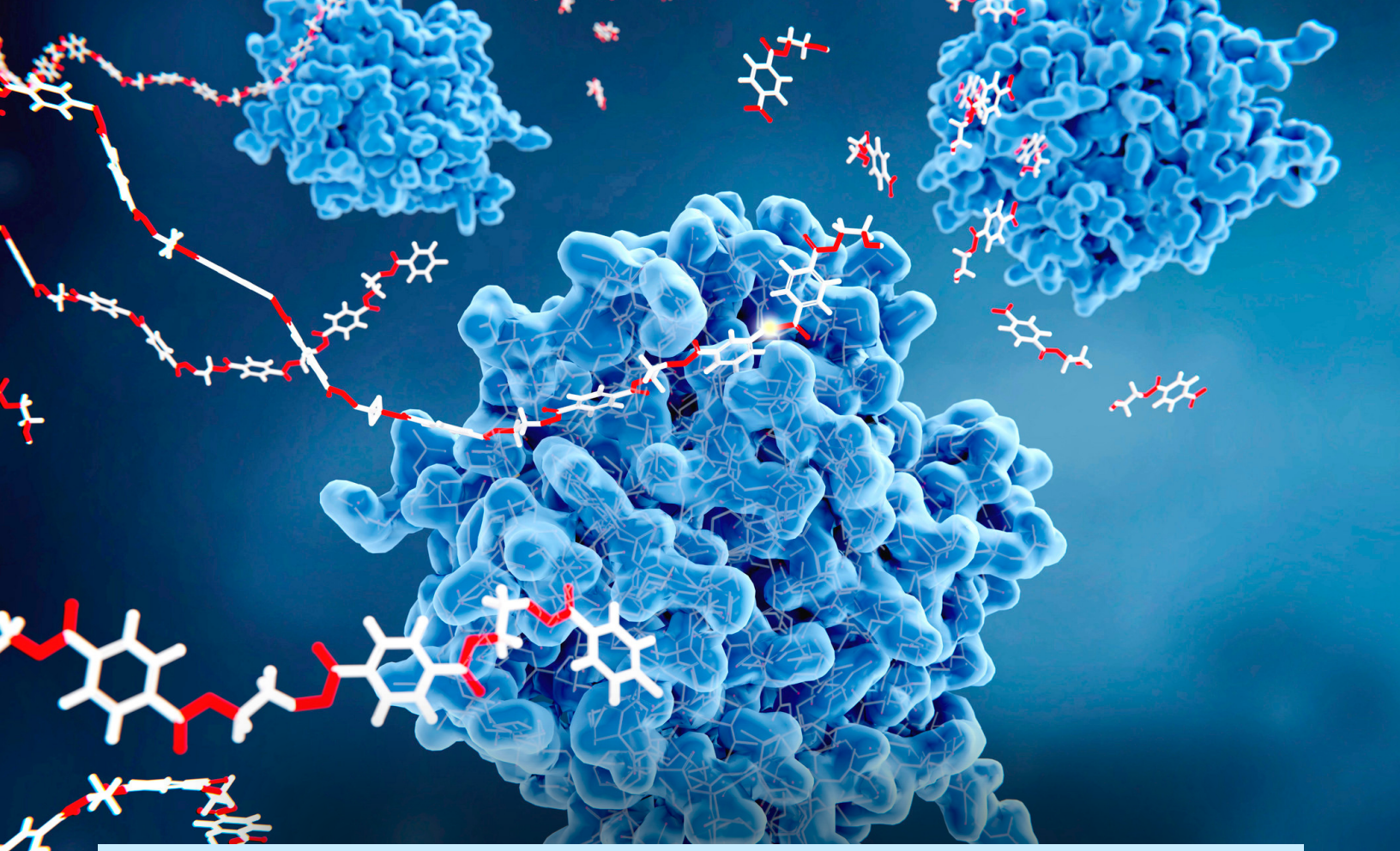

Is Your Body's Survival Response Working Against You?

How to Reverse Chronic Illness & Feel Better by Blocking the "Survival Paradox Protein"

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PART ONE

HOW THE SURVIVAL RESPONSE AFFECTS OUR HEALTH

CHAPTER ONE

WHAT IS THE SURVIVAL PARADOX?

