

LINDA HOYT

**ANTHOLOGY OF MAGAZINE ARTICLES  
AND STUDENT WRITING**

**CONVENTIONS**  
*and Craft*

GRADE 4



SCHOLASTIC

# Dedication

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# Would You Go to Mars?

Is it time to visit Earth's neighbor?

by Justin O'Neill

**W**elcome to your future home: Mars. In the morning, sleep in a little—your day is 40 minutes longer than on Earth. Grab breakfast from the greenhouse, where you grow your food. Then take a jog on the treadmill—you have to keep your muscles strong, or they will deteriorate in the low gravity.

How's the weather? Windy and ridiculously freezing . . . as always. (The average temperature is  $-81^{\circ}$  F.) But the view is spectacular: an endless expanse of red rocks and soaring mountains. You'll spend your day exploring and making incredible new discoveries.

Sound intriguing?

Good, because life on Mars could become a reality . . . and it could happen in your lifetime.

YOU  
ARE  
HERE



## A Welcoming Planet

Humans have been exploring space for decades. We first launched in orbit in the early 1960s, and 12 astronauts had walked on the surface of the moon by the end of 1972. But it's Earth's neighbor Mars, a bright red orb about half Earth's size, that scientists say is most capable of supporting human life. Compared with other planets in our solar system, Mars is downright welcoming (the surface of Venus, for instance, is more than 800 degrees!), in part because of its closeness to Earth. Mars even has frozen water on its surface.

Since the late 1990s, NASA has been exploring Mars using remote-controlled "rovers." Most recently *Curiosity*, a car-size vehicle, traveled through space on an uncrewed spacecraft and landed on Mars in August 2012. Directed by NASA scientists, the rovers prowl the surface, taking pictures, collecting and analyzing soil, and probing for signs of life.

But what about human explorers? Plans are already in the works to send astronauts to Mars as soon as the mid-2030s.

And after that?

Imagine bustling colonies of brave explorers and their families, working hard to build a new society. With Earth's population projected to hit more than 9 billion by 2075, we'll certainly need the extra space.

## Extreme Conditions

But before you start packing your bags, let's consider the challenges. For starters, Mars is far away. Just getting there could take up to 10 months. By comparison, it took astronauts only about four days to get to the moon.

Scientists already know that time away from Earth's gravity

harms the human body. Bones and muscles get weaker. The body produces less blood. Heart muscles atrophy. What damage would months and months of living in space do?

And then there is the matter of water, oxygen, food, and fuel. Scientists will have to find solutions to these problems, or the first humans on Mars won't survive very long in their new home.

result could be catastrophic. Animals, plants, and people could be wiped out.

## Worth the \$\$\$?

A more practical concern is the cost. The price of a mission to Mars could approach \$1 trillion. How can we justify spending that much when so many problems—poverty, disease—could use the cash here on Earth?

Then again, some of the technologies developed for space



That's *Curiosity*, a NASA rover currently exploring Mars. Its top speed is only 1.5 inches per second. A human explorer would be able to cover a lot more ground.

## Tiny Dangers

Along with the extreme conditions on Mars, there's another, tinier risk. It's so tiny you can't even see it: germs.

Some scientists believe that our germs could contaminate the whole planet of Mars, potentially killing Martian life before we have the chance to discover it. Worse, there is a small but terrifying chance that any microscopic life already there might be harmful to us. Humans would have no natural immunities to these germs.

Worse still, if any of those Martian germs hitched a ride back to Earth, the

travel could help here on Earth too. Many of NASA's past inventions have benefited our food safety, transportation, and medicine. (Do your foam shin guards protect you during soccer games? Thank NASA.)

In the end, the thrill of exploring an unknown world may be too hard to resist. "Imagine the excitement when NASA . . . starts to select the first astronauts to walk on Mars," astrophysicist Neil deGrasse Tyson wrote in *Foreign Affairs*. "Right now, those science-savvy future explorers are in middle school."

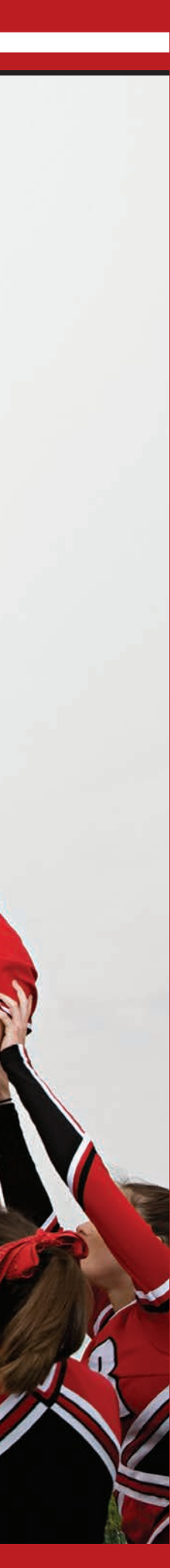
Could one of them be you?



# DAZZLE AND DANGER

**How one teen's tragic cheerleading accident turned her into a crusader for change.** by Kristin Lewis

When the day began on December 17, 2009, Gabby Taylor, 15, had no idea that her life was about to change forever. She woke up early, ate a bowl of cereal, and headed off to school in Woodbury, Minnesota. She was especially excited about cheer practice that afternoon. It would be the final practice before a big competition the next day. As co-captain of her squad at East Ridge High, Gabby felt intense pressure. But then Gabby *thrived* under pressure. Her squad had won every competition that season, earning glory for their clean style and eye-popping acrobatics.



Near the end of practice that day, Gabby was working on a new stunt. It called for Gabby and three other girls to toss a fifth girl (called a “flier”) into the air. The flier would flip twice and land in the arms of the girls below. The first time they tried the stunt, Gabby remembers the flier’s shoulder landing on her neck—hard. The pain was searing, but Gabby ignored it. They needed to get the stunt right, and she didn’t want to let her teammates down.

The second time they tried the stunt, Gabby felt the pain again. This time, though, it was worse, and Gabby sensed something was wrong. Her fingers tingled strangely, as if needles were pricking her skin.

What Gabby did not realize was that something terrible had happened inside her body. The repeated trauma had damaged her nerves—the delicate threads throughout our bodies that communicate information to and from the brain. Our nerves are responsible for every movement we make—every step, stretch, and flex—and every sensation we feel.

Now, Gabby’s nerves were in crisis. *Push through the pain*, Gabby told herself. She helped to toss the flier up again. BAM! Gabby’s arm exploded with pain. It would soon turn purple and swell like a balloon. The pain was so excruciating, all Gabby could do was cry.

## >> A NEW BREED

When cheerleading started in the late 1800s, injuries like Gabby’s were unheard of. The first cheerleaders were rowdy college guys who formed “yell squads,” leading the crowd in chants at football games. It wasn’t until World War II that women began to dominate cheerleading, as men went overseas to fight. In most schools, though, being a cheerleader was a show more of popularity than of athletic skill.

Today’s young cheerleaders are an entirely different breed.

Many do far more than rally a crowd. They cheer competitively, on school squads or through private gyms. These cheerleaders do stunts once reserved for circus performers. They fly, tumble, dance, and build astonishing pyramids in which rows of cheerleaders stand on top of one another, towering high into the air. And though they sometimes perform on hard, bone-cracking

surfaces, they do not wear the protective gear you see in sports like hockey or football.

Not surprisingly, today’s cheerleaders are in danger.

## >> A PERILOUS SPORT?

The number of cheer injuries has been rising over the past 30 years, according to a new report in the journal *Pediatrics*. This is partly because there are far more cheerleaders today (about 3.6 million over the age of 6). Another reason is that the sport has become competitive and the stunts far more risky.

Many cheerleading injuries are just bruises and strains—painful but relatively minor. In fact, fewer injuries are reported overall for cheerleading than for other sports.

The real concern is what are called “catastrophic injuries.” Such injuries are as terrifying as they sound: concussions, skull fractures, and spine injuries that can cause brain damage, paralysis, and even death.

It’s these injuries that have doctors worried—and for good reason. In 2005, a 14-year-old in Massachusetts died after a botched toss ruptured her spleen. In 2007, an 18-year-old in California broke her neck after falling 15 feet head first to the ground. And today, cheerleading accounts for 65 percent of all catastrophic injuries among girl athletes in high school.

## >> UNBEARABLE PAIN

In the days after her accident, Gabby learned that severe nerve damage had paralyzed her right arm. What’s more, she was in constant pain. Even a gentle breeze whispering across her arm was unbearable. After several procedures to numb her nerves were unsuccessful, she had spinal surgery that gave her some relief.

And Gabby’s injury had a terrible side effect: Her immune system—that is, her body’s system of fighting off illness—collapsed. Now, every germ is potentially deadly to her, and a mild cold can mean a week in the hospital.

An injury like Gabby’s affects more than just the body. It takes a deep and lasting emotional toll.

