your fat cells and learn to follow in the springy, “successfully aging” footsteps of a 92-year-old pole vaulter.”

Christopher McDougall, New York Times bestselling author of Born to Run and Natural Born Heroes

“Bill Gifford’s terrific Spring Chicken gives us a riveting account of the most important change of the last century—the doubling of our lifespans—and an intimate vision of what it will take to not only keep that trend going, but keep ourselves healthy and vibrant as we age.”

Steven Johnson, New York Times bestseller of How We Got to Now

“Gifford skillfully navigates the many strands of aging research to create an entertaining narrative of the perils of getting old.”

Kirkus
ABOUT THE AUTHOR

Bill Gifford is a contributing editor for *Outside* magazine in the US. Over the course of his career he has written extensively on science, sports, health and fitness for *Wired*, *Slate*, and *Men’s Health*, amongst others. The person he admires most is his grandmother, Doris, who is nearly 100 years old and eats a Danish pastry every morning. He intends to get there too. Or at least die trying.
SPRING
CHICKEN

STAY YOUNG FOREVER
(OR DIE TRYING)

BILL GIFFORD
I think the most unfair thing about life is the way it ends. I mean, life is tough. It takes up a lot of your time. What do you get at the end of it? A death! What's that, a bonus? I think the life cycle is all backwards. You should die first, get it out of the way. Then you live in an old age home. You get kicked out when you're too young, you get a gold watch, you go to work. You work for forty years until you're young enough to enjoy your retirement! You go to college, you do drugs, alcohol, you party, you have sex, you get ready for high school. You go to grade school, you become a kid, you play, you have no responsibilities, you become a little baby, you go back into the womb, you spend your last nine months floating—and you finish off as a gleam in somebody’s eye.

—Sean Morey
For my parents
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In his final moments of consciousness, as the young scientist crumpled to the laboratory floor, he may have realized that perhaps covering himself with varnish was not the best idea he had ever had, experiment-wise. But he was a man of science, and curiosity could be a cruel mistress.

He had been wondering for a while about the function of human skin, so durable and yet so delicate, so sensitive to burns from sun and flame, and so easily sliced open by knives much less sharp than his surgeon’s blades. What would happen, he wondered, if you covered it all up?

So, on what was otherwise a slow day at the lab, at the Medical College of Virginia in genteel Richmond, Virginia, in the spring of 1853, Professor Charles Edouard Brown-Séquard—native of Mauritius, citizen of Britain, late of Paris (via Harvard)—stripped off all his clothes and went to work on himself with a paintbrush and a pail of top-quality flypaper varnish. It didn’t take long before he had coated every square inch of his naked body with the sticky liquid.
This was still an era when a scientist’s primary guinea pig was generally himself. In one experiment, the thirty-six-year-old Brown-Séquard had lowered a sponge into his own stomach to sample the digestive juices within, which caused him to suffer gastric reflux for the rest of his life. Such practices distinguished him as “by far the most picturesque member of our faculty,” as one of his students would later recall.

The varnish episode would only add to his legend. By the time a random student happened to stumble across him, the professor was huddled in a corner of his lab, trembling and apparently near death. His body was so brown that it took a moment for the student to realize that he was not a wayward slave. Thinking quickly, the young man frantically began to scrape off the brown gunk, only to receive a tongue-lashing from the victim, who was furious that “some obtrusive individual [had] extracted him from the corner into which the varnish had tumbled him, and, just as he was fetching his last gasp, maliciously sandpapered him off.”

Thanks to that quick-witted medical student, though, Brown-Séquard would go on to become one of the greatest scientists of the nineteenth century. Today he is remembered as a father of endocrinology, the study of glands and their hormones. As if that were not enough, he made major contributions to our understanding of the spinal cord; a particular type of paralysis is still called Brown-Séquard syndrome. Yet he was far from an ivory-tower academic. He once spent months battling a deadly cholera epidemic on his native Mauritius, a lonely archipelago in the middle of the Indian Ocean. True to form, he intentionally infected himself with the disease by swallowing the vomit of patients, in order to test a new treatment on himself. (That nearly killed him, too.)

