

Exploring Different Professions

6 Articles

Check articles you have read:

☐ **Predicting the Future**
871 words

☐ **A Day in the Life of a Veterinary Technician**
1385 words

☐ **Song and Dance**
860 words

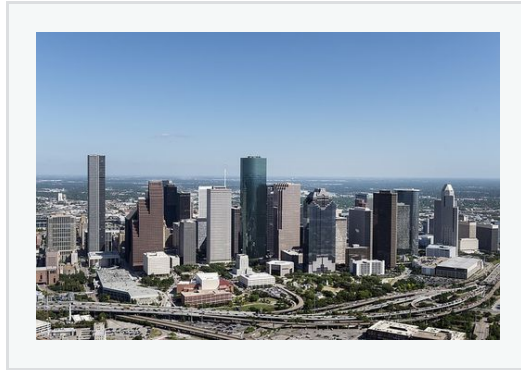
☐ **Bot Man**
916 words

☐ **All in a Day's Work**
1067 words

☐ **Quebec's Sugar Season**
945 words

Predicting the Future

By ReadWorks



Houston, Texas

Garry Golden sits in a small cafe in Brooklyn, New York. In front of him, sheets of paper with diagrams litter the table. He rapidly sketches trains, cars and highways as he explains his ideas. Garry Golden has one passion: transportation. The science of how to move people from place to place fascinates him. He spends his days studying the relationships between cars, subways, and trains. But he's most excited about imagining the way these relationships will change in the next 20 years.

Golden is a futurist. Futurists are scientists who analyze the way the world is today and use that information to make predictions about what the world will be like in the future. In this way, they are the opposite of historians, who try to better understand the present through studying the past. Futurists hope that by making scientific predictions about the future, we can make better decisions today.

Some futurists study the environment. Some study human society. Golden focuses on the study of transportation. He earned his graduate degree in Future Studies from the University of Houston. Living in Houston for those two years changed the way he viewed transportation in the United States.

Many public transportation advocates dislike Houston. They argue the city is too sprawling (it can take more than three hours to drive from one side of the city to the other during rush hour) and that there aren't enough buses and subways. However, Houston was a source of inspiration for Golden.

"Houston is a really interesting place, and their transportation is a fascinating story—it's worth

watching. When you think about it, what is the U.S. like? It's more like Houston. So you need to understand how Houston approaches things to understand the country as a whole. New York City is the exception," said Golden in an interview with *The New York Times*.

Golden points out that people in New York City own fewer cars and walk much more than anywhere else in the United States. "It's a unique environment," says Golden. "Very different from the rest of the country."

However, Golden believes American cities will become more similar to New York City in several ways over the next 20 years. He sees a trend toward fewer cars in the future. He explains, "Cities have a cost of car ownership that is a challenge. All these vehicles cost the city: in services, in having to repair roads and all of the other things." Cars also take up a lot of space. Houston, for example, has 30 parking spaces for every resident. That's 64.8 million parking spaces in only one city.

Golden points out that having so many parking spaces is inefficient. Much of the time the parking spaces sit empty. At high-use times—for example, Saturday afternoon when everyone is running errands—every parking space at a shopping center is full. But at 3 a.m. on a Monday, no one is at the shopping center. What is the solution? "I think cities are going to start to legislate cars in very new ways," says Golden. He explains that cities will make new laws to limit the number of cars people can have within city limits. Instead, people will use taxis, subways and buses. New technology, like smartphones, can make these forms of public transportation even better.

Buses have the same problem of inefficiency as parking spaces, explains Golden. Sometimes they are full, and sometimes they are empty. But imagine if everyone had a smartphone and used them to signal when they wanted to ride the bus. Buses could change their route, depending on who wanted to ride.

How soon would these changes come? Golden admits that it will take several years. Cities can be slow to change. Also, new systems of transportation can be expensive. "But it's coming," he says. "The trend of the empowered city will be here soon."