Rebecca first came to see me at Amitabha Medical Clinic in 2011. She was seventy, with stage 4 lung cancer that had metastasized to her bones. She had no family and lived alone; her companion that day was a stone-faced chauffeur waiting in a car outside the clinic. With tears in her eyes, she told me she had just been diagnosed. Hands shaking, she showed me the PET scan report highlighting the multiple tumors throughout her body. Based on what the oncologist said, she understood that her life could come to an end very soon.

"I don't want to die," she said. "I'm not ready to go." Every cell in her body was reeling with anxiety and fear. Her restlessness was palpable in the air.

As an integrative physician who treats cancer, I'd had this conversation many times. I handed her a tissue and she wiped her tears. "I will do anything I can to overcome this cancer," she said firmly. I acknowledged her fierce determination, her resolve. After all, determination is what's needed first and foremost to overcome a deadly disease, right?

With her anxiety so palpable, I wondered how this fear must be affecting her. Not just on the level of her emotions or quality of life; I wondered how it was affecting the cancer cells. Will this fear-based determination not to die help her overcome her disease? Or will it cause her to become sicker and shorten her life? Her anxiety was so prominent that it infused her surroundings, affecting her ability to take a deep breath. It was constant suffering, and it was clear she was in "survival mode."

Being in survival mode meant that her sympathetic nervous system hormones, the drivers of her innate biochemical response patterns, were dialed all the way up. Her adrenaline, noradrenaline, and cortisol were elevated, and her insulin was spiking. Her immune response was being suppressed, and her metabolic function was altered. Ultimately, it meant that many of the compounds she excreted in an effort to survive would very likely nourish her cancer and allow it to grow and survive as well.

Survival mode is often a state of stress and panic. The body feels rushed and doesn't slow down, and all cells, whether normal or cancerous, fight harder to survive. Thus, Rebecca's anxiety and fear of dying could "feed" the cancerous cells. Her best chance at beating the cancer and living a longer life was to shift away from survival mode and move into a state of greater relaxation, with less reactivity on the cellular, emotional, and psychological levels.

Based on research and my years of work with patients, one thing has become clear: when facing a life-threatening or debilitating illness, the natural biochemical stress response, our innate fight-or-flight mechanisms that are driven by our instinct to survive are fundamentally at odds with our ability to heal and thrive. This survival drive, rooted in our sympathetic nervous system and expressed by our biochemical alert system, is not going to save us. In fact, it can harm us.

How does this physiological response system turn against us so dramatically, fueling disease processes and premature aging? And more importantly, what can we do about it?

The good news is, we can do a lot. And we can do it in a way that is actually simpler than anyone facing a complex health condition—patient or provider—might have imagined.

We'll continue to discuss the details of Rebecca's treatment and outcomes in the next chapter. I witnessed something incredible in her case, as well as in many others. Something that Bruce Lipton, Deepak Chopra, and many others have written about, and what the yogis and mystics have been saying for millennia: the mind can influence the body to heal spontaneously and completely. The mind can deliver the body from the brink of death and disease to vitality and longevity.

THE CATCH-22 OF "POSITIVE THINKING"

Published evidence on the mind-body connection is significant and growing rapidly, and based on my personal and clinical experience, the results can be exponential. Its power is within us all the time, and it's absolutely available for us to use.

So, why doesn't it always work?

If mind-body medicine is the clinically studied gold standard "alternative" deemed the safest and most beneficial treatment and increasingly adopted and applied in clinical settings around the world, it stands to reason that many more people would be able to meditate or "positively think" their disease into remission.

It's the ultimate catch-22: when someone is facing a life-threatening disease, asking them to relax, change their thought patterns, and focus on happy, healing energy is much easier said than done. It's like asking someone whose house is on fire to stay calm, think positively, and deeply inhale the smoke from their burning home.

We're built for survival. We don't just want but intrinsically need to overcome disease and to heal. I've come to find, based on extensive published research and years of clinical observation, that this survival drive is the one major blockage standing in the way of would-be successes.

In an era when we tend to look for quick fixes and symptom suppressors, we're really just suppressing our healing capacity. We don't take the time to stop, slow down, and look within. The idea that we don't have time—that we must rush, and must compete with everyone, including ourselves—is detrimental to our health and well-being.