Gabby lost her entire way of life. She never got healthy enough to return to school. When she should have been learning to drive

a car, or going to the movies, or worrying about a math test, she was stuck in a hospital bed. Suddenly, ordinary tasks like taking a shower, opening a container of yogurt, or buttoning a coat required herculean effort.

And while her friends were supportive, they didn't always get what her injury truly meant. "My friends didn't understand why I didn't feel up to walking around the mall or why I wasn't able to watch Friday night football games," Gabby remembers. "They didn't understand the pain I was going through emotionally."

## >> MAKING IT SAFE

So how can injuries like Gabby's be prevented? One way, according to some experts, is for all states to officially categorize cheerleading as a sport, like gymnastics or field hockey. Twenty-nine states already do. In those states, cheerleading has safety rules and regulations just like any other school sport.

In the remaining states, including Gabby's home state of Minnesota, cheer squads are considered clubs, like the debate club or the chess club. As a result, some say, squads may lack proper oversight.

But a school doesn't have to officially recognize cheerleading as a sport to make it safer. For the past few years, a number of national organizations have been working together to reduce the number of injuries. The American Association of Cheerleading Coaches and Administrators, for example, publishes safety guidelines every year and offers education and certification for coaches.

Schools that work with organizations like this one can quickly improve the quality of their programs, says director Jim Lord.

And many have. In fact, in the past five years, catastrophic injuries in cheerleading have declined.

But the tragic truth is, things can still go wrong—even in programs that take precautions. Consider Gabby's squad: They had a certified trainer and state-of-the-art equipment.



Some cheer competitions are starting to restrict risky stunts.

## >> WARRIOR CULTURE

Lord and other experts agree there is another reason kids are getting hurt in cheerleading. It has to do with what's known as "warrior culture," a mentality that likens a sports team to soldiers in battle. Nothing is as important as winning. Loyalty to teammates matters more than personal health. Persevering through injury is considered downright heroic.

This mentality is held by all kinds of athletes: Soccer players who score goals with torn knee ligaments, volleyball players who serve with sprained wrists, football players with concussions who keep tackling.

The motto "no pain, no gain" has become an accepted norm.

This pressure to play through injury comes from many places. It comes from parents, who have invested time and money in their child's training and who dream of a college scholarship. It comes from coaches, who want their athletes to perform at the highest level. And perhaps most acutely, it comes from young athletes themselves. Many set impossible standards, and fear that missing even one practice could jeopardize years of hard work as well as their status on the team.

## >> SPEAK UP

Gabby understands this better than anyone. "Doctors have told me that if I had refused to do that stunt a second or third time, I still might be cheering and in college today," she says.

Instead, Gabby is sharing her hard-learned lessons with others. Last year, she was crowned Miss Teen Minnesota and became a spokesperson for the National Center for Sports Safety. Now she travels the Midwest talking to kids about how to be safe so that no one else will have to suffer the way she has.

Gabby still has bad days—days she is too sick to get out of bed, days when she is overcome with sadness for the life she could have had. But she has also discovered her extraordinary strength. After two years of grueling physical therapy, she can give a thumbs-up and wiggle her fingers. She hopes to regain use of her arm one day.

In the meantime, Gabby's message to young athletes is simple: "When your body is hurt, speak up and communicate with a coach, friend, teacher, anyone. You only get one body in life, and you need to honor and respect it."



# Malala the Brave

The amazing true story of a 15-year-old girl who stood up to a deadly terrorist group

by Kristin Lewis

It was October 9, 2012. Malala Yousafzai, 15, was on a school bus in Mingora, Pakistan, where she lived.

Suddenly, two gunmen appeared. "Who is Malala?" one of them demanded.

Terror filled the bus as the gunmen opened fire. They shot Malala in the head. They also shot two of her friends. Children screamed. Then the gunmen fled, leaving them to die.

The gunmen were members of the Taliban. This group believes in an extreme version of Islam that most Muslims don't agree with. Members of the Taliban use terror to enforce their beliefs.

The Taliban wanted to kill Malala. Why? Because she fought for girls' right to go to school.

## Taliban Takeover

In 2007, the Taliban took control of the area where Malala lived. Pakistan's army tried to stop them. The Taliban

reacted violently. They blew up buildings and murdered people.

The Taliban made people follow oppressive rules. Women were not allowed to go to school or work, or to wear makeup. They couldn't even go outside without a male relative. Music, television, and movies were banned. People who broke the rules were punished by whipping or execution. Terror ruled.

In January 2009, the Taliban ordered all schools for girls to close. Malala's school, which her father had owned for more than 10 years, remained open. This was very dangerous.

Hundreds of schools were bombed. Teachers were murdered. For many parents, the risk was too great. More than half of the students at Malala's school dropped out.

## Malala's Courage

Malala wanted to do something about the situation. In 2009, she began blogging for the British Broadcasting Company (BBC) website. She wrote about what life was like under the Taliban. People all over the world read her blog. Outrage over the Taliban grew.

Malala gave speeches on television. Her message was always the same: All children deserve the right to an education. "Even if they come to kill me, I will tell them what they are doing is wrong, that education is our right," Malala said.

In 2011, the president of Pakistan awarded Malala the first-ever National Youth Peace Prize. Everyone knew her name.

Including the Taliban.

## Attacked

Even before she won the peace prize, notes began appearing under Malala's door, ordering her to give up her crusade. But she refused to back down. That's why the Taliban gunmen boarded her school bus on that terrible day in October 2012.

They shot her as a warning to other girls.



(Top) After their school was bombed, girls studied in the rubble left behind. (Bottom) Malala appeared in magazines and newspapers worldwide.



Malala's friends were not critically hurt. But Malala was in bad shape. The bullet destroyed her left ear and sent pieces of her skull into her brain. She was flown to a hospital in England. In Pakistan and around the world, millions prayed for her. Protesters marched. Many of them were kids.

## Staying Strong

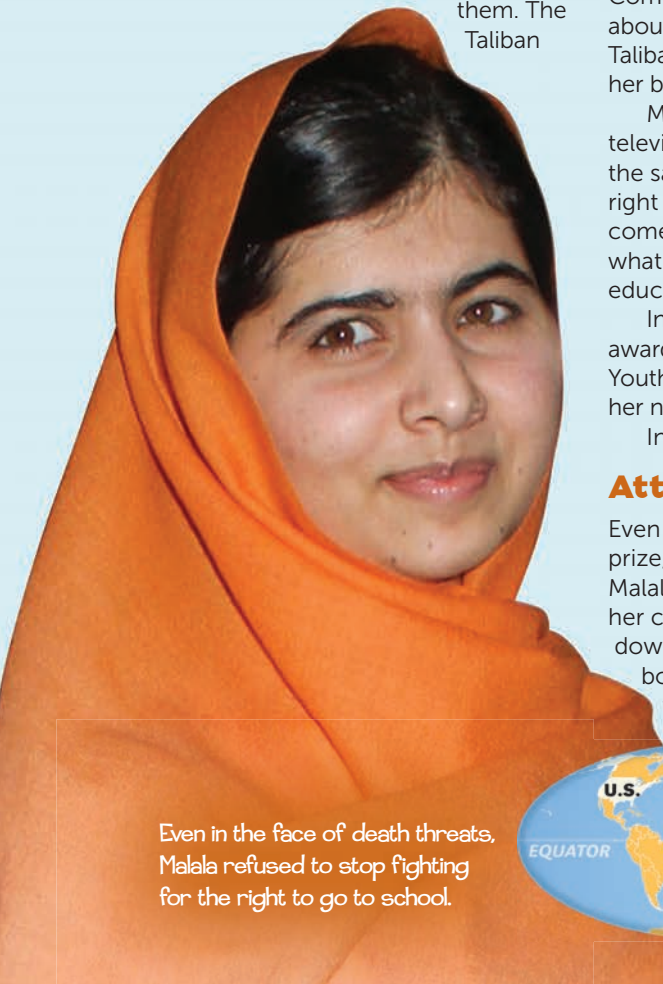
It's been more than a year since the shooting. Malala has had several operations and continues to get better.

The Taliban have vowed to go after Malala again. So Malala's family moved to England, where they hope they will be safe.

Last March, Malala started high school. "Today, I am wearing a uniform," she said proudly. "It proves that I am a student. It is the happiest day. I am going to school. I am learning."

Malala continues to be a powerful symbol of the struggle many kids face. She dreams of a world in which all children, especially girls, can get an education. In July, Malala spoke at the United Nations Youth Assembly.

"One child, one teacher, one book can change the world," she declared. "Education is the only solution."



Even in the face of death threats, Malala refused to stop fighting for the right to go to school.





# SPACE: The ultimate vacation destination

SPACE TOURISM  
ALLOWS PAYING  
CUSTOMERS TO  
TRAVEL WHERE  
ONCE ONLY A  
SELECT FEW  
COULD GO

by Sara Goudarzi

You're suited up and sitting aboard a spaceship along with five other passengers and two pilots. Hitching a ride with a large aircraft, the spaceship slowly climbs to an altitude of 15,240 meters (50,000 feet). Detaching from the aircraft, it fires up its rocket motors. You're pinned to your seat as if on the ultimate roller-coaster ride, and then BAM, you're shot into space.