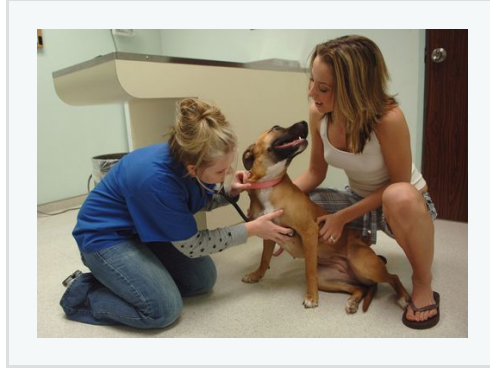
The other trend that excites Golden is electric cars. "We need to reduce the amount of fuel we consume," says Golden. "Everyone agrees on this. The question is how to do it." Golden especially believes in the future of electric cars that have sensors to understand the world around them. "If we

have cars that can communicate with one another, they can adjust speeds to eliminate traffic jams,” he says. Rush hour in Houston would suddenly be much less painful.

One challenge related to the production of electric cars is that it is hard to cheaply produce batteries that are strong enough for these cars. This is partially because cars are so heavy. But Golden argues you could also make cars out of strong plastic composites. The cars would then be much lighter and much cheaper to make. “This could revolutionize the highways,” he says. When could electric smart cars become the norm? Golden argues as soon as 2030.

As a futurist, Golden shares his predictions with other scholars at conferences across the country. He also provides advice to companies that want to know what the future will be like so that they can make better strategies. Golden remains optimistic about the future. “There are so many exciting developments,” he says. “In thirty years we will live a very different world.”

A Day in the Life of a Veterinary Technician



veterinary technician checking a dog

A fluffy black-and-white cat greets patients and visitors at the Chippens Hill Veterinary Hospital in Bristol, Conn. The cat lives at the hospital, as do two other cats, a pair of cockatiels, a milk snake, a bearded dragon (a type of lizard), and a three-and-a-half-foot-long, 7-pound green iguana.

Chippens Hill is a warm, welcoming place for animals to live, to be cared for, to heal, and, yes, sometimes to die.

In the hospital's examination room, Danielle Pratt is reassuring a nervous patient whose anxiety is causing long strings of drool to fall from her mouth. Pratt, 32, is a veterinary technician at Chippens Hill. The patient, Clara, is a big cuddly-looking long-haired white cat who is too overweight—and reportedly too lazy—to clean herself properly. She is in the animal hospital today to have her matted fur shaved and to get her yearly rabies shot. She is not happy about this prospect, so Pratt speaks to her in reassuring tones. Clara will be sedated throughout the procedure—both for her safety and for Pratt's safety. Shaving an angry, anxious cat is a nearly impossible task. Clara continues to drool in dreaded anticipation.

A voice from the next room calls out, "Danielle! Your patient is upside down and drowning!" Pratt investigates and finds that Turtle, a small tortoise in her care, is upside down in his container. Pratt rights him and explains that Turtle arrived at the hospital full of parasites and not eating. "He still won't eat on his own," she says. "Turtles can take a while to get better. We're trying to give him a chance." For now, she feeds Turtle through a feeding tube.

The animal hospital is busy, and Pratt will be working hard all day long. This day's appointment schedule includes neutering a young cat, examining a boa constrictor that's not eating, and

trimming a chinchilla's teeth. Pratt will assist with the surgical procedures and perform several procedures herself, including drawing blood from each patient. "The only time you're sitting is at lunch," she says. "This is not a lazy person's job."

For now, though, Pratt's attention is on Clara, who is meowing in protest as she is poured out of her carrier and placed on the examination table. Before carrying her to the scale, Pratt wraps the cat in a towel, one of the many self-protective measures a vet tech must take every day. So far, Pratt has been lucky and hasn't been injured by an animal. "I've been scratched beyond belief," she says. "I've never been bitten. But I will be."

In addition to safety concerns, there's a lot of physical labor involved in lifting, transporting, and holding the animals, some of which might be scared and liable to lash out. The physical aspect of a vet tech's job has its benefits, though. "I've built up some serious muscles," Pratt notes.

Cat Wrangling

Once Clara is back on the exam table, Pratt holds her down while veterinarian Nicola Melliar-Smith checks the cat's ears and listens to her heart. Pratt presses Clara's nose gently to stop her nervous purring. "You can't hear the heartbeat when they purr," Pratt explains.

