

A background collage of diverse people, mostly smiling, in various professional and casual settings. The collage is composed of many small rectangular images arranged in a grid-like fashion, with some images overlapping. The overall color palette is warm, with many yellows and oranges, and the images are slightly faded to allow the text to stand out.

CLASSROOM *to* CAREER



STEM Career *Stories*
from Texas Biomedical
Research Institute



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Texas Biomedical Research Institute

Who Are They?



Located in San Antonio, Texas Biomed is the only independent research institution in the world that is home to both a National Primate Research Center and a Biosafety Level 4 lab. The Institute operates under the high standards of Good Laboratory Practice (GLP). Each of these resources is rare, and the combination of them is unique. With 65 doctoral scientists and more than 350 employees, we are poised to lead the world in this fight against infectious diseases of all types.

By conducting research that leads to breakthrough discoveries and sharing what we learn, we are leading the fight to reduce unnecessary anxiety, suffering and death due to infection.

We at Texas Biomed function with a strong set of values. Values we call "T.I.D.E.S". Teamwork, Integrity, Diversity, Excellence and Safety. We use this values system in our hiring process and encourage our employees to incorporate these values into their work.



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“Dr. Anderson wants to build a bridge between parasitology and biology, in order to bring the two fields together.”

Hooked on Parasites: A Fishy Tale

Dr. Tim Anderson's Story



When he was a boy, Tim Anderson enjoyed going fishing in his native Scotland. Whenever he could, Tim would sneak off to his favorite fishing spot.

Catching fish was the fun, but after catching the fish, Tim needed to clean them. That's a nice way of saying removing the guts of the fish. While cleaning the fish, Tim noticed that some of the fish were infested with parasites like tapeworms. He was fascinated by the parasites and their complex life cycle. Tim was hooked! He wanted to work in research to better understand how these organisms worked. While earning his PhD, Tim spent summers working on biology field projects studying parasites. After earning his PhD, he wanted to be his own boss, so he conducted field research which led him to parasite hotspots around the world.

While conducting field research, Tim received an email from a fellow scientist at Texas Biomedical Research Institute who had a question about parasite genetics and life cycles. Tim wrote his response and, on a whim, added the following question: “Any chance of a job offer?” The response was

surprising: Yes! And that is how Dr. Anderson came to be at Texas Biomedical Research Institute where he continues his parasitology research. His lab studies schistosomes (shish-to-sohms). Commonly called a Blood Fluke, the schistosome larvae live in fresh-water snails. The adult worms are released into the water where they can infect humans causing intestinal issues and, if left untreated, cause organ failure. Mostly found in tropical areas, the disease affects over 220 million people annually.

As a researcher at Texas Biomed, Dr. Anderson determines the direction of his research. He cheerfully explains that he gets to pursue his interest in parasites and help people at the same time! Dr. Anderson wants to build a bridge between parasitology and biology, in order to bring the two fields together. By having this partnership, it makes cutting edge discoveries a greater possibility. His passion for his research and connecting with scientists is positively infectious. He is still hooked!

Additional Materials

Dr. Tim Anderson's Story

DISCUSSION QUESTIONS

1. Not all parasites live inside an organism. Mosquitos are considered a parasite. What traits do you think are necessary to classify something as a parasite?
2. Dr. Anderson's fishing trips generated his curiosity about parasites. What activities do you engage in that are connected to science?

SUGGESTED ACTIVITY

Select one of the following parasites. Create a poster showing the parasite's lifecycle, describes the effects of the parasite on its host(s), and the environment where the parasite thrives.

Trypanosoma brucei	Toxoplasma gondii	Entamoeba histolytica
Ascaris lumbricoides	elephantiasis	Balamuthia mandrillaris

TEKS

8.2A, 8.2B, 8.2D, 8.2E, 8.3A, 8.3D, 8.11A, 6.12D



Beetlemania

Dr. Eusondia Arnett's Story



For some people, their career path seems clear, leading them smoothly from point A to point B. However, for Dr. Eusondia Arnett, staff scientists and Lab Director

at Texas Biomedical Research Institute, the path to her career did not come with a GPS. In high school, Eusondia was curious about how a complex system, like the human body, could be made up of individual cells. She decided her path to a science career meant becoming a medical doctor. Eusondia studied microbiology at Wright State University in Ohio where she met professors who introduced her to science research. She realized there were other career pathways besides being a medical doctor. With her professors' guidance, she decided to change directions to pursue a career in science research. Her science career destination changed from MD to PhD.