Trips to outer space are no longer just for astronauts. Charging a hefty fee, forward-thinking companies will take adventurers on the ultimate vacation: a short trip into space.

"You get about 15 to 20 minutes in space, and you'll be weightless for a few minutes of that," says Will Whitehorn, co-founder of Virgin Galactic, a company that plans to fly tourists into space within a couple of years.

Here's how Virgin Galactic will accomplish the feat, and what a trip to space will feel like.

## INTO THE AIR

Before riders on Virgin Galactic's spacecraft, called *SpaceShipTwo*, can experience outer space, a jet-powered aircraft, *WhiteKnightTwo*, must carry the ship to the edge of Earth's atmosphere.

*WhiteKnightTwo* operates much like a commercial flight. The aircraft's engines burn fuel to throw gases out the back. This creates a force called thrust, which pushes the aircraft forward. The aircraft's wings force air downward, causing an equal and opposite force upward called lift. Together, thrust and lift allow *WhiteKnightTwo* to overcome

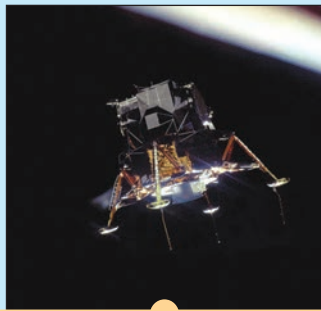


## MAJOR MILESTONES OF SPACEFLIGHT



APRIL 12 • 1961

**Russian cosmonaut Yuri Gagarin** becomes the first human in space. His flight lasts 108 minutes.



JULY 20 • 1969

**Astronauts Neil Armstrong and Buzz Aldrin** are the first humans to walk on the moon. The duo spend 21.5 hours on the lunar surface and bring back to Earth 21.55 kilograms (47.5 pounds) of lunar rocks.



APRIL 12 • 1981

**NASA's first shuttle mission launches.** It carries astronauts Robert Crippen and John Young. Space shuttle Columbia orbits Earth 37 times during the mission's 54.5 hours.



JUNE 21 • 2004

**Virgin Galactic's SpaceShipOne** becomes the first privately owned spacecraft to reach the edge of space.

the pull of gravity, getting off the ground and up in altitude—way up. “You’re going higher than any [passenger] has ever flown—about 15,000 feet higher than a normal jet,” says Whitehorn.

So far, the trip feels like a typical ride in an airplane. “You’re just sitting back looking out but you begin to see the blackness of space above you because you’re right at the edge of the atmosphere,” says Whitehorn.

### BLASTOFF

Igniting its rocket motor, *SpaceShipTwo* detaches at the brink of space. Turning vertically, the rockets send it speeding upward at 4,023 kilometers (2,500 miles) per hour. Passengers start to feel a mighty force pushing them down into their seats. This force of acceleration, which could be as much as four times that of gravity, is called g-force.

“It’s a funny feeling, but it’s not too bad,” says Steven H. Collicott, an aeronautics and astronautics professor at Purdue University in Indiana. “It’s similar to how you get pushed back in the seat of a sports car that leaves a spot in a hurry.”

The rocket thrust pushes up, but at the same time, gravity pulls the spaceship down toward Earth. For the rocket to stay on its upward trajectory, the thrust needs

to be greater than the weight of the rocket.

Leaving the atmosphere, passengers notice blue sky is replaced by outer-space black and the spaceship’s engines shut off. Even without the engines, the spaceship continues to climb up because of inertia (the tendency of an object in motion to stay in motion). It will slow down when it reaches the top of its flight and start to fall back toward Earth.

“During that period, you’ll have maybe a minute and a half going up and a minute and a half coming down where you will feel weightlessness like an astronaut,” says Collicott. Space tourists will experience weightlessness because they will have no weight relative to their surroundings: The spaceship is falling at the same rate as its passengers are.

“You’ll be able to move around the cabin and look out the window on all sides, see the awe-inspiring curvature of the Earth below, the thin blue atmosphere, and look up toward the planets and the stars,” says Whitehorn. You’ll also be able to experience the silence of space because the engines are off during that part of the flight. Space itself is noiseless because there is no air in space to transmit sound.

### BACK TO EARTH

Having reached an altitude of 105 km (65 mi), the passengers will buckle up again and get ready to return to Earth.

As gravity pulls the spaceship home, its wings fold up into a feathered position—giving the spaceship the appearance of a huge badminton shuttlecock.

This unstreamlined shape allows the spaceship to slow down by experiencing air resistance and high drag forces. The deceleration gives the pilots good control, says Collicott.

When *SpaceShipTwo* falls to an altitude of approximately 21 km (13 mi), it comes to the part of the atmosphere where there’s lots of air. Here, pilots unfold the wings so they can land the spaceship as a glider—an aircraft supported by the action of air against its surfaces.

As of press time, Virgin Galactic had performed more than 50 test flights. During the most recent one, *SpaceShipTwo* reached a milestone: It flew by itself in the upper atmosphere. “From here on, it’s going to be progress all the way into space next year,” says Whitehorn.

Although in time the cost of a space trip is expected to drop, for now, a trip will run a whopping \$200,000. So if you want to access the outer reaches of the sky, you’ll need to start saving up!

# *Saving the Great White Monster*



by Lauren Tarshis

*The great white shark is among the most feared animals in the world. But it's also one of the most important to our oceans. Here's why this shark needs your LOVE.*



**I**magine for a few minutes that you are the most feared creature in the ocean: the great white shark. Wherever you go, you spread terror and panic. Fish scatter like confetti. Dolphins skitter away. Even six-ton killer whales aren't safe around you.

And no wonder. There is no animal in the sea that you cannot kill. Mainly you attack by surprise, striking from below, speeding toward your prey like an underwater missile. You hit with the full force of your 4,000-pound body, knocking your prey senseless.

And then—chomp!

Your jaw is one of nature's most devastating weapons, with more than 300 teeth lined up in jagged rows. Your bite is three times as strong as that of a lion; one snap of your mighty jaws can kill a creature many times your size.

But you are not just a killing machine, mindlessly prowling the ocean in search of your next meal. You are a highly intelligent fish with a curious nature. You can travel more than 10,000 miles in a year.

You have seen the rainbow-hued coral reefs off

Australia and the volcanic shores of the Hawaiian

Islands. You and others of your species know the pitch-dark depths of the Pacific and the white sandbars of the Atlantic. You are also vital to the world's oceans. As the animal at the top of the food chain—the apex predator—you keep the delicate ocean ecosystem in balance.

For millions of years, sharks like you have thrived, with nothing to fear. But in recent years that has changed.

Now, you are in terrible danger.

Worldwide, sharks like you are being ruthlessly hunted and brutally slaughtered. Over the past 10 years, an average of 100 million sharks have been killed every year.

That's right: 100 million sharks. Every year. In some parts of the world, sharks have vanished. Many species, including great whites, are in danger of extinction.

What brutal creature is killing the world's sharks? It does not have fanged teeth or strangling tentacles.

It doesn't even live in the sea.

The creature killing the sharks is the human being.

## ***Killing for Soup***

People have been hunting sharks for thousands of years. In the 1800s, Americans relied on oil from shark livers to waterproof their ships. Native Americans prized the teeth of tiger and bull sharks, which they used for carving and cutting. But it wasn't until the 1990s that sharks were hunted in staggeringly large numbers. Today, they are hunted for meat and as trophies, but mainly they are hunted for their fins, the key ingredient in shark fin soup.

This soup is a delicacy in China, where a single bowl of it can cost \$300. A watery broth filled with stringy strands of shark fin, the soup is not known for its good taste. Rather, it is served to impress important guests at occasions like banquets and weddings.

For centuries, only a small number of Chinese people

were wealthy enough to afford the soup. But since the late 1980s, wealth in China has been growing. Today, millions can afford luxuries like fancy cars, designer clothing—and shark fin soup. As the demand for shark fins has skyrocketed, so has the price. The dorsal and pectoral fins of a great white can sell for thousands of dollars each. On any given day, thousands of fishing boats are out in the ocean, prowling the seas for sharks. Many trail wire fishing lines hundreds of feet long and studded with as many as 1,500 hooks baited with raw meat. Some boats can catch more than 100 sharks on a single trip. Many fishermen don't even bother to bring the sharks back to shore. They just hack off the fins while at sea and leave the sharks to die in the ocean.

## ***Rising Alarm***

Sharks are some of Earth's oldest creatures. Tens of millions of years ago, as *Tyrannosaurus rex* was roaring across America's Great Plains, ancestors of today's sharks were cruising the world's oceans. Now, these ancient and fascinating creatures could soon be wiped off the face of the planet.

