Evolution

When I was a child, I spoke like a child,

I thought like a child, I reasoned like a child;

when I became an adult, I put an end to childish ways.

*(1 Corinthians 13:11)*

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As the world marks the 200th anniversary of Charles Darwin’s birthday, only 39% of Americans say they “believe in the theory of evolution.” Those who attend church weekly and did not attend college are least likely to believe in evolution. Of Americans with postgraduate degrees, 74% do accept evolution as fact. *(Gallup Poll, as it appeared in The Week magazine, February 27, 2009)*

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In the past two decades, the percentage of adult Americans who accept evolution has fallen from 45 percent to 40 percent. Of 33 modern nations surveyed, only Turkey’s population is more resistant to the idea that human beings evolved from animals. *(Science, as it appeared in The Week magazine, September 8, 2006)*

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Good week for: The ascent of man, after a meta-analysis of previous surveys found that a majority of Americans (54 percent) finally agree with the statement that “human beings, as we know them today, developed from earlier species of animals.” Just a decade ago, only 40 percent believed in evolution. *(The Week magazine, September 3, 2021)*

Bad week for: Intellectual discourse, after Alabama Republican gubernatorial candidate Bradley Byrne was accused in a GOP rival’s campaign ad of believing in evolution. Byrne insisted he’s a creationist who believes “every single word” in the Bible. *(The Week magazine, June 4, 2010)*

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Five species of Hawaiian birds – all now extinct – looked so much like Asian and Australian birds called honeyeaters that scientists thought they were all in the same family. The birds had curved bills to reach inside flowers and long bushy tongues to lap up nectar. But a new genetic analysis by Smithsonian scientists of preserved Hawaiian specimens shows that the birds constituted their own family and were unrelated to true honeyeaters. The resemblance was an extreme case of “convergent” evolution, in which lineages evolve strikingly similar adaptations – in this case, for feeding from flowers. *(T. A. Frail, in Smithsonian magazine)*

Blackcap birds that breed in Central Europe in the summer traditionally fly to Spain for the winter. But in the past 50 years, some have started wintering in Britain, lured by seed and suet in bird feeders. Significantly, the birds tend to mate with others that wintered in the same area. Now researchers from Germany and elsewhere have observed that the two blackcap groups differ in wing shape, beak width and feather color – evidence of evolution in action. *(T. A. Frail, in Smithsonian magazine)*

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Nabokov’s theory of evolution: Novelist Vladimir Nabokov’s passion for studying butterflies yielded not only great books – he wrote Lolita during trips to net specimens – but also exemplary science More than 65 years after he first posed a contested theory of evolution for his favorite butterfly group, the Polyommatus blues, a new study proves him right in every detail. “I was blown away,” lead author and Harvard University professor Naomi Pierce tells The New York Times. A self-taught expert, Nabokov became curator of lepidoptera at Harvard’s Museum of Comparative Zoology. His microscopic study of the sexual organs of various species of blues led him to speculate that differences among them had evolved in Asia before they traveled, in five separate waves, over the Bering Strait into the New World. Other scientists argued that the butterflies in the group were more closely related, and that their differences had evolved later, once they arrived in the Amazon. Pierce says modern DNA testing posthumously vindicates the author’s “amazing, bold hypothesis,” and she thinks he would be pleased. She cites his poem “On Discovering a Butterfly”: “I found it and I named it,” he wrote. “I want no other fame.” *(The Week magazine, February 18, 2011)*

**Teilhard de Chardin saw the universe and mankind in a constant, ongoing evolution towards greater complexity and increased consciousness. He believed there was a general pattern to evolution which he called the Law of Increasing Complexity. In it he saw the three phases of divergence, convergence, and emergence. 1. In the divergence phase, a new form of reality (the subatomic particles, the atoms, molecules, single-celled animals, many-celled animals), evolves into a wide variety of forms. 2. When all possibilities have been explored, certain forms blessed with creative instability converge, and 3. a new and higher form of reality emerges. These new forms are characterized by greater complexity and greater consciousness in their activities. *(Robert T. Francoeur, in Catholic Digest)***

**Man: “Monkey, I’m coming up there after you. You think you’re the only one who can climb. I’m a primate too.” As he falls out of the tree, the man then says:“And that’s how I came to disbelieve the theory of evolution.” Monkey: “Unintelligent design.” *(Darrin Bell & Theron Heir in Rudy Park comic strip)***

