

BEYOND EVOLUTION

How New Discoveries in the Science of Life Point to God



SY GARTE, PHD

FOREWORD BY JUSTIN BRIERLEY

This book graciously and simply explains why and how evolution is a critically important factor for understanding the development of Earth's life, but why it's not the only factor. Sy Garte explains why, in many instances of the origin and history of life, the divine hand of God creates, designs, and guides. Sy shows how biology will most productively advance with a both-and, not an either-or, approach. I highly endorse this book and believe it should be required reading for every biology student and church leader.

HUGH ROSS, PhD, pastor, astrophysicist, and founder and senior scholar of Reasons to Believe

The Berlin Wall of evolution fell, but there were no reports in the media. The iron curtain between faith and science has lifted. Sy's book heralds the new era.

PERRY MARSHALL, author of *Evolution 2.0*

In this thoughtful and well-written book the author describes how concepts such as "purpose," a word long banned in evolutionary discourse, have now come back into the biological mainstream. Delving into the biggest questions that biology yet has to resolve, Sy Garte sees God's creative work in the whole of life, from beginning to end, not somehow located in the current gaps in our scientific understanding. Those of any faith or none will find much here to stimulate thought and to inspire.

DENIS ALEXANDER, PhD, emeritus fellow of St Edmund's College, Cambridge University, and emeritus director of The Faraday Institute for Science and Religion

A devout Christian and a highly accomplished biochemist, Sy Garte has become one of the most important voices in the science-faith conversation today. And one of the more interesting. And he doesn't disappoint in his latest work. In my view, it is imperative for anyone

interested in the science-faith conversation, particularly for those of us who barter in the life sciences, to carefully consider Garte's powerful points in *Beyond Evolution*. Garte challenges both Christian and atheistic biologists to reconsider biological evolution in the face of emerging insights about the nature of the evolutionary process. Doing so just may turn your thinking about the living world upside down. Garte points out that a revolution is underway in biology with long-forbidden concepts—such as teleology, agency, and cognition—pushing their way to the forefront. According to Garte, these insights mean that biological evolution should no longer be considered a threat to the faith of Christians and should no longer serve as the basis for atheists to dismiss a Creator's role in life's origin and history.

FAZALE "FUZ" RANA, PhD, biochemist and president and CEO of
Reasons to Believe

For too long, biologists have tried to reduce life to chemistry and physics. Garte exposes the futility of that project and makes their dead biology come to life. He shows how purpose, goals, agency, choice—and even love—are characteristics of living things that cannot be reduced away. If created reality at its most basic is just atoms and the void, it's not difficult to see why atheism is attractive to some people. But in Garte's inventory of the fundamental constituents of the universe, life and its capacities are counted among them. That doesn't prove their origin is an Author and Giver of Life, but it certainly points us in that direction.

JIM STUMP, PhD, author of *The Sacred Chain*, vice president of
BioLogos, and host of *The Language of God* podcast

In *Beyond Evolution*, Garte presents a compelling case for a fundamental teleology in the biological realm. Regardless of one's position on evolutionary theory or the biblical creation narrative, there is much

of value to be gleaned from this concise volume. It is a fascinating and insightful contribution to the science and faith conversation.

MELISSA CAIN TRAVIS, PhD, fellow at Discovery Institute's Center for Science and Culture

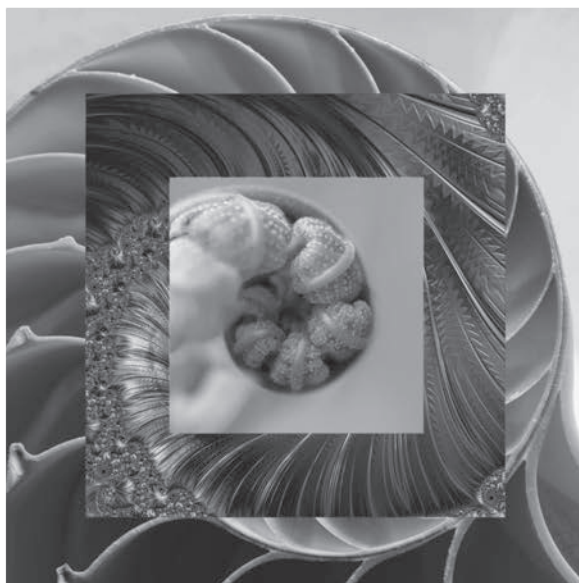
Beyond Evolution is a watershed book that widens and deepens the conversation on the science of biology and its relationship to belief in God. Many see these two as having a more checkered relationship than, say, for the physical sciences. But Garte encourages us that it need not be so, and that new developments in the field of biology point ever more strongly to a "divine creator." *Beyond Evolution* is expertly written and beautifully crafted. I highly recommend that you read it.

SHARON DIRCKX, PhD, speaker, broadcaster, former neuroscientist, and author of *Am I Just My Brain?*

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Foreword

IN HIS INTRODUCTION TO THIS BOOK, Sy Garte says that doing good science requires courage. This strikes me as an apt description of the scientific enterprise.

After all, science is about asking hard questions and being willing to revise our understanding of the world based on new evidence revealed by our experiments. That requires courage, especially when new findings challenge a much-loved theory or cherished consensus. And especially when the evidence points in the direction of purpose, design, or even God.

Until recently, God has been banished from view in most scientific circles as a materialist orthodoxy has taken over the academy. When biologist Richard Dawkins proclaimed in his book *The Blind Watchmaker* that “Darwin made it possible to be an intellectually fulfilled atheist,” it reflected the fact that he and many other scientists regard a naturalistic theory of evolution as a complete explanation for life in all its complexity and variety. God, they believed, was no longer necessary in a world explained by unguided physical processes acting over long time periods. Indeed, as a completely materialist view of the world grew in popularity, “scientism”—the view that everything can

be explained in purely natural, scientific terms—became a substitute for God in the hearts and minds of many.

As the host of many faith debates over the past twenty years, I have been witness to the dogmatic insistence of those in the scientific community who refuse to countenance any explanations that will admit a divine “foot in the door.” This has led to conversations with some notable scientific figures who, when asked if there is *any* evidence that might point in the direction of God, have insisted there is not.

“But what if the stars lined up in the sky to spell ‘It’s God . . . believe in me!’?”

“It could be advanced alien technology.”

“What if Jesus appeared to you in this room right now?”

“I would assume I was having a brain seizure.”

And so on.

It turns out that, rather than being paragons of objectivity and reason, scientists are as human as the rest of us. Indeed, there are some scientists who have become so wedded to their preexisting worldview that it appears no amount of evidence would change their mind.

Happily, that is not the case with Sy Garte. His personal journey from skeptical atheism to Christian faith in late middle age is a testimony to the fact that he is willing to follow where the evidence leads. The same applies to Sy’s intellectual life as a scientist.