His Richmond professorship did not last the year; the French-
man’s eccentric ways and darkish skin proved too much for the Southern capital, so he moved back to Paris, to spend the remainder of his career shuttling between France and the United States. All told, he spent six years of his life at sea, which would have made his late sea-captain father proud. Yet despite his near-constant state of motion, he could not outrace old age. By his sixties, Brown-Séquard had fetched up once more in Paris, as a professor at the Collège de France. His friends included Louis Pasteur, as in pasteurization, and Louis Agassiz, one of the forefathers of American medicine. The poor orphan from far Mauritius was inducted into the French Legion of Honor in 1880, followed by a slew of other prestigious prizes, culminating with his election as president of the Société de Biologie in 1887, confirming his status as one of the leading men in French science.

He was seventy years old by then, and he was tired. Over the previous decade, he had noticed certain changes overtaking his body, none of them good. He had always buzzed with frenetic energy, bounding up and down stairs, talking a mile a minute, then interrupting himself to scribble down his latest brilliant idea on the nearest scrap of paper, which would vanish into a pocket. He slept just four or five hours a night, often beginning his workday at his writing desk at three in the morning. It has been suggested, by his biographer Michael Aminoff, that he may have been bipolar.

But now his once-boundless vigor seemed to have abandoned him. He had evidence, too, because he had long kept track of his body, measuring things like the strength of his muscles and keeping careful records. In his forties, he had been able to lift a 110-pound weight with one arm. Now the best he could do was eighty-three pounds. He got tired quickly, yet he slept poorly if at
all, and he was tormented by constipation. So naturally, being the scientist he was, he decided to try to fix the problem.

On June 1, 1889, Professor Brown-Séquard stood before the Société de Biologie and delivered a keynote address that would forever change his career, his reputation, and popular attitudes towards ageing. In the talk, he reported on a stunning experiment that he had performed: he had injected himself with a liquid made from the mashed-up testicles of young dogs and guinea pigs, which he had augmented with testicular blood and semen.

His idea was simply that something in younger animals—specifically, in their genitals—seemed to give them their youthful vigor. Whatever that was, he wanted some. After a three-week cycle of injections, he reported a dramatic turnaround: “To the great astonishment of my principal assistants,” he claimed, “I was able to make experiments for several hours while standing up, feeling no need whatever to sit down.”

There were other benefits. His strength seemed to have returned, as his tests confirmed: now he could hoist a hundred-pound weight, a significant improvement, and he was once again able to write late into the evenings without fatigue. He even went so far as to measure his “jet of urine,” and found that it now travelled 25 percent farther than it had prior to the injections. With regard to his constipation issues, he noted proudly that “the power I long ago possessed had returned.”

His colleagues in the audience were torn between horror and embarrassment. Extract of...dog testicles? Had he gone mad in his old age? Later, one of his colleagues sniped that Brown-Séquard’s outlandish experiment had proved only “the necessity of retiring professors who have attained their threescore and ten.”
Undeterred, he made his magic mixture (now fashioned from the testes of bulls) available for free to other doctors and scientists, in the hope they could repeat his results, which some did. The reviews from his peers were still scathing. Harrumphed one Manhattan MD in the pages of the *Boston Globe*, “It is a return to the medical systems of the middle ages.”

Outside the halls of academe, though, Brown-Séquard became an instant hero. Almost overnight, mail-order entrepreneurs began selling “Séquard’s Elixir Of Life”: twenty-five injections for $2.50, using the good doctor’s name but with no other connection to him. The newspapers, predictably, had a field day; at last, they could print the phrase *testicular liquid*. A professional baseball player, Jim “Pud” Galvin of Pittsburgh, openly used the elixir in the hope that it would help him pitch better against Boston—the first recorded modern use of a performance-enhancing substance by an athlete. The old professor was even feted in a popular song:

*The latest sensation’s the Séquard Elixir*

*That’s making young kids of the withered and grey*

*There’ll be no more pills or big doctor bills,*

*Or planting of people in churchyard clay.*

Sadly, this last line proved to be wishful thinking: on April 2, 1894, five years after his address to the Société de Biologie, Charles Edouard Brown-Séquard was dead, six days shy of his seventy-seventh birthday. Despite his fame, he had not profited one franc from his elixir. And while his fellow scientists ultimately concluded that the miraculous revival that Brown-Séquard had attributed to his “orchitic liquid” was due to little more than a placebo effect, he
had kicked off a rejuvenation craze that seemed to cause even the most rational men and women to lose their minds.