By the early 2000s, worried scientists were warning that China's appetite for shark fin soup was endangering the world's shark populations. Indeed, over the past decades, the population of some shark species has dropped 99 percent. Great white, tiger,



*A bowl of shark fin soup can cost hundreds of dollars.*

bull, and hammerhead sharks are in particular danger.

Extinction would be tragic for sharks, of course, but it would also spell disaster for fragile ocean ecosystems—and the humans who depend on the ocean for food. The disappearance of an apex predator would have an impact on almost every other species of fish, causing some populations to boom and others to vanish.

## Attacks Are Rare

Imagine once again that you are a great white shark, swimming through the ocean. Are you doomed?

Just a few years ago, many scientists thought so. That, however, was before WildAid got involved.

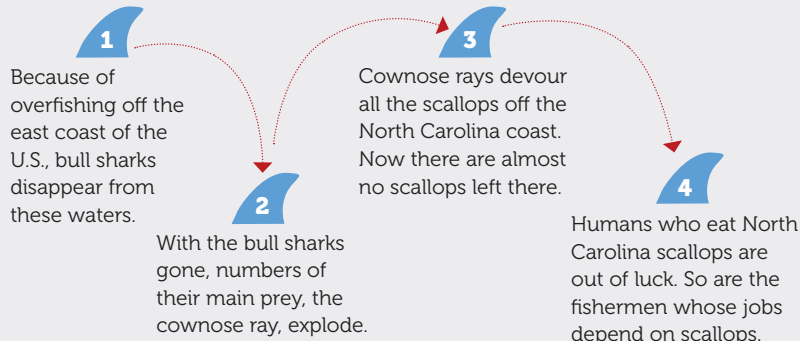
WildAid is one of several wildlife groups working to save the planet's



(above, top) Shark fins dry on a dock before being sold. (above, bottom) Many shark-bite survivors like surfer Bethany Hamilton, who lost her arm in a shark attack when she was 13, are fighting to save sharks. "If you care about the ocean, you care about sharks," she says.

## Why We Need Sharks

Sharks help keep the ocean in balance. Already, the disappearance of sharks has had a dramatic effect on the ecosystem. Here is one example.



many endangered species. The shark presented them with a difficult case. People tend to want to help animals that they care about. Pictures of baby elephants and wide-eyed pandas melt our hearts and move us to donate to causes dedicated to saving them. But looking at a photo of a great white shark—the blood-red mouth, the dead black eyes—few people think, "Awwwww." More likely, they shudder and recall the frightening stories of shark attacks that make headlines every year.

It is true that an average of 80 people are bitten by sharks each year, and that each incident is horrifying. But given the number of people who swim and surf in the ocean, these incidents are extremely rare. A beachgoer is 15 times more likely to be killed by a falling coconut than by a shark.

Still, many people believe the world might be a better place without sharks, which has made it difficult for scientists to rally support for shark conservation.

Until now.

The leaders of WildAid realized that few Chinese people understood the true cost of shark fin soup. So WildAid enlisted some of China's biggest celebrities, like basketball player Yao Ming and actor Jackie Chan, to raise awareness. WildAid also ran ads on TV showing gruesome scenes of sharks being slaughtered. The campaign attracted enormous attention and

has been more successful than anyone dared hope. Many young people are refusing to serve shark fin soup at their weddings, and in 2012, the Chinese government banned the soup from official banquets. In 2013, the number of shark fins imported into China dropped by nearly 30 percent.

## Reason for Hope

Eventually, as fewer people want shark fin soup, fishermen will not be able to demand high prices for fins. Soon, experts hope, fins will be all but worthless, and fishermen will have no reason to hunt sharks. WildAid founder Peter Knights points out that the success of the campaign shows that even difficult problems can be solved with creative thinking.

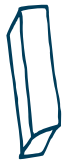
But for now, danger still lurks for you and other sharks. Stay away from fishing boats, with their terrible nets and thousand-hook fishing lines. Steer clear of crowded beaches with splashing humans, where the sight of your fin knifing through the water will cause panic.

But don't despair. There is reason to hope that the humans who have threatened you will, one day, learn to prize you. And perhaps millions of years from now, your descendants will be the most powerful creatures in the ocean, just as you are today.



# Are You Getting Enough ZZZs?

by Janice Arenofsky



It was 8 a.m. The alarm clock jangled Adam awake. He reached over and turned off the alarm, sat up slowly, stretched, and yawned. Last night he had stayed up late working on a project for science class, and now he was tired. But he still had things to do. He had to find a recipe for modeling dough. And he had to do research for a report on Mayan pyramids.

Adam yawned again and flopped back down on the pillow. “Mmmff” was all he could say.

Do you ever feel too tired to do all the things you need—and want—to do? If so, you may need more sleep!

## Busy Brains

Sleep is a must, experts say. It's that important. In fact, you will spend over one-third of your life asleep. Why? During sleep, your body repairs itself. Also, the brain releases

important hormones (the body's chemical “messengers”) that help your body grow and control its use of energy. Some scientists believe that during sleep, your brain also somehow “repairs” nerve tissue. Sleep refreshes you and helps you do your best.

Let's go back to last night and give Adam a normal good night's sleep. Here's what happens. He first goes into what is called non-REM sleep. Non-REM sleep has four stages. (His brain waves are different during each stage.)

He'll start at stage one, the lightest sleep. Then he'll move into stages two, three, and four. Stages three and four are the deepest. During non-REM sleep, Adam's muscles relax. His breathing and heart rate slow down, and his blood pressure becomes lower. When Adam has been in the deepest sleep for a while, he goes back through stages three, two, and one to the lightest sleep.

REM (rapid eye movement) sleep comes next. During REM, Adam has dreams. His



eyes move quickly, and his breathing, heart rate, and blood pressure become irregular. He becomes “paralyzed” during this kind of sleep, but his muscles may twitch. The next morning, he may or may not remember his dreams.

Now Adam returns to non-REM sleep, and the cycle begins again. During the night, Adam goes through several cycles like this. Each one lasts about 90 to 100 minutes. During the night, he spends about 75 percent of his time in non-REM sleep. He spends about 25 percent of his time in REM, or dreaming, sleep.



## Sleepy and Grumpy

It's important to get a full night's sleep and to give your brain and body time to get enough non-REM and REM sleep. Sleep is believed to help you learn and reason. You may have noticed that you seem to remember things better when you've “slept on” them.

It's not surprising that sleep also helps you do better with your schoolwork. After a good night's sleep, you will feel alert and rested. Having enough sleep will help you work better and make fewer mistakes. The flip side of this isn't so pretty. Sleepy kids are more likely to make mistakes than well-rested ones, and

may have trouble following directions and learning new things.

Sleep also helps you control your emotions. Sleepy kids are not always fun to be with, says Carl E. Hunt, MD, the head of a national sleep center. He says kids who are not getting enough sleep tend to have fewer friends because they are grumpy, depressed, or angry. You would think that these young people would *act* sleepy, but some don't. They may “act out” instead.

Sleepiness can affect your safety and health—but not for the better. Sleepy kids may have more accidents. If they are athletes, they tend to get hurt more. They even grow more slowly than those who are well rested. Sleepy people may get sick more, too. This is because a lack of sleep stresses the immune system. Kids develop colds, flu, and other infections. As adults, they may have high blood pressure, heart disease, or strokes.

It's clear that getting enough sleep is important, but how many ZZZs do you need? That depends on how old you are. Newborn babies need about 14.5 hours of sleep a day. Eighteen-month-old babies need about 14 hours. And 3-year-olds need 13 hours. Preteens and teens need nine to 11 hours of sleep a night. Surprised? Young people need lots of sleep—and a regular sleep schedule helps them get it.

## Sleep Thieves

You can become sleep-deprived quickly; it takes only a few days. There are some “thieves” out there, waiting to rob you of sleep. Who are these thieves?

One sleep thief is allergies. Kids with stuffy noses sleep poorly. They aren't well rested, says Joel B. Steinberg, MD. The Texas doctor and professor says hay fever or sinus problems can interrupt sleep. The same is true for asthma.

Another burglar is caffeine. Caffeine can make you feel too “wired” to fall





**Avoid drinks with caffeine too close to bedtime.  
Drink milk, juice, or water.**

asleep. Caffeine is found in coffee, tea, cola, and some other soft drinks. It's also in chocolate.

Sometimes pain is the sleep stopper. A number of painful conditions might keep you awake. These include earaches, migraines (*MY-grainz*; bad headaches), and sore throats. Tell your parents if you hurt and can't sleep well.

Even certain fun activities too close to bedtime can interfere with sleep. Surfing the Internet and playing computer games are two. John Herman, a Dallas researcher, says that the bright computer screen confuses your body. It tells your body that it's daytime when it's really bedtime. Watching television also can do that. Turn off the computer and TV at least a half-hour before bedtime.