Written with the layperson in mind, *Beyond Evolution* is an indispensable guide to how fast the landscape of the natural sciences is changing, as a paradigm shift in physics, chemistry, and biology takes place. The development of life, it turns out, is not the result of a mechanistic, unguided process but rather exhibits an extraordinary precision and purpose that points to something deeper and more mysterious than mere physics and chemistry.

Alongside Sy, many significant scientists have broken loose from the shackles of materialist orthodoxy and are courageously offering a revolutionary account of cosmology and biology that overturns the

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materialist assumptions of many of their predecessors. As the notable physicist and origins researcher Professor Paul Davies, an agnostic, put it to me, “The directionality of the Universe going from matter, to life, to consciousness . . . to comprehension. That comes very close to something like a meaning or purpose in nature. I think that’s a sort of religious feeling. What Einstein called ‘a cosmic religious feeling.’”

Whether you call them dissidents, pioneers, or something else, Paul Davies, Sy Garte, and many others are in the scientific vanguard of a movement that I have dubbed “the surprising rebirth of belief in God.”

The expulsion of God from the realm of science was premature. Indeed, it may be that not only does science point to God, but that God has been responsible for our ability to do science all along.

I am glad for the courageous voice of Sy Garte. In reading this book, I am confident that you will be grateful for it too.

Justin Brierley

Host of *The Surprising Rebirth of Belief in God* podcast
and author of *Why I’m Still a Christian*

INTRODUCTION

How Did We Get Here?

FINDING THE RIGHT QUESTIONS to ask is the key to progress in all kinds of endeavors¹—from science to plumbing to theology. Probably one of the oldest questions people have asked themselves is “How did we get here?” The word *we* in this question can mean us humans, all of life, or even all of existence. The question has clear scientific as well as theological aspects, and in some cases (especially when things go wrong) can even apply to plumbing.

This book is about how the science of biology and our understanding of the majesty of God can answer that question applied to life on earth. You will read about how evolutionary theory is being transformed and how single cells do things like make decisions and communicate with each other. I discuss the origin of life and of human consciousness, the reality of purpose and agency in the science of life, and why we need new laws in biology to move the science forward. Above all, this book is about the strong connection between life and divine creation, culminating in the existence of you and me, a human reader and a human writer of these words, creatures made in the image of God.

The overarching message I hope to convey is that modern mainstream biological research in several fields is now providing evidence

for a divine creator. As Ruth Bancewicz of the Faraday Institute puts it, “The question ‘Can Science Prove God Exists?’ turns out to be a category error—trying to use science to answer a non-scientific question. On the other hand, many scientists think there is enough evidence from a wide range of sources to warrant belief in God.”²

I am among those many scientists. And in this book, I will try to convince you to join me. If God exists and is the creator of the world we know—meaning all of nature—it is logical to assume that the natural world will contain signs of that divine creation. If there were no God, then the entire universe would conform to Richard Dawkins’s description:

The universe we observe has precisely the properties we should expect if there is, at bottom, no design, no purpose, no evil and no good, nothing but blind, pitiless indifference.³

However, the fact that there is love, beauty, purpose, and meaning in at least one part of the universe—here on earth, inhabited by loving, purposeful people who create beauty—counts as evidence for the existence and majesty of a divine presence. This is what the early empirical scientists (most of whom were devout Christians) meant when they based their work on finding the God-given laws that govern the natural world. Creation declares the glory of God, the Good Book tells us. As a biochemist, I see God’s glory most clearly in biology.

To correct Dawkins, we can say,

The universe we observe has precisely the properties we should expect if there is, at bottom, a grand design, a purpose (such as the existence of life that can worship its

Creator), good and evil, and all that is needed to justify belief in the presence of God.

In the next two chapters, we'll apply the central question "How did we get here?" to the current rift between differing groups of Christians and biologists. How did the science of life become a battleground for so many Christians? How has evolution become the "theory of everything" that atheistic scientists use to explain a universe without God? I will emphasize that we need to move beyond the "evolution wars" that divide Christians and beyond a purely reductionist, materialist view of life that ignores so many new advances in science, including a transformation of evolutionary theory itself.

The reality is that the theory of evolution is neither atheistic nor antibiblical—it is fully consistent with the existence and omnipotence of a divine creator. Furthermore, contrary to common belief, evolution by natural selection is not the most important principle of the life sciences but the result of more fundamental, uniquely biological processes. I will show you why the time has come to stop fighting over the reality of evolution among Christians.

We are at the beginning of a scientific revolution—perhaps a paradigm shift—in biology that will replace concepts such as random chance and blind selection as the major drivers of biological change with new approaches encompassing purpose, agency, and cognition in cell biology.

The origin of life is the greatest mystery of biological science and will not be understood using only the known laws of chemical or physical science. This mystery can only be approached by brand-new, biology-specific theories.

And finally, we must ask: "How did we human beings get here?" The enormous complexities of human behavior and consciousness serve as pointers to the concept of being made in the image of God.

The Paradigm Shift

Central to my message is the need for new scientific laws specific to biology. These include evolution, which at present has no mathematical law to bolster the theory (chapter 2); the origin of life, which doesn't even have a theory (chapter 5); and the nature and theory of consciousness, which has neither law nor theory—or even a good definition (chapter 6). Potential sources for some of these laws are given in chapters 3–5. I have no doubt that once we have discovered these new laws, specific to the science of biology, they will point to the designer God as their source, as do all the laws of nature.

In order to accomplish this, biology is in dire need of accepting some concepts that will strike many biologists as scientific heresy. We need to revise a great deal of our current theories to include things like teleology, agency, cognition, and many non-gene-centric ideas of how living creatures operate and survive against all odds. I will reveal some exciting recent research that casts serious doubt on the widely accepted premise that biological design is completely devoid of guidance by willful agency.

There was a time when the clockwork mechanisms of classical physics seemed entirely deterministic and materialist, with no hint of mystery and, at least the way some people saw it, no need for God. That time has long passed as the introduction of quantum theory, relativity, the fine-tuning of the cosmological constants, and the evidence that the universe had a beginning have reshaped so much of modern physics.⁴

Signs of this kind of shift are starting to appear in biology with data and experimental evidence pointing to something beyond our current understanding. The theories that will become established to explain these new findings are yet to be formulated, but their time is coming. As a matter of faith in God and in the scientific process, I believe that, as always, the discovery of these putative new theories and laws governing life will point to the truth of a divine creator.

Biology Is Different

The study of life is a science, of course—the science of biology. But life is different from planets, rocks, and molecules, and thus the science of biology is also different from the other sciences. This is because many of the things that life can do—like reproduce itself—are not found in any other kind of matter. Exploring those differences will be a central part of this book.

I remember sitting as a young man in a graduate class in biochemistry and being utterly astonished by what I was learning about the details of how proteins are made in cells. And when I taught it as a professor, I remember seeing the same look of wonder on my students' faces and knew that I had succeeded as a teacher.