The next fad was something called the Steinach operation, which promised to restore a man’s vitality but really amounted to nothing more than an ordinary vasectomy. It nevertheless became hugely popular among the male intelligentsia of Europe, including the poet William Butler Yeats, who at sixty-nine had married a twenty-seven-year-old; even Sigmund Freud, so attuned to phallic states, pronounced himself satisfied with the results.

In the United States, rejuvenation fever exploded in the 1920s, when a patent-medicine salesman named John Brinkley popularized an operation that basically involved implanting fresh goat testicles into the scrotum of worn-out middle-aged men. Brown-Séquard had actually tried similar experiments on dogs back in the 1870s, but even he hadn’t dared try a cross-species transplant. Brinkley had no such qualms, perhaps because he was unencumbered by an actual medical education. He did, however, own a radio station, and he broadcast nonstop testimonials about the wonders of the operation, in between performances by the Carter Family and even a young Elvis Presley.

Over the decades, he operated on thousands of patients, making himself one of the richest men in America. Meanwhile, dozens of people died on his operating table, and hundreds more were left crippled or maimed by his clumsy surgeries. And still they kept flocking to him: the tired, the worn-out, the flagging, impotent, ageing men of America, and even a few brave women, desperate for one more chance at youth.

They had no idea how lucky they were, just to be alive.
Chapter 1

BROTHERS

*Old age isn’t a battle; old age is a massacre.*

—Philip Roth

The wave reared up, green and foaming, and slammed into my grandfather. For a too-long instant, he disappeared under the water. I watched from the shore, holding my breath. I was ten years old. Finally, he staggered to his feet on the shallow sandbar, wiped the spray from his eyes, and turned to face the next rising wall of water.

Lake Michigan has days when it thinks it’s an ocean, and that day was one of them. All morning long, it had been hurling five-foot swells at the beach in front of my family’s old frame cottage, which my great-grandfather had built with his own hands, cheap lumber, and sheer Anglo-Saxon will back in 1919. Bodysurfing on this beach was one of my favourite things on earth, and I prayed for wavy days. Unfortunately, on this day the waves were too big, and I had been forbidden to go in the water. So I sat on the porch, sulking.

With me on the porch was my great-uncle Emerson, who was
my grandfather’s older brother and, it’s fair to say, not my favourite relative just then. Stiff and somewhat humourless, he only spoke to us children to scold us for running around or making noise. He didn’t swim, so he couldn’t watch us on the beach, which rendered him pretty much useless to us. He never joked or played with us, either, the way the other uncles did. He just sat there, staring vacantly out at the lake. To my ten-year-old mind he just seemed ancient, and not in a good way like a fossil or a dinosaur.

Meanwhile, out in the water, my grandfather was frolicking in the head-high waves. His name was Leonard, and even in his sixties, the old navy man still loved the rough surf. Enviously, I watched him plunge into one foaming breaker after another, emerging to wipe the water from his eyes before turning to face the next one. I adored him.

The family had gathered to celebrate his birthday, which he had mock-grandiosely dubbed St. Leonard’s Day. A homemade banner proclaiming it as such fluttered from the porch railing, to the puzzlement of beach walkers. The house was a kind of landmark because it was so much older than its neighbors. It had survived the Great Depression and countless brutal winter storms, including a big one during the 1930s that had washed out the sand dune on which it had been built. Nearly all the neighboring cottages were completely destroyed. The family drove out from Chicago and repaired it by themselves, and after that it was known as The Ark.

The adults gathered for cocktails at six. It may have been closer to five. Afterwards the aunts fixed dinner in the downstairs kitchen, built to hold up the house after we lost the dune. When dinner was done, the men lit a bonfire on the beach, and we kids scorched marshmallow after marshmallow until we were sent to
Brothers

bed, to the sound of crashing waves. It was just another beautiful childhood day at the lake, and it would stay lodged in my memory for years before I recognized its true significance.