Melliar-Smith must administer preanesthesia to Clara to calm her down before she is sedated completely. The doctor is having a hard time finding a vein through all of the fluffy white fur, and the cat is losing patience fast. Finally the doctor finds a vein in a leg and gives Clara a shot. Meanwhile, Pratt speaks to Clara in soothing tones. "Don't get mad now," Pratt says. "The hard part is over."

"Eow," Clara grumbles.

Cat wrangling didn't come naturally to Pratt, whose only pet growing up was a hamster. In fact, Pratt is allergic to dogs and cats and takes allergy shots in order to work. She learned to approach, handle, and interact with animals from the doctors and other techs and through daily experience. "In some cases, you just have to be quicker than [the animals] are."

The staff received a crash course in owl care when someone brought in an injured screech owl found by the road. People often bring in sick or injured wildlife—the staff has treated chipmunks, frogs,

hawks, rats, and a blue heron, among others. The little screech owl had a broken wing that needed to be amputated. Under the staff's care, the owl, which they named George, healed and now enjoys a new life as an educational owl at a nearby nature center.

Although on-the-job training is a big part of becoming a skilled vet tech, formal training is required. Pratt has a four-year degree in veterinary technology; it's also possible to earn a two-year degree in the field. The curriculum combines science and medical technology coursework with clinical experience.

Everyday Responsibilities

Clara is put back in her cage to mellow out. Pratt collects a stool sample from the cat to check for parasites.

Vet techs must be attentive to detail. Each drug used is carefully logged so that every staff member knows what medication each animal has received and doesn't mistakenly administer a second dose or something that might interact badly with a medication already given.

After a drug is administered, a vet tech monitors the animal closely. For example, exotic animals need special attention while under sedation. Pratt remembers a sedated parrot that stopped breathing. She and the veterinarian worked to restore the bird's breathing, and after a few tense moments, the parrot pulled through.

Success as a vet tech depends on quick thinking and the ability to cope with a variety of tough situations—a panicked and nipping dog; a carrier full of stray kittens left on the hospital doorstep; an operation to remove a small tumor revealing that an animal's body is riddled with cancer. When that happens, Pratt says, "We usually don't let them wake up."

Pratt admits there are tearful moments for the staff when an animal dies. But death is part of the job. "A lot of the animals that we put to sleep need to be," she says. "You have to look at it that way. You're doing them a favor."

Today, though, no tears are shed, only fur. Clara is prepared to be sedated and then shaved. Shaving—for hygiene, not for beauty—is one more skill Pratt picked up on the job.

As Melliar-Smith hooks Clara up to a machine that will deliver the sedative, Pratt monitors the cat's

vital signs. Clara slowly begins to fall asleep. Pratt rubs a bit of goo on Clara's sleepy eyes that will keep them lubricated while she is under anesthesia. When Clara stirs, Pratt adjusts her sedative levels. Finally, Clara is asleep and ready to be shorn and bathed and to receive her rabies shot.

Pratt performs all of these tasks with great care and skill. She then carries the sleeping cat back to her cage, gently places her on a soft towel, and positions a heat lamp nearby. Clara will wake up slowly and comfortably.

For a vet tech, every day is different and filled with its own interesting challenges. "Animals can't tell you what's wrong," Pratt notes. "It's exciting to figure it out."

Want to Be a Vet Tech?

If a workplace filled with a mix of animals that need care and attention sounds as much fun as a barrel of monkeys, consider a career as a veterinary technician. While the majority of vet techs work in animal hospitals, some find work in research laboratories, zoos, stables, and animal shelters. According to the National Association of Veterinary Technicians in America (NAVTA), the main duties that a vet tech performs include the following:

- conducting physical EXAMINATIONS and taking the patient's history
- TEACHING pet owners to care for their pets
- CARING for the hospitalized animal
- administering MEDICATION and vaccines
- performing CLINICAL LABORATORY PROCEDURES, such as taking blood or stool samples or checking an animal's blood pressure and oxygen level during surgery
- DENTAL cleaning and examination
- taking and reading an animal's X-RAYS
- managing an animal's SEDATIVE and monitoring the animal while it is under sedation
- assisting in SURGERY
- conducting BIOMEDICAL RESEARCH (*Note: a four-year degree is preferred in the research field.*)

Song and Dance

By Beth Geiger

Erich Jarvis turned from an education in dance to studying the biology of songbirds.