Other sleep robbers are loud music, lights, and certain drugs. Long telephone calls also can keep you from falling asleep. So can scary movies, school worries, or family stress. Insomnia (trouble falling or staying asleep) can also result from fears and anxieties.

Over-busy schedules also limit your sleep time. You've probably heard the phrase, "So much to do, so little time." Try not to take on so many activities that there isn't enough time left for sleep.

Finally, if you or someone you know says, "I'm always tired," check with a doctor, school nurse, or counselor. Maybe your schedule is not the problem. Some people are tired because of medical conditions. Depression and anemia (not enough red blood cells) are two of them. Others are thyroid problems and infections.

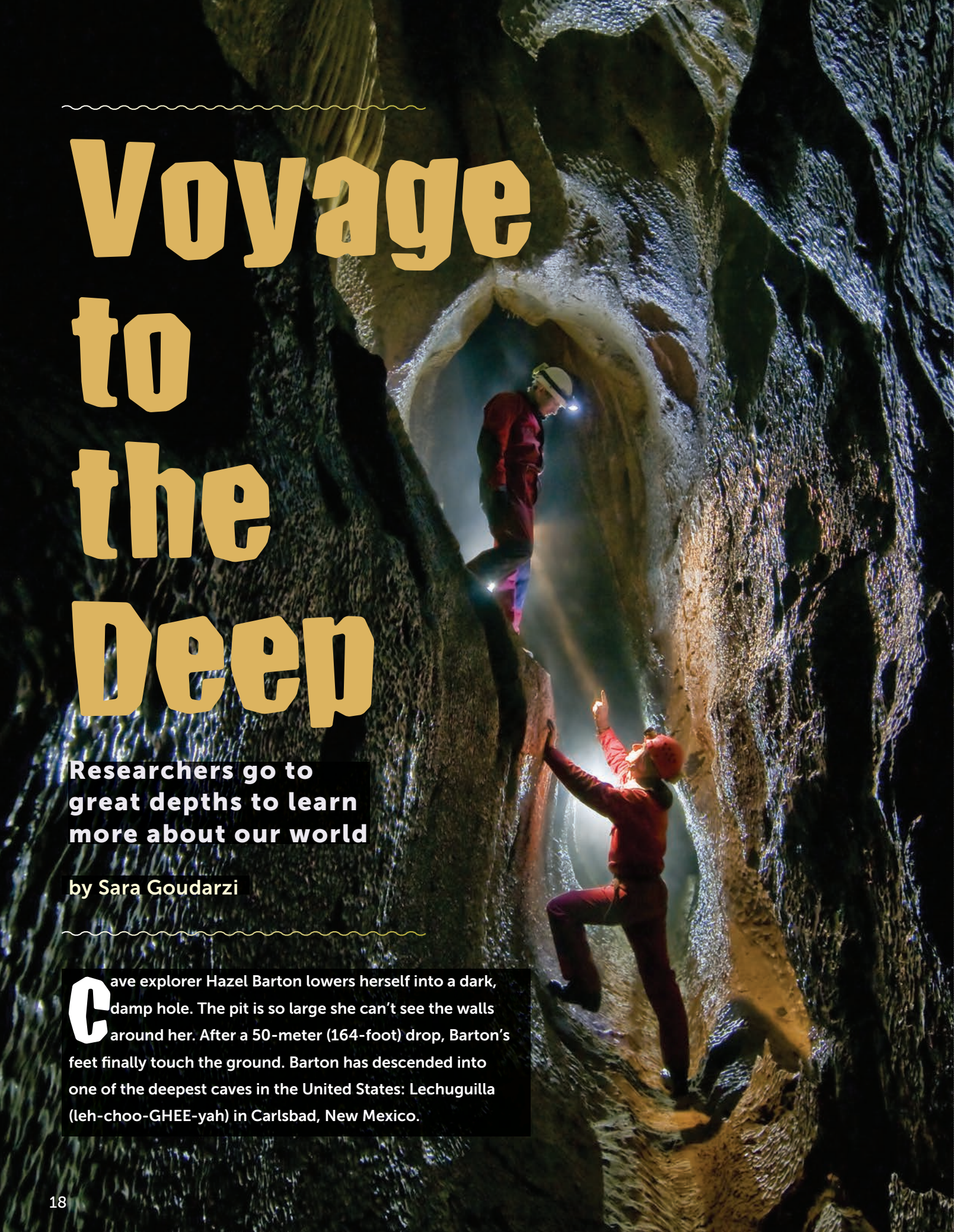
## Once Upon a Mattress

To do and feel your best, be sure to get the right amount of sleep for your age group. Here are some hints for a good night's sleep:

- Exercise every day. Try for a full 60 minutes, but do not exercise too close to bedtime.
- Set regular times for going to bed and getting up. Stick to them.
- Decorate your bedroom with your favorite pictures, photos, and posters. Choose relaxing images.
- Place a memento of a person or place you love near your bed.
- Make sure your bed has a comfortable mattress.
- Take a warm bath, have a warm drink (no caffeine!), or a healthy snack before going to bed.
- Think pleasant thoughts before bedtime and as you fall asleep. Think about the people you care about. Or picture yourself strolling in a garden, along the seashore, or some other beautiful, restful place.
- Keep your bedroom dark, quiet, and cool (but not cold).
- Use deep breathing or other relaxation methods to help you fall asleep.
- Still awake? Look through a photo album. Read or listen to soft music.

It's easy to become a super sleeper. You can do it lying down.





# Voyage to the Deep

**Researchers go to great depths to learn more about our world**

by Sara Goudarzi

**C**ave explorer Hazel Barton lowers herself into a dark, damp hole. The pit is so large she can't see the walls around her. After a 50-meter (164-foot) drop, Barton's feet finally touch the ground. Barton has descended into one of the deepest caves in the United States: Lechuguilla (leh-choo-GHEE-yah) in Carlsbad, New Mexico.



Barton's headlamp shines on the cave's glittering features. Thin, pointy rocks hang like icicles from the ceiling. Others rise up from the cave floor, like rocky fingers reaching toward the surface. Barton looks around and realizes that parts of the cave walls look like they're covered in popcorn-shaped rocks.

Barton knows how lucky she is to see this underworld treasure. "These cave formations take millions of years to form," she says. "If one breaks, no one will ever see it again, because it won't grow back in our lifetime."

In addition to dazzling sights, caves are also full of unusual kinds of life such as centipedes, millipedes, and bats, as well as bears. Scientists find species in caves that aren't found anywhere else on the planet. For these reasons, researchers risk their lives to study and record Earth's underground worlds.

## Going Underground

Explorers have discovered caves in places all around the world: in ice, rock, lava, and sand. The most common kind of cave is made when water washes through cracks between rocks. Over time, erosion enlarges these cracks through the rock, forming a cave.

"Caves also form underwater when coral reefs grow together and create small passageways and caverns," says underwater cave explorer Kenny Broad.

Many caves give clues to what conditions were like long ago. "Let's say you cut certain types of cave rocks in half and analyze them. You can learn what the climate was like hundreds of thousands of years ago," says Broad. "Understanding how the climate has changed helps us understand what may be happening in the future," he adds.

Scientists are also interested in mapping caves. City planners need to know the location of unstable underground caverns. That way, they can make sure no one builds structures over them.



Divers explore an underground sinkhole called a cenote [si-NO-tee].

## Window to the Past

All sorts of species—from bacteria to bats—live in cave ecosystems. Scientists want to know how these species survive in places where the sun's light can't reach. What do they eat? What role do they play on Earth as a whole?

"Caves allow us to look at these interactions," Barton says. "There's no light energy," which means organisms have to find another way to survive.

At the beginning of Earth's history, organisms were not able to turn the sun's energy into food. That ability, called photosynthesis, did not develop until about 2.6 billion years ago. So caves are like a window into Earth's past. They can show scientists what early life forms might have looked like.

## Risky Science

Most caves are too complex to navigate with cameras or submarines. That's why they're among the last places that humans must physically visit to explore. And though exploring them is exciting, it's also risky.

When Broad dives into a water-filled cave, he must bring his own supply of air to breathe. If Broad doesn't get back to the surface before his air runs out, he will drown. Broad carries a backup air tank in case of an emergency. He also runs a guideline from the cave entrance. He can follow it out if he loses his way.




Painted Grotto, Carlsbad Caverns National Park

Broad admits that the work can be nerve-racking. "You never know when something can fail you," he says. "That's why we bring lots of backup equipment."

Plus, caves can be dangerous environments, where falling rocks and landslides can occur with no warning. "I had a rock fall on my arm in New Zealand," says Barton. "I ended up in the hospital for three days."

Ultimately, explorers like Broad and Barton find that the rewards of cave research outweigh the risks. "Caves carry a lot of mysteries for us to try to understand," Broad says.





Deadly bacteria are lurking in hospitals, playgrounds, malls, and parks, infecting millions of people.