What Rebecca needed above all else was to slow this sympathetic nervous system response, but she couldn't. Her house was burning down, and she couldn't take a deep breath in the midst of what appeared to be a life-threatening situation.

When we experience a sense of restlessness, not feeling safe, or not trusting our environment and community, it can translate all the way down to the cellular level. When we feel unsafe and believe we need to survive on our own, it changes the metabolism and function of our cells—they receive signals from their environment that there is a lack of oxygen. The formal term for lack of oxygen is hypoxia, and the hypoxic cell can't breathe or naturally relax. (In cancer however, the cells behave this way even in the presence of oxygen, which we'll discuss in detail later in the book.)

To begin the healing process, we need to move a hypoxic cell to a place where it feels it can breathe, create a normal metabolism, and return to normal mitochondrial function. To do this, the cell and the person must shift away from a state of survival toward a state of relaxation. To achieve such a change, the person as a whole must experience safety and balance all the way to the cellular level. The survival alarm has to be turned off!

So, how did Rebecca and I begin addressing her cancer? How was she able to take a deep breath? We worked directly on her biochemistry. We didn't just circumvent her fear and anxiety—we transformed it. We used certain natural compounds to quiet the alarm system, normalize the cell, and fight the cancer.

We combined those compounds with meditation, breathing exercises, regular acupuncture, and healing sessions with different modalities, including hands-on osteopathic, craniosacral, sound, and visualization therapies. Most importantly, we surrounded her with unconditional love and affection, a sense of community, and an environment that held her without judgment—we created a world where she felt safe and loved.

A DEEPER HEART-BODY CONNECTION

The mind-body connection is amazing, and it's not a one-way street. Emotions, thoughts, and subconscious responses clearly affect our biochemistry, our physiology, and our subjective and objective experiences of health and disease. At the same time, our biochemistry sharply affects our emotions and our thoughts. It affects who we are at the core.

Meditation and other mind-body practices can undoubtedly give us the quantum edge in healing. They work not only because they can calm our anxiety, reduce inflammation, and reverse our biochemical disease processes—they also work because they melt our rigidity and relax our fixations. They dissolve the literal boundaries between the person and the disease, allowing the person to reach and engage the tumor, the atherosclerotic plaque, the burrowing Lyme spirochete, or any other opportunistic infection.

However, mind-body methods like meditation can only unleash our innate healing potential when we figure out how to truly engage our hearts. In this regard, a more accurate term for this type of healing is "heart-body medicine" rather than "mind-body medicine." It is heartfulness rather than mindfulness. I call this "open heart medicine."

The basic physiology of our heart and the fundamental mechanics of this vital organ function in a way that actually allows and supports "miracle" healing—an unexpected positive outcome that defies probability.

Ultimately, we have to get through the thin veneer of "positive thinking" and penetrate the deeper layers of our defenses. Our instinctual fears and anxieties, while part of our innate survival drive, obstruct our healing capacity by triggering biochemical changes in our body that create literal physical barriers. These barriers are made of different components that need to be treated. For example, there can be hyperviscosity, which is thickness of the blood that hampers circulation and the ability to deliver oxygen to the tissue; fibrosis, which is the scarring or hardening of tissues and organs; biofilm structures, which form protective shields around tumors and pathogens; and more. And all of this will translate into changes in communications between the cell and its environment. This causes changes inside the cells and affects their function.

So, what is the key to shifting us from survival to harmony? From disease to longevity? What is this metabolic survival alarm that must be turned off?

Researchers have identified one master protein produced by the body, which is at the headwaters of our biochemical alarm system. This protein dictates our biochemical and physiological response to stress, illness, and injury.

The more stress we're under, the more our bodies will view life as a battle, leading to ongoing conflict and friction within. Production of this survival protein will ramp up in an effort to resolve the conflicting dialogue between the body and the outside world and between different systems and cells within the body. Here is where we can see the paradox of this survival protein in action.