Hoping to reproduce that effect, I will try my best here to describe what I often call the incredible complexity of biochemical processes, including how cells reproduce themselves. I've tried to keep most of this explanation in plain language, but for those who would like to know more, I include a technical appendix that goes into greater detail regarding the mechanisms of protein synthesis, the genetic code, and other biochemical machinery in cells.

Biological research is opening the door to a broader and deeper understanding of the foundational principles underlying the science of life. These principles also have theological ramifications that go in the opposite direction from those of reductionist ideology.

Most professional biologists (including myself in the past) see Darwin's theory of evolution by natural selection as the biological "theory of everything." While not denying the important role evolution plays in life, I intend to convince you in chapter 3 that the most fundamental principle of biology is not evolution but accurate self-replication leading to inheritance. I will show you how the process of evolution is simply an automatic outcome of inheritance by self-replication and that replication is both necessary and sufficient for evolution by natural selection to happen.

Biology is different is a theme I elaborate on throughout the book as I discuss the role of natural laws in the other sciences and the lack of such laws in biology. I argue that in order to go further in our understanding of life at its deepest levels, we will need to use ingenuity and courage to incorporate previously forbidden concepts like purpose, agency, and primitive cognition into our explanatory paradigms and theories. As examples, I bring in many newer scientific ideas published in peer-reviewed scientific literature that have not yet reached popular culture.

You might think “courage” is a strange word to use in a scientific context, but there is precedent for its application in advancing a field of science to a new level of understanding. The courage of Albert Einstein to propose a radical new theory of the nature of light, involving such seemingly bizarre concepts as time slowing down as a function of speed, brought physics into the modern era and led to a better comprehension of the mysteries of time, space, matter, and energy.⁵

But even Einstein, the formerly bold pioneer, would later balk at the notions of probabilistic reality revealed by quantum theory. In order to make the kind of progress that the new physics led to (giving us smartphones and GPS, MRI machines, and nuclear energy), the older philosophical doctrines of reductionism and strict determinism had to be laid aside. In this book, I discuss these same doctrines and their stifling effect on biological progress and highlight the equivalent work of courageous modern-day biological scientists who are emulating the bold spirit of Einstein, Planck, Bohr, and Heisenberg.

Biology and Theology

The questions “How did we get here?” and “Where are we going?” are connected, and that connection is, I believe, being brought into ever sharper focus by new discoveries in molecular biology, evolution, and other fields of biological science. Ultimately, I believe the complete

truth about our world and ourselves requires input from theology as well as science. There is only one universal truth, and in order to discover it, we need both laboratories and churches, Scripture and equations, worship and peer review.

If you have read my book *The Works of His Hands: A Scientist's Journey from Atheism to Faith*, you know that I came to faith in late middle age, and I have little experience or knowledge of apologetics. I'm still learning some details of Christian life that are second nature to cradle Christians. Yet I know that science, especially the science of biology, is strongly harmonious with Christianity (see my book *Science and Faith in Harmony: Contemplations on a Distilled Doxology*⁶).

There really is something about life beyond the laws of thermodynamics and chemical equilibrium. There is, not just in us but in all of biology, a divine spark. I will show you the evidence that what I just said is true and how that truth fits in with the holy truth of Christ and the Bible. We humans are indeed made in the image of God, and all of life is imbued with the spirit of its creator.

Not being a theologian, I rely on the work of others when it comes to questions about how scientific knowledge relates to biblical truth. As scholars in the science-and-faith community often emphasize, it's a mistake to directly compare our scientific knowledge with the writings of Genesis and other books of the Bible. It makes no sense to read the Bible as a scientific textbook. It would in fact be foolish to read even an eighty-year-old science textbook as a source of accurate modern scientific information, let alone trying to fit a series of books written thousands of years ago about the nature of God and humanity into any kind of modern scientific narrative. The Bible's purpose is to teach theological truth—to tell us about the Creator that loves his creatures and wants a relationship with them.

Justin Brierley writes in his book *The Surprising Rebirth of Belief in God*,

Evidence from history, philosophy, theology, personal experience, and the testimony of others will all play their part in drawing thinking men and women towards Christian faith. But for many, an awed wonder at the complexity of the very smallest building blocks of life—and at the very largest aspects of our cosmos—may be the place where such journeys begin.⁷

I do believe that once properly understood, biology—including evolution in its modern and ever-improving versions, as well as molecular biology, ecology, human consciousness, and the origin of life itself—is a strong scientific pointer to the majesty of the divine creator. This book is all about demonstrating the evidence for that belief to believers and skeptics. I hope reading it will help biologists, students of biology, and the general public see the world of life in a new light, even in the light of Christ. We will see the view of nature as pitiless and indifferent transformed into a brilliant light: one of conscious design, mighty purpose, and overwhelming love. And we will (as I did as a mature adult) come to know that the study of life is part of the universal praise of God, pure and refined. For biology, like all the natural sciences, is distilled doxology.

We will start with a discussion of the historical context in which biology originated and developed into a real science, as well as how we got to the pointless and destructive bitterness related to the theory of evolution within the church. We will then tackle the subject of why evolution is not worth fighting about. Let us now embark on a wondrous journey into a new world of biological reality that does nothing less than declare the glory of God.

CHAPTER 1

Biological Ideology and a Call for Unity

WE OFTEN HEAR THE PHRASE “we live in troubled times.” It is not a very profound statement—it has always been true, although the kind of trouble has varied. For Christians, part of the current malaise is a bitter antagonism within the church over biblical interpretation and the role of science. While there have always been divisions among followers of the Way, in the present case, I believe at least some of the disputes related to evolution are resolvable, and I will discuss this in the latter part of this chapter. But first let’s take a close look at how biology got where it is today.

I believe that nothing is ever thoroughly comprehensible without a knowledge of its history. A good deal of what I want to say in this book about biology might not make much sense without an understanding of how the science of life developed, and how this history has influenced modern ideas about how to study life scientifically.

Biology is the youngest of the traditional natural sciences, and some branches (population genetics, systems biology, molecular biology) have only been around for a century or less. It is an exciting science—not only because it is the science of the most beautiful, God-given phenomena of life, which includes us humans, but because of its freshness, its plethora of new frontiers, its host of unanswered questions, and its potential for illumination of the magnificence of divine action in the natural world.

It is my firm contention that progress in biology, while undeniably swift and exponentially successful, is also hampered by some ideological attitudes and outdated dogmas. Some of these are currently in the process of being reexamined and rejected, which is very good news. To provide a foundation for the discussion of that good news in the rest of this book, I will highlight here the history of how biology came to be what it is today.

Origins of Modern Science

Modern empirical science arose in medieval Europe when several pathways of thought coalesced into a brand-new worldview. The “natural philosophers,” inspired by their Christian faith, understood nature as God’s creation and thus orderly and lawful and able to be studied and understood. In general, the church supported this fundamentally monotheistic idea.