Cross the United States and you'll hear a chorus of regional accents. Some people say *car*; others say *cah*. Some say *butter*; others *buttah*. Even the country's songbirds have their own dialects, says Duke University biologist Erich Jarvis.

Songbirds learn to express themselves vocally by imitating adults, just as people do. That ability, called *vocal learning*, fascinates Jarvis. "Vocal learning is a rare trait," he explains, shared by just a few animals. Each species of songbird has its own signature tune with local variations that offspring learn from their parents.

Many researchers who study how birds learn songs focus on behavior. But Jarvis, who studies brains, is tuned in to the biological side. How does a bird's brain change as it learns a song? What can that teach scientists about the human brain?

Performing Arts

Jarvis, a professor of *neurobiology*, the study of the structure and function of the nervous system, didn't start out in science. Growing up in New York City, he studied dance at the High School of Performing Arts. At graduation, he made a surprising decision. He turned down professional dance scholarships and headed to college to major in math and biology.

Why the sidestep? A love of magic as a kid had ignited an interest in science, says Jarvis, and he also liked nature. Most important, he believed he could make more of a difference as a scientist than as a performer. "My mother always encouraged me to do something that might have a measurable impact," he says.

Jarvis attended Hunter College in New York City. There, he conducted laboratory research in *molecular biology*, the study of the molecular building blocks of life. The idea of scientific discovery began to excite him.

Bird Brains

Jarvis's research started going to the birds when he was working toward his doctorate at The Rockefeller University. "I wanted to understand how the brain controls complex behaviors," he says, and vocal learning is one of the brain's most complex behaviors. "My main interest wasn't birds," Jarvis told *Current Science*. "My main interest was the genes that control vocal learning." Genes are the basic units that determine how a body functions.

Not all genes are active at the same time. When a gene is functioning, though, it produces telltale by-products in the form of proteins. Those by-products are called *gene expressions*.

To learn which genes are active when a bird learns to sing, Jarvis freezes a bird's brain within minutes of when it has learned or produced a new song. Then he searches for gene expression changes to pinpoint the genes that control vocal learning.

Magic Seven

Today, Jarvis is looking for more than active genes. He's trying to identify the places in the brain where the activity takes place. "We call this 'behavioral molecular brain mapping,'" he says.

Three types of birds exhibit vocal learning: songbirds, parrots, and hummingbirds. Using behavioral molecular brain mapping, Jarvis uncovered a startling coincidence. Though the three types are barely related, each uses the same seven brain structures to learn how to vocalize. That is an example of **convergent evolution**—unrelated species that evolve similar features.

"It's a remarkable finding," Jarvis told *Current Science*. "How can Mother Nature come up with the same solution three different times?"

Wings are another example of convergent evolution. Wings have evolved multiple times on wildly different creatures—pterosaurs, bats, birds, and insects. Yet no matter what the animal, the wings are always attached near its *center of gravity* (the center of a body's mass).

Jarvis made another important discovery: He and his collaborator Constance Scharff found that birds have a gene that is nearly identical to a human gene called FOXP2. They found that in songbirds, the expression of the FOXP2 gene increases as the birds learn a new song. "The gene helps them learn songs," says Jarvis.

In humans, the FOXP2 gene is involved in language. When the FOXP2 gene *mutates*—is randomly altered—people lose their ability to learn or express language well.

Do birds respond to FOXP2 mutations the same way humans do? To find out, Scharff damaged the gene in laboratory songbirds. Sure enough, the songbirds developed vocalization problems similar to those that affect people with FOXP2 mutations. Jarvis hopes his work will someday help stroke victims who lose the ability to say what they are thinking.

Jarvis's songbird research has struck a chord in the scientific community. He runs a world renowned research lab and has won several major awards.