The molecular end result of this reactive defense strategy is contraction, isolation, and often disease. These are survival responses, which are driven by self-preservation but unfortunately lead to inflammation and fibrosis. These responses also lead to degeneration at the cellular level, organ system level, and at the level of our well-being and longevity. They halt the cooperation between our trillions of cells that would otherwise seamlessly communicate with each other in the miracle of life. The body has an innate capacity to heal itself—when the survival response doesn't stand in its way.

CHAPTER TWO

THE ARCHITECT OF THE SURVIVAL RESPONSE: GALECTIN-3

Now that you know what the survival paradox is, let's meet its molecular architect.

If you've never heard of galectin-3, you aren't alone. Despite the fact that there are thousands of papers published about its role in driving everything from cancer to heart and kidney failure and much more, the vast majority of people—including most healthcare practitioners—have never heard of it either! But you're about to hear a lot about it.

There are different types of galectins, but the most studied (yet little-known) one is galectin-3, a fascinating carbohydrate-binding protein. On close examination, it plays an important role in the balance between health and disease. It is the core component and initiator of our self-preservation mechanism. I call it "the survival protein." Let's define exactly what it is and what it does inside the human body.

THE OPERATION OF GALECTIN-3

When injury, illness, or other stressors occur, our innate survival response triggers the production and activity of galectin-3. In these instances, galectin-3 initiates a cascade of processes that are necessary for injury repair. However if the alarm fails to turn off after the threat subsides, galectin-3 gets out of control and *can seriously harm us.*

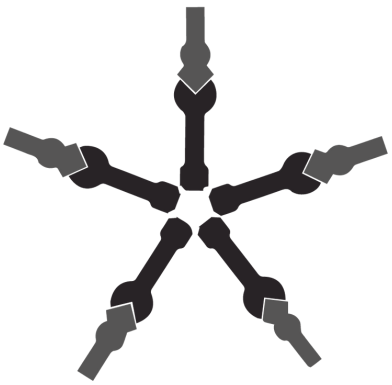
When galectin-3 activity continues uncontrollably, it effectively "goes rogue," driving inflammation and fibrosis rather than healing. This, in turn, can lead to numerous disease processes. What's more, pathogens such as different infectious agents and tumors can hijack galectin-3 and use it for their own survival. This is a key issue that can be treated strategically, and we'll further explore this concept throughout the next chapters.

Galectin-3 is produced or *expressed* in different types of cells. In particular, galectin-3 is expressed in immune cells, in epithelial cells (the ones that coat certain tissues such as those of the intestines and lungs), in endothelial cells (the inner-lining cells of the blood vessels), and in sensory neurons, among others.

We understand that galectin-3 can be beneficial or harmful, but how can one protein harm and benefit us at the same time? To gain a better insight into this paradox—our survival paradox—let's take a journey together into the structure of this protein.

Galectin-3 has a chimera structure, meaning that different structures from various sources come together to create it (a chimeric character you might be familiar with is Frankenstein: he was created from many different parts). When galectin-3 is activated, it can bind to other galectin-3 proteins and other carbohydrates to form complex structures. Up to five individual galectin-3 proteins can stick together, creating five-sided structures called *pentamers.*

Galectin-3 Pentamer



When galectin-3 forms pentamers, these can attach to other galectin-3 pentamers, to other carbohydrates (sugars), and to cell-surface receptors, where these structures can then mediate cell reactions and control the interaction between the cell and the environment. Sounds complicated? It is a bit. But don't worry, we'll break it down.

Our survival protein, galectin-3, is activated when we experience a sudden threat, be it physical, emotional, mental, or psychological. It's also activated in cases of injury, infection, cancer, or other illnesses. When galectin-3 is activated, it turns on multiple pathways that initiate inflammation and the process of fibrosis, and such scar tissue build-up can lead to hardening and dysfunction of tissues and organ systems. Furthermore, it can also overexpress itself in specific areas of the body, for example, in the joints, cardiovascular system, or the brain. And what is truly amazing is that it can exert very different effects at different sites based on what it's bound to.

GALECTIN-3 EXPRESSION IN MODERN LIFE

To better understand the complexity of galectin-3, let's relate it to the bigger picture: our modern-day existence. We live in a world where people continue to become more isolated. When people are less connected to each other and to the earth, all become weaker. We exploit and abuse our natural resources, and we see the effects of rapid climate change. Global warming is an inflammatory process on the planetary level.