Another critical thread in the development of science as we know it was the application of mathematics to the discovery of new natural laws. Thinkers marveled at the fact that the basic workings of the natural world could be understood and written down as simple equations. Isaac Newton revolutionized the worlds of science and philosophy with his demonstration that the same force that makes an apple fall to the ground also governs the motions of the planets.¹ The unifying principle of gravitation showed that all of reality is

connected both in time and space—the universe is truly governed by laws. Newton saw this as a demonstration of the work of the divine lawgiver, as did his colleagues for many centuries.

As natural philosophy embraced empiricism, inductive reasoning, and the power of experimental methods, what we now call the scientific revolution unfolded. It wasn't long before the world began to see the fruits of these concepts in many technological breakthroughs.

Physics and Metaphysics

There also grew a tacit understanding that the realm of science was physics and the realm of theology was metaphysics. The two agreed not to interfere in each other's realms, though the definition of what was physics and what was metaphysics differed from how we understand those terms today. The nature of consciousness, for example, was not a subject for science, nor was any deep investigation into the nature and origin of life. Life, and human life in particular, continued to fall under the biblical and theological purview.

On the other hand, discoveries related to chemistry, research on thermodynamics, and the intricate mechanical inventions of the time provoked nothing but admiration and respect from everyone, clerics included. By the end of the eighteenth century, science was increasingly hailed as the new wisdom and a source of unlimited potential.

As the new discoveries continued, the idea that all of nature was within the intellectual grasp of science started to grow and gain consensus in the second half of the nineteenth century. Maxwell's laws showing the close relationship of electricity and magnetism were the crowning touch,² and many began to believe that the dream of a full human understanding of nature was within reach.

Naturalism was triumphant, and there were models to explain everything. Light, for example, was understood to be a wave that travels in the ether, atoms were particles that obey the laws of classical

physics, living cells were thought to be composed of a homogeneous jellylike substance called protoplasm, and the universe was held to be past-eternal (meaning it has always existed) and in a steady state.

The End of Certainty

The dawn of the twentieth century, however, burst the bubble of scientific rationalism championed by so many enthusiastic thinkers. Einstein proposed theories, confirmed by experiments, that fundamentally changed the way we think about the nature of time, space, and gravity. The subsequent revolution in quantum physics destroyed the notion of scale independence of the physical laws: what was true for planets and apples was not at all true when extrapolated down to the subatomic world. It turned out that the unity of physics in controlling the behavior of objects did have a size limit after all.

We can thus describe the history of the physical sciences in two major phases, at least so far. The first phase, the growth of certainty, was the enlightened view that with observations and experiments, the complete truth about the world could be obtained. This was a period of solving mysteries, closing knowledge gaps, and forging ahead with confidence that science would leave no question unanswered.

The second phase, the rise of uncertainty, began in 1905 with Einstein's publication of several papers, including one on the theory of special relativity.³ Throughout the twentieth century, spearheaded by developments in quantum mechanics, fractals, nonlinear dynamics, and chaos and complexity theories, the second phase was marked by a questioning of the reductionist paradigm that was the basis of the first phase.

While the first phase was reductionist and optimistic, the second phase was neither. Heisenberg's uncertainty principle (1927), which states that it is impossible to know both the momentum and position of an electron at the same time,⁴ undermines the idea that

science can answer all questions. Soon after, Gödel's incompleteness theorem (1931) showed that even mathematics—the pure language of science—was not immune to uncertainty.⁵ In this phase (which continues today), many questions have been answered, but the answers have always led to more questions. Reductionism and pure determinism increasingly became nonviable. Mysteries seemed to proliferate, and the old confidence that science would soon solve all of them became a philosophical view held by ideologues but very few scientists.

How Can We Trust Science?

If scientific certainty is a thing of the past, and science keeps changing, it's worth asking: How can we trust what scientists say? How do we know that they won't change their tune when new information comes along? That does, in fact, happen, and it simply means that rarely are we absolutely sure of scientific truth. But science is based on honesty, and scientists tend to admit freely when they make a mistake or when some understanding changes—and when they don't, their peers will hold them to account.

How does that process work? Scientists communicate with each other by writing scientific papers (not news articles) that are published in scientific journals (not magazines, books, or blog posts). The way scientific journals decide whether or not to publish a scientific paper is to send the manuscript to two or three other scientists in the same field and ask them to evaluate it.

This process is called “peer review.” The people chosen to be peer reviewers have generally reached a certain level of recognition and experience, and they have a reputation for honesty and integrity.

Since there is no peer review to check the accuracy and quality of the information contained in blogs, social media, newspapers, magazines, short reels, YouTube videos, TV news clips, and so on, we cannot be sure that such information is either thorough or accurate.

The Origin of the Science of Biology and the Darwinian Revolution

While the physical sciences were going through their periods of certainty and uncertainty, the science of biology was on a different course.

When Charles Darwin began his studies, biology had already been divided along the lines of orthodoxy. Some felt that all work in biology had to conform to religious scripture, since life was held to be squarely within the realm of the metaphysical. Others, such as most of Darwin's friends and teachers, held the view that biology should become a science much like chemistry and physics. This meant that the rules of science as they began to be understood for physics and chemistry would apply to scientific inquiries on the nature and detailed mechanisms of life.

The movement to make biology a science was not antireligious. It was a project by a group of thinkers who wanted to apply the methods of the successful sciences to understanding nature better. The boundaries of science were evolving, and moving life out of metaphysics and into the scientific category was a logical next step.

Carl Linnaeus, Jean-Baptiste Lamarck, and others began this trend where it needed to, with classification schemes of living beings and fundamental ideas about whether and how organisms could change and emerge.⁶ Other scientists, most of them originally chemists, entered the field of biology with experimental and theoretical advances. The chemistry of living creatures became a subject for study and analysis, just as chemistry itself was making huge strides in technical and theoretical progress. The work of Louis Pasteur, Claude Bernard, and others gave hope and encouragement to those looking for a new, rigorous science of life. The term *biochemistry* entered the scientific lexicon in 1903, and discoveries followed at breathtaking speed.

But there was something important missing: an idea that could form a fundamental basis for biological science the way Newton's theory of gravity unified physics.

When Charles Darwin published *On the Origin of Species* in 1859, it shook up the way people thought about life but did not lead to an immediate revolution in biology. Darwin's theory of evolution was at first considered an interesting intellectual exercise, a useful description of how biological diversity might arise. But the fact that it had no foundation in chemistry, physics, or mathematics led to a gradual loss of interest among both scientists and the public as the nineteenth century ended. Meanwhile, biologists were moving on to laboratory studies of proteins, enzymes, membranes, and other fascinating components of living cells.

That all changed at the turn of the century with the rediscovery of Augustinian friar Gregor Mendel's work on the laws of heredity, leading to the birth of genetics. For the theory of evolution by natural selection to work, Darwin had assumed, based on common observations, that organisms reliably passed on their characteristics to their offspring, but he had no understanding of how they did so. Now the missing details were being worked out, and the scientific basis of heredity was firmly demonstrated. Darwin's theory, built on the universal techniques of plant and animal breeding and on the bedrock of Malthusian population dynamics, began to regain adherents among biologists.