Getting into graduate school meant fierce competition for a limited number of positions. To improve her chances, she needed more research experience. Through her network of friends, mentors, and colleagues, Eusondia found a research position with the US Department of Agriculture (USDA), trapping and counting Japanese and Emerald Ash Borer beetles, invasive species that damage

"You don't have to have everything planned out in high school."

crops. At the same time, she joined a research lab at Wright State University studying plant responses to Emerald Ash Borer beetles. Her work with beetles provided the research experience she needed to be competitive for graduate school. She attended graduate school at Ohio State University, where she earned her PhD in microbiology. There she expanded her network of colleagues and mentors. Having earned her PhD, Dr. Arnett's path led her to a post-doctoral fellow at Ohio State University Wexner Medical Center. One of her mentors, Dr. Schlesinger, was impressed with her work. When he accepted a position at Texas Biomedical Research Institute and asked Eusondia if she would like to continue her research in San Antonio. She accepted the opportunity and headed to Texas!

Dr. Arnett is the Lab Director for Dr. Schlesinger, who conducts tuberculosis research in Biosafety Lab Level 2 (BSL2) and BSL3 labs. In a BSL2 and BSL3 lab, scientists study infectious diseases that are curable and treatable. Dr. Arnett may have started her professional career following beetles, but her drive, curiosity, and willingness to follow different paths led her to a career where she finds treatments and cures for infectious diseases. She would not be where she is today without her curiosity, determination, and her network of colleagues and mentors. In hindsight, Eusondia wished she had known in high school that there were other pathways in science besides being a medical doctor. She offers this advice to students: "You don't have to have everything planned out in high school." There are many pathways and areas that branch from biomedical research.

Additional Materials

Dr. Eusondia Arnett's Story

DISCUSSION QUESTIONS

1. Dr. Arnett has a network of colleagues and mentors. Describe the role of a mentor. If you have a mentor, how do they contribute to your life?
2. What is your main "take-away" for you from Dr. Arnett's story? Explain why.

SUGGESTED ACTIVITY

1. Develop poster/presentation about:
 - a. Tuberculosis research (*Possible Content*: the cause, symptoms, treatments, TB testing, local research)
 - b. Microbiology Careers (*Possible Content*: define, identify and describe careers, describe ways in which this science impacts lives)
 - c. Immunology Careers (*Possible Content*: define, identify and describe careers, describe ways in which these sciences impact lives)

TEKS

8.1A, 8.1B, 8.2A, 8.2B, 8.3A, 8.11B, 7.12F



Following the 'ah-ha' Moments

Lisa Cruz's Story



Lisa Cruz always had an interest in science, but she also enjoyed writing. So, when she attended Baylor University, she majored in both Journalism and Environmental Studies. After graduating, Lisa quickly discovered “the reality of life is that you need to find a job after college!” Lisa searched for a job in environmental studies, but with no luck, she turned to her journalism degree and became a reporter. In a moment of serendipity and self-discovery, she found that she could expand her employment opportunities if she highlighted both science and storytelling. She took a job in community relations for an engineering company working on environmental restoration projects.

With her community relations experience now solid, she moved on to perform outreach for a variety of organizations within the San Antonio area at a PR company, working for a number of healthcare and nonprofit organizations. Eventually, she found a position where she could apply her journalism skills and science knowledge as the media outreach director for the American Heart Association (AHA) San Antonio office. She moved up to become the

“However your career path develops, do what you are passionate about.”

Executive Director of that office, overseeing staff and volunteers in fundraising and outreach. She and her team secured more than \$1 million for the organization.

From her experiences in non-profit, Lisa eventually ended up at Texas Biomedical Research Institute, a privately funded institute, as Assistant Vice President of Corporate Communications. Corporate Communications at Texas Biomed means incorporating all of Lisa's loves: storytelling, science, and helping people. Lisa is now in charge of internal and external communications, media and public relations, publication production, as well as social media and website management. She works with a communications outreach team to inform the public of the advancements in biomedical research pioneered by the scientists at Texas Biomed. Lisa says working at an institute that performs this type of research helps keep her passion for science alive; she believes in the research that is being done at Texas Biomed and the benefits of this research to the community. She admits it is sometimes challenging to find the right vocabulary that will make the greatest impact when sharing the discoveries with nonscientists, but having the right team makes the job easy, and she has found that at Texas Biomed.