At the human level, our internal and external sense of peace is dwindling, and our attention spans are ridiculously short. We can no longer wait for weeks, days, or even hours to give or receive a response—we can only tolerate waiting for milliseconds, and we feel the need to react immediately to every stimulus.

Most of us live high-stress lifestyles inundated with electronic and other forms of stimulation. I don't think it's an exaggeration to say that our modern society is in a state of overwhelm.

The continual barrage of stimuli from every direction, the onslaught of environmental toxins, the ongoing mental, physical, and emotional stress we've grown accustomed to—these disturbances throw us into survival mode where our systems are on constant high alert, like an alarm that never turns off.

The result? Unhealthy galectin-3 expression, and with it, progressive damage to vital organs and systems over the long-term. This, in turn, fuels more galectin-3 production, forming a perpetually closed loop system that is proving to be perhaps the single greatest threat to our health and longevity.

The condition of our alarm system and its response to stressors of different origins depends upon the condition of multiple other systems. It's influenced by the neurological, circulatory, and metabolic systems, as well as mitochondrial function (our energy production system). Our diet and lifestyle affect it too. Regardless of the nature, origin, or location of the stressor, the response—galectin-3—has an extraordinary influence on our body's alert system and, subsequently, our entire spectrum of health and longevity.

For our alarm system to work correctly, our inflammatory, immune, and other biochemical responses must be carefully regulated. When the alarm system is working well, it can resolve slow-coming issues like cancer, aging, or joint pain. It can also ramp up quickly and address immediate threats like cuts, infections, bruises, emotional stress, and other dangers. Then it can wind down just as rapidly after the problem has passed.

Let's compare a healthy inflammatory response to an unhealthy one by thinking about what happens when we turn on lights. Turning on a single switch doesn't take much energy. In this case, "turning on one light" alerts the body of an issue, illuminating the need for repair. When this happens within the body, it's an entirely normal, acute inflammatory response, and when the problem is gone, the light turns off.

However, the trouble begins when a switch is turned on and can't be turned off. It's as though a circuit has malfunctioned. When the switch stays on, it triggers a cascade, causing multiple lights to switch on. This is the start of chronic inflammation, and the body goes into crisis mode. At that point, the body has a choice: resolve the problem or keep turning on more lights. If the body chooses to keep switching on lights, this will eventually lead to a much bigger crisis.

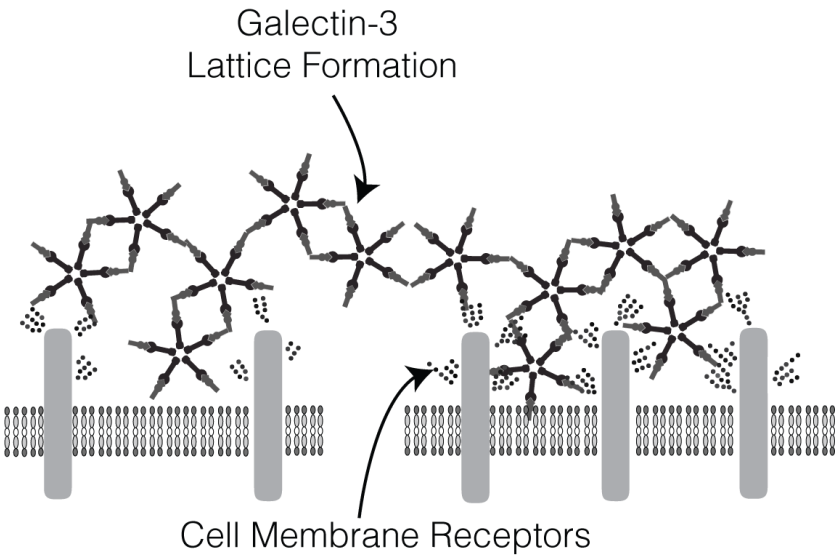
Another problem with these lights is that they can be turned on in isolation, away from the body's radar, meaning the body will be unaware that these lights are even on. Just like these lights, galectin-3 can be activated in an isolated microenvironment where it gradually causes damage. In some cases, by the time the damage is detected, it may be too late to heal or reverse it. A person may wake up one day to discover "sudden" kidney failure, when in fact, the damage occurred slowly over time—they were just unaware of it.

