A Short History of Nearly Everything

What’s in it for me? Learn about the basics of life, the universe, and everything.

How did we get here? Where did the universe come from? What is the universe, even? Great thinkers and scientists have been tackling these questions for millennia, but only now are we beginning to come close to creating a complete picture of our fascinatingly complex universe. These blinks will give you a crash course in all of the major existential questions. You’ll learn how the universe was formed, how life came to be, and how the world’s great minds came up with their groundbreaking ideas. But as much as science has given us in terms of our understanding of the world, numerous questions are yet unanswered. The many life forms living in the depths of our oceans, much of what makes up the universe, and even elements of the world beneath our feet still remain shrouded in mystery. In these blinks, you’ll also discover

how you can hear the remnants of the big bang today; why we owe our very existence to the good graces of bacteria; and how many things you share in common with a banana or a fruit fly.

The big bang theory states that the universe developed from an incredibly dense point, and at terrific speed.

It’s 1965. Two radio astronomers, Arno Penzias and Robert Wilson, are working with a large communication antenna in New Jersey. They’re trying to find a bit of radio silence so that they can perform experiments. But it’s proving tricky. Wherever they point the antenna, there’s persistent interference – a weird, unfocused hiss that just won’t go away. Penzias and Wilson try everything to get rid of the hiss. They rebuild their instruments. They rejig and retest their systems. They climb onto the antenna and clean off the bird poo. The hiss just won’t go away. In exasperation, they call Robert Dicke, an astrophysicist at Princeton. When Dicke hears their story, he instantly knows what they’re on to – it’s cosmic background radiation left over from the birth of the universe. By complete accident, Penzias and Wilson have found the first concrete evidence of the big bang – the moment when our universe was born. Here’s the key message: The big bang theory states that the universe developed from an incredibly dense point, and at terrific speed. So what exactly happened when the universe was formed? The big bang theory states that the universe began as a single point of nothingness called a singularity. This point was so compact that it had no dimensions. Confined in this single, infinitely dense point were all the building blocks of the universe. Suddenly – and no one quite knows why – this singularity exploded. In a single moment, all the future contents of the universe were flung across the void. The sheer scale and speed of this explosion are hard to fathom. Scientists believe that immediately after the big bang, the universe doubled in size every 10-34 seconds. It may be hard to grasp just how fast that is, so let’s put it another way. In just three minutes, the universe grew from the tiniest of specks to over 100 billion light-years in diameter. 98% percent of all matter, along with the fundamental forces that govern the universe, were created in the time it takes you to make a sandwich. So going back to Arno Penzias and Robert Wilson and their hiss, what exactly was it that they had discovered? The intense energy unleashed during the big bang eventually cooled and transformed into microwaves. It was these microwaves that Penzias and Wilson picked up as a hiss. And you don’t even need a huge communications antenna to see this evidence; anyone with a television can manage. Just detune your TV, and listen for that weird static you get between stations. Around 1 percent of this static is a remnant from the big bang – a relic of our universe’s earliest moments.

The universe is so big, there are probably other beings out there – we just haven't found them yet.

