ACTS & FACTS

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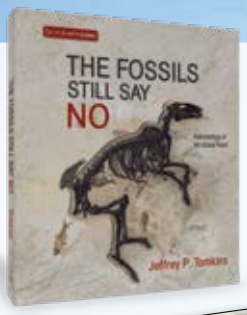

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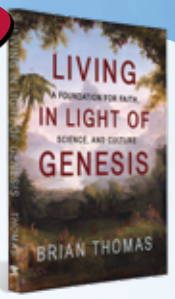

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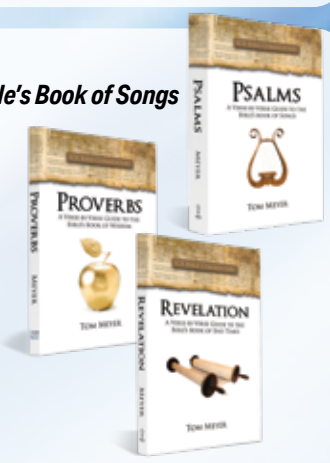

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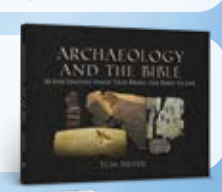

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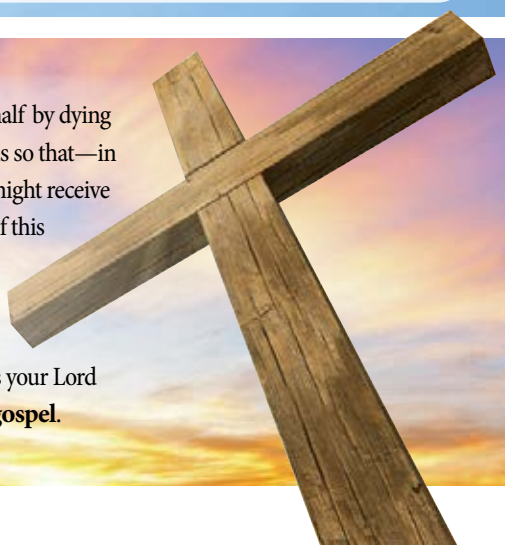

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DESIGNER
Dennis Davidson

[Jesus Christ] is the image of the invisible God, the firstborn over all creation. For by Him all things were created that are in heaven and that are on earth, visible and invisible, whether thrones or dominions or principalities or powers. All things were created through Him and for Him. And He is before all things, and in Him all things consist. And He is the head of the body, the church, who is the beginning, the firstborn from the dead, that in all things He may have the preeminence. For it pleased the Father that in Him all the fullness should dwell, and by Him to reconcile all things to Himself, by Him, whether things on earth or things in heaven, having made peace through the blood of His cross.
(Colossians 1:15–20)

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All Scripture quotations are from the New King James Version unless otherwise indicated.

Front cover: Galápagos tree finch
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WHY BIOLOGY NEEDS A THEORY OF BIOLOGICAL DESIGN

PART 2

RANDY J. GULIUZZA, P.E., M.D.

article highlights

- The evolutionary narrative demonstrates a theory's power to shape thinking.
- This narrative was carefully crafted to provide a natural explanation for the appearance of design in biology without the involvement of a Designer.
- Darwin's concept of natural selection personified nature as exercising agency to shape evolutionary change.
- In evolution's anti-design framework, adaptation is caused by external selective pressures rather than resulting from creatures' innate systems.
- A new theory of biological design's elements will essentially be the opposite of the ones in evolutionary theory.

"Based on a true story" is included by movie producers to add authenticity, importance, and a flair of anticipation. So, my account of how I was greatly misled as a youngster is a preemptive response to the question "who cares about theory anyway?" My story accentuates the power of the evolutionary narrative—not factual data—to shape thinking.

Three Reasons to Take the Power of Theory Seriously

From a young age I was fascinated by "survival of the fittest." It just seemed so obvious. I thought it clarified my understanding of the world, and I interpreted things like good and bad, success and failure, and even life and death through that lens.

Later, I learned about genes and their relationship to a creature's traits. School taught me that random mutations produce various traits in populations that get fractioned out by, you guessed it, survival of the fittest. My mind possessed the major explanation for how life operated. I memorized details. I promoted it to classmates with the zeal of Richard Dawkins. Creatures' complicated abilities were naturally shaped, I imagined, over unfathomable periods of time by the omnipotent, omnipresent force of natural selection.

But there was another influence. I knew that the theory was accepted by educated people. In my mind, it was *absolutely* settled science. As far as I knew, it was only rejected by blind, backward religious types. To me, scientists had thoroughly thrashed theologians by demonstrating that "science" is the solitary vehicle to convey truth. Like millions of others, I was seduced. Evolutionary theory fits like a key in the deadbolt of human pride to lock up minds.

My experience is the first reason to take the power of theory seriously. The evolutionary narrative is misleading young people into profoundly ungodly thinking and is wielded to marginalize Christians in the public square.

Along that line, there's a second reason theory matters. The agenda of all theories is to shape thinking. I was on my way to becoming like Harvard's evolutionary psychologist Steven Pinker. He brandishes the evolutionary narrative—and its theological implications—to marginalize biblical influence in culture. Christians who might ignore the evolutionary narrative should pay attention to how Pinker unabashedly explains how evolutionary "science" leads society.

> In which ways, then, does science illuminate human affairs? Let me start with the most ambitious: the deepest questions about who we are, where we came from, and how we define the meaning and purpose of our lives. This is the traditional territory of religion…[but] the moral worldview of any scientifically literate person—one who is not blinkered by fundamentalism—requires a radical break from religious conceptions of meaning and value.
>
> To begin with, the findings of science entail that the belief systems of all the world's traditional religions…are *factually mistaken*. We know, but our ancestors did not, that humans belong to a single species of African primate that developed agriculture, government, and writing late in its history. We know that our species is a tiny twig of a genealogical tree that embraces all living things and that emerged from prebiotic chemicals almost four billion years ago.…
>
> In other words, the worldview that guides the moral and spiritual values of an educated person today is the worldview given to us by science. Though the scientific facts do not by themselves dictate values, they certainly hem in the possibilities. *By stripping ecclesiastical authority of its credibility on factual matters, they cast doubt on its claims to certitude in matters of morality.*[1]

Here's some backstory for the third reason theory matters. Before Darwin put his long selectionist narrative together, he studied the best advocates of intelligent design.[2] He read the "intelligent design playbook," so to speak. Evolutionary theory's key elements were specifically selected to be a reverse reflection of how a human engineer would purposefully construct something that itself functions purposefully.

Understanding the reasoning for *why* the evolutionary narrative is built like it is enables design theorists to study the "evolutionary theory playbook." This will make it easier for them to develop the essential elements of a theory of biological design (TOBD). Why? Because TOBD elements will basically be the opposite of the key components of evolutionary theory—which themselves were developed to oppose vital aspects of intelligent design.

Selectionism: Purposefully Crafted to Counter God's General Revelation in Nature

As stated above, evolutionary theory was intentionally produced to oppose how biology clearly points to a Creator. Evolutionary authority Jerry Coyne sums up the observation:

> If anything is true about nature, it is that plants and animals seem intricately and almost perfectly designed for living their lives.... Nature resembles a well-oiled machine, with every species an intricate cog or gear. What does all this seem to imply? A master mechanic, of course.[3]

Biology, therefore, points to a very big question: Why do creatures possess innumerable features that look like they were purposefully engineered?

When people recognize *similar handiwork* between living creatures and what human engineers make, they're seeing a revelation of God declaring His existence to all humanity (Psalm 19:1; Romans 1:18–25). Coyne knows that for millennia people in every culture intuitively thought creatures were crafted by a Creator because they have a highly designed look to them. But Coyne doesn't believe that revelation. Neither do millions like him—and many of them don't want others to believe it either.

Most theorists who followed Darwin have intentionally and cleverly continued to refine his anti-design narrative. These folks weren't led from belief to unbelief by observing any real process that *naturally* produces incredibly designed organisms without detectable intervention by God. Rather, their *initial* unbelief in God's clear self-revelation led them to craft a narrative that conjures up a mystical process that they use as a natural substitute for God in designing creatures.

Prominent evolutionary theorists openly acknowledge the anti-design purpose of the selectionist narrative. For instance, Peter Godfrey-Smith summarizes the ideology of philosopher and cognitive scientist Daniel Dennett of Tufts University:

> For Dennett, it is selectionism that prevents us engaging in an erroneous pattern of thinking that is so widespread that traditional religious thinking is only one instance of it. Darwinism enables us to do without "skyhooks," miraculous interventions that explain the occurrence of design, purpose and meaning.…Selection is seen as a critically important part of a larger intellectual enterprise, the enterprise of developing and defending a secular worldview.…It provides the key to answering Arguments from Design for the existence of various Gods.[4]

Every assumption of evolutionary theory has been carefully selected to play a part in providing a non-theistic account of why creatures look designed. The narrative is characterized by inherent anti-engineering elements to shape people's thinking that nature alone is sufficient to produce the appearance of design in creatures. Whether God intervened or not is superfluous.