**Charles Darwin published On the Origin of Species, “the chief work of my life,” November 22, 1859. In it he marshals 20 years of biological and geological observations to support his theory that the descent – he will not use the word “evolution” until 1872 – of all creatures is governed by natural selection, “the preservation of favorable variations, and the rejection of injurious variations.” The first printing of 1,250 copies sold out in a day, and Origin laid the groundwork for modern scientific thought. *(Alison McLean, in Smithsonian magazine)***

A study of humans, chimpanzees and gorillas has found that their DNA makeup is so close that a leading Australian geneticist says apes should be regarded as a human species. Geneticist Simon Easteal of the Australian National University said the study, which involved 10 mammal species, suggests that contrary to the popular belief that humans evolved from chimpanzees, they might have had a common ancestor. He said there was only 1.6% difference in the rate of DNA development between humans and chimpanzees and 2.2% difference between humans and gorillas. *(Rocky Mountain News)*

Most snakes are hatched with a small, sharp, and very hard “egg tooth.” It has only one function: o assist the little snake in breaking the egg to emerge into this vale of tears. Within a matter of hours, the egg tooth falls off. Baby birds also come equipped with egg teeth, confirming that birds have evolved from reptiles. *(Bernie Smith, in The Joy of Trivia, p. 114)*

Fishy features: When a human baby, an embryo, first starts to develop inside its mother, it looks quite different from when it is born nine months later. In fact, it does not even look human. At four weeks, it has slits near its neck that look a little like the gills of a fish. At six weeks, it still looks fish-like with a tail as well as arms and legs. After a few months, the gills and tail disappear, and the embryo begins to look human. *(The Diagram Group, in Funky, Freaky Facts, p. 86)*

The famous finches of the Galapagos Islands are evolving again – this time right before our eyes. When Charles Darwin first used the island’s finches as evidence for his theory of natural selection, he could only speculate about how the colorful songbirds developed their various traits. But now, Princeton biologists Peter and Rosemary Grant are actually watching it happen. For years, the Grants had observed finches with various-size beaks foraging for seeds; the large-beaked birds went for the larger seeds, while the small-beaked ones gobbled up the small seeds. But when a drought in 2003 and 2004 reduced the food supply, the larger-beaked members of that finch species, known as medium ground finches, began to die off. It turned out that another large-beaked variety of finch was devouring the big seeds before the medium ground finches could get to them. One year later, the Grants observed that medium ground finches had markedly smaller beaks, enabling them to compete for the smaller seeds. This rapid evolution was so dramatic, biologist Jonathan Losos tells Nature, “it will make its way instantly into general biology textbooks.” *(The Week magazine, August 11, 2006)*

Forming fingers and toes: For the first 40 days of a baby’s growth within the womb, it has no fingers or toes – only flippers. The fingers separate around the 50th day, and the toes form a week later. *(The Diagram Group, in Funky, Freaky Facts, p. 182)*

Unlike Darwin, who believed in “the survival of the fittest" as the biological basis of evolution, James Lovelock, a young British scientist, sees mutual benefit as the engine of biological progress. In the age of Gaia, it's cooperation, not competition, that makes the world go 'round. *(Ross Evan West, in New Realities magazine)*

The personal is the political, so it is said, and every week brings new proof of this maxim’s truth. A year ago, conservative attorney Charles Cooper appeared before the U.S. Supreme Court to argue in favor of California’s ban on gay marriage. Today, Cooper – a self-described constitutional “originalist” who served in the Reagan administration – is planning his stepdaughter Ashley’s marriage to “a lovely young woman named Casey.” Ashley’s happy, Cooper explained, noting, “My views evolve on issues like this the same as other people’s do.” Exactly so. Just consider the example of Dick Cheney, a man not known for warm and fuzzy liberal sentiments. After his lesbian daughter, Mary, marriedher partner in 2012, Cheney pronounced himself “delighted.” When your gay children, siblings, cousins, and friends come out, you just want them to be happy, like anyone else. Decades ago, I saw my father go through a similar evolution. A conservative World War II vet, he pretended not to know my brother Byron was gay, and uneasily kept his distance from my brother’s dedicated partner. Then, at the height of the AIDS epidemic, Byron fell gravely ill. All reservations fell away; my dad literally took Byron in his arms and carried him into a hospital. For the next year, he, my mom, and Byron’s partner, Johnny, became a seamless team devoted to my brother’s care and comfort. At the memorial service, Dad flung his arm over Johnny’s shoulder and mixed with a room full of gay men, sharing stories about my brother, laughing with them, hugging them, crying. They loved Byron, and so did he, and nothing else mattered. That’s the power of love: It’s always what matters most. *(William Falk, in The Week magazine, May 2, 2014)*