Here’s a question for you: Do you think we’re alone in the universe? Before you answer, let’s first take a look at the universe’s particulars. Since the big bang, the universe has been expanding. From the so-small-it’s-impossible-to-measure speck that was the singularity, the visible universe has grown to more than one million million million million miles across. Contained in this vast space are around 140 billion galaxies. Again, that number is probably too big for any of us to really grasp. So let’s put it in more relatable terms. If each of these 140 billion galaxies were a frozen pea, there’d be enough of them to fill a large auditorium. That’s a lot of peas. Astronomers aren’t sure how many stars are in our own galaxy, the Milky Way. But they guess it’s somewhere between 100 and 400 billion stars. Here's the key message: The universe is so big, there are probably other beings out there – we just haven't found them yet. Now, let’s ask that question again, this time knowing that the universe is so vast, with many galaxies, stars, and planets: Do you think we’re alone in the universe? It seems unlikely, right? But just how many aliens are out there? According to a 1961 equation by professor Frank Drake, it’s possible we’re merely one of millions of other advanced civilizations. Here’s how Drake did his calculation. First, he divided the number of stars in a selected part of the universe by the number that were likely to support planetary systems. Then, he divided that number by the number of systems that could theoretically support life. Finally, he divided that by the number of planets on which life might evolve to become intelligent. Although the number shrinks enormously with each division, Drake concluded that there was a multitude of civilizations out there. He estimated there may be millions of advanced civilizations in our galaxy alone! But let’s not get too carried away. As we’ve established by now, the universe is enormous. The average distance between any two hypothetical civilizations is likely at least 200 light-years. One light-year, by the way, is equivalent to about 5.8 trillion miles. So even if alien civilizations do exist, they're probably so far away that it’s unlikely we’ll see them any time soon.

“So even if we are not really alone, in all practical terms we are.”

Isaac Newton was focused on making sense of how the universe and Earth moved.

Isaac Newton was devoted to the advancement of science. And he was prepared to put his body on the line for the cause. Few others, for example, would try and explore the mechanics of human sight by pushing a needle into their eye. And many scientists likely wouldn't stare at the sun to test the limits of our ability to, well, stare at the sun. Yes, Isaac Newton was quite the eccentric. He was also one of the most brilliant and influential minds who ever lived. The key message in this blink is: Isaac Newton was focused on making sense of how the universe and Earth moved. Many consider Isaac Newton's most influential work to be Philosophiae Naturalis Principia Mathematica. But this title won't find its way onto most people's summer reading lists. It's incredibly difficult to understand. Newton deliberately made it almost impossible for the layperson to grasp. He didn't want to share his ideas with mere amateurs. But to those who can understand it, Principia is one of the most important scientific works of all time. Contained within this work are many groundbreaking ideas. Take Newton's universal law of gravitation. This states that all bodies in the universe – large and small – exert a pull on every other body. The extent of their pull is proportional to their mass. So take two examples: Stars, which are huge, have a gravitational pull strong enough to bring planets into orbit. But your desk lamp, with its relatively tiny mass, asserts a much smaller gravitational pull. This is why you don't see your pens and pencils orbiting around it. Principia helped scientists understand a great deal about the universe, as well as more about planet Earth. For example, Newton's laws allow us to estimate the weight of the Earth – it's about 5.9725 billion trillion metric tons, if you're wondering. It also helped us discover the true shape of the planet. Newton's laws proved that the Earth is not spherical. The force of the Earth's spin causes it to flatten slightly at the poles and bulge at the equator. So, to be precise, the Earth is an oblate spheroid rather than a true sphere. Yet, while Isaac Newton helped us learn more about the motion and shape of our planet, he didn't tell us anything about its age, which we'll explore in the next blink.

Rocks and fossils showed that the Earth was old, but radioactivity showed just how old it was.

In 1650, an Irish archbishop named James Ussher decided he'd try and answer a long-standing question: Just how old is the Earth? Using information contained in the Old Testament and a few other historical documents, Ussher got to work. After careful deliberation, he came up with a very precise answer: the Earth was created at midday on October 23, 4004 BCE. Ussher's answer didn't really catch on. Most scientists at the time believed the planet to be much, much older. The only problem was, they had no way of determining its exact age. The key message here is: Rocks and fossils showed that the Earth was old, but radioactivity showed just how old it was. Geologists in the nineteenth century could tell a lot from the Earth's rocks. By looking at layers in the rocks, they could tell there had been many geological periods in Earth's history. They could tell which rocks were older and which were more recent, and that it must have taken millions of years for each layer of rock to build up. But they couldn't be sure of exactly how long. It wasn't until well into the twentieth century that the Earth's age was discovered. And the tool that finally unlocked this secret was radioactivity. The concept of radioactivity dates back to 1896, when Marie and Pierre Curie discovered that certain rocks release energy without showing any change in their size or shape. They named this phenomenon radioactivity. The Curies' work caught the interest of physicist