The big hurdles are: How do you explain apparent purposeful engineering without an engineer? Where did the qualitative difference between a rock and a racoon come from? Darwin is credited with jumping these hurdles. Let's dig in to what his narrative allegedly accomplished.

Essential Elements for an *Anti-design* Theory of Biology

Simplicity underlies the success of selectionist thinking. It holds that creatures slowly improve over time because the best organisms ultimately emerge out of deadly struggles to survive. But the real *power* lies in how that simple narrative seemingly accomplishes what is nigh impossible without an intelligent designer—explaining the origin of the distinctive characteristics of living creatures called agency and purpose.

Agency is the ability to carry out actions as a totally (or nearly) autonomous entity through innate intelligence and volition as an expression of desires, i.e., things one "wants to do." Agency can be expressed consciously or unconsciously. As far as people can tell, things like rocks, wind, and nature itself can't exercise agency.

Purpose considers a creature's many behaviors, parts, systems, etc. that clearly work together to achieve a specific outcome that cannot be attributed to either natural laws or what is termed "chance." Evolutionists such as Philip Ball, a former editor of *Nature*, recognize that the current evolutionary narrative doesn't account for the agency and purpose found in living creatures. A book review of Ball's *How Life Works: A User's Guide to the New Biology* stated:

> Ball grapples with the philosophical question of what makes an organism alive. Agency—the ability of an organism to bring about change to itself or its environment to achieve a goal—is [Ball's] central focus. Such agency, he argues, is attributable to whole organisms, not just to their genomes.…Ball is not alone in calling for a drastic rethink of how scientists discuss biology.… and all argue that agency and purpose are definitive characteristics of life that have been overlooked in conventional, gene-centric views of biology.[5]

Darwin is venerated for his narrative that explains the origin of creatures' agency without appealing to any agency at all…especially God's. Did he really pull that off?

Darwin's Answer to God's Agency: Project It onto Nature

For his selectionist narrative, Darwin needed something that doesn't possess agency but could still somehow *act* like a true agent. He therefore advanced a very clever, two-pronged approach. First, as we saw in the previous article,[6] Darwin supposedly discovered a process that's creative yet unconscious.[7] Scientifically, however, there's a problem—no one's ever seen anything unconscious be creative.

Darwin's solution was to personify nature itself as the creative force. He noticed that pigeon breeders produced diverse varieties by selecting for certain traits. Darwin claimed that nature was analogous to human breeders in that it could also "select for" or "favor" traits. He coined the powerfully misleading term "natural selection" to describe

the concept.

This broke from all scientific moorings by projecting onto nature a volitional ability to scrutinize all creatures, everywhere, at all times and unfailingly select the fittest in deadly survival competitions.[8] The "natural selector" saves the best traits and over time builds highly engineered organisms custom-fit to diverse environments.

Second, Darwin proposed crediting *the cause* of an organism's adaptations to nature and not, as it had been before, to the organism itself. Harvard evolutionary theorist Stephen J. Gould stressed Darwin's sweeping change in causality:

> Darwin's theory, in strong and revolutionary contrast, presents a first "externalist" account of evolution.…Darwin overturned all previous traditions by thus granting the external environment a *causal* and *controlling* role in the direction of evolutionary change.[9]

This externalistic approach sees organisms as passive "modeling clay"[10] being *shaped by* active environments.[11] Selectionist literature frames adaptation such that the environment "directly instructs the organism"[12] how to adapt. Externalists imagine a mystical force called selective pressure that is indispensable for shaping their interpretation of adaptation and is perceived to "work on," "drive," and "sculpt" a population of organisms. For example, a population of lions is envisioned as a selective pressure that ultimately molds the traits of a neighboring population of gazelles.

In contrast, internalism holds that most biological adaptation happens when highly regulated *innate* systems purposefully direct modifications of traits toward potentially successful outcomes. But that sounds like a design-based framework. Thus, externalists reject it because for them selective pressures must be both external to and imposed upon organisms.

The personification of nature strips God of His creative agency, and externalism rids creatures of their agency as *the causative entity* in adaptation. Darwin's bold, counterintuitive perceptions of personifying nature and pacifying creatures are the way selectionists view living things. Evolutionary biologists didn't rid biology of a creative agent; they just transferred it to nature.

Darwinism's Answer to Purpose: "It's All Random"

Darwin also advanced a very shrewd, two-pronged approach to address the purposeful activities pervading biology. Prong one is the Darwinian head-in-the-sand tactic where evolutionary biologists don't have to deal with purposeful systems in organisms…because they're not really there. Darwin tended to ignore purpose by viewing systems rather simplistically. Purposeful systems only *appear* purposeful, but they really aren't. Today, evolutionists desperately look for chaos to produce purposeful systems.

Darwin's disciples have historically treated the concept of purpose itself with contempt. Writing as early as 1887, a pioneer researcher in plant physiology aptly protested, "Concerning one point I should wish to anticipate: viz, the use of the word Purpose, a word which many fanatics of the theory of descent would if possible banish entirely from the language."[13]

More recently, professional woe awaits biologists who mention purpose. Darwinists disparage any biologist using even quasi-purposeful language to describe their observations, saying they make biology "sick" and "persist in making (literally) sense of a world that we know to be senseless."[14]

> It is no longer acceptable to think of biological objects as having any purpose because the overwhelming consensus of scientific opinion is that they were not designed and built by a Creator… with purposes in mind for them.[14]

Prong number two simply declares that key steps in the adaptation process are random despite the lack of tests that demonstrate this. Why "random"? Because it's the *opposite* of purpose. Randomness is at the heart of selectionism.

> A classical or Darwinian evolutionary system embodies a basic principle: purposeless genetic variation of reproductive individuals, united by common descent, coupled with…natural selection of those rare individuals that fortuitously express the traits that complement or thwart the contemporary selective pressures.… It's a process replete with chance.[15]

How is this anti-design? Though engineers may employ something like a random-number generator within a regulated process, under normal circumstances they reject the blindly muddled "hit and miss" or "trial and error" process envisioned for evolution to accomplish their design process. The evolutionary narrative gets people believing that adaptation happens via random mutations and so on, and then they intuitively sense that this clunky system wasn't engineered—especially by a wise God. Dennett sums up why attributing causality for adaptation to the environment (externalism) is the opposite of intelligent design.

> You'll never see a spear making a spear maker. You'll never see a horse shoe making a blacksmith. You'll never see a pot making a potter. It is always the other way around and this is so obvious that it just seems to stand to reason.…[Intelligent design] captures this deeply intuitive idea that you never get design for free…which Darwin completely impugns with his theory of natural selection. And he shows…not only can you get design from un-designed things, you can even get the evolution of designers from that un-design.[16]

Pulling It Together: How Theory Guides Interpretations

Upon the bedrock beliefs of purposeless biological activity and environments exercising agency, Gould adds three additional assumptions about genetic variability:

> Variation, in short, must be copious, small in extent, and undirected. A full taxonomy of non-Darwinian evolutionary theories may be elaborated by their denial of one or more of these central assumptions.[17]

These assumptions highlight how the evolutionary narrative is

built. They're *not* merited by a body of scientific findings but are needed to guide interpretations in line with the narrative's goal of directing thinking away from the Creator.

Table 1 summarizes how this is accomplished. Narratives guide how observations are interpreted (white section). Let's say an evolutionist observes a genetic change. Then within the context of externalism (green section) and based on their assumption of undirected genetic change (top gray box), they'll reflexively interpret the observed genetic change as a random mistake leading to a loss of information (white section). Working through the table highlights how anti-design notions that are baked into evolutionary theory feed the narrative gloss that characterizes what evolutionists "see" in nature and report in papers.

The evolutionary narrative demonstrates the power of theory. It didn't grow from a series of scientific discoveries that naturally fit together to form a rational guide to understand nature. Instead, it was purposefully manufactured as an anti-design framework to counter God's revelation in nature. Selectionism—the heart of the evolutionary narrative—is the mental construct framing interpretations in the minds of millions, as it did in mine when I was growing up.

Knowing this background provides a template for building a new theory of biological design that's opposite to evolution's anti-design stratagems. The next article will explore this topic.