Though they almost seemed like they came from different generations, my grandfather Leonard was a mere seventeen months younger than his brother Emerson, a slender gap bordering on scandalous for upright Midwestern Protestants circa 1914–15, when they were born. They were nearly twins, with the same genes and upbringing, and they remained very close throughout their adult lives. Yet their fates could hardly have been more different.

Still that image haunts me: Emerson in his rocker on the porch while his only-slightly-younger brother is out thereducking major waves. Not too long after that day, Emerson began showing signs of the Alzheimer’s disease that would eventually devour his mind; he died in a nursing home at the age of seventy-four. Meanwhile, my grandfather’s idea of retirement was to buy a small citrus orchard in the mountains north of San Diego, where he toiled alongside the migrant farmhands until his mid-seventies. He was still going strong when a random infection felled him at age eighty-six.

The difference between the two brothers was at least partly the result of one unlikely factor: religion. Like my great-grandparents, Emerson and his wife were devout believers in Christian Science, which is a misnamed faith if ever there was, because its followers actually reject medical science in the belief that human ailments can be healed through prayer. So they almost never went to the doctor, for anything. As a result, Emerson had piled up biological damage like a Cadillac in a demolition derby. A succession
of skin cancers that he refused to treat had eaten away at his left ear, leaving it deformed and cauliflower-like. Later, he suffered a series of minor strokes that also went unattended. Every time he had an infection that could have been cleared with antibiotics, but wasn’t, that took a toll on him, too.

My grandfather had shed his Christian Science beliefs early, at the insistence of his wife, and his most consistent religious observance was a steadfast devotion to the daily cocktail hour: one Scotch-based beverage on the rocks at 6 p.m. sharp every day. He availed himself of modern medical care, which had made crucial advances against infectious illnesses, and even heart disease and cancer. Just as importantly, he had quit smoking in 1957 (unlike his brother), and he got daily exercise in the form of vigorous and often highly ambitious gardening projects, which he worked on every day before cocktails. The result was that he enjoyed a longer life—and a much longer healthy life—than his brother.

Public-health experts now call this *healthspan*, one’s span of healthy years, and it will be an important concept in this book: while my grandfather’s *lifespan* was only about fourteen years longer than his brother’s, his *healthspan* was at least thirty years greater. If I’ve done my job, *Spring Chicken* will help you understand how to end up more like my grandfather, with his long healthy life, and less like his unfortunate brother.

Decades later, on another perfect summer day, I found myself again sitting on the porch of The Ark. It had been a long time since I’d visited. My grandfather’s generation had moved on, and the house had been sold to a distant cousin. We didn’t go there much anymore, so this was a rare treat, a return to the site of some of my happiest childhood memories. Only now I was in my early
forties, and naturally I had been thinking gloomy thoughts about getting older.

This was in part thanks to my thoughtful work colleagues, who had marked my fortieth birthday by giving me a cake adorned with a single candle. Shaped like a tombstone, it read:

RIP
my youth

Which was awfully kind of them. But it was also rather brutally true: in the media world in which I’ve worked all my professional life, forty is considered old. Even though you aren’t actually old—far from it—our culture nonetheless labels you middle-aged. Demographically undesirable. On the way out, career-wise. Possibly even an AOL user. My own mother had already pronounced me “no spring chicken.”

She did have a point. Inside, I could tell something was changing. I’d been more or less athletic since university—sometimes more, sometimes less—but lately I’d noticed that it had become a lot more difficult to keep in shape. If I took a few days off from running or cycling or going to the gym, my muscles would turn to Jell-O, as though I’d been sitting on the couch for weeks. When I finally did get out for a jog, I’d feel the unmistakable bounce of nascent man-boobage.

Hangovers now seemed to last for days, my wallet and my keys liked to go AWOL, and as for reading a restaurant menu by romantic candlelight, forget about it. I seemed to be tired all the freaking time. A handful of friends had already died of cancer, or come close. In idle moments, I found myself dwelling more and more on middle-aged regrets, stuck on the idea that my best years
were behind me, and that God was checking his watch. Right on schedule: some scientists believe that the woes of midlife reflect the fact that we have reached a kind of biological “tipping point,” where the damage of ageing has begun to outpace the ability of our body and our mind to repair themselves.