Lisa's work experiences integrated both of her degrees and led her to a career that feeds all of her passions. She believes, “However your career path develops, do what you are passionate about. It is the learning process, not the degree itself, that will move you to where you will wind up.”

Additional Materials

Lisa Cruz's Story

DISCUSSION QUESTIONS

1. After reading this story, how has your thinking changed about science careers?
2. Are you surprised a Vice President of Corporate Communications is considered a STEM career? Why or why not?

SUGGESTED ACTIVITY

QR Code Gallery Walk: Connect multiple narratives to unique QR codes. Post the QR codes around the classroom. When the students scan the QR code, they are to read the attached

TEKS

8.3A, 8.3D



“Taking risks in his life has led Robbie to a science career where he can continue to grow, preparing himself for wherever his path may lead.”

The Life of a Snail Wrangler

Robbie Diaz's Story



When picturing yourself in a science career, working with snails is probably not the first thing that comes to mind! Robbie Diaz, from the Texas Biomedical

Research Institute, would agree, yet working with snails is exactly what he does. Robbie is the Research Assistant at the “snail ranch”. The snails are an important part of research to treat the infectious *Schistosoma* (shish-to-so-ma) parasite. Schistosomes are parasitic worms that affects 200 million people worldwide and causes 200,000 deaths per year. It is the second most devastating parasitic disease in the world, the first being malaria. The *Schistosoma miricidia* larvae (juvenile form of the parasite) lives inside of the snails. As the Research Assistant, Robbie assures everything in the lab runs smoothly. From feeding the snails tasty lettuce to monitoring the snail tanks' environments, Robbie's attention to detail allows the research to progress. If anything in the lab environment goes wrong, the research comes to a halt.

Robbie is a native of San Antonio and graduated from Edison High School. He earned a degree in biology-chemistry from Southern

Nazarene University in Bethany, Oklahoma, with the goal being to attend medical school. During college, Robbie applied for a summer research program to study pollinators in Costa Rica. While in Costa Rica, he took a course in tropical medicine and became hooked on schistosomes. Robbie says the time spent in Costa Rica provided him with real world experiences that sparked his interest in foreign parasites. The allure of parasitology intrigued him, leading Robbie to consider a career in research. After college, Robbie returned to San Antonio. He worked as a bird trainer while looking for a job where he could use his unique skill set and pursue his interest in parasites. His search led him to Texas Biomed where he enjoys being part of a research team doing valuable, life-saving work.

During college, a mentor advised Robbie to create his own story and do something different; something that would make him stand out. Robbie took this advice to heart and encourages others, no matter what their field, to push themselves out of their comfort zone, to find new experiences and stretch themselves. Taking risks in his life has led Robbie to a science career where he can continue to grow, preparing himself for wherever his path may lead.

Additional Materials

Robbie Diaz's Story

DISCUSSION QUESTIONS

1. What else do you want to know about Robbie?
2. Where is Costa Rica? What makes its environment “just right” for schistosomes?
3. What surprised you about Robbie’s story?

SUGGESTED ACTIVITY

Imagine Robbie is a superhero. Create a 6-panel comic strip showing how Robbie “fights” the villain. You can be factual or creative! HINT: if doing a more factual story, investigate the life cycle of schistosomes.

TEKS

8.1B, 8.2C & D, 8.3C, 8.4A & B, 7.10A & C, 7.11A & C, 6.12D



There's Nothing Like a Close Shave!

Renee Escalona's Story



At the grocery store, you may have seen a deli meat slicer - a machine that shaves meat into thin slices for sandwiches. If you are a histo-technologist, you get to use a similar instrument, but on a much smaller scale! Renee is responsible for preparing tissue slides. She uses a special slicing instrument called a microtome to create tissue slices that are less than the width of a human hair! She uses different stains on the slide to help pathologists identify different diseases.