Ernest Rutherford. Rutherford discovered that radioactive elements decay into other elements. For example, one kind of uranium – Uranium-235 – decays into a type of lead – Lead-207. What's more, this decay always happens at the same speed. It always takes the same time for half of the elements in a particular sample to decay. This process is known as half-life, and it's very useful for estimating the age of something. When you know the half-life of Uranium-235 and that it decays into Lead-207, you can calculate the rock's age by measuring the current amount of these two elements in it. It wasn't until 1956 that all these discoveries came together and the age of the Earth became known. In that year, Clair Cameron Patterson worked out a precise dating method using ancient meteorites. He determined that the Earth was around 4.55 billion years old – plus or minus 70 million years. That's much older than what James Ussher estimated!

Einstein's special theory of relativity states that time is relative.

We all know Albert Einstein to be one of the most famous scientists of all time. Yet Einstein's early life was far from brilliant. As it turns out, he wasn't a great scholar and even failed his first college entrance exams. At university, the young Einstein actually studied to become a high-school science teacher but then couldn't land a teaching job. Einstein eventually found himself working in the Swiss patent office. It was in 1905, in this humble role as a patent clerk, that Einstein first made his mark on the world. And it was quite a mark! The papers he published that year would change science completely. The key message in this blink is: Einstein's special theory of relativity states that time is relative. Einstein first explained his special theory of relativity in these 1905 papers. Put very simply, this theory states that the notion of time is relative – it does not progress constantly. It can be a difficult concept to wrap your head around. After all, time feels constant. Every second, every minute, every hour passes at exactly the same speed. It doesn't speed up or slow down, and it feels like there is nothing we can do to change it. But time is relative. Time can pass at different speeds, depending on different circumstances. It has to do with your relative position and speed compared to someone, or something, else. To explain, let's use an example from British philosopher Bertrand Russell. Imagine you're on a station platform. Approaching the station is a train traveling at almost the speed of light. For you, this train would appear distorted, and the voices of those inside the speeding train would sound warped and slowed down, like a record playing at the wrong speed. If you were to see any clocks inside the train, you'd discover they were running slower than the station clock on the platform. So far, so weird. But here's the stranger thing. Everyone on the train would experience things as normal. Their voices and movements would appear as they should – smooth and at normal speed. To them, the clocks on the train would be running as normal, too. But, if they looked at you on the platform, they'd think you were distorted, speaking slowly, and moving weirdly. Depending on the speed and your relative position to a moving object, you experience different speeds of time. Simple, right? But Einstein wasn't done yet. In the next blink, we'll discuss his second great contribution to science.

Einstein's general theory of relativity totally changed how we look at gravity.

Did you know there's an enormous amount of energy inside of you? There's a whole bunch of potential energy contained within all the atoms and molecules in your body. If you were to unleash all the energy in your body, you'd generate an explosion equivalent to 30 hydrogen bombs. And this energy isn't just found in our bodies. Everything with mass – every rock, life-form, and planet – has a huge amount of potential energy. Albert Einstein described this connection between mass and energy in his most famous equation: E =m c2, or energy equals mass times the speed of light squared. Put very, very simply, E = mc2 explains how mass and energy are pretty much the same thing. Mass is simply potential energy ready to be unleashed. But this wasn't Einstein's final discovery. The key message in this blink is: Einstein's general theory of relativity totally changed how we look at gravity. Published in 1917, Einstein's general theory of relativity proposed the revolutionary concept of spacetime. As the name suggests, spacetime combines the three dimensions of space with a fourth dimension: time. In other words, space and time are elements of the same entity. It can be quite hard to imagine the strange concept of spacetime. One helpful analogy is to think of it as a sheet of stretched rubber. This sheet is flat, but it's malleable – it can warp and bend. Among other things, the idea of spacetime completely changed how we think about gravity. Gravity is actually the curving of spacetime. Here's how it works. Objects with mass bend spacetime. Objects with more mass curve it more. As smaller objects pass through spacetime, they end up following these curves; this, basically put, is gravity. Let's go back to our sheet of rubber. If you place a big, round object – say a bowling ball – in the middle of the sheet, the sheet will stretch and sag. This is how massive objects, like the sun, stretch and curve spacetime. Now, imagine you roll a marble across the sheet. It will try its best to travel in a straight line. However, as the marble nears the bowling ball it will begin to veer off course. It will start to follow the slope made by the heavier object. Soon, the marble will end up going around and around the curve in the rubber sheet – just as the planets orbit the sun. In one elegant theory, Einstein explained to the world how gravity functions!