When I went in for a physical exam, somewhere around age forty-three, I learned that I had mysteriously gained fifteen pounds, and my cholesterol levels now approximated those of chocolate milk. For the first time ever, I had the beginnings of a beer belly, which shouldn’t have been surprising since I love beer, but it bummed me out nonetheless. All of this my doctor chalked up to “normal ageing.” She smiled as she said it, as if it were nothing to worry about, and certainly no reason to take action. Nothing to be done, her slight shrug said.

Really? I wanted to know more. Like, can we make it stop? Or at least slow down? A little? Please?

Finding a “cure” for ageing, a way to defeat death, has been the dream of humankind literally since we began writing down our dreams. The oldest existing great work of literature, the nearly four-thousand-year-old *Epic of Gilgamesh*, in part chronicles a man’s quest for the elixir of eternal life. He actually finds it, in the form of a mysterious thorny plant that he retrieves all the way from the bottom of the sea, only to have it stolen by a serpent (spoiler alert). “When the gods created man they allotted him death,” the hero Gilgamesh is told, “but life they retained for their own keeping.”

Staying young, or at least looking young, has been much on our minds. One of the oldest known medical texts is an Egyptian papyrus dating from circa 2500 bc that contains a “Recipe
for Transforming an Old Man into a Youth.” Unfortunately, the recipe turns out to be a face cream made from fruit and mud, probably not all that different from the pomegranate- and melon- and milk-infused “anti-ageing” creams that Americans spent an estimated eleventy bajillion dollars on last year. My favourite is a seaweed-based potion called Crème de la Mer that sells for more than $1,000 a pound; a British cosmetic chemist named Will Buchanan determined that its actual ingredients cost about $50.

When *Gilgamesh* was written, relatively few humans lived long enough (or well enough) to die of old age; life expectancy hovered around twenty-five years, as it had for millennia. On the day you are reading this, ten thousand Baby Boomers will celebrate their sixty-fifth birthdays. Tomorrow, another ten thousand will crank up the Jimmy Buffett and float across the Rubicon of “old age”—and so on and so on for the next two decades. At this rate, we will run out of birthday candles well before 2060, when the number of Americans older than sixty-five will have doubled to more than ninety-two million, making up 20 percent of the U.S. population. For comparison’s sake, over-sixty-fives make up just 17 percent of the population of Florida right now.

The entire planet is turning into Florida. There are more older people on earth right now than ever in history, even in recently “developing” nations like China, where the one-child policy has skewed the population balance in a breathtakingly short period of time. For most of human history, the age distribution of the human race has resembled a pyramid, with a great many young people at the base, and relatively fewer oldsters as you move up towards the peak. Now, as lifespans get longer and birthrates get smaller, the industrialized countries have become top-heavy with old folk, more like mushrooms than pyramids. According to the
Nikkei newspaper, Japan will soon sell more adult diapers than diapers for children. Instead of succumbing to tuberculosis or polio or the plague, as in previous generations, these “new old” will die of heart disease, cancer, diabetes, and Alzheimer’s—the four horsemen of the geriatric apocalypse.

These chronic diseases have become so common as to seem inevitable. Four out of five American sixty-five-year-olds are now on medication for one or more long-term ailments—for high cholesterol, blood pressure, diabetes, and sundry other complaints. Increasingly, our old age is a highly medicated one, which means that we are likely to spend the latter decades of our lives as patients—that is to say, as sick people. Public-health experts call this the period of morbidity, the portion of our lives when we suffer from chronic disease. Right now, for most people, that period consists of, basically, the second half of their lives, which is a scary thought. Scarier still is how much these legions of ageing Baby Boomers are going to cost to keep around, with their medications and knee replacements and artificial heart valves—and how lousy many of them are still going to feel.

If there were ever a time when humanity needed the magic flower of Gilgamesh, this would be it.