Renee is originally from El Paso, TX where her mother was a medical technician. Through her mother, Renee was exposed to science at an early age. In many ways, Renee's childhood became one-big science lesson! She earned a degree in Biomedical Science from Texas A&M University in College Station. While at Texas A&M, Renee took a histology course that changed her life. The prefix histo means 'living body tissue,' and ology means 'the study of;'. In the histology course, Renee discovered she enjoyed exploring the microscopic inner workings of the body.

"Sometimes you just stumble into a career that is the best fit for you."

When Renee graduated from college, she knew she needed a job, but had no idea where to begin. She says it is important to seek out opportunities; sometimes you just stumble into a career that is the best fit for you. And that is exactly what happened. She started working in histology at the Texas Veterinary Medical Diagnostic Lab in College Station, Texas. She later moved to San Antonio where she worked in a hospital lab and later at a private lab. Although she enjoyed her positions, she wanted to return to the veterinary field. She saw a position for a histotechnologist at Texas Biomed and she has been happily working there ever since. In her position at Texas Biomed, Renee works with veterinarians and pathologists.

Renee enjoys her career because she learns something new nearly every day. People may see her job of preparing microscope slides all day as repetitive. But Renee sees her position as one that requires a high level of skill that is vital to advancing biomedical research. Renee enjoys her slice of the good life!

Additional Materials

Renee Escalona's Story

DISCUSSION QUESTIONS

1. Renee was concerned about finding a job after college. What are your concerns about your path after graduation from high school?
2. Describe a science career that you would like to know more about. What appeals to you about this career?

SUGGESTED ACTIVITY

Research a career that ends in -ology. Create a “trifold” of information about that career. Include any education requirements, where in San Antonio or Texas to obtain training or education programs to pursue this career, and additional STEM-related careers connected to this -ology.

TEKS

8.11B, 7.11A, 7.12D, 7.12F, 6.12D



“Dawn discovered she enjoyed working in the library helping students with a variety of projects. This experience opened her eyes to new career possibilities.”

Not by the Book

Dawn Field's Story



The word “librarian” may suggest someone who maintains a quiet environment, surrounded by neatly organized shelves lined with books. As the librarian at

Texas Biomedical Research Institute, Dawn Field does work around shelves lined with books, but she does so much more! She works with scientists to create a collaborative environment that supports ground-breaking research in infectious diseases. Dawn provides resources for scientists and animal care specialists who share her passion for animals.

Dawn Field grew up with animals in her life. She attended Texas A&M where she earned a degree in Biomedical Science. Her plan was to become a veterinarian, but life took her in a different direction. She raised a family, worked as a substitute teacher, and volunteered at a local junior high school library. Dawn discovered she enjoyed working in the library helping students with a variety of projects. This experience opened her eyes to new career possibilities.

Dawn earned a master's degree in Information Sciences from the University of North Texas. Still wishing to work with animals, Dawn was excited to find a librarian position at Texas Biomed in San Antonio. In this position, she

helps scientists by locating vital information in support of their research. Although this was not her original career plan, Dawn is excited and fulfilled in her position as a librarian. Through her work, she contributes to biomedical research and provides staff with information that supports quality animal care. Sometimes life takes unanticipated directions, but unexpected twists and turns can lead to a rewarding career. Just ask Dawn.

Additional Materials

Dawn Field's Story

DISCUSSION QUESTIONS

1. Describe how a librarian assists scientists.
2. How have librarians supported you during your education?
3. In what ways has technology affected how you use the library and how do you think technology has impacted librarians?

SUGGESTED ACTIVITY

Interview the school librarian to discover how they help students and teachers.

TEKS

8.3A, 8.3B

*“What drives you
will lead you to
opportunities.”*

Nursing Animals to Good Health

Heather Gleason's Story



Some people choose their careers because they have an intrinsic drive or passion for the field. Heather Gleason has that passion for animal care. She

admits that sometimes she prefers to work with animals more than people.