Werner Heisenberg's uncertainty principle helps explain how particles move.

As we've just discovered, Albert Einstein helped us understand huge phenomena like time and gravity. But what about the smallest things in the universe? What about atoms, molecules, and particles? Do Einstein's theories work on this tiny scale? Not quite. The key message here is: Werner Heisenberg's uncertainty principle helps explain how particles move. An atom consists of a nucleus filled with neutrons and positively charged protons. Around this nucleus spin negatively charged electrons. The behavior of an atom's protons and electrons confused the early scientists who studied them. By the conventional laws of physics, the spinning electrons should fizzle out of energy very quickly. The positively charged protons crammed into the nucleus should repel each other. In other words, atoms shouldn't exist at all. To come to grips with this bizarre atomic world, a new branch of science was needed – this is what became known as quantum theory. An important figure in the development of quantum theory was Werner Heisenberg. In 1926, he developed the concept of quantum mechanics. At the heart of his theory was the uncertainty principle. Here's how the principle works. When physicists first measured electrons as they spun around an atom's nucleus, they witnessed something strange: sometimes the electrons behaved like they were a wave, and sometimes the electrons behaved like they were a particle. The physicists were confused. How could they be two things at once? They could either be a wave or a particle. They couldn't be both, right? Heisenberg's uncertainty principle solved this conundrum. Put simply, the uncertainty principle posits that an electron is a particle, but it's one that you can explain in the same way as a wave. The principle also explains how it's only possible to either know where an electron currently is or know its path and speed. It's not possible to know both its position and its path. All this means is that you can't really predict where an electron will be; you can only guess its probability of being somewhere. Quantum theory is tricky to understand, but it helps explain very small entities. It can't be used to explain the big things in the universe – things like gravity and time. On the flip side, the theory of relativity is great for understanding the larger forces in the universe. It's hopeless, however, at explaining the subatomic world. Science is therefore left with two theories: quantum physics and the theory of relativity. No one has yet found a theory that explains everything.

There are four unique criteria that make life on planet Earth possible.

The next time you leave your house, take some time to notice your surroundings. In particular, try and notice the sheer diversity of life. You might see birds, insects, lizards, rodents, dogs, cats, and, of course, your fellow human beings. Planet Earth seems to be teeming with life. This might lead you to think that our planet is a friendly place to live. This is far from the case. The key message here: There are four unique criteria that make life on planet Earth possible. Despite the extraordinary diversity of life on Earth, our planet is far from hospitable. As humans, we're forced to live on a relatively tiny bit of the planet. We can't survive in the desert or the Antarctic. We can't live on or in the oceans. According to one estimate, 99.5 percent of the Earth's habitable space is completely inaccessible to humans. Considering just how tough it is to live on most of the Earth, it's a surprise that we're here at all! In fact, we're incredibly lucky to have even a bit of Earth to live on. For a planet to be habitable, it must meet four criteria: First, it has to be just the right distance from a star. A planet that is too close to a star will be far too hot to sustain life – but too far away, and it will be too cold for life to thrive. In fact, if the Earth were just 5 percent closer to the sun, or just 15 percent further away, life would not have developed. Second, the planet must have an atmosphere that shields life from cosmic radiation. On Earth, we can thank our planet's molten core for providing us with a protective atmosphere. Third, we need a perfectly sized moon. Without our rocky, dimpled companion, the Earth would spin much faster. Its dizzying spin would cause the climate and weather to go haywire. Fourth, timing is everything. The complex sequence of events that led to our existence had to play out in a particular manner at particular times to produce life. For example, our moon was formed after a planet the size of Mars crashed into Earth around 4.4 billion years ago. We can thank this collision for giving us our perfectly sized moon. We can also thank the fact that it happened billions of years ago, before the development of life. Had it happened later, it might have snuffed out life on Earth altogether.