The Risks of Isolation Formations

Isolation is a fundamental survival strategy. It is initiated and driven by galectin-3. As we discussed earlier, galectin-3 uses multiple pentamers bound to each other in different ways to create lattice formations (or coatings or biofilms). These formations create pockets of isolation around areas of damage, infection, and toxic build-up, among others. Within these microenvironments created by galectin-3, diseases can develop undetected and remain protected from drug treatments and other therapeutic agents.

Frequent harmful visitors within the body—like bacteria, viruses, fungi, parasites, other infectious agents, and cancer cells—have a similar isolation strategy. They can hijack galectin-3 to create a shield around themselves (a lattice formation) so they are undetected by the immune system and can even evade therapeutic agents. Galectin-3 can also isolate various threats that are too difficult for the body to deal with, such as toxins and heavy metals.

Galectin-3 Pentamers Form Lattices That Attach to Cell Membrane Receptors



You can imagine that on a psychological level, we go through a similar process, burying emotions and traumas that are too difficult for us to deal with. Even if these traumas are not at the surface of our awareness or consciousness, they can still have a psychological and physiological effect on us. You might have had an experience while going through a detox process where an emotion or memory surfaces all of a sudden. Where was this emotion all this time? It was likely buried in a microenvironment that was not accessible to us. As we open or reveal our physiological microenvironments and release toxins, we can also open psychological microenvironments releasing buried emotions.

Even if an isolated area is not specifically created in order to hide an infectious agent or cancer cell, the microenvironments created by the galectin-3 lattice formations are still walled off from our circulation, and these altered environments can often become very inflamed and hypoxic due to a lack of oxygen.

Hypoxia also shifts our cellular energy production pathway from normal mitochondrial function to *anaerobic glycolysis*, which is a highly inefficient way to produce energy; it results in the buildup of lactic acid and other inflammatory metabolic by-products. This can lead to further hypoxia, which produces additional inflammation and galectin-3 expression, causing the hardening or dysfunction of tissues, organs, and blood vessels.

THE PROS AND CONS OF GALECTIN-3

Despite the potential harm it can do, galectin-3 serves a few important purposes within the body. It helps intranuclear cell development and extracellular injury repair and survival. However, when the body is in crisis and there is an upregulation of galectin-3 production, it can have detrimental consequences.

Due to complex biochemical structures and genetic tendencies within each person, there is no standard, predictable response when it comes to galectin-3. This protein can be at different levels in different people and trigger different responses, even if they have the same condition. For example, some people's bodies are "hypervigilant," always on the alert, and they respond to a stimulus or trigger with overinflammation. Other people may not have a good "survival sense," and they lack the ability to fight and create the proper inflammation. Instead, they have a tendency to shut down and end up with suppressed immunity or an increase in fibrosis.

Furthermore, there is an adaptive response with galectin-3, meaning the reaction is amplified due to previous physical, emotional, or psychological trauma. In an adaptive response, our system has been conditioned to respond to specific triggers in a particular way. In other words, it repeats the patterns it is accustomed to, all the way to the level of our cellular memory.

Healing without Consequence

For our bodies to heal properly, we often need to remove the stimulants that cause the inflammatory process to perpetually continue. It's no secret that as we get older, it takes more and more effort to do things that once took no effort at all. When we are young and agile, our bodies are more efficient and less toxic; they are flexible and have a high capacity for change, growth, and repair. We can mount a robust inflammatory response to shut a problem down without consequence. Like the metaphor of a bird flying in the sky without leaving any trace, or like writing on water, we can often solve a problem without leaving a trace.

However, as we age, our bodies lose that agility, and we are more apt to carry our issues with us. For example, if an injury occurs to the skin in utero, the wound can heal without a trace, but as we age, the wound healing process slows and causes increased scarring. As we travel the road of life, our bodies display the evidence of our physical, emotional, psychological, and spiritual traumas—they no longer heal with ease.

The metaphors for a bird flying without leaving a trace and writing on water come from Buddhist philosophy. They serve to illustrate the nature of thoughts and experiences as arising and vanishing—an example of impermanence. This is what inflammation should be: it should be an acute response that occurs and then disappears. It should turn off without a trace and without lingering consequences. This is what happens when we have a robust immune system and when galectin-3 works appropriately. And when it doesn't, the damage begins.