Heather is a Veterinary Research Technician at Texas Biomedical Research Institute. She is a native San Antonian who graduated from Lee High School. Heather wanted to attend college, but her family could not provide financial support. Heather says, “This was not a setback, but rather an opportunity.” She researched various colleges, as well as ways to pay for her continuing education. Heather attended Texas A&M Kingsville, earning a bachelor’s degree in Veterinary Technology. As a licensed veterinary technologist, she is the equivalent of an animal nurse, possessing skills similar to those of human nurses. Heather gained experience during two externships at Texas A&M’s Veterinary Teaching Hospital, working with large and small animals. She also completed an eight-week internship at the San Antonio Zoo. Heather went on to work in private vet

practices. These diverse experiences helped her discover that she preferred following the care of animals throughout their life span, not just when they were sick.

Since Heather is a goal setter, she created her own path toward success. She believes, “What drives you will lead you to opportunities.”

Heather’s enthusiasm for her career is evident and contagious. She has a deep love for animals and is committed to providing the animals with the highest level of care. Heather is a prime example of someone who encourages people to find a career in what they are passionate about, because, “If you do what you love, it’s not a job.”

Additional Materials

Heather Gleason's Story

DISCUSSION QUESTIONS

1. How are veterinary technicians like nurses?
2. Describe what appeals or does not appeal to you about this job?
3. What qualities do you believe would be needed to be a successful veterinary technician?

SUGGESTED ACTIVITY

Create a comic strip that shows Heather working with animals. Include protective clothing and/or science equipment she may use to tend to the animals. Comic strip should be a maximum of 6 panels and demonstrate safe lab practices.

TEKS

8.11A-C, 7.11C, 7.12B, 7.12C, 6.12D



“She encourages others to not be afraid to challenge themselves, to go above and beyond what is expected, and to find their passion.”

Family can lead you to your Passion

Heather Guenther's Story



Family connections can lead to fulfilling career opportunities in STEM. Heather Guenther is a local San Antonian who graduated from John Jay High

School. After graduation she was not sure what she wanted to do. Her grandfather worked at Texas Biomedical Research Institute and suggested she apply. Following his advice, Heather applied and secured an entry level position as an animal caretaker. Through this experience she discovered the vital importance of animals in biomedical research and how well Texas Biomed cares for their animals.

Heather thrived at Texas Biomed, participating in continuing education and completing coursework to obtain her vet tech certification. These trainings helped her to advance in her career. Heather honed her organizational and communication skills, eventually securing a position as a vet tech in the Bio Safety Level 4 lab (BSL4). The BSL4 lab is where scientists research incurable infectious diseases, developing treatments and cures. Heather had to complete specialized training

and certifications to work in this highly sophisticated and technical lab. Organizational leadership noticed Heather's skills and created a new position for her. Heather now works as a liaison between the lab techs, scientists, maintenance personnel, and employees whose work is connected to the BSL4 lab. Heather organizes maintenance schedules, addresses security concerns, and ensures equipment within the lab is working properly.

Heather is motivated to continue learning. She is working toward a bachelor's degree in environmental science. She encourages others to not be afraid to challenge themselves, to go above and beyond what is expected, and to find their passion. Heather's family connection provided an opportunity to start her career. Today, Heather considers her work colleagues to be her extended family who share a passion for animals and are dedicated to finding treatments and cures for some of the world's deadliest infectious diseases.

Additional Materials

Heather Guenther's Story

DISCUSSION QUESTIONS

1. What type of science skills do you think are important in Heather's job?
2. What steps did Heather take to advance her professional career?
3. Is there anyone in your family or neighborhood who works in a career field that you are interested in?

SUGGESTED ACTIVITY

Like many people who graduate from high school, Heather did not know what she wanted to do for a career. Identify a local STEM-related organization that you are interested in learning more about. Create a presentation, electronic or hard copy, about the organization. Include their mission statement, describing the main research or function of the organization. Identify types of positions within the organization. Identify one position to research. Expand on any required certifications or education requirements, indicating where the certifications or education levels can be attained in San Antonio or Texas.

TEKS

8.1A, 8.1B, 8.3A, 8.3B, 8.3C, 8.3D, 8.4A, 8.4B, 8.5B, 8.5D, 8.5E



“There are great moments ahead on everyone’s horizon, not just for those that make the ‘A’s in school.”