**Can we stop them before it's too late?**

# FIGHTING INVISIBLE KILLERS



*by Kristin Lewis*

*Here is microscopic MRSA bacteria—up close! This “superbug” can be found in standing water.*



In May 2011, 11-year-old Addie Rerecich was attacked by a monster. No, this monster was not a ferocious animal. In fact, it was invisible to the naked eye. But it was one of the most dangerous killers in the world today.

Specifically, Addie was attacked by a kind of bacteria that for years has given doctors nightmares. It's called *methicillin-resistant Staphylococcus aureus*, or MRSA.

Despite doctors' efforts, it was slowly poisoning her from the inside out.

### The Nightmare

Addie's nightmare started when she developed an ache in her hip. At first, she and her mom, Tonya, chalked it up to a strain from softball practice. But then Addie's temperature spiked to 103 degrees. Doctors concluded that she had a virus. They said she should rest and follow up in a few days.

Meanwhile, Addie didn't get better. She got worse—a lot worse. Unlike many other illnesses, this one was not responding to medications.

Two days later, Addie's pain had become so unbearable that she couldn't sleep. Tonya rushed her to a hospital in their hometown of Tucson, Arizona, that specializes in treating children. There, doctors tested Addie's blood and discovered that she was infected with MRSA. They suspected that it had entered her body through her hip, though no outside injury was visible. Now the brutal infection was coursing through her bloodstream.

Next, Addie was rushed into the intensive care unit, where doctors and nurses scrambled to help her. MRSA can be one of the most dangerous and contagious infections. Some people can

fight it off, but for others, particularly the elderly and sick, MRSA can be lethal.

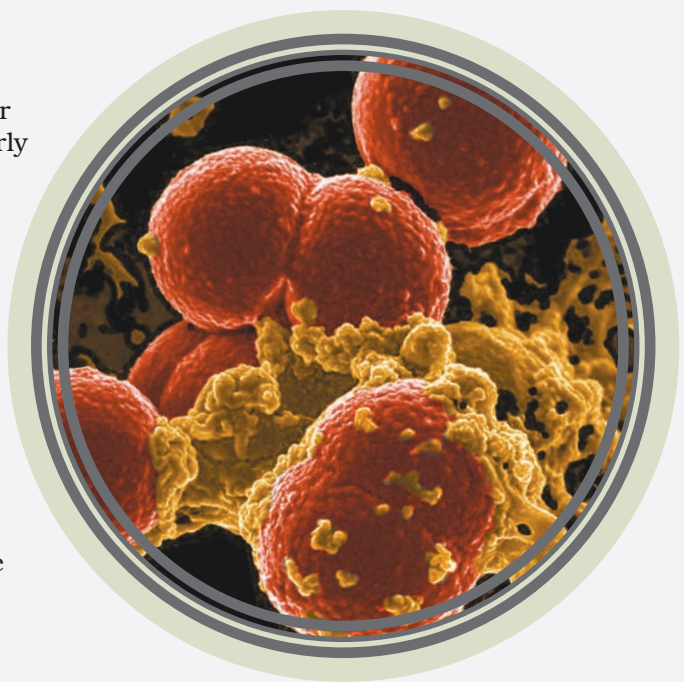
To illustrate, MRSA is called a superbug because many medicines used to treat infections don't work on it. In the U.S., more than 2 million people get some kind of superbug every year, according to a new report by the Centers for Disease Control and Prevention. Like a raging wildfire, superbugs threaten everyone—young and old, healthy and sick—and kill at least 23,000 people every year.

Addie was in for a terrifying fight against MRSA—and it was just beginning.

### Age-Old Problem

Bacteria are microscopic organisms that are too small to see or feel. There are 5 million trillion trillion bacteria on Earth, and they are literally everywhere, from the top of Mount Everest to the deepest trench in the Pacific Ocean. You are surrounded by them right now, and your body is filled with them. The majority of bacteria are harmless. Many are actually crucial to our survival, like the bacteria that line our intestines and help us digest our food.

Some types of bacteria, though, make us sick. Until the 20th century, bacterial infections were a leading cause of death around the world. That's because there were few medicines to treat them. People routinely died of strep throat or even mild cuts that became infected. By the



*MRSA bacteria (in red) being attacked by a human white blood cell. This is the body's natural way of fighting off germs.*

1900s, for example, the Black Death, caused by the bacterium *Yersinia pestis*, had killed more than 200 million people.

### An Accidental Medicine

Human history changed on the morning of September 3, 1928—and it happened by accident.

A Scottish scientist named Alexander Fleming was cleaning his laboratory. For years, he had been searching—unsuccessfully—for a cure to infection. While organizing some glass plates he had coated with *Staphylococcus*, he noticed something odd. Some mold had grown on one of the plates (he was notoriously messy), and there were no bacteria on or near the mold.

*Was there something in that mold that was killing bacteria?* Fleming wondered.

It turned out that the mold was producing an incredible substance called penicillin. It would be the world's first antibiotic.

Suddenly, the world had become a much safer place.

Antibiotics—medicines that destroy or slow down the growth of bacteria—were called wonder drugs. This was not an exaggeration. During World War II, penicillin saved hundreds of thousands of injured troops. Killer diseases were now survivable. Surgeries to fix everything from broken bones to failing kidneys became more common, because antibiotics prevented the fatal infections that would have likely followed.

For the next 50 years, antibiotics continued to open doors to incredible life-saving procedures. Organ transplants, chemotherapy for cancer patients, heart surgery—none of these would be as safe without antibiotics.

By the 1950s, doctors were handing out antibiotics like candy. The drugs were being prescribed to treat all kinds of sickness, whether caused by bacteria or not. Over time,

## KILLERS THROUGH TIME

*And How We Stop Them*

### BLACK DEATH

*(Yersinia pestis)*

**SYMPTOMS:** fever, vomiting, coughing, swollen lymph nodes, tissue that blackens and dies

**HOW IT SPREADS:** bites from fleas living on infected rats; through the air

**HOW WE FIGHT IT:** antibiotics

At the height of the Black Death in the 14th century, at least a third of Europe's population was wiped out. Today, the disease is easily treated with antibiotics, and infections are extremely rare.



even better antibiotics were developed, and their uses continued to expand. Farmers began giving them to cows, pigs, and other livestock to prevent, rather than treat, illness, and to make the animals grow larger.

What few people realized was that there was a consequence to the overuse of antibiotics. Some bacteria were fighting back, and they were getting stronger.

## Preparing for the Worst

Within 24 hours of Addie's admission to the hospital, her condition had deteriorated. Tiny infected boils erupted on her skin. Fluid filled her lungs. She was put on a machine that breathed for her, giving her lungs time to heal.

But in a horrifying turn of events, hiding inside that machine was another kind of superbug. It is called *Stenotrophomonas maltophilia*, and it is even worse than MRSA.

Immediately, doctors administered another antibiotic, and Addie started to get better. Then the antibiotic stopped working, and the infection came back. So doctors started Addie on a different drug. Then that one stopped working, too.

This went on for several agonizing weeks until finally there were no antibiotics left to try. Doctors told Tonya to prepare for the worst.

## The War on Superbugs

How could the bacteria inside Addie resist the medicines that once killed them?

Bacteria, it turns out, are smart—and resilient. Every time they encounter an antibiotic, they “learn” a little bit more about how to beat it. Over time, bacteria come up with ways to defend themselves. They build thick armor around their cells. They develop scissorlike arms that can stop medicines in their

tracks. They can even pass on their drug resistance, teaching other, weaker bacteria how to be strong too.

Does this mean the superbugs are going to win? Not if scientists like Dr. Helen Boucher can help it.

Dr. Boucher is an infectious disease specialist at Tufts Medical Center in Boston and one of a growing number of doctors and scientists who are working hard to stop the spread of superbugs.

Boucher warns that as antibiotics stop working, our world could start to look like it did before Alexander Fleming discovered penicillin, when a minor cut could kill within days. Common medical procedures could again be too risky to perform. Millions could die of infections that were once easily treated.

The good news is that we can stop this from happening—if we act now. According to Boucher, the best way to fight superbugs is to prevent infection in the first place. Because superbugs can travel around on your skin (they usually won't make you sick unless they get inside your body), you can pass them to other people without ever knowing. Regularly washing your hands for at least 30 seconds with soap and water can help prevent that.

Just as important? Take antibiotics only when you really need them. And when you do take them, make sure you take the entire prescription. Don't stop after you start feeling better. (Even if your symptoms are gone, you may still have bacteria inside you that can grow and multiply.) The CDC estimates that half of all antibiotics taken in the United States are unnecessary or used inappropriately. And the more antibiotics we take, the more resistant bacteria become. That's why in places where antibiotics are used most—such

## KILLERS THROUGH TIME

*And How We Stop Them*

### CHOLERA

*(Vibrio cholerae)*

**SYMPTOMS:** diarrhea, nausea, dehydration, fever, convulsions

**HOW IT SPREADS:** food and water contaminated with infected fecal matter

**HOW WE FIGHT IT:** better sanitation; antibiotics

Over the centuries, tens of millions of people have died in cholera outbreaks. Today, it is easily treated, but there are still up to 5 million cases a year. Cholera is also a concern after natural disasters. Thousands got sick in Haiti (right) after the 2011 earthquake because food and drinking water got contaminated by sewage in the refugee camps.



as hospitals—bacteria seem to be the strongest.