Not only animals and plants are in a process of evolution. Germs are as well. Diphtheria, for example, had been a mild disease before 1735, when it suddenly assumed a fatal form in an outbreak in Kingston, N.H. Not a single one of the first forty victims recovered. *(Isaac Asimov’s Book of Facts, p. 235)*

When notorious boxer Stanley Ketchel had the theory of evolution explained to him, he spent the day staring at a bowl of goldfish, then pronounced evolution to be false. “I’ve been watching those fish for hours,” he explained, “and they haven’t changed one bit.” *(Bob Fenster, in They Did What!?, p. 146)*

Good week for: Visible evolution, after a gorilla named Ambam was filmed walking upright on two legs for sustained periods in a British zoo. Ambam’s handlers believe he learned to walk like a human in order to gain a height advantage over his rivals and to free his hands to carry more food. *(The Week magazine, February 11, 2011)*

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Between apes and humans: Add yet another branch to the human evolutionary tree. Scientists working in South Africa have unearthed four well-preserved skeletons, including those of a mother and her son, that date back nearly 2 million years, to a time when hominids were evolving from Australopithecus, an ape-like genus, to the more modern genus Homo. Dubbed Australopithecus sediba, the skeletons exhibit “a fascinating mosaic of features,” Smithsonian paleontologist Rick Potts, who was not part of the research team, tells The New York Times. The creatures – which apparently fell into a sinkhole and drowned – had modern legs and hips for walking upright, but long arms for climbing trees; the face and small teeth of Homo, but with small feet and a brain only about a third the size of those of humans. The hominids may be direct ancestors of humans or “a very close side branch mimicking the earliest members of Homo,” lead researcher Lee Berger says. The find was a stroke of luck. For nearly two decades, Berger had combed a nearby hill for evidence of hominids when his 9-year-old son, who’d come along on an outing, tripped over a log and shouted, “Dad, I found a fossil.” *(The Week magazine, April 30, 2010)*

How humans are still evolving: Human evolution is often thought of as a processthat ended millennia ago, when our ape-like ancestors morphed into Homo sapiens. But a new study has found that the process of natural selection continues, gradually weeding out life-shortening traits in modern humans, including genes that predispose people to heart disease, Alzheimer’s, and heavy smoking. Geneticists examined the genomes of 210,000 people of European descent in search of mutations associated with greater or lesser l**o**ngevity. Natural selection – a basic mechanism of Darwin’s theory of evolution – is based on the principle that organisms best suited to their environments tend to survive longer, making it more likely that they’ll pass their genes on to future generations. The researchers found that the ApoE4 gene linked to Alzheimer’s is becoming less common, particularly among women. A gene mutation associated with a strong addiction to cigarette smoking in men is also on thedecline, ScienceDaily.com reports. “It may be that men who don’t carry these harmful mutations can have more children, or that men and women who live longer can help with their grandchildren, improving their chance of survival,” says the study’s co-author, Molly Przeworski. The analysis also reveals that genetic variants linked to heart disease, asthma, obesity, and high cholesterol all appear less frequently in people who live longer – an indication that humans may continue to adapt to a constantly changing environment. *(The Week magazine, September 22, 2017)*

***\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\**** A new study from the University of Rome Tor Vergata shows that a rare strawberry-tinted land iguana in the Galapagos Islands is genetically distinct from other iguanas there, having diverged from them more than five million years ago as the archipelago formed. The rosada iguana – which escaped Darwin’s notice – was discovered only recently, largely because it lives on the desolate slopes of an active volcano. *(T. A. Frail, in Smithsonian magazine)*

Finches on the Galapagos Islands that inspired Charles Darwin to develop the concept of evolution are now helping confirm it – by evolving. A medium-sized species of Darwin’s finch has evolved a smaller beak to take advantage of different seeds just two decades after the arrival of a larger rival for the original food source. The altered beak size shows that species competing for food can undergo evolutionary change, said Peter Grant of Princeton University, lead author of the report appearing in today’s issue of the journal Science. The larger rival was able to break open and eat these seeds three times faster than the smaller finches, depleting the supply of the seeds. That’s a form of evolution known as character displacement, where natural selection produces an evolutionary change in the next generation. (*Randolph E. Schmid, in Rocky Mountain News)*