The Solution: Blocking Unhealthy Expression of Galectin-3

I'd like to take a moment to emphasize a critical point and the primary reason I wrote this book: we can absolutely interrupt this cycle of destruction and halt—or even reverse—these fundamental disease processes. How? By deactivating unhealthy galectin-3.

When we block galectin-3 from binding, we can break up lattice formations and reach the isolated pockets and areas of the body, including tumor microenvironments. Abnormal tissues and cells, even tumorous cancer cells, can become normal once again, which, needless to say, has tremendous implications for our health and longevity. By blocking unhealthy galectin-3, we can dismantle its harmful effects and render it inactive, decreasing unhealthy inflammation in the process. This makes blocking galectin-3 one of the most important therapeutic strategies for treating a vast array of conditions.

REBECCA'S STORY (CONTINUED)

Let's revisit Rebecca's story since it helps illustrate how galectin-3 can directly influence survival, health, and disease.

When Rebecca came to see me in 2011, it was the first year we were able to test galectin-3 levels in the blood. Thanks to a simple new serum assay that was recently approved by the FDA and is now readily available, she was one of the very first patients in my practice to have galectin-3 levels tested.

Rebecca's initial levels were sky high, and the by-products of her sympathetic nervous system response to her crisis were elevated, as well as other proinflammatory, procancerous markers. A key strategy in her treatment plan was to target galectin-3 using various proven methods. We used her levels as a marker to gauge her progress throughout.

The results were unmistakable: when Rebecca was doing well, her galectin-3 levels were lower, and when she was in a crisis, her levels were higher. For Rebecca, this marker served as an important indicator as to when the cancer was aggressive and when it was "quiet."

This helped us fine-tune her treatments and stay one step ahead of the cancer. (Note, however, that due to its complex biochemistry, galectin-3 can cause damage even at low levels. It is therefore important to address galectin-3 regardless of its levels. More information can be found in Appendix A.)

Rebecca taught us something very important: she exemplified the intimate connection between our emotions and our health. When Rebecca's anxiety increased, her cancer got worse. Her presentation was so pronounced and immediate that it was easy to see when her anxiety was worsening. But when she was able to relax, quiet the anxiety, and be more spacious, her symptoms got better. The way Rebecca responded as a person was the way her body responded as well. When her survival crisis decreased, and she became comfortable thinking about life, death, and impermanence, it affected the way the cancer functioned. The cancer felt less threatened and decreased its own survival response.

Does it sound new-agey and fluffy when I talk about changes in the behavior of cancer? Really, it's not. I'm referring to changes in the levels of growth factors that drive the aggressiveness of cancer, factors like downstream proteins that are regulated by our survival protein, galectin-3. Such downstream proteins are impacted by signaling molecules—which themselves are impacted by our emotional state.

Rebecca was able to calm her system through regular meditation, deep breathing, acupuncture, participation in my meditation and healing retreats and workshops, and through the use of galectin-3 blockers. These helped to mitigate the initial survival process and significantly reduce the growth and aggressiveness of her cancer.

Rebecca's cancer did not completely respond to chemo and radiation, but it subsided through these healing methods. Her scans became normal, indicating that her cancer had gone into remission. But Rebecca did more than just incorporate these healing methods into her treatment—she also developed community and friendships with other patients in our center.

These friends cheered her on throughout her journey, and the stoic driver who brought her to her first appointment was no longer needed, as she began participating in lively carpools to the clinic. She went from being highly critical of nonconventional approaches and bitter about her diagnosis and fate to embracing her process and welcoming her treatments.

Rebecca's transformations profoundly affected her physiology and allowed her to outlive her prognosis considerably. One day, her laugh rang through the clinic from the IV room, reminding me of the healing power of joy. Her cancer eventually returned, but even with residual lung cancer, she lived seven more years with a better quality of life than she had experienced in decades. She said, "Isaac, I feel alive like never before." She died peacefully in her home, in a meditative state, surrounded by friends. Her life was celebrated by the many people who were deeply touched and inspired by her journey.