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Dr. Guliuzza is president of the Institute for Creation Research. He earned his Doctor of Medicine from the University of Minnesota, his Master of Public Health from Harvard University, and served in the U.S. Air Force as 28th Bomb Wing Flight Surgeon and Chief of Aerospace Medicine. Dr. Guliuzza is also a registered professional engineer and holds a B.A. in theology from Moody Bible Institute.

a. Summary of evolutionary theory's (ET) externalism, where environments drive the organism-environment relationship					
b. ET empowers environments to:	1. Act. Nature can act like a human breeder.				
	2. Select. Environmental conditions are selective pressures that drive relatively passive creatures through lethal sieves.				
	3. Cobble. Phenotypic outcomes over time should bear characteristic signs of a "cobbling" or "tinkering" evolutionary process.				
	4. Direct. Nature's selective actions are the overriding directional factor in evolution.				
c. ET assumptions	d. Resulting interpretations of any change as:				e. Inferences
Undirected Genetic Change: No automated activation of genetic variation. No preset production of useful genetic outcomes.	Mistakes: Genetic changes are mutational errors that offer the principal source of genetic variety for adaptive changes.	Random: Changes are blind to the future needs of the organism.	Losses: Genetic change most often produces a loss of function. Broken products will be the dominant outcome.	Non-Lamarckian: No transfer of information from somatic cells to germ cells across generations. The Weismann barrier is impenetrable.	Genetic inheritance is the principal means to transmit selectable variation. Random genetic recombination and random drift are secondary mechanisms to generate genetic variety and sort through diverse traits.
Gradual Changes to Traits: No wholesale arrival of new traits. Phenotypic changes are imperceptibly small.	Slow: Each variant with slight phenotypic effects	Linear: Consistent rate of change over time—not long periods of stasis punctuated by episodes of conspicuous change	Continuous: Any trait to represent descent with modification from a universal common ancestor		Incremental accumulations of variation explain phenotypic differentiations between higher taxa. New species arise by a prevention of gene flow between populations that evolve differently.
Copious Offspring: Genetic variety is assumed to be plentiful within a population.	Trial and Error: Natural selection working on a large pool of random mutations in an unpredictable and haphazard manner with hit-and-miss outcomes				Evolution requires the study of populations. Most animal species are now extinct. Populations evolve by changes in gene frequency brought about by natural selection, gene flow, and drift.

Table 1. *Main elements of evolutionary theory*
(a) Darwin's revolutionary change from preceding theories of evolution was proposing an externalistic framework for the assumptions and interpretations within evolutionary theory.[16] (b) Evolutionary scientific literature projects onto the environment a pseudo-agency as a causal explanation of adaptation. Nature is conferred an ability to govern verbs as a causal agent. (c) These are the three core assumptions of what genetic and phenotypic change necessarily will be during adaptation. (d) The core assumptions dictate how a genetic or phenotypic change must be interpreted/characterized in evolutionary literature. (e) These are inferences about how increases in biological complexity and diversification happen.

MAY 3–5

Westby, WI
Living Waters Bible Camp
Spring Creation Conference
(R. Guliuzza)
LWBC.org or 608.634.4373

MAY 24–25

St. Louis, MO
South County Bible Church
Gateway Creation Conference
(R. Guliuzza)
CreationConf.com or 214.615.8325

MAY 5

Corsicana, TX
Lone Star Cowboy Church of Navarro County
(F. Sherwin)
ICR.org/CorsicanaTX or 214.615.8333

JUNE 9

Plano, TX
Calvary Chapel Plano
(T. Clarey, D. Napier, E. Steele)
ICR.org/PlanoTX or 214.615.8306

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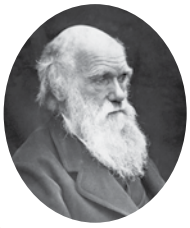
JULY 7

Rockwall, TX
Ridgeview Church Rockwall
Dinosaur Sunday
(B. Thomas, F. Sherwin, D. Napier, E. Steele)
ICR.org/RockwallTX or 214.615.8306

JULY 19–21



Medora, ND
Medora Community Center
Scopes Monkey Trial: This Is Our Time Conference and Field Trips
(R. Guliuzza, T. Clarey)
IBA777.org or 406.961.7850

AUGUST 2–7

Fort Qu'Appelle, Saskatchewan, Canada
Creation Science of Saskatchewan
Creation Family Camp
(J. Johnson)
Creation-Science.sk.ca or 306.252.2842

AUGUST 3, 5, & 6

Chicago area (multiple locations)
Midwest Creation Fellowship
(F. Sherwin)
MidwestCreationFellowship.org or 847.223.4730

AUGUST 7–11

Glendive, MT
Glendive Dinosaur and Fossil Museum
Dinosaur Dig Experience
(B. Thomas)
ICR.org/DinoDig

LANDMARK EVENTS GRAND CANYON ADVENTURE

AUGUST 28–SEPTEMBER 2

(T. Clarey)
LandmarkEvents.org/GrandCanyon or 210.885.9351

SEPTEMBER 3–7

(J. Johnson)
LandmarkEvents.org/GC5 or 210.885.9351

SAVE THE DATE

OCTOBER 4–6

Epsom, NH
Epsom Bible Church
New England Creation Conference
(R. Guliuzza, B. Thomas, E. Steele)
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HOT SPRINGS NATIONAL PARK

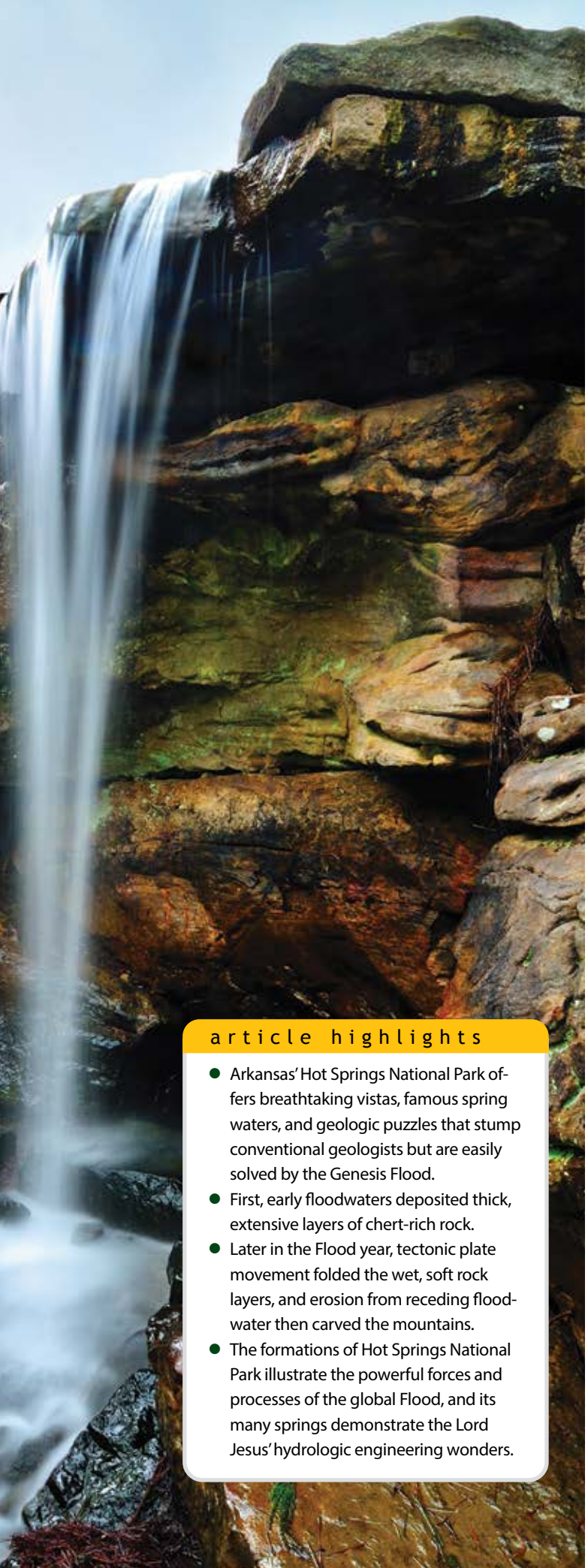
HYDROTHERMAL SPRINGS FORMED BY THE FLOOD

TIM CLAREY, PH.D.

Hot Springs National Park is located about an hour southwest of Little Rock in the folded Ouachita Mountains of central Arkansas. It is the second smallest national park in the United States at just under nine square miles. Park employees like to claim it's the "oldest area in the parks system" because in 1832 President Andrew Jackson signed legislation designating it as a federally protected region.[1] It became a national park in 1921.[2]

Seventy springs were counted in the original 1804 survey, but today there are 47 springs that still produce 750,000 to 950,000 gallons of thermal water a day.[2] Display Springs is the only one that was left in its natural state. All others have been covered and are used to pipe water to the bathhouses and fountains within the park.[2] Water temperatures run from about 95°F to above 147°F.[2] Most hot springs elsewhere have a foul, sulfur-rich smell, but Hot Springs water is known for its "exceptional purity, with no unpleasant taste or odor,"[3] making this hydrothermal system unique.