"To attain any kind of life in this universe of ours appears to be quite an achievement."

We know surprisingly little about life in the oceans.

Blink 9 of 13 Most of us spend our lives on dry land. Sea captains and Olympic sailors aside, few of us spend much time on open water. Because we rarely venture far from land, we don't really consider just how much water there is on Earth: 1.3 billion cubic kilometers, to be exact. The key message here is: We know surprisingly little about life in the oceans. Ninety-seven percent of all water on Earth is found in the ocean. And yet, for most of human history, we've ignored it. The first real investigation of the oceans wasn't organized until 1872. That was the year the British sent a former warship called HMS Challenger to explore the seas. Challenger and her crew spent three and a half years traversing the world's oceans. They collected marine organisms and made measurements as they went. Their research culminated in a huge 50-volume report and a new area of science: oceanography. This new science didn't exactly take off. The next figures in our story of oceanography don't turn up until the 1930s. Otis Barton and William Beebe were interested in what you might find at the bottom of the deepest ocean. To get themselves down that far, they built a tiny iron submarine called a bathysphere. It was hardly cutting-edge technology. You couldn't steer or drive it. It was simply dropped into the ocean at the end of a long cable. As low-tech as it might have been, the bathysphere allowed Barton and Beebe to set new records in diving. In 1930, they set a world record by descending 183 meters into the ocean depths. By 1934, they had used the craft to dive more than 900 meters. Unfortunately, neither of them were actually trained oceanographers. And the rudimentary lighting in the bathysphere meant they couldn't see much. All they could report was that the ocean depths were filled with strange things. As a result, academics and scientists largely ignored their findings. Things have improved since, but still not far enough. Today, scientists have reached the bottom of the deepest oceans. Yet, we still don't know that much. We have more detailed maps of the planet Mars than we do of the seabeds on Earth. According to one estimate, we may have only investigated a millionth – or even just a billionth – of the ocean abyss.

Bacteria are Earth's most abundant life forms, and we're here because they enable us to be.

As children, we're taught to wash our hands. We learn that it's important to scrub for 30 seconds and rinse with warm, soapy water. That's because we want to get rid of any bacteria and germs we may have picked up, right? Well, while washing your hands is certainly an important hygienic routine, there's no escaping bacteria. Everywhere you go, countless bacteria travel with you. The key message here is: Bacteria are Earth's most abundant life forms, and we're here because they enable us to be. But not all bacteria are bad. In fact, there are about one trillion bacteria living on your skin right now – and that's if you're healthy! There are so many bacteria on Earth that if we added up the mass of all living things on the planet, tiny bacteria would account for 80 percent of that total. You may be asking yourself: How did one life form become so abundant? For a start, bacteria are masters at reproduction. They are prolific. Bacteria can produce a new generation in less than ten minutes. This reproductive capability means that, without outside influences, a single bacterium could theoretically produce more offspring in two days than there are protons in the universe! Another reason is bacteria's amazing strength and resilience. Bacteria can live and thrive on almost anything. As long as they have a little moisture, they can survive in even the harshest environments. Bacteria can even live in the waste tanks of nuclear reactors. Some are so resilient they appear indestructible. Even when a bacterium's DNA is blasted with radiation, it will simply reform as if nothing has happened. It sounds like a horror story, doesn't it? You may want to go wash your hands and body right now. But it's not that scary. In fact, bacteria are incredibly important for our survival. Among other vital roles, bacteria recycle our waste, purify water, and keep the soil productive. They convert our food into useful vitamins and sugars, and they allow us to process and use the nitrogen in the air. All in all, most bacteria are either neutral or beneficial for humans. But it's true, we can't count all bacteria as our friends. About one in every one thousand bacteria is pathogenic. This tiny demographic represents the third-most lethal killer of humans worldwide. Some of the most virulent illnesses, from the plague to tuberculosis, are caused by bacteria – all the more reason to keep washing those hands.