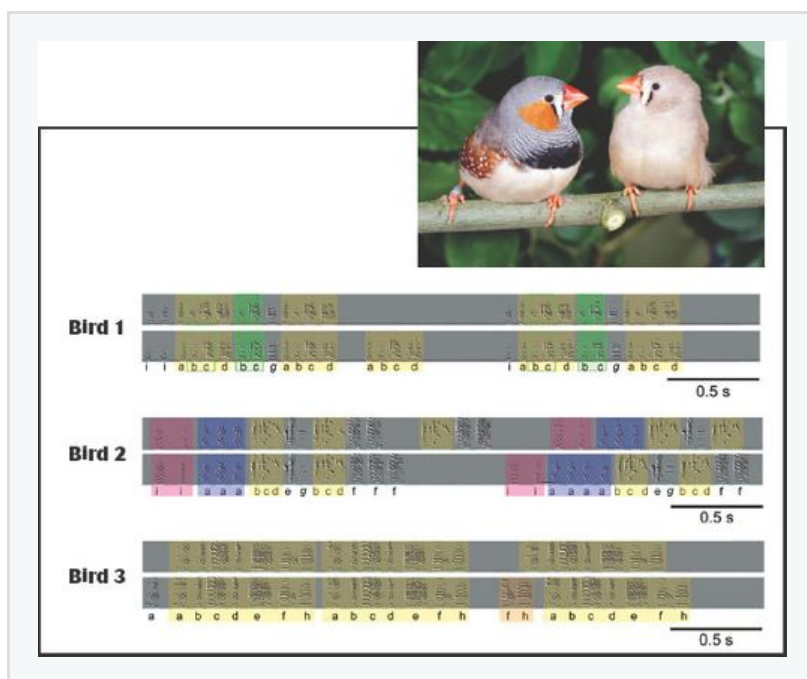
Small Leap

Though dance may seem an odd beginning for a scientist, for Jarvis the leap was smoother than it sounds. "Both dance and science require a tremendous amount of discipline and the drive to keep trying," he says. He also emphasizes that science, like art, is highly creative.

Above all, Jarvis's work has shown that, brain-wise, birds are not the featherweights they've always been labeled. "Being called a birdbrain," he says, "should not be an insult."

Sound Bites

These sound readings show the differences between the songs that three young male zebra finches learned from their fathers.



Bot Man

By Bobby Oerzen

Robotics expert Grant Imahara uses his knowledge of physics to bust myths.

Have you ever compared a clumsy friend to “a bull in a china shop?” Then you haven’t been watching *MythBusters*. “We put two, three, four, five bulls in the china shop, and they only knocked over one plate!” says Grant Imahara. “Amazing!”

Imahara is one of the co-hosts of the popular Discovery Channel TV show that tests the validity of old sayings, rumors, movie stunts, and Web videos. An electrical engineer by training, Imahara uses his knowledge of applied science to predict the outcome of the tests before the myths are busted—or, more likely, blown up.



MythBusters

Grant Imahara steered a bus via remote control from the back of a pickup truck.

Imahara has also predicted how long the Energizer Bunny will keep going and going. That’s no myth. That’s robotics, his other job. Imahara is also a robot builder and an *animatronics engineer*, someone who designs lifelike robots for movies and television.

Born an Engineer

Imahara’s love of engineering began early in life. “I’ve always been fascinated with how things work,” he says. Instead of crashing his toy cars when he was a young boy, Imahara removed the wheels. “I took apart anything I could get my hands on.”

Later, at age 10, he got his first computer, which sparked an interest in electronics. “But it wasn’t until high school that I realized you could get paid to make things work and that’s called an engineer,” says Imahara.

After getting a degree at the University of Southern California, Los Angeles, he headed across town to the movie industry. “Although it may look like all fun and games, it’s really hard work,” he says.

Imahara has worked as an animatronics expert on movies such as *The Lost World: Jurassic Park* and *Star Wars: Episode I The Phantom Menace*. “It’s like I’ve given these robots a life and personality of their own,” he says.

Remote Controller

One of Imahara’s early assignments was devising a remote control system for the Energizer Bunny. “We had to be very tricky and clever with how everything was arranged so the robot could beat the drum, move, and look like a bunny on the outside but still have a huge amount of go on the inside,” he says.

Imahara later found himself in another tricky situation after joining the cast of *MythBusters*. One episode duplicated a stunt from *Speed*. In the 1994 action movie, Sandra Bullock pilots a runaway 10,885-kilogram (24,000-pound) bus over a 15-meter (50-foot) gap on an L.A. freeway.