As Montaigne observed, the real cruelty of ageing is not that it kills an old person, but that it robs a young person of his or her youth. That is the greater loss, he wrote. The only mercy is that it works slowly, almost imperceptibly. Nevertheless, he wrote, Nature “step by step conducts us to that miserable state... so that we are insensible of the stroke when our youth dies in us, though it be really a harder death than the final dissolution of a languishing body, than the death of old age.”
Though I missed the Baby Boomer cutoff (1964) by three years, I did share in their grand generational delusion, that they would somehow never get old. Ageing was something that had happened to old people, our parents and grandparents. We, somehow, would be immune. So much for that, obviously, but what made ageing real for me, finally, was not my parents hitting seventy, or even my own impending cage-match with middle age; what brought it home, at last, was what happened with my dogs.

There were two of them, a matched pair of redbone coonhound mixes, the Southern breed featured in the children’s classic *Where the Red Fern Grows*. I’d had Theo from puppyhood, and Lizzy since she was very young, and now they both qualified as canine senior citizens. The interesting thing was that while Theo had stayed sort of puppyish, Lizzy had gone grey in the muzzle at seven or eight, and had developed a stiff-legged, lady-truck-driver walk. People would approach us on the street and ask, with no regard for her considerable vanity, “Is she the mother?”

Nope: they were brother and sister, born in the same litter. But they looked so different, it was like my grandfather and Emerson all over again: one seemed so much older, yet they were exactly the same age. Only with the dogs, there was no obvious explanation, like Christian Science. They had basically the same genes, and had eaten the same food and gone for the same walks since they were young. Like my grandfather and his brother, they could not have been more similar—or more different.

Everyone has noticed this, how people seem to age at vastly different rates. We go to a school reunion, and some classmates have turned into their parents, while others look like they just got home from Beach Week. What makes the difference? Is it only “good genes,” as most people seem to think? Or is it something
you can control, like what you eat? How much you moisturize? Answering this big question—why some people age more slowly than others—will be a key mission of this book.

With Theo and Lizzy, I chalked it up to random chance—which actually does play a significant role in ageing, scientists believe. But that wasn’t quite it, and as it turned out, appearances were deceiving. One October Sunday, I came home from a bike ride to find Theo waiting on the porch of our cabin in Pennsylvania, all excited. He used to love racing with me on the trails, and even now that he was nearly twelve, he was still up for a quick trot around the block. So I opened the gate, and he cantered alongside me for a lap, then two, then three. He seemed fine, ready for more, so it was a shock when I took him to the vet four days later and found out that he had cancer.

Our vet is a kindly man named Tracy Sane, a country boy marooned in Manhattan, and whenever he saw the two redbones, he would get a little wistful and say something like, “Those are real dogs.” I’d brought Theo in to have a small skin growth removed, which should have been no big deal. The surgery would require him to go under anesthesia, so Dr. Sane donned his stethoscope to listen to his heart. As he worked his way down Theo’s chest, his expression darkened. “Theo’s got a bit of a heart murmur,” he said.

The murmur meant that Theo’s heart was enlarged, and weakened. It happens to humans as well, and is one of the most common signs of ageing. And it usually means there is something else wrong. The chest X-ray revealed what it was: the space where his spleen and liver should have been was occupied by a large, fuzzy blob, about the size of a toy Nerf football. “This,” said Dr. Sane, “is a problem.” He called it a “splenetic mass,” which was a soft way of saying “tumour.” It needed to come out—if it could be
removed safely, he said. We made an appointment to come in first thing Monday morning. “Theo’s looking at a tough road,” he warned grimly.

Over the weekend, my girlfriend Elizabeth and I tried not to think about Theo and his tumour. The news was all about a hurricane called Sandy that was preparing to slam into the city. It was supposed to be one of the strongest storms ever to hit New York. On Saturday we walked to the neighborhood farmer’s market, where Theo and Lizzy tugged us towards their favourite stand, the one that sold turkey sausages and gave free samples to dogs. Then we snuggled up on the couch with the TV on, watching the tall sailing ship *Bounty* as she sank off North Carolina. Sandy was coming.