Waterfall cascade near Hot Springs, Arkansas



article highlights

- Arkansas' Hot Springs National Park offers breathtaking vistas, famous spring waters, and geologic puzzles that stump conventional geologists but are easily solved by the Genesis Flood.
- First, early floodwaters deposited thick, extensive layers of chert-rich rock.
- Later in the Flood year, tectonic plate movement folded the wet, soft rock layers, and erosion from receding floodwater then carved the mountains.
- The formations of Hot Springs National Park illustrate the powerful forces and processes of the global Flood, and its many springs demonstrate the Lord Jesus' hydrologic engineering wonders.

Hot Springs, Arkansas, skyline

Bathhouse Row, Hot Springs National Park

Park rangers claim the geologic features of the park extend back over 400 million years. But the rocks in the park don't tell us their age, and conventional geologists struggle to understand how many of these features formed. Three observations demonstrate how Hot Springs formations are best explained by the much more recent global Flood.

1. Thick layers of marine sediment called chert, or flint, blanket the area.
2. Outcroppings throughout the park reveal tightly folded rock layers.
3. A small stream flows through a water gap, dividing two mountains. Why did it cut across the ridge instead of going around?

Flood Rocks at Hot Springs

Rocks exposed in the park comprise two sedimentary megasequences. The lower layer is the Tippecanoe and the upper is the Kaskaskia. Each megasequence represents a major pulse or advance of ocean water onto the pre-Flood continents. This was followed by a slight drop in water level before a new megasequence advanced on top of the previous one. Megasequences are like chapters in the Flood, with individual strata for pages, and each one contains unique marine fossils. Both of these megasequences were part of the early progression of the global Flood, likely deposited prior to day 40 of the Flood year.[4]

An unusual rock type formed across Arkansas during deposition of the Tippecanoe and Kaskaskia Megasequences. This rock is

an ocean sediment known as chert or flint. It's a type of fine-grained quartz that's fairly amorphous, like agate. Many cultures used chert to make arrowheads and other stone tools. Figure 1 shows the extent of the Kaskaskia chert-rich rocks in green. Note this same deposit covers most of Arkansas and parts of the surrounding states. Conventional geologists don't fully understand how such thick, extensive layers of chert could form.

Flint arrowheads
Image credit: James St. John, Wikimedia Commons, CC BY 2.0 Deed

The Tippecanoe layer, called the Bigfork Chert, is about 750 feet thick. The Kaskaskia quartz-rich rock is called novaculite, which is similar to chert but is mostly microcrystalline quartz. This layer is called the Arkansas Novaculite and is about 900 feet thick. Both rock types consist of very pure quartz. Creation geologists think chert-rich rocks formed in the Flood because of an unusual water chemistry that possibly denotes extremely hot water rich in dissolved quartz. Regardless, the thickness and extent of these deposits are best explained by the global Flood's massive waves and megasequences.

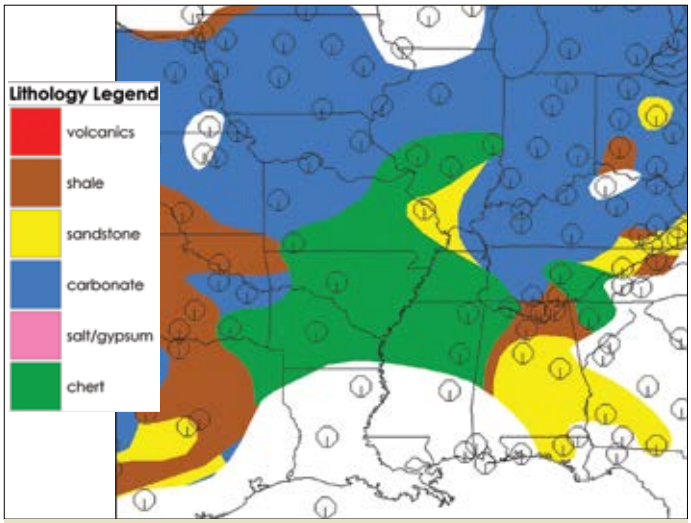


Figure 1. *Map of south-central United States showing the basal rock type of the Kaskaskia Megasequence. Arkansas is near the center. The green is chert-rich Arkansas Novaculite. Each circle is a control point and represents a stratigraphic column. There are no Kaskaskia rocks where the map is white. See the legend for other rock types.*
Image credit: Davis J. Werner

Folding and Faulting of the Sediments

Many rock layers throughout the park are tilted and tightly folded. Conventional geologists claim they folded over 300 million years ago during the same tectonic plate collision that formed the Appalachian Mountains. Some of the layers would have been over 100 million years old at the time they were deformed and should have been solid rock by then. Rocks today do not fold—they shatter. How did these rocks fold so easily?

Flood geologists can explain this. They propose that just weeks after the sediments of the Tippecanoe and Kaskaskia Megasequences were deposited in the early Flood, a tectonic collision folded them. The Ouachita Mountains formed as two plates rammed together at a rate of yards per second,[4] which was much faster than today's plate velocities. This is known as catastrophic plate tectonics,[4] and it only occurred during the Flood year. The plate collision caused the still-wet and compacted sediments to bend, fold, and even fault. This explains why the mountains in the park are so tightly deformed but not shattered.

Folded rocks in Hot Springs park
Image credit: Arkansas Geological Survey. Used by permission.

Late Flood Erosion

The park's visitor center is located in a water gap (valley) between Hot Springs Mountain to the east and West Mountain to the west (Figure 2). Today, a rather small stream called Hot Springs Creek flows through this gap. Why would a waterway cut through the ridge and divide these two mountains? The water should have gone around.

Conventional scientists claim this is a product of stream piracy in which a stream on one side of the ridge just happened to originate at the same location as a stream running down the other side. Over time, one of the streams overtook the other (piracy). But the coincidence of this happening is highly unlikely.

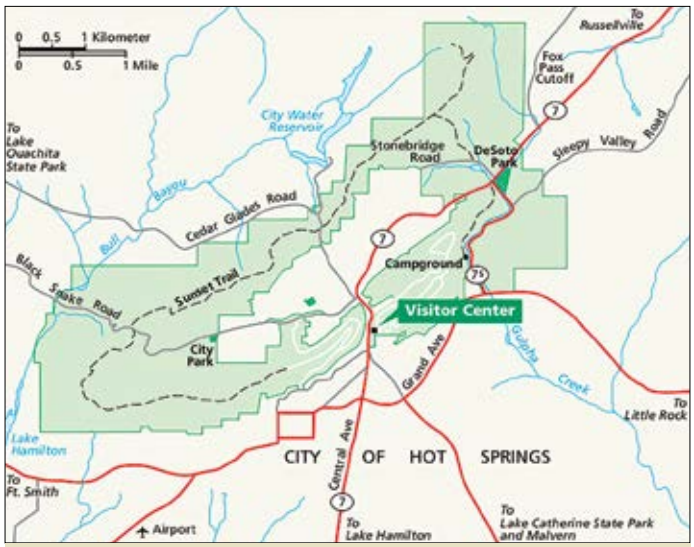
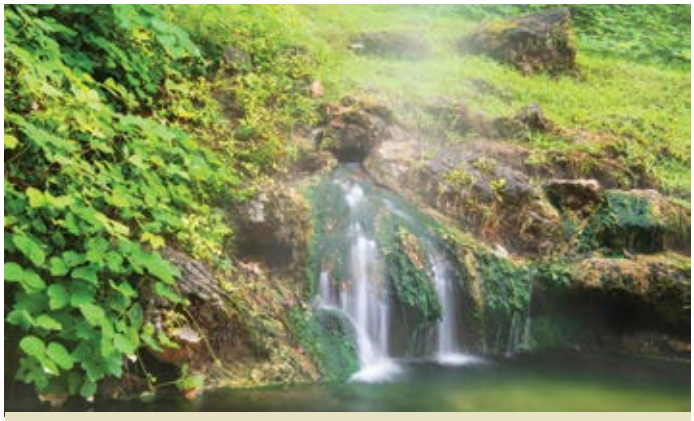


Figure 2. *Hot Springs regional map*

Instead, Flood geologists suggest the uplift of the Ouachita Mountains caused fractures and faults to cut across the ridges. During the highest point of the Flood, water would have been well over the tops of these mountains. As the Flood began to recede, water would rush through these cracks, widening them until a gap was created. Today, small streams like the one at the visitor center continue to flow through these gaps.



Spring water comes out of the ground steaming after its long subterranean journey.

Hot Springs Hydrothermal System

The Flood's receding water eroded the Zuni Megasequence sediments that had likely been deposited across the park during the peak of the Flood.[4] Zuni layers are found just to the south and extend underneath the Gulf of Mexico.[4] The receding Flood also rounded and smoothed the ridges, created water gaps, and exposed the highly folded chert layers.