MythBusters

The bus lacked the velocity to fly 15 meters through the air. It crashed instead, revealing that a similar stunt in the movie Speed was a special effect.

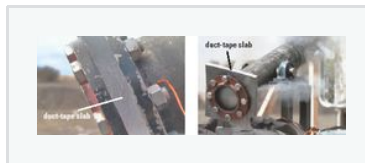
Because the stunt is extremely dangerous, Imahara had to guide the bus by remote control from the back of a pickup truck. The scene turned out to be a myth; the remote-controlled bus nose-dived off the test ramp into the asphalt below. Viewers may have been shocked, but Imahara wasn’t. He knew the bus wouldn’t clear the gap. “We use physics all the time to predict how things will work,” says Imahara. “Everything we test adheres to the laws of physics.”

Imahara identified all the *variables* in the test. A variable is a factor in an experiment that can change and affect the result. The variables included the bus’s *velocity* (the rate at which it moved in a specific direction), the angle of the ramp, and the length of the gap. Gravity was also a factor, of course, but not a variable. Gravity is a *constant*—a factor that does not vary in specified circumstances. Gravity

accelerates objects toward Earth at 9.8 meters (32 feet) per second, every second. With all the variables in mind, Imahara calculated that a bus reenacting the *Speed* stunt would miss clearing the gap by more than 9 meters. Which it did!

The Third Law

Imahara also used scientific reasoning during *MythBusters*'s duct tape show. In that episode, he and his co-hosts tested the legendary strength of duct tape. They wondered whether it is strong enough to withstand a cannon blast. The team fastened a block of duct tape to the back of a cannon and fired an 8-kilogram cannonball from it.



MythBusters

The MythBusters crew screwed duct-tape slabs of varying thickness to the back of a cannon and tested each one's ability to withstand the force of a cannon shot.

The variables in this experiment included the explosive force of the cannon—enough to launch the cannonball hundreds of feet at 257 kilometers (160 miles) per hour—as well as the duct tape. Each myth buster guessed how many blocks of inch-thick duct tape it would take to withstand a cannon blast.

Imahara made his guess using Isaac Newton's *third law of motion*: To every action there is an equal and opposite reaction. In other words, the force propelling the cannonball forward is matched by a force of the same size pushing the cannon backward against the block of duct tape.

Imahara calculated that it would take 3 solid inches of duct tape to withstand the cannon's mighty blast. His calculation was a little off; it took only 1 inch!

Regardless, Imahara remains confident of the predictive power of physics. "Pop singers come and go, but the laws of physics never change," he jokes. "Gravity—you can always count on gravity."

All in a Day's Work

By Chris Hayhurst

Thinking about what jobs are out there? Health care could be a great fit for you.

Ever think about what kind of work you'd like to do someday? If you think you would like helping people, health care is a terrific career to think about.

The future of health care careers is bright. That's the latest prediction from the U.S. Department of Labor. Jobs in pharmacy, physical therapy, and cardiovascular technology are all on its list of fastest-growing careers. That's not going to change anytime soon. By 2016, the department reports, there will be 3 million new health-care jobs in the United States. That's more than in any other industry.

Here is a look at just a few of the many interesting jobs in the field.

Physical Therapist

Physical therapists help people manage and recover from all kinds of injuries and conditions. They have an expert understanding of how the body moves.

Education required: master's degree

Where they work: private clinics, schools, nursing homes, rehabilitation centers

Featured pro: Guy Lev, Alameda County Medical Center, Oakland, Calif.

About his work: "Every day I meet new people. It's nice developing great relationships while knowing I'm helping them get back on their feet."

Lev, in his fourth year of work after receiving his Doctor of Physical Therapy degree, has seen it all: spinal cord injuries, broken bones—the works. "It's an amazing job," he says, "but it's also challenging. It's always way more complicated than 'OK, your shoulder hurts, let's do some exercises.' You've really got to think."

Physician Assistant

Physician assistants (PAs) practice medicine under the supervision of doctors. Conducting physical exams, interpreting tests, and writing prescriptions are all part of the job.