Intelligent design: Darwin under attack: The opponents of evolution have evolved, said Ellen Goodman in The Boston Globe. Just 20 years ago, they were insisting that Genesis' account of a six-day creation was literally true, and wanted public schools to teach it as an equal to Darwin's theory of evolution. Having lost that battle, the creationists regrouped, and cooked up a theory they call "intelligent design." A clever reworking of creationism, intelligent design postulates that the universe is too complex to have been created by chance mutations and evolution – thus proving the existence of an intelligent designer. At the very least, the creationists say, children should be taught about this "scientific" alternative to Darwinism. This sneaky new strategy is working. The state of Kansas just completed an extraordinary series of hearings on intelligent design, amid signs that officials will soon give the theory "equal time" in the classroom with evolution. A dozen other states are considering similar proposals. *(The Week magazine, May 27, 2005)*

One of evolution’s “missing links” may no longer be missing, says Nature. Scientists near the North Pole have unearthed skeleton fossils of what appears to be one of the first fish to ever waddle onto dry land, 375 million years ago. The species, which has been named Tiktaalik roseae, has several traits that make it a “transitional” creature, something between a fish and a tetrapod, or four-legged animal. Paleontologists say the find is a crucial piece of evidence showing how humans, dinosaurs, birds, and millions of other species evolved from fish that managed to crawl out of the sea. Like a fish, the newly discovered creature had scale and fins on its 4- to 9-foot body, but it also exhibited the beginnings of legs, wrists, and elbows. Unlike a fish, it had a distinct neck, plus eyes on the top of its head instead of the sides. Scientists say the discovery rebuts religious creationists, who have long cited the absence of such a transitional creature as a hole in Darwinism. “It’s a really amazing, remarkable intermediate fossil,” paleontologist Neil Shubin tells The New York Times. “It’s like, holy cow!” *(The Week magazine, April 21, 2006)*

On July 10, 1925, in Dayton, Ohio, the so-called Monkey Trial begins with John Thomas Scopes, a high-school science teacher accused of teaching evolution in violation of state law. The law made it a misdemeanor to “teach any theory that denies the story of the Divine Creation of man.” *(MOMENTS IN TIME – The History Channel)*

Those who study evolution say I’m more closely related to the African monkey than the African monkey is to the South American monkey. I don’t care. I don’t intend to leave them anything. *(L. M. Boyd)*

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With all of the children wanting Mom's attention, she thinks to herself: “If humans are still evolving, mothers will soon have more than two hands.” *(Bil Keane, in The Family Circus comic strip)*

If evolution really works, how come mothers only have two hands? *(Milton Berle)*

***\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\****We have definitely a lot more creation public than evolution public. Being in the Bible Belt, the movie does have a lot to do with evolution, and we weigh that carefully. *(Lisa Buzzelli, head of the IMAX theater in Charleston, S.C., about Volcanoes of the Deep Sea, which Southern theaters have declined to show because of references to the way life may have evolved, as it appeared in the Rocky Mountain News, March 30, 2005)*

A species of mussels that thrives in the waters off the Atlantic Coast is providing scientists with a glimpse of unusually fast evolution. In response to an influx of mussel-crushing European shore crabs back in 1817, mussels on the East Coast developed the ability to thicken their shells when they detected a chemical released by the European crabs. But when a new species of Asian shore crab arrived on the U.S. coast in 1988, the mussels couldn’t detect the new crab’s signature chemical and were killed in droves. Now, a group of New England zoologists has found that the same group of mussels has evolved the ability to detect the chemical released by Asian crabs, and is able to thicken their shells in response. That rapid evolutionary response is a “nanosecond” compared to the usual stretch of time it takes for species to develop new traits, researcher Aaren Freeman tells LiveScience. It likely took place so quickly because the mussels’ evolutionary mechanisms had been sensitized to this kind of change by the first group of European crabs. This rapid natural selection, its path laid by a previous adaptation, indicates “the blending of ecological and evolutionary time,” Freeman says. *(The Week magazine, September 8, 2006)*

**A New View of Human Evolution: Scientists have unveiled what they believe are the oldest Homo sapiens remains ever found, a major discovery that potentially upends our understanding of when and where our species evolved. The fossils -- a skull, bones, and teeth from five individuals -- were unearthed in a remote area of Morocco, in what was once a cave. After using advanced dating analysis on stone tools and a tooth found at the excavation site, researchers determined that the bones are between 300,000 and 350,000 years old -- 100,000 years older than any other known Homo sapiens fossils. The individuals had a mixture of modern and primitive characteristics, with a face and jutting jaw nearly identical to that of a modern human, and an elongated brain case characteristic of early humans. Until now, it was widely believed Homo sapiens evolved from earlier forms of the Homo genius in a small region of East Africa about 200,000 years ago, then spread out across the continent and the world. This discovery suggests our species arose much earlier, and that the process took place over a wider area. "We did not evolve from a single 'cradle of mankind,'" paleo-anthropologist Philipp Gunz, who co-authored the research, tells The New York Times. "We evolved on the African continent." That conclusion remains controversial. With no universally accepted set of features that distinguishes modern humans from our older ancestors, some paleontologists say the new remains are merely an example of early humans just before they evolved into Homo sapiens. *(The Week magazine, June 23, 2017)***