Turning Challenges into Success

Dr. Shannan Hall-Ursone’s Story



Shannan Hall-Ursone attributes her professional accomplishments to turning challenges into learning experiences. Shannan always

knew she wanted to be a veterinarian. She majored in biology and chemistry at Delaware State University and attended veterinarian school in Virginia where she earned her Doctor of Veterinary Medicine (DVM). Shannan says vet school was difficult. The courses were challenging, and she readily admits she did not always get A’s. Shannan credits her success to her determination to strive for excellence and by surrounding herself with a core group of true friends.

An internship at Johns Hopkins shifted Shannan’s career interests from private veterinary practice to a career in biomedical research. Her skill as a veterinarian provided her with opportunities to design protocols regarding animal care within the biomedical sciences. Through her experiences in biomedical research, she has become a skilled surgeon, performing the same life-saving

surgeries on animals that are done on humans. Shannan wants to change the misconceptions about animals and biomedical research. In her position as a veterinarian at Southwest National Primate Research Center (SNPRC) in San Antonio, she ensures animals receive the highest level of care throughout their lives. The work she and her colleagues do at the SNPRC helps heal people and animals, including our beloved pets!

Shannan believes “You don’t really learn until you’re out in the world.” The only guarantee is that each of us will encounter challenges along the way. Follow Shannan’s example and surround yourself with people who lift you up and are positive influences in your life. A core group of friends can get you through any challenge. When it comes to friends, it’s about quality, not quantity. From experience, Shannan sees challenges as opportunities: it all depends on how you respond to challenges. When you encounter challenges and think your opportunities are limited, take Dr. Hall-Ursone’s advice to heart: “There are great moments ahead on everyone’s horizon, not just for those that make the ‘A’s in school.”

Additional Materials

Dr. Shannan Hall-Ursone's Story

DISCUSSION QUESTIONS

1. What challenges have you experienced that you were able to change into opportunities?
2. Describe how a veterinarian applies science to their career.

SUGGESTED ACTIVITY

Watch the video as a class:

(<https://www.youtube.com/watch?v=p4MolOFb7ME&feature=youtu.be>).

After watching the video, ask students to write a discussion question about animals and bioscience research. Collect the questions and facilitate a class discussion using randomly selected questions. Or provide small groups with 1 or 2 randomly selected questions to discuss. Groups are to provide a share-out from their discussion.

TEKS

8.1A, 8.1B, 8.2A-E, 8.3A-D, 8.4A, 8.4B, 7.10C, 7.12B, 7.12D



“After earning her degree in Biology at Wesleyan University, she attended the University of Massachusetts where she earned a master’s degree in zoology.”

Enrichment for Everyone!

Dr. Corrine Lutz's Story



Just like humans, non-human primates can be picky eaters too! From marmosets to chimpanzees, Dr. Corrine Lutz figures out how to ensure that the nutritional needs of these amazing animals are met. Corrine is the Director of Behavioral Services at the Southwest National Primate Research Center (SNPRC). Corrine says her main challenge is to develop and implement an enrichment program that promotes the wellbeing of the nonhuman primates under our care.

Corrine has had a deep love for animals all her life. After earning her degree in Biology at Wesleyan University, she attended the University of Massachusetts where she earned a master’s degree in zoology. She developed an interest in animal behavior, specifically in addressing behavioral needs of animals in captivity. She headed to the University of Washington where her PhD in psychology focused on animal behavior. In her position at the SNPRC, she continues her research, establishing protocols which ensure the animals in her care experience their best possible life.

The foraging devices mimic the animals’ natural habitats where they would need to search for food. The animals utilize the devices to forage for food as they would in the wild. However, the devices need to be well-made, so the animals do not take them apart. It can also be challenging to provide food the animals like! For example, Dr. Lutz and her staff have learned that some of the animals do not like squash or zucchini. But there is one treat all the animals like, especially on hot days: frozen “ants on a log” made from celery, vegetarian cream cheese, and nuts.

Enrichment activities go beyond food, including items that will address the social, cognitive, behavioral, and sensory needs. The enrichment staff provide a variety of activities and devices to meet these needs. Victoria McFarland, a Behavioral Services staff member, implemented Enrichment Fridays where staff members join enrichment staff in the kitchen to make snacks and design enrichment activities for the animals. She discusses the dietary requirements and preferences of the animals and answers staff questions. In this way, the animals are meeting the enrichment needs of SNPRC staff!