Education required: master's degree

Where they work: anywhere a doctor would

Featured pro: Jason McGrade, Lenox Hill Hospital, New York

About his work: "I'm the second set of hands for the surgeon," says McGrade, the hospital's associate chief PA in *cardiothoracic* (heart and chest) surgery. An example is when the team does a procedure in which a vein or an artery is taken from an arm or a leg to replace a damaged one closer to the heart. McGrade works on removing the vessel from its old spot while the surgeon opens the patient's chest. "We basically carry out the operation together," he says.

McGrade has other responsibilities too. He visits patients before procedures and tells them what to expect. After surgery, he monitors their progress and makes sure that all is well. "Every day," says McGrade, "there's something new. There's never a dull moment."

Blood Collection Specialist

Blood service professionals are the link between blood donors and people who need blood to survive. They hold blood drives and then help get blood to where it is needed.

Education required: bachelor's degree

Where they work: blood centers

Featured pro: Karen Kish, R.N., American Red Cross, Columbus, Ohio

About her work: "The most rewarding part for me," says Kish, a regional director of collections, "is knowing we've made a difference in someone's life."

Kish oversees up to 30 blood drives daily. A good day yields 750 pints of blood. How do you launch a career like hers? "Start by going to a blood drive with a parent who is donating blood," she says. If it doesn't make you queasy, it may be for you. Kish is a registered nurse, but you don't need to be a

nurse to do all the jobs in this field.

Medical Research Scientist

Medical scientists conduct the research that leads to new medicines, treatments, and vaccines. Researchers spend long hours in labs or clinics and write papers about their findings for scientific journals.

Education required: bachelor's degree, M.D. or Ph.D. for advanced positions)

Where they work: universities, private companies, government agencies

Featured pro: Jonathan Fuchs, M.D., M.P.H., San Francisco Department of Public Health and the University of California, San Francisco

About his work: "I run clinical trials of experimental preventive HIV vaccines," says Fuchs. He is director of vaccine studies with the San Francisco Department of Public Health. Clinical trials help scientists learn whether medicines or vaccines work and whether they are safe for people.

The field of vaccine research, says Fuchs, is wide open, especially when it comes to HIV, the virus that causes AIDS. "We've had some promising developments recently," he says, "but it will still take time to find an effective vaccine." The researchers of tomorrow, he notes, may be the ones to ultimately get it done.

Top Health-Care Jobs

When you think of health care, you may think of doctors and nurses.

Doctors are highly trained medical specialists who spend their days diagnosing and treating all sorts of injuries and illnesses. Nurses provide routine, day-to-day care for patients who have already seen doctors. Doctors and nurses are in high demand and are projected to be even more so in the coming years. Experts predict a shortage of 40,000 doctors by 2020 and 260,000 nurses by 2025.

Other health-care jobs with strong growth projection through 2016 and

beyond:

- Home health aides
- Medical assistants
- Substance abuse and behavioral disorder counselors
- Pharmacy technicians
- Dental hygienists
- Dental assistants

Degrees Deciphered

Bachelor's degree (B.S./B.A.) received after four years of college study

Master's degree (M.S./M.A.) advanced study after college

M.P.H. master's degree in public health

Ph.D. study beyond a master's degree; stands for Doctor of Philosophy

M.D. degree held by medical doctors; typically requires four years of study beyond college followed by additional on-the-job training

R.N. registered nurse; earning a license requires training and passing an exam

Scrubbing In

Francesca Jackson, 15, spent a week of her summer at the SCRUBS Health Career Exploration Camp at Bon Secours St. Francis Hospital in Charleston, S.C. Francesca wants to be an *anesthesiologist*—a doctor who helps patients sleep comfortably (and stay asleep!) during surgery. At the camp, she took classes in CPR and first aid, shadowed professionals on the job, and spent a lot of time in the hospital's neonatology unit with newborn babies. "We got to put on gloves and touch a *placenta*," an organ that nourishes babies before they are born, Francesca says. "That was so cool." After the camp, she continued to volunteer in the pain management department of the hospital, where she works with anesthesiologists.



Courtesy of Scrubs Health Career Exploration Camp

Francesca, left, learns how to help a person having a heart attack.