Today, rainwater enters the ground through the fractured, chert-rich layers, percolates downward possibly a mile,[2] and is warmed by the earth's geothermal gradient. Sinking rainwater recharges and pressurizes the system, forcing heated water up along faults and permeable sand layers. This produces the springs. The water is so pure because the chert source rocks don't readily dissolve like limestone does. This also possibly explains the lack of odor since chert doesn't contain sulfur-rich minerals.

Display Springs, Hot Springs National Park
Image credit: National Park Service

Genesis 2 describes the pre-Flood world as having mists rising from the earth, possibly fed by springs. It also describes a river that went out of Eden that was perhaps also fed by springs. While the global Flood completely changed the earth's surface and we can only speculate about pre-Flood conditions, perhaps the hydrothermal system at Hot Springs provides a glimpse into how the Creator might have engineered that earlier hydrologic system.

Conclusion

Hot Springs National Park showcases layers of sedimentary rock deposited and folded in the Flood about 4,500 years ago. The smoothed ridges and water gaps illustrate the power of the receding floodwaters, and the many springs demonstrate the wonders of the hydrologic cycle engineered by the Lord Jesus. These springs help provide water for us today, and similar springs might have supplied the pre-Flood world, too. They certainly give us more cause to celebrate the wonders of God's creation.

Hot Springs public fountain. The spring water is known for its odorless purity.

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JEFFREY P. TOMKINS, PH.D.

Medium ground finch (Geospiza fortis), *Galápagos Islands, Ecuador*

Galápagos Finches A Case Study in Evolution or Adaptive Engineering?

A group of birds known as Darwin's finches live in the Galápagos Islands, which are located in the Pacific Ocean 600 miles west of Ecuador. These birds have been a leading icon for evolutionary research and observations. But do they really prove the neo-Darwinian paradigm of evolution through mutation and selection over long periods of time?

The Darwin's Finch Story Begins

True finches comprise birds in the family Fringillidae that live all over the world except in Australia and the polar regions. But from a research perspective, the most renowned finches are the ones named after Darwin—which are actually not considered true finches since they are members of the tanager family (genus *Geospiza*). These finches got their fame from Charles Darwin's visit to the Galápagos in 1835 on his HMS *Beagle* voyage. Darwin, *Beagle* captain Robert FitzRoy, and several assistants collected multiple finch specimens and brought them back to England.[1]

Darwin didn't write about the finches until after he studied them in England. John Gould, a British systematist, initially described the birds as a set of unique species. When Darwin began examining them, he believed their beak variation was evidence for his theory of gradual evolution. He thought the beaks had been shaped by natural selection. Darwin wrote:

> The most curious fact is the perfect gradation in size of the beaks of the different species of *Geospiza*. Seeing this gradation and diversity of structure in one small, intimately related group of birds,

article highlights

- Charles Darwin claimed that the beak variation he saw in the Galápagos birds named after him was due to evolution by natural selection.
- Darwin's finches, which are actually tanagers, became an evolutionary research icon when Peter and Rosemary Grant began their 40-year study of them in 1973.
- Finch DNA and epigenetics associated with beak development demonstrate engineered adaptative systems—the opposite of random mutations.
- Galápagos finches possess an innate ability to rapidly adapt to the islands' changing environments, which points to the complex workmanship of the all-wise Creator.

> one might fancy that, from an original paucity of birds in this archipelago, one species had been taken and modified for different ends [by natural selection].[1]

At present, it's claimed that about 13 species of dark-colored finches inhabit the Galápagos Islands. Each island hosts more than one species, and many of these species can interbreed. Darwin had collected nine of the 13 species.

Darwin's Finches Become an Evolutionary Icon

While many modern textbooks assert these finches were a major discovery for Darwin's theory of evolution, he did not include them in *On the Origin of Species by Means of Natural Selection*. The first person to coin the term "Darwin's finches" was English surgeon and ornithologist Percy Lowe in 1936, which was more than 50 years after Darwin's death. But the person who really brought the idea to the forefront of scientific thought was David Lack in his 1947 book *Darwin's Finches*.[2]

Princeton University husband and wife team Peter and Rosemary Grant established Darwin's finches as an evolutionary model system when they went to the Galápagos Islands in 1973. They carefully monitored the populations of various species of finches, focusing primarily on the island Daphne Major, which was well-isolated from human interference compared to the other islands.

The Grants recorded weather patterns, the birds' diets, and changes in body and beak size/shape over many years. In fact, the Grants' research ended up being a 40-year, ongoing study that even incorporated modern genomic technologies that didn't become available until late in their careers.[3]

Satellite image of five of the 13 Galápagos Islands
Image credit: ESA, CC BY-SA IGO 3.0

Small ground finch (Geospiza fuliginosa), *Galápagos Islands, Ecuador*
Image credit: Putneymark, Wikimedia Commons, CC BY-SA 2.0 Deed

Finch Population Numbers and Climactic Cycles

One of the most interesting aspects of the Grants' research was what followed a drought that hit the Galápagos Islands in 1977. Because of the drought, tough seeds were the only readily available finch food. Finches with smaller beaks couldn't crack the seeds and therefore starved, while the few with larger beaks could crack open the seeds and survived. Evolutionists claimed that nature was somehow selecting and driving the birds' thickening beaks, giving Darwin's theories a seemingly real-life example.

However, in 1982 and 1983, higher-than-normal rainfall stimulated the drought-stressed plants to rebound, and the island developed a lush environment. As a result of the increased seed availability and softer seeds, finch numbers increased, including the preponderance of birds with smaller beaks. For every supposed evolutionary step forward for beak sizes, the trait took a step backward. There was only a temporal population shift.[3]

As it turns out, these climactic cycles are quite common in the Pacific Basin and are known as the El Niño–Southern Oscillation. This environmental phenomenon greatly appealed to the Grants, who believed that this was an ideal outdoor laboratory for observing natural selection during their 40 years of research on the finches.[4]

Specified Innate Variation—Not Evolution

Early in the Grants' research, Peter Grant astutely noticed that the beak trait (shape/size) in a certain finch population was "oscillating back and forth" over time.[5] This finch beak oscillation was even noted in an evolution textbook, which stated:

> Beaks evolving up in some years, down in other years, and staying constant in yet other years—probably results in some kind of "stabilizing" selection over a long period of time.[6]

The author uses the mystical term "stabilizing selection" instead of claiming that any major directional evolution was achieved outside of the innate specified range of variability. In reality, the Galápagos finches have only shown their God-given, innate abilities to adapt, survive challenging environmental conditions, and fill niches. And they do this while keeping their basic created kind intact and viable.

The evolutionary reasoning that governs much of modern biology speculates that random mutations result in new traits, but evidence for this has been hard to find in the finch DNA. A 2022 study in *Science Advances* investigated the genomic architecture underlying finch adaptive diversity, which included a comprehensive analysis of DNA sequences associated with such traits as beak and body size.[6]

Researchers discovered that in the small, medium, and large ground finches there were 28 different chromosomal locations (loci) showing strong genetic differences that were statistically correlated with beak and body size. The researchers determined that these loci represented ancestral blocks of DNA whose origins predate the recent adaptive diversification of the finches. In fact, a number of the genes inside the large blocks of DNA were those previously found to be associated with beak development.

The bottom line is that these blocks of DNA were not connected to random mutations but to preexisting, functionally complex blocks of stable code. Obviously, the genetic data point not to the random mutations of evolutionary theory but to an all-wise Creator who engineered the code when He created this particular finch kind.

The *Science Advances* article included further analysis of data from a massive DNA sequencing study published in 2015.[7] This original project sequenced the genomes of 120 different individuals representing all of Darwin's finches and two close relatives. One of the first things the researchers documented was "extensive evidence for interspecific gene flow throughout the radiation."[7] In other words, despite the fact that subsets of the original finch kind had diversified and adapted to specific feeding-based niches, they were still interbreeding on occasion with finches from other niches. Thus, the researchers commented:

> Extensive sharing of genetic variation among populations was evident, particularly among ground and tree finches, with almost no fixed differences between species in each group.[7]

Another interesting finding was that a large 240,000-base region of the finch genome encompassing a regulatory gene, transcription factor *ALX1,* was strongly associated with beak shape diversity across the different groups of finches. The *ALX1* gene is a master regulator of a network of other genes associated with craniofacial development, including beak shape and size. Thus, different variants of the *ALX1* gene region strongly contributed to the diversification of beak shape, leading to an expanded utilization of food resources among the various environmental niches.

In another study published in 2023, researchers (including the Grants) used whole genome data from 3,955 of Darwin's finches representing four species on the Galápagos island of Daphne Major.[8] They discovered that only six major loci explained 45% of the observed variation in beak size, which was a highly heritable trait.