The bacteria inside Addie were some of the strongest in the world.

### The Last Resort

Addie's condition continued to worsen. She developed more infections from drug-resistant superbugs that tend to flourish in hospitals. Doctors said her lungs were damaged beyond repair. Yet her mom refused to give up. What Addie needed, Tonya realized, was a new set of lungs. "I went on the Internet at 3 a.m. and started researching transplants," Tonya said. She found a doctor she thought could do the surgery, Dr. Michael J. Moulton, the surgical director of lung transplantation at the University of Arizona's Medical Center-University Campus.

"I knew I had to get to him somehow. I felt like if he could come and meet her, he'd see the life in this child. She'd come through a war covered in scars but intact."

Moulton agreed to see Addie, and Tonya tried not to get her hopes up. But to her relief, Moulton said he thought he could help Addie. First, though, doctors needed to deal with all the resistant bacteria inside Addie. Otherwise there was little chance she could survive a procedure as traumatic as a lung transplant.

Turns out, there was one more antibiotic they could try after all. It is rarely used because it can seriously harm organs. It's a last resort antibiotic, basically poison. Tonya believed that if there was even a glimmer of hope that Addie's life could be saved, the risk was worth it.

After doctors administered the antibiotic, Tonya and Addie received the best news they'd had in months: The bacteria were being obliterated.

On September 8, 2011, Addie received a pair of lungs.

### Time to Act

It's been two years since the lung transplant, and Addie, for now, is out of danger. Her new lungs are fragile, and she is still recovering her strength. But she is moving forward with her life and eager for her mom to share her story.

Tonya has become a crusader against superbugs, working with the Infectious Diseases Society of America to get the word out. She is especially passionate about the importance of developing new antibiotics capable of killing superbugs. One challenge is that most big drug companies have stopped working on new

antibiotics because they are so costly and time-consuming to develop. It can take as much as a billion dollars to get a new drug to patients.

But the situation is not hopeless. Last October, the CDC sounded the alarm. They are working on ways to make it easier for companies to develop new antibiotics and get them to patients who need them most. They are ranking superbugs by threat level. They also want to better track where infections occur, so scientists can develop treatments more quickly.

All in all, that is good news. "We need to take steps now to ensure we are able to more effectively battle these infections in the future," Tonya urges. "My family and I pray every day that no one else will have to experience what Addie has gone through."

## KILLERS THROUGH TIME

*And How We Stop Them*

### E. COLI

*(Escherichia coli)*

**SYMPTOMS:** diarrhea, cramps, nausea, vomiting, fever

**HOW IT SPREADS:** food and drink, especially meat, poultry, and dairy

**HOW WE FIGHT IT:** pasteurization

Good hygiene slowed E. coli down. So did pasteurization, a process invented by 19th-century scientist Louis Pasteur. (Thanks, Louis!) Milk is heated, then cooled, killing off harmful bacteria. Today in the U.S., all dairy products must be pasteurized. Sadly, a resistant form of E. coli is being reported.







# Space Attack

by Justin O'Neill

## Millions of rocks are hurtling through space. What really happens if one of them hits us?

**A**s the sun rises on February 15, 2013, the people of Chelyabinsk, Russia, start their morning as usual, yet the 1.1 million residents of this busy city are in for a very unusual day. They do not know that a space rock measuring 55 feet across is headed directly toward them.

This rock has been circling close to Earth for thousands of years. Now it is entering our atmosphere, the layer of gases that surrounds the planet, and picking up speed as it zooms toward the surface. It gets so hot that it starts to crumble. Now it's 15 miles above the ground. It won't be long until . . . it explodes!

People in Chelyabinsk gawk, puzzled, as a brilliant fireball

streaks across the blue-pink sky and disappears in a blinding flash, leaving behind an eerie trail of smoke. Some run outside for a better look. Others pull their cars to the side of the road, alarmed.

What was that? A missile? A plane crash? Aliens?

Two uneasy minutes pass. And then—BOOM! SMASH! Invisible shock waves shake the city. Walls collapse. People are knocked



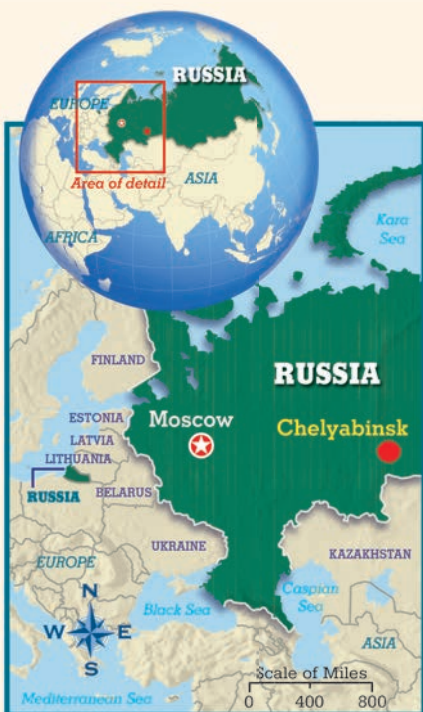
to the ground. Windows shatter, flinging razor-sharp shards of glass into homes, schools, and offices. In a single terrifying instant, 1,200 people are injured.

What had just happened?

## Rocks From Above

Ever look up at the night sky and see a shooting star? Beautiful, yes? Don't let the name confuse you, though—a shooting star is not really a star; it's a meteor, the stream of light produced when a rock burns up in the atmosphere. Our solar system has millions of rocks: asteroids (large space rocks), comets (part rock, part ice), and meteoroids (smaller space rocks). Especially large meteors, like the one in Chelyabinsk, are called fireballs. Any pieces of rock that land on Earth are called meteorites.

These rocks are leftovers from when our solar system formed billions of years ago. Most of these rocks orbit the sun, as planets do. Generally, they stay in the asteroid belt between Mars and Jupiter, but sometimes they knock into their neighbors and, bouncing around like bumper cars, stray close to us.



Each day, Earth is bombarded by some 100 tons of debris from space. Most of the debris burns up in the atmosphere without causing any harm. But if an asteroid larger than a mile across were to hit Earth, it would be catastrophic. Sixty-five million years ago, an asteroid strike likely led to the extinction of the dinosaurs. That asteroid, which was six miles across, crashed off the coast of what is now Mexico. Dust clouds from the explosion blocked out the sun—perhaps for months—causing plants and animals to die. Could something like that happen again?

Events like the Chelyabinsk fireball are rare; few of today's scientists imagined they would live to see anything like it. Very large asteroid strikes, like the one that probably did in the dinosaurs, are even more rare. They happen only once every 100 million years or so.

For some people, though, that is not rare enough. Currently, a group of experts is working to ensure that a giant asteroid never strikes Earth again. The B612 Foundation, founded by former astronauts, is building a satellite called Sentinel that will serve as our planet's eyes, hunting for asteroids as it orbits the sun.

"Right now, we're on Spaceship Earth, and we're flying through the universe without any windows,"

says B612 spokesperson Diane Murphy. "We're creating windows for Spaceship Earth."

If we spot a large asteroid zooming toward Earth, we could alter its path by crashing an uncrewed spacecraft into it. If that wasn't possible, we might at least have time to evacuate cities in the asteroid's path.

## Future Impacts

What happened in Chelyabinsk is a reminder of something that's easy to forget: We are drifting through space, and we are not alone. Drifting with us are objects that may someday pose a threat. But according to Murphy, there is no reason to panic. Asteroids are part of the universe. There is nothing we can do about that, but we do have the technology to prepare for future impacts.

Fortunately, not one person in Chelyabinsk was killed; most injuries were minor. And now, many people in the area have a new hobby: hunting for meteorites. Even small fragments from the fireball may be worth thousands of dollars. If you saw one, though, you probably wouldn't think it was anything special. Most meteorites look like boring old black rocks.

If you saw one, you'd probably walk right by.







# KILLER FRIES?

MORGAN SPURLOCK  
WANTED TO SHOW THE  
WORLD THE TRUTH ABOUT  
FAST FOOD. AND IT  
NEARLY KILLED HIM.

by Kristin Lewis



*The government says that “pink slime,” a cheap filler found in some ground beef, is safe, but people were so icked out by the idea of “pink slime” that McDonald’s no longer uses it in its burgers. Many parents are calling for schools to get rid of it, too.*

Morgan Spurlock is turning green. Slumped over in the driver’s seat of his car, the remnants of his McDonald’s Big Mac and fries strewn across his lap, he looks into the camera and whispers, “I feel weird.” He guzzles his giant soda and burps. Before he can say “excuse me,” he thrusts his head out the window and vomits. And vomits. And vomits.