On Sunday we hunkered down for the storm, reading the paper and drinking coffee and then switching to wine. After dinner, we tried to get the dogs out for one last walk, but Theo wouldn’t go. This wasn’t unusual. He hated storms, and he had been known to hold out for hours rather than venture out in the rain to pee. He was a stubborn guy, and there was no dragging him. I gave him a sort of doggy massage to try to relax him, rubbing up and down his back as he lay in his bed. But we didn’t think there was anything terribly wrong, other than the weather. The next morning, when the storm had passed, we’d take him in for his operation. He was three weeks short of his twelfth birthday.

But Theo had other plans, and they didn’t include surgery. We found him before dawn, lying beside his bed, still warm except for his lips. I closed his eyes, Elizabeth pulled a blanket around his body, and we wept together.

In the weeks after Theo died, more than one friend confided that they had cried harder over the death of a dog than when their
own fathers had passed away. It’s not that they loved their fathers any less (or at least, not entirely that). But our parents grow old in slow motion, and we expect it. There’s something about a beloved animal’s short life and quick passing that hits too close to home. It reminds us too much of our own tenuous lease on this existence. In Theo’s lifetime, I had gone from being a still-pretty-young man, with thirty just in the rearview, to one who was no longer quite so young, even pushing fifty.

I was so old that I was actually working on a book about ageing. Theo’s death pushed me into overdrive. Now I wanted to know everything about ageing, this universal but still little-understood process that affects practically every living thing. I decided to approach it as a reportorial investigation, following the evidence wherever it led. I would read every study, every book on the subject of ageing that I could find. I’d worm my way into the under-funded laboratories where the hard science was done, and I would ferret out the leaders of the field. But I would also seek out the mavericks, the rebels of science, the ones who had the courage to push novel insights, regardless of current dogma or fashion. I’d also look for the older people who are showing the way to the rest of us: the ones who are pole-vaulting in their seventies, thought leaders in their eighties; even picking stock-market winners past a hundred.

I had big questions: how does time transform us? What was happening to me, as I slid into middle age, and beyond? How was my mid-forties self different from my teenage self? What would change between forty and seventy? For that matter, why is my ten-year-old niece “young,” but my twelve-year-old dogs are old? What is this invisible force called ageing that affects everyone I know? Everyone reading this? Everyone who has ever lived?
More to the point: how much of ageing is under our control, and how much determined by fate, or random chance? My motivation was personal. Straight up, I wanted to hang on to my youth, or what was left of it, for as long as possible. I want to end up like my grandfather, diving into the waves and pruning fruit trees in his old age—and not bound to the rocking chair, like his poor brother Emerson.

And while I’d feared, early in my research, that I’d only learn a bunch of depressing stuff, that turned out not to be the case at all. Scientists are discovering that ageing is far more malleable than we had ever thought—that, in effect, it can be hacked. You don’t have to endure your grandfather’s old age (or in my case, my great-uncle’s). How well you grow old is at least partially under your control. Two of the major diseases of ageing—cardiovascular disease and diabetes—are largely avoidable, and even reversible in some cases. A third, the dreaded Alzheimer’s disease, may be up to 50 percent preventable.

The story of the dogs told me that there is more to longevity than simply whether or not you go to the doctor and get a weekly facial. The mystery goes much deeper than that. What’s really cool and surprising, though, is how many aspects of ageing can be modified, even delayed, at the cellular level. Science has discovered secret longevity-promoting pathways and mechanisms, embedded deep within our cells, that can help beat back or slow down some of the effects of ageing—if we can only figure out how to unlock them. Some of these evolutionary pathways are so ancient that we share them with the lowest life-forms, such as microscopic worms and even yeast; others we are only beginning to identify, through the enormous power of genomic sequencing.

Already, we know that certain genes seem to be linked to
extreme longevity and good health, and hundreds more such genes are on the brink of being discovered. Some of them may even be able to be triggered, or mimicked, by drug compounds that are already in the research pipeline. But not everything is pie-in-the-sky: major longevity-promoting mechanisms, hard-wired into our biology, can be triggered right now, by simply going out for a short jog, or even just by skipping a meal or two. A little bit of knowledge and prevention, it turns out, may even make the difference between bodysurfing your way through the rest of your life, and spending it on the rocker on the porch.