The most prominent locus was a gene block containing four genes that carried enough variation within it to cause a rapid adaptive shift in the population in response to drought conditions that altered the food supply. The researchers noted, "Only a small fraction of the genome is strongly differentiated among species of the *Geospiza* ground finches."[8] Similar to previous research, the data showed that the limited amount of specified diversity was maintained and distributed among the finches by interbreeding. Once again, adaptive, innate variation was readily transferred by interbreeding based on preexisting code blocks. This facilitated adaptation—not random evolutionary mutations.

Epigenetic Mechanisms Further Negate Mutation

Authentic creature kind diversification and adaptation is a process whereby organisms diversify within the boundaries of their own genetic variability. This can result in variants with specific ecological adaptability. While it was once thought that this process was strictly facilitated by DNA sequence variability—as in certain specified major genetic loci mentioned above—Darwin's classic example of adaptation in finches now includes a surprisingly strong epigenetic component as well.

Epigenetics is emerging as an important theme in creature adaptation.[9] It's becoming evident that both genetic variability and epigenetic mechanisms are built into the genome as adaptive systems of variation. These systems allow for robust diversification and niche filling to occur within the boundaries of created kinds.

Epigenetic changes involve the addition of chemical tags in an organism's genome without actually changing the genetic code. Both the DNA nucleotides and the proteins called histones that DNA is wrapped around can be chemically tagged by different types of controlling molecules that determine how genes are turned on and off. Thus, the epigenetic regulation of the genome can produce differences in traits without actually being related to changes in the DNA sequence itself.

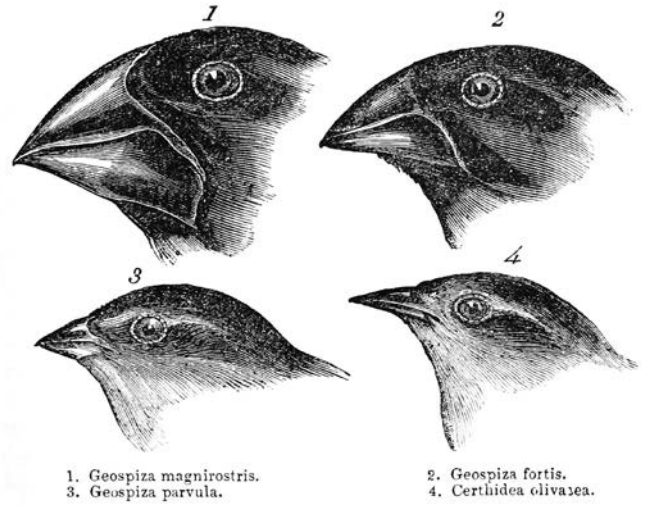
What's even more amazing is that these changes can be inherited over multiple generations. Thus, epigenetic changes facilitate variability and diversification within created kinds. Traditional Darwinian evolution alleges that random changes in the DNA generate new and useful variants that are then selected by the environment. Epigenetics soundly negates this idea.

In 2013, a study demonstrated the epigenetic basis of diversifying adaptation in house sparrows, species *Passer domesticus*, that

were introduced in Kenya in the 1950s. Their progressive geographical spread and ecological patterns of adaptation were characterized by differences in genome-wide DNA methylation patterns, not variation in the actual DNA sequence.[10]

How might epigenetics facilitate adaptation in Darwin's finches? And could it possibly underly variation in finch beaks? In previous research, it was found that very similar developmental genetic pathways among finch species can produce markedly varied beak shapes.[11] So, if the genes are essentially the same between finch species, then what seems to be the major mechanism of variation?

In a 2014 study of Darwin's finches, researchers examined two different regulatory features in the genome.[12] The first was short sections of non-coding DNA sequence that varied in the number of copies (repeated units) called copy number variants, or CNVs. In humans, differences in CNVs form the basis for studying forensics and paternity testing and are also connected with development. The second factor the researchers evaluated was genome-wide patterns of DNA methylation.



Darwin's finches or Galápagos finches. Darwin, 1845
Image credit: John Gould, public domain

From these analyses, the researchers found that epigenetics (DNA methylation) correlated well with increased diversity among finches, but CNVs, based on actual DNA sequences, did not. They also undertook a more focused study of the epigenetic profiles of specific genes involved in the birds' morphogenesis of beak shape, immune-system responses, and coloring. Remarkably, the epigenetic profiles of the different finch species for all of these developmental gene groups were different, while the DNA sequences were nearly identical.

In a 2017 study, researchers collected data from over 1,000 birds from two different species of Darwin's finches: *Geospiza fortis* and *G. fuliginosa*.[13] The birds were separated into two different groups that lived on Santa Cruz Island in the Galápagos, which had a significant human population. One of the finch populations was rural and ate food available in the wild. The others were urban and had adapted to eating human food. They found that urban *G. fortis* finches were larger in nearly all morphological measurements—including body size and beak shape—compared to rural *G. fortis*. This was likely due to increased food availability at the urban site.

However, the two different *G. fuliginosa* populations showed no significant morphological differences. Furthermore, they did not find any differences in the overall study based on DNA sequence data. In contrast, they did discover dramatic epigenetic differences between the urban and rural populations of both species based on DNA methylation analysis. Thus, the adaptations of the birds to two different food-source environments were largely determined by epigenetics—a built-in system of adaptation that has nothing to do with any hypothetical theory of mutation-selection.

Conclusion

Much of the scientific focus on Galápagos finches has been on the different shapes and sizes of their beaks, which are also connected to the broad range of behavioral adaptations exhibited for different food sources. Ground finches forage and exploit the soil and crevices in large rocks for seeds. Cactus finches penetrate and feed on cactus flowers and fruits with their sharp pointed beaks. Warbler finches forage leaves of trees and bushes for small arthropods. Woodpecker finches use small twigs as tools to extract insect larva from crevices in tree bark that they can't reach. And sharp-beaked finches called vampire finches peck on the feather buds of large birds called boobies to drink their blood.

All of these different adaptations, however, have no fundamental basis in the mutation-selection paradigm of Darwinism. Instead, they are explained by built-in genetic variability and epigenetic control systems in the genome. These have their basis in the exquisite design and complex engineering of the all-wise, omnipotent Creator.

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Dr. Tomkins is a research scientist at the Institute for Creation Research and earned his Ph.D. in genetics from Clemson University.

There shall come forth a Rod from the stem of Jesse,
and a Branch shall grow out of his roots.

— Isaiah 11:1 —

Cross section of leaf stem with trichomes
(Arabidopsis thaliana)

Image credit: Micrograph captured and edited by Michael J. Boyle, Ph.D., The William B. Dean, MD Imaging Center of the Institute for Creation Research

JAKE HEBERT, PH.D.

Oysters and Pre-Flood Longevity

The oyster species *Crassostrea virginica*, also known as the eastern oyster, is a prized seafood. Research has demonstrated that a fossil version of the *Crassostrea* oyster lived much longer than its modern-day counterparts. Called *Crassostrea titan* because of its large size, it provides evidence that at least some animals in the pre-Flood world experienced much longer lifespans, just as humans did (Genesis 5).

This Crassostrea titan *fossil is nine inches (23 centimeters) long—about twice the length of today's* Crassostrea *oysters.*
Image credit: Kevmin, Wikimedia Commons, CC BY-SA 3.0 Deed

Years ago, creation researchers Don Patten and Greg Beasley predicted that gigantism and delayed maturation accompanied the extreme longevity of creatures living before the Flood.[1,2] Fossil representatives of many creatures were once much larger than their descendants. The pre-Flood world was filled with giant turtles, fish, camels, sharks, snakes, penguins, dinosaurs—you name it! But how can you show that a fossil creature lived longer and took longer to mature than its descendants?

article highlights

- Some pre-Flood oysters matured slower, lived longer, and grew larger than their modern descendants.
- This matches trends for other creatures in the fossil record like turtles, fish, snakes, crocodiles, and sharks.
- Recent study findings fulfill the predictions of earlier creation researchers, but more research is needed.

The eastern oyster

One way is to count growth rings in the hard parts of some organisms, like the shells of clams and oysters. This enables scientists to construct growth curves that show how large the oysters grew, how long they lived, and how long it took them to mature. This can be done for both living and fossil oysters.

The accompanying figure is my reconstruction of a graph from the mainstream technical journal *Paleobiology*.[3] It compares growth curves constructed from three groups of fossil *Crassostrea* oysters and one group of contemporary *Crassostrea* oysters. Two of the fossil groups living in the pre-Flood world were found in Flood strata. A third fossil group was found in likely Ice Age post-Flood deposits. The final group consisted of contemporary ("recent") *Crassostrea* oysters.

The Flood and post-Flood growth curves show a dramatic difference. The adult Flood oysters are more than twice as long as the post-Flood oysters (about 275 mm compared to about 135 mm). The post-Flood curves indicate that none of those oysters lived past nine years. But the pre-Flood oysters lived as long as 20 and 23 years!