"Bacteria may not build cities or have interesting social lives, but they will be here when the sun explodes."

Life started spontaneously as a bundle of genetic material that found a way to copy itself.

Picture this scene. All of a sudden, certain ingredients in your kitchen start to magically mix together. Eggs, baking soda, flour, and butter all start combining and baking themselves into a delicious cake. You're shocked at the sight of this self-making cake! And then, things get even weirder. The cake starts splitting to produce more delicious cakes. Then, these cakes also start dividing, creating even more sweet treats. Does this bizarre situation sound impossible to you? Well, it's actually pretty similar to how amino acids combine into proteins – a process that is essential to life. Here's the key message: Life started spontaneously as a bundle of genetic material that found a way to copy itself. The proteins created when amino acids combine are the building blocks of life. It might seem strange how they appear almost randomly – just like our self-baking cake. But it shouldn't; self-assembling processes happen constantly, from the symmetry of snowflakes to the rings of Saturn. And if it can happen with inorganic ingredients like ice and rock, why can't it happen with organic ingredients? After all, the only real difference between organic and inorganic matter is the essential ingredients – carbon, hydrogen, oxygen, and nitrogen. All of this means that spontaneous life is possible. But what this doesn't explain is how it happened. And why did it happen here, on Earth? Life as we know it is the result of a single genetic trick that's been handed down through generations. This moment of creation occurred four billion years ago, when a tiny bundle of chemicals managed to divide itself. By dividing, it learned a way of passing on its genetic code. This single event began all life on Earth. It's been called the Big Birth by biologists. The process begun by the Big Birth eventually created bacteria. They remained the sole life forms on the planet for two billion years. Then, bacteria began to learn how to tap into water molecules. In doing so, they created the process of photosynthesis, which filled the world with oxygen. When oxygen levels reached modern-day quantities, complex life forms arrived. They evolved into two broad groups: those that expel oxygen, like plants, and those that consume it, like us. Of course, since this moment hundreds of millions of years ago, life has continued to evolve. We'll learn more about this in the next blink.

Though the Earth supports an uncountable number of species, all life can be seen as one.

We've just discovered that life on Earth began when bundles of molecules learned how to divide themselves and share their genetic code. Since this fateful day, four billion years ago, life has more or less flourished. Just take a look at the sheer variety out there. To say that there are many different species on the planet is an understatement. Estimates range from 3 million to 200 million. According to one report in the Economist, up to 97 percent of the world's plant and animal species remain undiscovered. Yet, despite this amazing variety, all life is linked. The key message here is: Though the Earth supports an uncountable number of species, all life can be seen as one. In 1859, Charles Darwin published On the Origin of Species. In this groundbreaking work, Darwin demonstrated that all living things are connected. Darwin explained how different life forms evolved along different evolutionary paths, depending on their environment. Life-forms that evolve to best suit their surroundings will flourish and reproduce. Those life-forms that fail to fit in will perish. Through this process of evolution by natural selection, life has diversified. However, trace all these evolutions back, and you'll eventually find a common ancestor shared by every species. Modern investigations into DNA show how linked all life is. For example, if you compare your DNA with any other person's DNA, you would find that 99.9 percent of the code would be exactly the same. And these similarities don't only exist within species – believe it or not, approximately half of your DNA would match up perfectly with the DNA of a banana. What's more, Sixty percent of your genes are exactly the same as those found in the fruit fly, and at least 90 percent of them correlate on some level with those found in mice. Stranger still, scientists have discovered that parts of our DNA are interchangeable between species. For example, we can insert human DNA into certain cells of flies, and they will “accept” this DNA as if it were their own. It's quite clear that all life on Earth is connected – far more closely than most of us would ever have imagined. Looking at the rich diversity of life seems nothing short of a miracle. Our final blink will look at whether it's possible that this miracle could abruptly end.