When R. A. Fisher, J. B. S. Haldane, Julian Huxley, and others put the theory together with the genetic theories of Mendel, the modern synthesis of evolutionary biology soon became the central tenet of all biological science. Vast amounts of new information have been generated since then, spanning paleontology to molecular genetics, cell biology, animal behavior, and ecology, encompassing every branch of biological science, all of it in accord with the basic idea of evolution by natural selection.

The Neo-Darwinian (Modern) Synthesis

The twentieth century saw the flowering of Mendelian inheritance into a major science. The concept of the gene—the hypothetical

inheritance particle—was substantiated by the discovery of the structure and function of DNA.

The phenomenon of mutation—a change in the function of a gene—was understood even before anything was known about the chemical nature of these theoretical controllers of inheritance. Mutations could be studied by their effects on the characteristics of fruit flies or bacteria growing in dishes. One important question was the role of chance as opposed to purpose in causing mutations. Can organisms purposely act to produce mutations in specific genes that would help them survive an environmental stress, such as starvation or exposure to toxic agents? While this idea seemed to make sense, many believed that an alternative scenario, which fit Darwinian theory more closely, was correct. In this hypothesis, mutations are generated randomly, and then the lucky few that had a beneficial mutation survived due to the principle of natural selection.

In the 1940s, experiments in bacteria seemed to definitively answer this question. The results showed that mutations were produced entirely randomly, and natural selection determined which cells would survive based on what genotypes led to the phenotypes that did best in the given environment.

As we will see in later chapters, this conclusion has been shaken by recent research, but at the time, these results helped to confirm the emerging neo-Darwinian view that purpose plays no role in the mechanisms of molecular genetics. The triumph of blind chance as the key factor in the first stage of evolution was absorbed into biological dogma, and, as in the rest of natural science, teleological ideas were discarded from consideration. Evolution became a theory devoid of any hint of purpose or design.

DNA and the Molecular Revolution

The experimental findings of Oswald Avery in the 1940s that DNA might be the chemical responsible for heredity or the “genetic

material”⁷ were initially met with astonishment and doubt. The expectation had been that the answer to the chemical mystery of the nature of genes would be a protein enzyme. DNA, with its limited chemical composition, didn’t seem interesting enough to be a good candidate, considering the complexities of inheritance. The discovery of the double helical structure of DNA by James Watson and Francis Crick in 1953⁸ changed all that, and the revolution in the new field of molecular biology was on.

In the decades that followed, an unprecedented crescendo of discovery revealed how cells work on a molecular level, including how they inherit their characteristics and how they do all that they do to remain alive.

Progress in molecular biology got another boost in 1970 with the discovery by Howard Temin and David Baltimore of reverse transcription in viruses and the technical possibility of recombinant DNA and cloning.⁹ This led inevitably to one of the great projects in the history of science—the sequencing of the entire human genome by the Human Genome Project,¹⁰ completed in 2003.

Twenty-First-Century Biology

As we move through the first decades of the newest century, there are signs that biology might be entering the second phase of scientific discovery, similar to what physics experienced a century earlier. Increasingly, the answers to research questions are leading to many surprising answers and to new, more difficult mysteries.

One of these surprises has been the finding from the Human Genome Project that humans do not have a much larger collection of genes than most other organisms. It appears that the reason we are such complex biological beings is not because we have more genes than other creatures but because we regulate their expression in highly complex and interesting ways. This means that the control of *when* a gene does something is just as important as *what* the gene does.

Progress in biology has included new techniques like gene cloning (enabling genes to be copied and studied in detail) and gene editing (enabling changes to be made to the sequence of genes to correct mutations or alter their functionality).

Another field that has grown exponentially is systems biology, which, thanks to advances in computer modeling, is beginning to allow researchers to make sense of the millions of interactions and interwoven biochemistry of even the simplest cells.

Having briefly covered the general history of biology from its origins up to the present, let us have a closer look at parts of that history that are most important to my message in this book: the history of the relationship between science and Christian faith, and the history of biological ideology, apart from scientific progress.

The History of the Relationship Between Science and Faith

There is no dispute that most of the major European scientists from the origin of science up to the end of the nineteenth century were Christians. But of course, they lived in a Christian milieu and might not have had much choice—at least, that is what we hear from the kind of skeptics who insist on the basic incompatibility between a scientific and a Christian worldview. Their view of the relationship between science and faith has come to be known as the “conflict thesis” and has its origins in the same late-nineteenth- to early-twentieth-century period that saw so many intellectual, technological, political, and social revolutions at once.

It must be pointed out that most of those who accused faith of being an enemy of science were not actually scientists (as is often true today). So how did the conflict thesis arise in the first place? As always, there are many reasons, covered extensively by historians, but the immediate catalyst was the publication of two books. The first was *History*

of the Conflict Between Religion and Science by chemist and inventor John William Draper, followed about twenty years later by Andrew Dickson White's *A History of the Warfare of Science with Theology in Christendom*.¹¹ White was not a scientist or a theologian but a historian, politician, and educator. These books were reacting to attacks on Darwin's theory of evolution by some clergymen, but they generalized this conflict to all of history to paint a picture in which theologians and the church had always stood in the way of progress, oppressing science and scientists. Their false narrative had an enormous influence on educated elites in the United States and Europe, leading to a major shift in public thinking about the relationship between science and faith. But the tide might now be turning, as reported in a recent book by David Hutchings and James C. Ungureanu:

Thanks to the dedicated and committed research of a band of specialists operating since the 1980s at least, the conflict thesis has now been thoroughly debunked. One by one, the tales spun out in *Conflict* and *Warfare* have been shown to be either entirely false, horribly misunderstood, or deliberately misrepresented.¹²

The popularity of the conflict thesis likely benefited from social changes starting in the same period the two books were written. The explosive development and increasing importance of new technology in Western countries began to sweep away traditional lifestyles and, with them, more spiritually centered worldviews for large swaths of the population. The idea of an ongoing conflict between religion and science became ingrained in the culture with many other ideas of modernity, despite its harmfulness to both. This harm has arguably been greatest in the United States, where the majority of the population remained Christian and where these misguided assumptions of a

war between science and faith have been used to divide people along political and culture-war lines.

Building in part on the same narrative, the rise of New Atheism at the beginning of the twenty-first century initiated a wave of deconversion in the developed world. Younger, educated people bought into the rehashing of the conflict thesis by the likes of Richard Dawkins and Sam Harris. Many scientists as well as philosophers, entertainers, and public figures joined the movement toward atheism.