While widespread inoculation will play a large role in bringing life back to normal, getting the shot will not be your cue to take off your mask. The end of the pandemic will be an evolution, not a revolution, the vaccine just another tool in that process. *(The Week magazine, October 23, 2020)*

Pollution speeds evolution: Natural selection normally happens over thousands of years, but it took just 50 for pollution to transform a fish species in the highly contaminated Hudson River, investigators have found. The PCBs and other toxins that General Electric plants started dumping into the Hudson in 1947 used to kill most of the river’s Atlantic tomcod while they were still young. Recent surveys, though, show that the bottom-feeding fish in the still-polluted waters are now living much longer than before. Researchers found that 99 percent of Hudson’s tomcod now have a genetic mutation that prevents the pollutants from harming them, and that the gene shows up in only 10 percent of tomcod from clean waters. “It’s an example of how human activities can drive evolution,” study co-author and Woods Hole Oceanographic Institution biologist Mark E. Hahn tells ScienceDaily.com. The mutation allows the Hudson tomcod to survive and reproduce by binding extreme levels of PCBs in their fat – but not without a price to the environment at large. The Hudson tomcod’s adaptation means the striped bass that prey on them ingest heavy doses of stockpiled toxins, pushing pollutants up the food chain. In other words, warns co-author Isaac Wirgin, “Any evolutionary change at this pace is not a good thing.” *(The Week magazine, March 11, 2011)*

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A professor at the University of Southern California has given what he calls “The Five M's of Religious Evolution.” They are: The Man, The Message, The Movement, The Machine, The Monument. *(A Synoptic Study of the Teachings of Unity, p. 5)*

Sharks broaden gene pool: Two different species of sharks have been interbreeding off the coast of Australia – creating the first hybrid sharks ever seen. Australian blacktips, which live in tropical waters, have been mating with common blacktips, which are able to tolerate lower temperatures, producing offspring that can tolerate a broader range of water temperatures and geographical habitats. The discovery of these hybrids is like “catching evolution in action,” Bob Hueter, a shark expert at the Mote Marine Laboratory, tells MSNBC.com. Hybridization may be one way Australian blacktips are adapting to climate change; their hybrid offspring can survive in colder waters than they can, so as ocean temperatures shift, they’ll have a wider range of habitat options. Overfishing may also have depleted both species’ populations, driving them together. So far, researchers have used genetic testing to identify 57 hybrid sharks, from multiple generations. *(The Week magazine, January 20, 2012)*

When whales could walk: One of the evolutionary ancestors of today’s whales was a fully amphibious creature that spent much of its life in the sea, but slept and gave birth on land. Scientists are now able to confidently describe this animal, having found a well-preserved fossil of a pregnant proto-whale. The Maiacetus inuus, as the species has been named, lived 47 million years ago, midway through the whale’s evolution from a goat-like land creature to today’s marine mammal. It spent most of the day swimming with its flippered hooves, but crawled onto land to give birth, to mate, and to sleep. “Maiacetus was a long-snouted, short-haired mammal with short limbs, webbed hands and feet retaining small hooves on some fingers and toes, and it had a thick, long tail,” study author Philip Gingerich tells Discovery News. It was from 6 feet to 15 feet long and looked like a strange amalgam of a whale, cow, alligator, and sea lion. Maiacetus is a huge evolutionary find, representing a node on the branched family tree that gave rise to today’s whales and cattle. We can consider this new fossil find a birthday present for Charles Darwin, who was born 200 years ago this month, says geologist Ewan Fordyce. “Darwin would have reveled in such evidence for a major shift in the fossil record.” *(The Week magazine, February 20, 2009)*

How do we truly understand one another when there are so many levels on which we operate? Every one of us is an integrated network of living systems, each changing from day to day but always following a natural path of evolution. These living systems are so many and so complex that if is virtually impossible to completely understand them. The truth is, there is no fixed location that can be defined as “you.” You are a work in progress, a dynamic, living system. So when you study "you,” you are not studying a painting or photograph that never changes. You are studying a moving picture from every conceivable camera angle. The best any of us can do is to sustain a lifelong process of self-exploration. Only by continually noticing more and more about ourselves will we come to understand who we truly are. *(Jim Cathcart, in The Acorn Principle: Know Yourself, Grow Yourself)*

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