Quebec's Sugar Season

By ReadWorks



sugar house in Quebec, circa 1900

From the end of February straight through the spring, Quebec, Canada's largest province, will celebrate the flowing of sap from its maple trees. The "sugaring off" season—when maple syrup producers begin to fill their buckets—is one long holiday of sorts, commemorated by locals and tourists alike. During these months, the small cabins where the sap is boiled open themselves up to visitors. Known as "sugar shacks," "sugar houses," "sap houses," or "*cabanes à sucre*," (in French) these shacks are typically located in the woods on the same territory as the trees being tapped.

Visitors are invited to take sleigh rides through the forest and roll Popsicle sticks in pure, hot syrup that's been poured over snow to form sticky lollipops. The experience usually ends in a traditional French Canadian supper—served in a reception hall—of pea soup, baked beans with lard, maple-cured ham, fried strips of salt pork, omelettes, sugar pie, crêpes, and poached dumplings.

Though he had no experience in producing maple syrup, renowned Quebecois chef Martin Picard, whose restaurant, Au Pied de Cochon, is beloved by gourmets, chose to begin operating his own sugar shack in 2009. "We were using a lot of maple syrup at the restaurant, and in consuming so much, we realized that it might be a good idea to take on the challenge of producing the product from scratch," he said. Au Pied de Cochon is famous for its over-the-top fare: a lobster served in a pig's mouth; a dish of French fries, gravy, and curd cheese smothered in goose liver; a pork chop the size of a small table. Picard is happy to have brought his love of excess to the maple forest. His shack is about an hour's drive from the city of Montreal.

"Some places have truffles, others olive oil," Picard said. "I love the idea of maple

being *our* product, something that we can share with people all over the world. You don't really find maple syrup, that taste, outside of North America. It's the type of thing that you eat, and you want more—you need a second try."

It took some time for the chef and his team to learn to turn sap into syrup and integrate the syrup into the recipes they had in mind. "You need to understand how to work with maple syrup on its own terms," Picard said. "You can't use it in the same ways you would use white sugar, simply replace the sugar with the syrup, just as you can't translate French words directly into English. To learn English, you need to start thinking in English, dreaming in English." The Au Pied de Cochon crew has indeed been dreaming in syrup. In 2012, they released a 386-page cookbook (all but one of its recipes involve maple syrup!) that records the results of their experiments in the kitchen. Picard and his helpers used more than 100 gallons of the sweet liquid in trying out all of the dishes that appear in the book.

"When you have a sugar shack," said Picard, "and you don't quite know what to do with it, but there are people lining up to eat there, you need to figure it out—and quickly! You make a ton of syrup and learn how to use it, the different ways you can use it. Our maple nougat took fifteen tries before we got it right. By trial and error, we finally put our finger on the recipe, and now it's the product that we're most proud of." He added: "We bought this sugar shack in part to do research. Maple's potential as an ingredient hasn't been fully exploited yet."

Increasingly, though, chefs are realizing how versatile this syrup can be. It has become very popular on restaurant menus and is being added even to appetizers and drinks. Maple butter and maple cream can be used for cooking all kinds of dishes to give them a sweet kick. Not only do diners love its taste, but syrup appeals to people looking for natural and local food products.

New technologies for tapping trees are always being developed so that producers can extract more and more sap. However, some things are beyond their control. The amount of sap that a maple producer is able to collect in any given year is largely dependent on the weather. During a particularly cold winter, the sap freezes and doesn't run freely. A producer might, in this case, wind up with empty buckets on some days. Picard has had some rough, very chilly seasons, but he hasn't let that stop him.

So exciting is the prospect of a chef who produces his own syrup that it generally takes just half a

day for Picard's shack to be booked for dinner for the entire sugaring off season. The Au Pied de Cochon Sugar Shack is a wooden mess hall where, outside, wild pigs run free. (The pigs are fed syrup, too.) The supper served inside is one capable of sending eaters into hibernation. In 2012, the meal began with dessert: maple nougat, maple cotton candy, and tiny maple pastries. Many meat-heavy courses followed, and every one of them involved some form of syrup. Said Picard: "There doesn't exist a food that you can't mix with this stuff." He hopes that other chefs in the province will follow his lead and promote local products and culture by venturing into the forest. "The more this is done, the more people will know that in Quebec, at this time of year, you can come and eat something you can't get anywhere else."