The Earth is always at risk of existential dangers looming within the solar system – and even on our own planet.

Although we probably don't realize it on a day-to-day basis, our solar system is actually a dangerous place to live. In fact, the Earth often comes dangerously close to colliding with asteroids. There are at least a billion of these rock-like objects zooming through space. Each asteroid follows particular orbits within our solar system, and many of them make regular passes near Earth. Even more terrifying is the fact that there are around 100 million asteroids larger than 10 meters across that regularly cross the Earth's orbit. Scientists estimate that as many as 2,000 of these are large enough to put civilization in danger – if they hit. Think it won't happen? It's predicted that near misses with deadly asteroids could be happening around two or three times a week, entirely unnoticed. The key message here is: The Earth is always at risk of existential dangers looming within the solar system – and even on our own planet. If what’s happening in space isn’t scary enough, there are also things to worry about closer to home. The Earth has plenty of its own “in-house” dangers. Earthquakes, for example, can happen anytime. An earthquake occurs when two tectonic plates clash. Pressure builds until, eventually, one gives way, resulting in an earthquake. This is a particular problem for places like Tokyo, which sits on the meeting point of three tectonic plates. Earthquakes can be devastating. In 1755, the flourishing city of Lisbon, Portugal was flattened by a series of incredibly powerful earthquakes and an accompanying tsunami. Unfortunately, sixty thousand people perished. Then, we have volcanoes. Volcanoes remain a threat, even with modern science. For example, in 1980, Mount St. Helens erupted in the US state of Washington, killing 57 people. Even though most of the government’s volcanologists were actively monitoring and forecasting the volcano’s behavior, they didn’t expect an actual eruption. And yet, the volcano blew. But the Mount St. Helens eruption is small fry compared to another volcano in the United States. There is an enormous volcanic hot spot located directly under Yellowstone National Park. It is predicted that this supervolcano erupts every 600,000 years or so, leaving a three-meter coat of ash on everything within 1,600 kilometers. Unfortunately for us, the last time it was active was 630,000 years ago! Despite the inherent dangers in simply being alive on Earth, looking at the history of everything shows us how incredibly lucky we are to be here.

Final Summary

The key message in these blinks is: The history of the universe is incredible, and humans have only just begun to really understand things. Through centuries of careful scientific study, we’re able to theorize about the universe’s birth, learn when life on Earth began, and understand the laws which underpin our existence. Yet, there is still much more to learn, as the process of scientific discovery never stops! Got feedback? We're working on improving our audio content. If you listened to these blinks, you may have noticed something different. We'd love to hear what you think about our use of sounds and music to enhance our content! Just drop an email to with A Short History of Nearly Everything as the subject line and share your thoughts! What to read next: Where Good Ideas Come From, by Steven Johnson You’ve just gained a comprehensive view about the evolution of life on Earth, as well as some history of science. To learn more about the many parallels between the two, head on over to our blinks to Where Good Ideas Come From. Replete with anecdotes and scientific evidence ranging from how carbon atoms formed the very first building blocks of life to how cities and the internet fostered great innovation, these blinks explore how individual and organizational creativity can be cultivated.