The History of Ideology in Biology

There is no question that the rise of biology as a true science was difficult. The phrase “physics envy” has been used to highlight the somewhat defensive posture of biologists who are said to suffer from an inferiority complex due to the lack of mathematical rigor and clear structure of biological information and theory. In response, biologists went through a period of purging from their field any concepts that could possibly be construed as “nonscientific,” meaning not fitting well with the reductionist nature of pre-twentieth-century physics and chemistry. This defensive reaction initially served biology well but with time has prevented progress by limiting theoretical explorations to only those that pass the test of strict methodological naturalism. Concepts like purpose or agency were seen as the proverbial camel’s nose, which, if allowed into the tent of pure science, would soon be followed by the rest of the camel—all kinds of nonscientific metaphysical ideas.

The first such concept to be banished was *vitalism*, the belief that living things possess something more than inanimate matter. In the eighteenth and early nineteenth centuries, as physics and chemistry grew to explain more and more of the world of matter, many thinkers and scientists felt that life was animated by a “life force” or “vital principle” that could not be understood or probed with microscopes, dissections, and experiments. (The *mechanists*, those who thought living things

were just complex machines, disagreed.) Some vitalists proposed that even the chemistry of living beings was fundamentally different from abiotic chemistry and that the “organic” chemicals of life could not be synthesized in a laboratory. In their most extreme version, such beliefs made the idea of biology as a natural science impossible to consider. As a result, biologists increasingly considered vitalism to be a toxic concept.

When urea, a simple organic chemical compound found in all mammals, was synthesized in a lab in 1828, one of the assumptions of strong vitalism was clearly shown to be false: components of life *could* be duplicated outside a living organism, without the presence of a special vital force. Vitalism gradually faded both from philosophy and science, allowing for an unhindered beginning of a new science of life that used all the tools that chemical and physical sciences had to offer.

The semimystical concept of vitalism was not the only victim of the desire to purge what were considered nonscientific concepts from biology. One of the hallmarks of modern scientific methodology in biology is the removal of teleology, or purpose, from scientific consideration. The idea that there is no teleology in science has worked well for physics, chemistry, geology, and a great deal of biology as well. Nothing in the world of physics or chemistry acts with purpose—all that happens is strictly due to the laws of nature, which also include random chance. No volcano decides to erupt and then gathers the energy and materials to do so. Oceans don't consider the idea of being tidal—it's not up to them but to the gravitational forces from the moon.

With early advances in molecular biology, including the apparent random nature of mutations and the chemically driven mechanisms of physiology, it certainly seemed that biology had no need or use for teleological thinking either. However, it is hard to deny that most animals, especially we humans, do in fact act with purpose—or at least the appearance of purpose and the appearance of free will, as the strict reductionists would say. But recent scientific discoveries, discussed in detail in chapter 4, have begun to paint a new and startling

picture of the role of teleology and agency in all of life. And joining these two formerly discarded ideas is a surprising finding—the presence of cognition in the simplest forms of life.

The Future of Biology

We have seen that biologists have historically been strongly wedded to a reductionist viewpoint about life and its basic operations. There has been a common underlying assumption that—just like machines, volcanoes, chemical reactions, and storm systems—living creatures act according to and are influenced by only the well-known laws and forces of physics and chemistry. Some philosophers claim that even humans consist of nothing but electrical impulses, hormonal chemistry, and various physiological and biochemical processes that fool us into thinking we are actually feeling, thinking, conscious free agents with willpower and purpose.

Of course, we are always in the middle of history and not at its end point. We don't know how things will turn out, but I believe we might be on the verge of major fundamental breakthroughs in biology—breakthroughs that will require boldness and a willingness to shed the ideological constraints of the past. Once we accept that biology is not a science based on outdated historical ties to reductionism, we can make even more rapid progress in areas like abiogenesis, nongenetic mechanisms of control, and perhaps even consciousness.

In the rest of this book, I will show you how new, alternative ways of thinking about biology are leading to the ideological shift needed for such progress. And, most important for Christians, it is my strong conviction that with this progress, and with establishing that the science of life is much more than something dependent solely on the laws of physics and chemistry, we will again find pointers to the creator God.

I should clarify that I doubt that science, including the science of biology, will ever “prove” the existence of God. Science is simply

not in the business of providing proof, which belongs to logic and mathematics only. But it can provide *evidence*, and we already have considerable evidence for the role of a divine hand in the creation and sustenance of our physical world. I believe that new discoveries in biology are poised to provide even more evidence.

But before we examine those discoveries, let's first look at what many Christians immediately think about when they hear biology and God in the same sentence, a subject that has caused a serious rift within the church—the biological theory of evolution by natural selection.

Evolution: The Christian Controversy

You will find no denial of evolution by natural selection on these pages. Natural selection is indeed a powerful force and a unique property of life not found in chemistry or physics, and that is one reason biology is a unique field of science. But natural selection is an odd scientific force because it is based on a tautology. In the next chapter, I discuss this in detail and show why there is no mathematical law and no usable definition for fitness, the most basic component of natural selection.

In arguing for the toppling of evolution from its current position as the most fundamental theory in biology, I do not question its truth, but I do question the relevance and purpose of the ongoing—and unwarranted—controversy over its acceptance. The main result of such intense arguments over a biological theory is animosity between Christians. This unfortunate and unnecessary disunity in the body of Christ serves no purpose and can be remedied by a deeper understanding of the science.

I hope to show that all the angst and bitterness on both sides is a tempest in a teapot. I believe the disagreements about the reality of evolutionary processes have been blown out of proportion by folks more interested in a culture war than in reconciliation and mutual

tolerance of minor disagreements. I am convinced that future generations of Christians will look back at all the current sound and fury with puzzlement, and I pray that future will begin now.

Evolution is not an alternative to the creation of life by a divine designer. Instead, I see evolution as part of the tool set God used to create all of life, and even as part of a new scientific argument for the existence of God. Evolution does not point to “pitiless indifference,” as Richard Dawkins claims, but to a caring and omnipotent deity whose purposes include a universe of more than stars and planets, more than neutrinos and quarks, more than waves and particles: a universe containing the means to create whales and wallabies, tigers and trees, limes and lions, and you and me.

It has always amused me when some atheists paint Christianity as dogmatic and rigid, requiring everyone to blindly follow the set of rules and beliefs dictated by the church, and then in the next breath sarcastically exclaim that there are thousands of Christian denominations and sects that can’t even agree with each other about which one is right. It doesn’t seem to dawn on them that these two complaints are contradictory, since there would be no denominations if Christianity were in fact dogmatic and rigid.

Christians have never, from the beginning, been of one mind. As a Protestant, I respect and value my Catholic brothers and sisters, but I disagree that there is only one “true” church. On the contrary, I think diversity of opinions and views is healthy, at least here on this fallen earth, while we have only glimpses of the full truth.