No, he doesn’t have the flu. Spurlock is making a film called *Super Size Me*. For 30 days, he is attempting to eat nothing but McDonald’s food for breakfast, lunch, and dinner. The rules are simple: He must eat everything he orders, and if a cashier offers the “Super Size” option—which doubles the portion size for a few additional cents—he must say yes.

Why? Spurlock wants to show that fast food may be doing something truly terrible: killing us.

## FAST FOOD, SLOW DEATH?

Americans love fast food. Sure, we know it’s unhealthy, but that doesn’t stop us from eating it. As a nation, we consume enough burgers every year to cover the island of Manhattan—three times. We spend more than 3 billion bucks a week on fast food. One in three kids eats it every day.

The cost has been high. Today, America is one of the most overweight countries in the world. In fact, health

officials say that obesity—a condition in which a person is dangerously overweight—is one of the biggest health crises facing the United States today. It can cause all sorts of serious problems, like cancer and heart failure, and it’s a leading cause of death. It’s also affecting a shocking number of young people: More than 16 percent of kids ages 2 to 19 are obese.

With his documentary, Spurlock set out to prove that the fast-food industry is at least partly responsible. And he was willing to sacrifice his own health to do it.

After just seven days of eating nothing but McDonald’s, Spurlock had gained 14 pounds. After two weeks, his body was freaking out. He was moody and depressed. One night, he awoke in a panic, unable to breathe. A visit to the doctor showed that his liver was damaged, and his heart was struggling. His doctor begged him to stop.

The health problems Spurlock experienced are not surprising. Fast food is disturbingly bad for you. It’s loaded with sugar, fat, and chemicals with hard-to-pronounce names. French fries are soaked in enormous, gurgling vats of fat. At Burger King, a Whopper, large fries, and large soda together contain nearly four times the amount of sugar a middle-school kid should eat in an entire day.



# VEGAN TEEN OPENS BAKERY



When Nia Froome was 7, she received devastating news: Her mother had breast cancer. Nia's mom pulled through, but life in the Froome house was never the same. Determined to lead healthier lives, the entire family became vegan. Vegans don't eat any animal products—no meat, eggs, milk, or cheese.

With such a strict diet, the Froomes had a hard time finding yummy desserts, so Nia, who loved to bake, started modifying her recipes to be vegan-friendly. Over the years, her cookies became a family favorite.

When Nia was 17, she made a bold move and opened her own bakery in her hometown of Valley Stream, New York. She named it Mamma Nia's Vegan Bakery.

The shop was a hit. Customers loved that Nia's treats, in addition to being vegan, weren't loaded with sugar and fat yet still tasted delicious. Mamma Nia's was so successful that Nia won first place in the prestigious Oppenheimer Funds/NFTE National Youth Entrepreneurship Challenge. She received \$10,000 and got to meet President Barack Obama. Now, orders are pouring in from all over the state—even from non-vegans.

Experts say eating a diet full of fresh and unprocessed foods is key to a long and healthy life. Nia's treats make that just a little bit easier.



If fast food is so terrible, then why do we eat so much of it? For one thing, it's fast and cheap. It's also convenient—wherever you are, chances are you're close to a Burger King, McDonald's, or Taco Bell. The United States has more than 195,000 fast-food restaurants.

And let's face it: Fast food tastes pretty good too.

Still, many nutritionists say you should never eat it. Ever. If you must indulge, they say, you should limit it to once or twice a month at the most.

Spurlock was eating fast food three times a day.

## WHO'S TO BLAME?

Fast-food companies want you to eat their food, and they come up with some pretty clever ways to lure you into their restaurants. They spend billions on advertisements that make their food seem appealing. They use toys to entice kids—and with good reason. Studies show that developing a taste for fast food when you're young makes you more likely to eat it as an adult.

In 2003, the families of ten kids sued McDonald's. The kids were obese, and they claimed McDonald's was responsible because it did not warn them about the health risks of eating there. They lost the case, but they raised an important question about the role of fast food in our lives: Who is really to blame for the results of eating it?

By the end of Spurlock's 30-day McDonald's binge, he was in dismal shape. He had gained 25 pounds. His organs were failing. He had no energy. He couldn't focus. But it was all worth it to Spurlock. When *Super Size Me* hit theaters in 2004, it was a huge success. Viewers were shocked and grossed out to learn just what their favorite foods were doing to them. The film was nominated for an Academy Award. Health experts still celebrate it today.



Some critics, however, argued that it was unfair—that eating massive quantities of anything, whether it's tacos or carrots, is bad for you. Besides, McDonald's has never claimed outright that its menu is healthy or that people should eat there three times a day. "The scary part is: There are people who eat this food regularly," counters Spurlock. "So while my experiment may have been a little extreme, it's not that crazy."

## RESTAURANTS RESPOND

McDonald's and other fast-food restaurants have made some changes over the past few years. Either in the store or online, many now post the nutrition content of their foods. You'll also find healthier options like salads, yogurt, and oatmeal on fast-food menus, though these choices cost more and are the least popular items. McDonald's even eliminated its "Super Size" option.

It took Spurlock more than six months to lose all the weight he gained. But eventually he made a full recovery—though it's probably going to be a long, long time before he goes anywhere near a French fry.



# Time for a Pet?

by Simone

Did you know that 2.7 million adoptable dogs and cats are euthanized each year in the United States? That horrifying figure is about real dogs and cats—often house-trained and used to being part of a family—who died for no reason.

If you have a child, selecting a pet from the pound or Animal Rescue League has many advantages. First of all, children love animals and gain self-esteem by rescuing an abandoned or abused pet. Caring for the needs of a pet can teach responsibility and the power of family routines. Most of all, the child will learn to express kindness and love with a pet that will return that love generously.

If you happen to be alone, remember that a pet can be an amazing companion. The friendship of a pet has been proven to keep you healthy—and can even help you live a longer, happier life.

Our shelters are overflowing with pets and there are too few people to adopt them. So, don't wait. Head to the nearest shelter today and find a four-legged "friend" who will love you forever.

# Penguins: Belly-Sliding, Fast-Swimming Fish Eaters!

by Courtney

Imagine being a sailor cruising along the coast of Australia. Suddenly, a bullet-shape darts past. Swish! Is it a dolphin? No! It's a penguin—a fast-swimming, belly-sliding, chick-guarding fish-eater that swims with amazing agility using its wings like flippers.



However, these water-gliding athletes are not nearly as sleek on land. Kathump—Kathump! That is the sound of penguins waddling along the sand with their short legs and wide, webbed feet. They often waddle, or even hop to move from place to place. When going uphill, they sometimes use their beaks to dig in and help pull their bodies uphill. Going downhill, penguins flop onto their bellies and slide down, using their flippers and feet for control. This is called tobogganing.

When it is time for penguins to lay their eggs, one parent must sit on the nest at all times—or balance the egg carefully on their feet to keep it warm. Parents take turns going to the sea for food. Each trip—on land and sea—might be 50 miles one way. Imagine holding an egg on your feet for two months until someone returns with the groceries!

Male and female penguins are both good parents. Once the chicks hatch, both parents travel long distances to find fish for them in the sea. When the parents return with their fishy-treats, they locate their chick by calling out: eh—eh—eh. Each penguin has a sound that is unique, so parents and babies pay close attention to the calls as they search for each other. Because the chicks are starving, they chase their parents, begging for food. Penguin chicks gorge themselves on fish, storing so much food in their bellies that they look like over-stuffed bags of laundry!





# No Smoking

by James

Tick, tick, BOOM! Smoking is like having a ticking time bomb in your body! It is time for stricter laws to bring this dangerous habit to an end. Smoking damages you're body, causes strokes, heart disease, black lunges, and emphasema.

Besides who wants yellow teeth and fingernails, hair that smells like smoke, or big wrinkles in your face? And did you know that second hand smoke is dangereous for kids?

Do you want to be a ticking time bomb? The choice is yours. Save your yourself. Save your kids. Stop smoking now!

TO: Department of Transportation

FROM: Students of Room 312

SUBJECT: Traffic Light

Dear Department of Transportation,

We are writing to request that a traffic light be installed in front of our school that could be activated when people need to cross 185<sup>th</sup> street. When our school was built, this was a quiet country road. There were only two lanes of traffic so drivers were easily able to see people in the crosswalk and stop. The situation is no longer the same as there are housing developments, stores, and restaurants. The crosswalk is definitely not safe for our students, our families, or even the crossing guard.

You may wonder why we think a traffic light is needed when the school is paying for a crossing guard before and after school. Last week, a car came speeding through the crosswalk nearly hitting the crossing guard and four children even though the crossing guard's flag was clearly visible.

It is time for action. The crosswalk in front of our school needs a traffic light. We appeal to you for a speedy solution for this important issue.

Respectfully yours,

Fourth-Grade Students for Traffic Control