Also, the slopes of the growth curves trace how long it took the oysters to mature. At the age when growth stops, the slope of the curve flattens. Comparing the slopes of the four groups shows that the Flood oysters took much longer to reach adulthood than the post-Flood oysters. Thus, on a single graph we see evidence of greater adult body size, delayed maturation, and greater longevity in pre-Flood oysters, just as Patten and Beasley predicted!

But can we be reasonably sure the growth bands are annual? What about possible objections to this research conclusion? Space doesn't permit a detailed discussion in this article, but I address these issues in a recent research paper that can be freely read online.[4]

Obviously, more fossil animals need to be examined and possible objections addressed before we can make a strong claim. Nevertheless, I'm very excited about what we're finding. As always, thank you for your faithful prayers and financial support that make this research possible.

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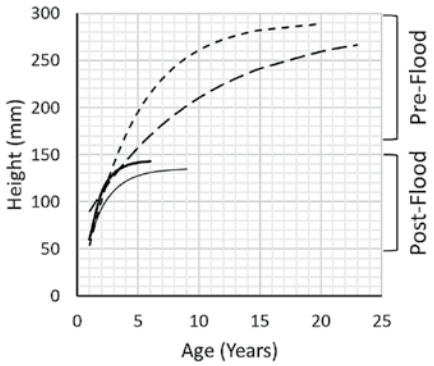
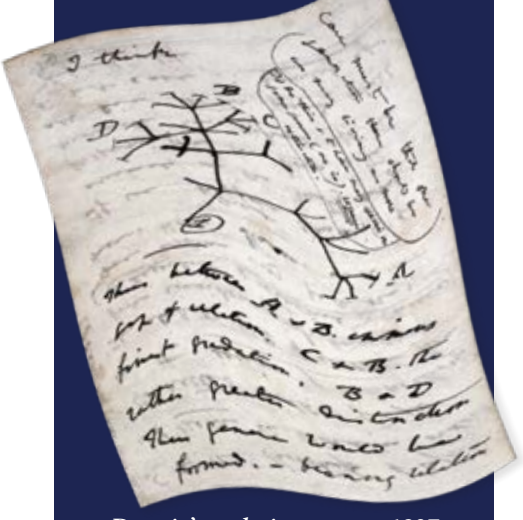
Dr. Hebert is a research scientist at the Institute for Creation Research and earned his Ph.D. in physics from the University of Texas at Dallas.



Growth trends of pre-Flood oysters compared to post-Flood oysters. Used by permission of the Creation Research Society.

MICHAEL STAMP



Darwin's evolutionary tree, 1837

Standing Against False Science

I'm Michael Stamp, and I'm in my 12th year as an editor at the Institute for Creation Research. It's always an encouragement to see people's eyes light up as they tour the ICR Discovery Center or study our resources. And it makes my day when I read a letter of gratitude from someone whose creation science journey has been blessed by our work.

ICR's mission is to glorify Jesus Christ and give Him the credit He is due as Creator. By communicating the abundant science that supports the Bible and opposing the deceptive doctrines behind evolutionary thinking, we hope to open people's eyes to our society's unquestioning acceptance of Darwin's "creation substitute" despite its lack of evidence.

The need to stand against entrenched false science, however, is nothing new. Though Darwinism itself is relatively recent, the susceptibility of culture to such "backward" ideas isn't. In the second century AD, Greek astronomer Claudius Ptolemy accepted Aristotle's concept of an Earth-centered solar system and developed a geocentric model. Like many at the time, Ptolemy believed the sun orbited Earth simply because it looked that way—after all, the sun rises and sets each day. For about 1,400 years, most scientists accepted Ptolemy's model as fact.

How could educated people believe this erroneous model for so long? It wasn't only because the sun appeared to orbit Earth but also because the Greeks were so highly regarded that their conclusions were rarely questioned. It wasn't until Polish astronomer Nicolaus Copernicus presented his heliocentric model—which places the sun at the solar system's center—that scientific doubts about the old model really took root and grew. Even then, it was decades before the new paradigm was widely accepted.

Similarly, people today tend to believe that Darwinian mutation-selection is responsible for the intricate diversity of life simply because many members of the scientific community present it as established fact. This flawed thinking has permeated science for generations, ever since Charles Darwin published *On the Origin of Species* over 150 years ago.

Yet, even Darwin wrote "I think" next to his first evolutionary tree drawing. Why? It's because he didn't actually observe evolution. Darwin speculated that life forms could spring from nonliving matter and become increasingly more diverse through random processes. But the transitional fossils that would prove evolution have never been found, and genetics research provides no basis for one creature type transforming into another. Even many evolutionists are beginning to doubt Darwinism.[1]

The geocentric model eventually died under the weight of new discoveries and the advent of scientists willing to reconsider accepted norms—and evolution is headed in the same direction. The evidence indicates that species don't evolve; rather, they change because they're engineered to rapidly adapt themselves to changing environments.[2]

Just as Copernicus opened the eyes of scientists to the sun's place in our solar system, ICR works to demonstrate how science truly supports the Genesis account of origins. While evolution is founded on a system of death and chaos, biblical creation represents a model of life and order.

Thanks to your support, ICR is standing against false science and equipping a new generation with God's creation truth. We're grateful for your prayers and financial gifts that allow us to carry out research for the glory of God. We invite you to join us in proclaiming Christ Jesus as Creator, Redeemer, and coming King, by whom "all things were created," both in heaven and on Earth (Colossians 1:16).

UPCOMING MEET AND GREET EVENTS

Free event • registration required • limited seating

- September 8—Medora Community Bible Church, Hutchinson, KS
- September 15—First Baptist Church, Ness City, KS
- September 27–28—Victory Baptist Church, Marysville, KS

Come meet with ICR Director of Donor Relations Chas Morse to hear the latest updates on ICR's research and vision for the future. For more information, email **ICRmeetandgreet@icr.org.**

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Mr. Stamp is an editor at the Institute for Creation Research.

JAMES J. S. JOHNSON, J.D., TH.D.

Christ's Creativity in Canyon Critters

Grand Canyon animals display many marvelous traits and behaviors as they live life in that harsh habitat. These canyon creatures succeed thanks to the Lord Jesus Christ's providential provisioning and not due to impersonal "luck."

Turkey Vultures

It's not by good luck that turkey vultures can find rotten carrion, gobble it down, and not die of food poisoning. Vultures have powerful senses of sight and smell; they detect dead animals from afar. Equipped by God for scavenging in this fallen world, they serve as garbage collectors/processors, picking apart and eating roadkill and other carcasses.

Why don't they get sick or die of botulism? The acidity of vultures' digestive tracts is astounding. The digestive juices in their stomachs can reach a pH between 1.5 and 1.0, more corrosive than car battery acid and caustic enough to instantly denature to death almost any bacterial or viral pathogen![1] If the vultures' Creator had not constructed their stomachs with such germ-destroying acidity, the vultures themselves would quickly become dead meat.

Horned Lizards

If these lizards' camouflage fails to defend them against predators, they can flee. But there's more—many horned lizards (aka "horny toads") can aim and squirt a stream of blood from the corners of their eyes! By constraining blood flow to build up blood pressure, blood vessels near the lizards' eyelids rupture, producing a target-directed squirt of blood. Felines (such as bobcats or cougars) and canines (such as coyotes or foxes) hate the taste of lizard eye blood.[2]

Of course, it's not by evolutionary accident that horned lizards have this ability to squirt blood up to five feet from their eyes to repel approaching predators. This bizarre defense—called ocular-sinus blood-squirting—is not something that lizards luckily evolved "as needed" by trial-and-error as hungry predators lunged at them in the canyon!

article highlights

- Christ Jesus designed desert animals with specific abilities to thrive in even the most severe environments.
- Vultures' digestive systems are built to handle dead flesh, horny toads can squirt blood out of their eyes as a defensive measure, and roadrunners know exactly where to strike to kill venomous rattlesnakes.
- Everywhere we look we find creatures with incredible built-in abilities.

Greater roadrunner fighting a diamondback rattlesnake

Roadrunners

Likewise, roadrunners did not luckily learn by hit-or-miss guessing how to speedily bite a rattlesnake next to its venomous fangs to prevent a striking rattler from successfully biting them.

> Amazingly, God has designed the roadrunner so it can speedily aim at the face and fangs of a striking rattler, using its pointed bill to bite and clamp onto the rattler's open mouth between or behind the upper fangs, lock-biting the snake in a death grip. Then the bird repeatedly thrashes and crushes the serpent's head against rocks, killing it.[3]

Consider joining one of ICR's upcoming Grand Canyon Adventures to observe God's wonders there for yourself! See page 8 for more information.

Rabbits, Wasps, Squirrels, and Rats

As noted in previous *Acts & Facts* articles, other canyon critters exhibit Christ's creative and caring providences, such as black-tailed jackrabbits (whose huge ears radiate excess body heat),[3] tarantula hawk wasps (who inject their young into the flesh of tarantula spiders),[4] tassel-eared squirrels (who mutualistically help their neighborhood's ponderosa pine and truffle fungi),[4] kangaroo rats (who don't need to drink water due to their water-conserving physiology),[3] and more.