We only need to go back to the origins of the church, as beautifully described in the book of Acts, to see that Christian uniformity was never a thing and that followers of Jesus have always had to wrestle with disagreements and various interpretations of his life, words, and works. Acts 15 (one of my favorite chapters in the Bible) illustrates the model for how to deal with a strong and fundamental disagreement among believers. It describes the early controversy over how

closely those who believe in Jesus should follow the law of Moses. Was the new faith a branch of Judaism (requiring observance of all Jewish laws), or was it something new? This was a practical matter for the growth of the church, since if the former were true, it meant that Gentiles coming to faith in Christ would need to follow Jewish dietary laws and adult men would need to be circumcised (presumably not a strong inducement to join). In Luke's account, a group of believers from the Jerusalem church held to this position and stood up in a meeting to say so.

In response, Peter shared testimony of how the Holy Spirit came to the Gentiles as well as to the Jewish disciples, and Paul and Barnabas spoke of their work among the Gentiles. Finally, James, the brother of our Lord, suggested a compromise: Gentiles only need to follow a few of the dietary rules—don't eat food sacrificed to idols or meat with blood in it—and observe sexual purity, and that's it (see Acts 15:13-21). And so it was, and the rest is history.

Of course, that was only the first instance of Christian disunity, and later controversies were not always settled so easily or equitably. In fact, many (such as the Protestant Reformation) involved violent confrontations.

Today we have many denominations that differ in details of how believers should worship and express their belief in Jesus. I came to faith as an adult, so to me, these differences appear to be minor and of little consequence compared to the overwhelming and amazing truth of the existence and resurrection of Jesus Christ and the joy of knowing his plan for my salvation. But I know that my lack of concern—about things like whether people should be baptized as babies or when they're older, or whether the pope is indeed infallible, or if Protestantism is closer to the faith of the early Christians than other traditions—is not shared by all Christians.

Fortunately, only a minority of modern Christians consider such disagreements to be so vital as to render their opponents heretics.

But there is one area of disagreement, especially among American Christians, that seems to produce outright hostility in the pews, and in my view it is not at all worthy of the degree of disunity and enmity it causes. It concerns the scientific theory of evolution by natural selection as the explanation of biological diversity.

This controversy is relatively new, starting around the end of the nineteenth century and becoming intense only around the 1960s. Several good books have been written about this history,¹³ so I won't go into details here.

My own view of arguments about evolution among Christians is that they are not worth having—for three reasons. First, one can be a faithful follower of Jesus while accepting or not accepting evolutionary theory, just as one can lead a perfectly fulfilled and admirable human life regardless of one's views on evolution. The second reason is that, as I will discuss in more detail in chapter 3, the theory of evolution is irrelevant to what I believe are deeper scientific issues in biology related to Christian faith. And finally, with some exceptions, the people who argue the loudest either for or against evolution don't seem to know what they are talking about, either because they do not understand what the theory actually says, or they are not up to date on the changes in the evolutionary theory that make a lot of their arguments obsolete.

How split is the American church on this issue? According to a 2019 Pew report, a substantial majority of mainline denominational Protestants and Catholics held that evolution is true (65 percent and 66 percent, respectively). On the other hand, only 38 percent of evangelical Christians believed that evolution is real.¹⁴ However, that latter figure is dubious, since a follow-up survey found that the answers of evangelicals (but not mainline Christians) depended on how the question was asked. With a different phrasing, the figure for accepting evolution rose to 62 percent for evangelicals, indicating some degree of complexity in how these Christians think about the issue.¹⁵

The findings suggest that altogether, roughly half of American

Christians accept evolutionary theory, and the rest don't. That is a pretty significant split that arguably reflects other social and political divisions in American society, with some important consequences for Christian unity in general.

This division over evolution can sometimes reach the level of bitter acrimony. Some will say that young earth creationists, who deny the truth of evolution, are anti-science and contributing to the decline of the faith among the young and educated. Others will claim that Christians who are evolutionary creationists accept a false theory and are denying the truth of God's clear words in the Bible.

The Virtue of Moderation

I would like to believe that despite the harsh rhetoric of some voices in the culture war, a great many Christians have already come to the realization that the evolution issue is just not worth fighting about. The following is a direct quote from my online friend Terry Godfrey, a devout Christian with a background of strict biblical adherence and an eloquent advocate for the truth of Christ:

Evolution is a side issue for me, kind of like the flood. Among my Christian friends, evolution is never even brought up. We just don't think it's that important where our relationship with God and our love and trust in Jesus is concerned. I've always left the door open for God's use of evolution because of the verses in Genesis that say, "Let the WATERS bring forth abundantly the moving creature that hath life." "Let the EARTH bring forth the living creature after his kind." "The Lord God formed man of the DUST of the ground." I tell them that if I was convinced that God used evolution that I'd be in even more awe and wonder at God's power and creativity than I am.¹⁶

All I can add to that is “Amen.” I would like to follow the peace-making example of James at the council of Jerusalem and pour the sublime water of Christ’s love on this fire of controversy before it comes close to burning down the church. I pray that when you have finished reading this chapter, you will join me in a celebration of Christian unity even in the face of nonuniformity.

To begin, here is something that might come as a surprise: pretty much everyone agrees, at least to some extent, that evolution by natural selection happens. The argument is not about the reality of evolution but about the extent to which that reality can be applied to understand life on earth.

Let me explain. Some Christians—young earth creationists (YECs) and adherents of intelligent design—agree that “micro-evolution” happens and results in changes within species or even in the emergence of new species within “kinds,” but they think new “kinds” cannot arise this way. The term *microevolution* is not used much by scientists outside of intelligent design circles, but it may be defined as the change within a species due to environmental pressures that lead to the selection of individuals and populations that show beneficial variations. While most YECs agree that such variations are caused by mutations, they differ from mainstream scientists by claiming that all mutations are deleterious and lead to a loss of information (which can nevertheless sometimes provide a more adaptive phenotype, like the loss of eyes in animals living in a dark cave without any light).

The current model of the YEC organization Answers in Genesis holds that evolution “ends” above the species level at families or even orders. Nathaniel T. Jeanson and Jason Lisle, two well-known YEC scientists, have said,

Young-earth creation (YEC) research within the bounds of the scriptural framework has revealed that the created

“kinds” of Genesis 1 appear to be best approximated by the taxonomic rank of family, not species. . . .

In addition, since preliminary studies suggest that a taxonomic rank higher than family may represent the “kind” boundary for some species . . . , the amount of speciation on the YEC timescale may be even higher.¹⁷

This is why the Creation Museum operated by Answers in Genesis contains exhibits showing what they believe were the “biblical kinds”—for example, a “cat kind,” which they present as the common ancestor to modern species like lions, tigers, jaguars, and domestic cats. In fact, the museum uses a phylogenetic tree similar to the one used by mainstream evolutionary biologists to illustrate what they take to be the post-Genesis flood emergence of modern species from their common ancestors by adaptive natural selection. A comparison of phylogenetic trees from Answers in Genesis and from mainstream biology is shown in figure 1.1.