Grand Canyon's diverse denizens continuously track environmental conditions and then self-adjust their traits and behaviors for purposeful results.[5] Canyon critters survive because of precisely targeted solutions to habitat challenges.

Truly, Grand Canyon houses a community of amazing animals. Those animals display Christ's bioengineering genius in design details and demonstrate the Creator's providential provision for wildlife living in Grand Canyon.

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Dr. Johnson is associate professor of apologetics and chief academic officer at the Institute for Creation Research.

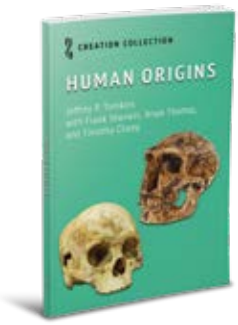
First of all, I want to thank you for your ministry and for standing on the doctrine of the Bible. I love your publications *Acts & Facts* and *Days of Praise*. Second, **I have bought many books and videos from your ministry. They have helped me in strengthening my faith in the Lord Jesus Christ.** Recently I bought *Dinosaurs: Exploring Real-Life Dragons of History* and *Unlocking Eclipses*. Both are excellent books and well researched. Third, I am writing you because I am a born-again Bible believer and biblical creationist and biblical paleontologist. Your ministry has been a blessing over the years. I first started with your ministry when it was in Santee, California.

— D. S.

Just wanted to comment on the [October 2023] research edition of *Acts & Facts* that I noticed several times [that] "research funded by ICR donors" was included in the articles. **What a great way to acknowledge those donors, encourage more, and humbly convey dependence on God's providence!** May ICR's 2024 be blessed.

— J. M.

Thank you, thank you! I was so excited that this research edition of *Acts & Facts* was coming I can't tell you! And today it arrived. I immediately began devouring it. **By the way, I'm thoroughly enjoying the powerful imagery and text in *Human Origins*.** I can't wait for the next volume in this series to come out! Thanks again for straightening out my address change. I've really missed *A&F* since our move, and getting it back again, even this one copy, is a shot in the arm for an old creationist curmudgeon like me. God bless all at ICR!



— J. C.

Editor's note: The next two books in the Creation Collection series are now available—*Dinosaurs: Exploring Real-Life Dragons of History* and *Sea Creatures: Discovering God's Underwater Wonders*. You can find out more about them on page 24.

[The December 2023 kids edition of *Acts & Facts*] was such a blessing to share with my younger generation. My adult class liked it also! — S.

My five-year-old son is big into axolotls [*sic.*], so when this arrived he went running around the house showing it to everyone! Love it, thank you! — J.

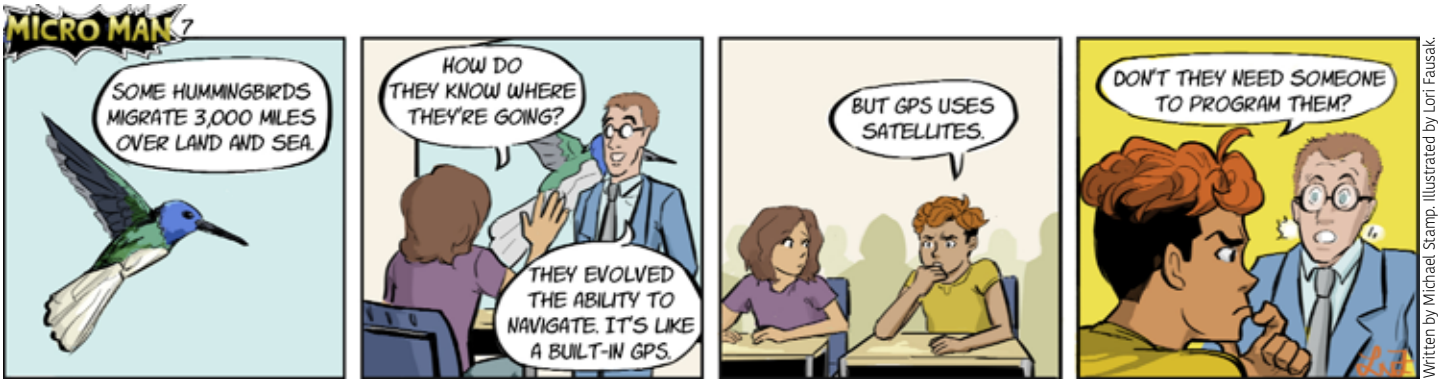
Our kids loved this edition! They did every activity in it. — C.

Thanks for putting the kids' favorite animal on the front. Definitely increased the amount it was open in our house. — T.

Our boys were thrilled to find this in the mailbox! They've kept it in the van and have read it over and over when driving places! — B.

Editor's note: If you would like a copy of the *Acts & Facts* kids edition or to print extra copies of the activities, you can find PDFs at **ICR.org/CreationKids**.

Have a comment?
Email Editor@ICR.org or write to
Editor, P. O. Box 59029, Dallas, TX 75229.
Unfortunately, ICR is unable to respond to all correspondence or accept unsolicited manuscripts, books, email attachments, or other materials.



Written by Michael Stamp. Illustrated by Lori Fausak.

Creation Kids

Seeds and Sprouts

ICR INSTITUTE FOR CREATION RESEARCH

Ready, set, grow! Our Earth is filled with all sorts of beautiful plants. Many sprout from seeds through a process called germination. With the right amounts of water, oxygen, and warmth, these seedlings, or baby plants, develop into healthy adults. The Lord Jesus designed each spectacular seed with everything it needs to flourish! Did you also know...

- Each seed has built-in nutrients to grow and thrive. Most also have a tiny root, stem, and at least one leaf inside!
- Some types of plants, like spinach, need cooler temperatures for their seeds to germinate.
- Seeds are good for you, too! They're great sources of fiber, protein, and healthy fats.

Seed Scramble

Can you unscramble the names of these popular flowers?

1. Esor _____
2. Onsuflwre _____
3. Vnealred _____
4. Iayds _____
5. Putil _____
6. Ylli _____

Plant Heads supplies: seeds and/or seedlings, potting soil, eggs, egg carton, knife, and markers

Instructions:

1. Ask an adult to gently cut off the top of an egg with a knife. Clean out the inside of the egg. Repeat with all the eggs you want to use.
2. Using a marker, draw a silly face on each egg.
3. Fill each egg with potting soil and seeds or a seedling of your choice.
4. Store the plants in an open egg carton. With sunlight and water, they'll grow egg-cellent locks of "hair"!

Answers to Seed Scramble: 1. rose, 2. sunflower, 3. lavender, 4. daisy, 5. tulip, 6. lily

BY RENÉE DUSSEAU AND SUSAN WINDSOR

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Creation Q&A 2
Answers to 32 More Questions about the Bible and Evolution

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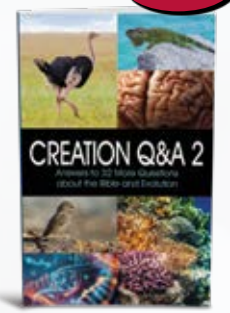

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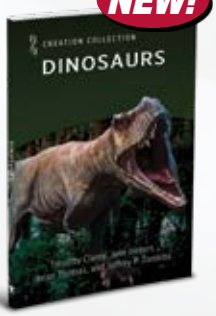

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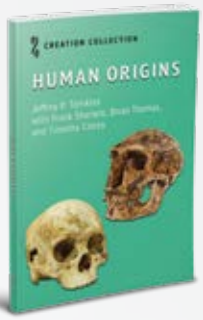

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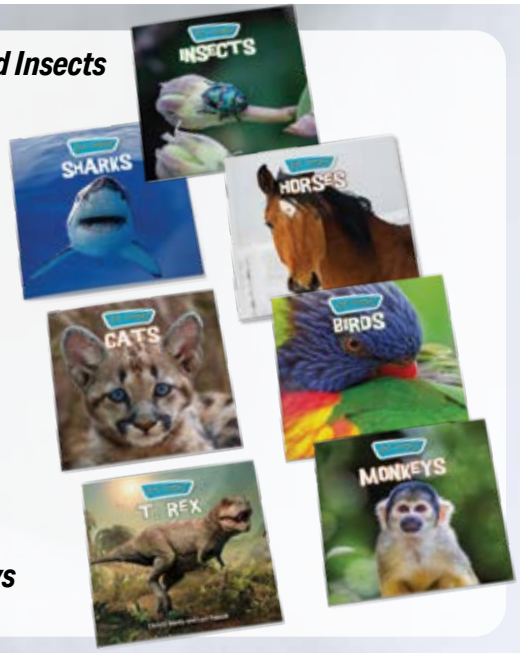

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