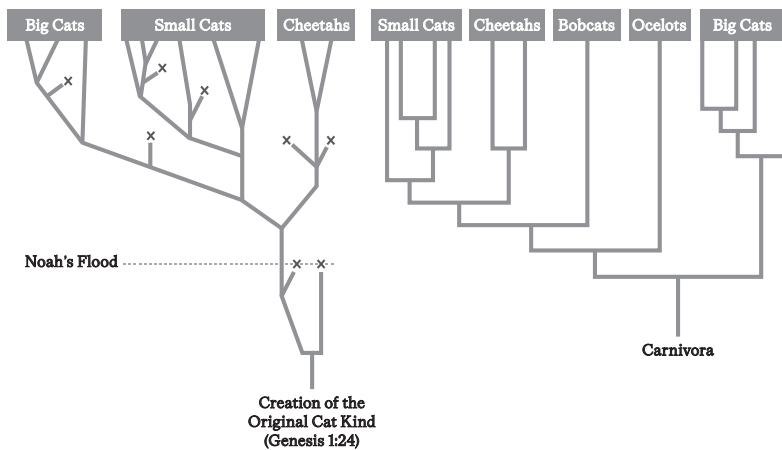


FIGURE 1.1 *The evolutionary pathway (“phylogenetic tree”) of cats is adapted from a young earth creationists organization (Answers in Genesis) on the left,¹⁸ and adapted from a mainstream biology paper in the journal Nature on the right.¹⁹*

Mainstream biologists—among them Christians who are evolutionary creationists—hold that “macroevolution” operates according to the same evolutionary principles as “microevolution,” and it starts much further back on a phylogenetic tree, beginning with single cells. In other words, one group thinks that evolution by natural selection started operating with single cells, and the other group believes that evolution by natural selection started later, with a set of original created kinds that survived the Flood on the ark. Both groups start with first ancestors whose origin is outside of their respective models. In the case of mainstream biology, the origin of life is outside of evolution and, as of now, lacks a working scientific explanation (more on this in chapters 3 and 5); in the case of Answers in Genesis’s kinds, they were of course created directly by God.²⁰

I am not trying to minimize the large differences in the scientific views of life between mainstream biologists and those who hold to YEC. But it’s worth asking, why do these differences lead to such conflict? Why all the bitterness and strife?

What Does Evolutionary Theory Actually Say?

Part of the answer is that so many people do not understand what evolution actually is and what it is not. The following from an online opponent of evolution is representative:

The story goes that there were dark moths and light moths living in England. Industrial pollution or soot started to make the bark of the trees darker. The light-coloured ones stood out more, so the predators could see them easier, and soon there were more dark-coloured moths. They tell you this is EVOLUTION. That the dark ones suited their environment better and natural selection took out the lighter-coloured ones. . . . See. NOTHING HAPPENED.

The light-coloured ones were removed. That's it. The dark ones already existed. Now there were just more. It's not like the white ones started having darker offspring.²¹

The writer here thinks he's proving evolution wrong, but his comment actually describes the reality of evolution quite well. His comment reflects the common error of thinking that evolution occurs in *individuals* rather than in *populations*. The white moths, in fact, do *not* have darker offspring—they don't have *any* offspring since, unlike the dark moths, they have been eaten. The individual moths don't change; the total population does. The writer says this means evolution does not happen, but what he describes is exactly what evolution is: natural selection acting on preexisting variation.

It's populations that evolve, not individuals. No individual gives birth to a member of a different species. Offspring are rarely radically different from their parents unless there is a strongly deleterious mutation that results in disease or death. In the great majority of cases, they resemble their parents very closely. One would not be able to observe evolution by examining individuals within a population and their offspring.

What is a population? It's a group of individuals of the same species who are able to freely mate with each other. When two groups of the same species are separated by geographical barriers (mountains, deserts, bodies of water, or very long distances), they are two different populations. A good example of this is the famous finches of the Galápagos Islands.²²

Now we come to how evolution actually works within a population. It's important to note that evolutionary change is generally slow and might not be noticeable in time periods measured in a few lifetimes. If we had two populations living on separate islands that cannot interbreed, and we could observe them over many hundreds of years, we would see that on island 1 the population has undergone

some changes (as a group, not limited to one individual), and that on island 2 the population, while the same species, now has a different set of variations. This is usually due to what is called “genetic drift,” and it involves random mutations causing minor variations that are mostly neutral—slightly beneficial or slightly deleterious—on each island. Variation already present in the two founding populations can also be amplified over time.

As long as the two populations remain reproductively isolated, the pattern of variations between them will be independent of each other, and after a sufficient amount of time they will begin to appear significantly different from each other. If this difference also involves adaptation to different environments, and the changes become deeper and begin to affect some more basic functions and structures of proteins, there may come a time when the two populations would no longer be able to interbreed. At that point we would have two different species.

I would like to believe that if everyone talking or thinking about evolution could understand these basic realities of the theory, a good deal of the heat of the argument would dissipate. I am aware that this is probably unrealistically optimistic—because, ultimately, the degree of strife is less based on scientific differences or misunderstandings than on much more fundamental disagreements that are cultural in nature.²³

The religious implications of evolution are often cited as an important source of disagreement. I believe that the modern scientific theory of evolution is not in any conflict with Genesis 1, but most YECs will strongly disagree. When I and my colleagues in science read Genesis, we see a poetic picture of the work of God in creation, an account whose purpose is to express theological truths. We find the text to be a beautifully written declaration of the glory and majesty of God, whose creation of the universe, our planet, and ourselves is the basis of our belief in the omnipotent God we worship. We also see that some of the details necessarily reflect the times in

which the text was written—that is, the understanding that ancient Near East people had of the natural world.

In terms of the core teachings of Christianity—trusting Christ’s salvific work in the world and loving God and our neighbors—I don’t think it matters theologically whether a Christian believes in evolutionary creation or a young earth any more than it matters at what age a person is baptized. And this is why I say that the argument is ultimately not based on scientific or even theological differences but on a cultural divide. Even in the face of strong disagreement, we should unite in focusing on the core of our Christian convictions, free of cultural or political ideologies.

I think that both Genesis and Darwin’s theory are correct. God uses both Scripture and science to educate and enlighten us. For me, the truth of evolution is evident, and so is that of Genesis. They do not conflict because their purposes, their explanatory methods, and the questions they answer are not the same but complementary to and harmonious with each other.

As Christians, rather than spending our time and energy arguing with each other about important but secondary matters, let’s focus on the words and deeds of our Savior Jesus Christ. That’s where we will find our unity, our strength, and our final victory. As Michael Reiss and Michael Ruse, the authors of *The New Biology*,²⁴ state in a blog post, “The systemic complexity of the new biology points to the inter-connectedness of creation in a way that finds a parallel in the religious vision of the unity of all things in God.”²⁵

Now that we have tried our best to make peace among warring camps, let’s get back to the modern and rapidly evolving science of evolution and see what I mean by everyone getting it wrong, on both sides.