Additional Materials

Dr. Shannan Hall-Ursone's Story

DISCUSSION QUESTIONS

1. Dr. Lutz uses her knowledge of animal behavior to design enrichment activities for animals in her care. Describe social, cognitive, behavioral, and sensory enrichment activities that you engage in during a typical day at school.
2. The word “enrichment” means to improve or enhance. Explain why enrichment activities are important for humans and non-human primates.

SUGGESTED ACTIVITY

Select an animal and design an enrichment activity for that animal. The activity will need to be safe for the animal and address one of the identified needs: social, cognitive, behavioral, or sensory. Be prepared to explain how the enrichment activity supports the identified need. Justify the safety of the enrichment activity for the animal.

TEKS

8.1A, 8.2A-E, 8.11A-C, 7.5B, 7.10C, 7.11C, 7.12B, 7.14B, 7.14C, 6.12D



Not all Scientist Wear Lab Coats

Briana Mendez's Story



Science labs have unique equipment: microscopes, centrifuges, and electronic balances to name a few.

However, there are other types of equipment, often unseen, that are vital to the safety and well-being of the scientists. Equipment such as Heating Ventilation and Air Conditioning systems (HVAC), air exchange systems, and water supplies are essential for conducting scientific research. These systems are critically important to scientists who work in a Biosafety Level 4 (BSL4) lab where they investigate deadly, incurable diseases such as Ebola virus and hemorrhagic fever. It takes applied science skills to maintain these systems. Briana Mendez is not your typical scientist; she doesn't wear a lab coat; she wears a tool belt!

Briana is a San Antonio native who graduated from Lee High School, and like many students, had no idea what she wanted to do after high school. To start, she followed her love for all things mechanical and electrical. She joined the military and earned mechanical and electrical training experience working various

“Briana Mendez is not your typical scientist; she doesn't wear a lab coat; she wears a tool belt!”

jobs. Once she completed her military service, she continued her education through trade schools and earned certifications in electrical engineering and mechanical engineering. Briana had a desire to get a degree, but family commitments took priority. Nevertheless, she persevered and completed her certifications, eventually working her way to become an assistant training director at a local trade school.

Briana is always looking to grow and learn. When she learned of a position at Texas Biomed to maintain BSL4 lab mechanical systems, she applied. Despite being from San Antonio, Briana did not know that Texas Biomed existed or what a BSL4 lab was! But what she does know is mechanical systems! Briana is an example of someone who graduated from high school who was not sure about her future. She served her country in the military, and now Briana serves the San Antonio community and the world through her work as a mechanical specialist at Texas Biomed.

Additional Materials

Briana Mendez's Story

DISCUSSION QUESTIONS

1. After reading Briana's story, describe how your understanding of a science-related career has changed.
2. Identify obstacles Briana may have encountered on her way to obtaining her current position.

SUGGESTED ACTIVITY

Design a science lab. The lab must contain basic equipment, such as lab tables, sinks, and electricity. Consider classroom labs and even labs you have seen in movies. Think about the work Briana does to keep scientists safe. Your lab needs to include safety equipment. Be prepared to discuss your lab design, including explaining where and why you placed safety equipment.

TEKS

8.1A, 8.1B, 8.4A, 8.4B



“Eddie believes good writing skills apply to every possible career, including STEM-related careers.”

“Granting” Wishes

Eddie Meza's Story



At Texas Biomedical Research Institute, it is possible to successfully integrate science with a career in business. As the Director of Sponsored

Programs Administration at Texas Biomedical Research Institute, Eddie Meza has created a bridge between science research and fund administration. By taking care of administrative details associated with grant writing and grant funding, Eddie enables the scientists to stay focused on their primary job; finding treatments and cures for infectious diseases. Without Eddie and his team, scientists would need to take time away from their important research to write grants to deal with to administrative duties.

Eddie attended a STEM magnet high school where college advisers mentored him, guiding him through the college application process. He is a first-generation high school and college graduate, earning a BA from UC Berkeley and dual master's degrees in public administration and Marketing from USC. During his education journey, he discovered a love for data and administration. Eddie believes good writing skills apply to every possible career, including STEM-related careers.

Advances in biomedical research require a diverse team of bridge-builders, to connect research scientists, animal care specialists, and administrators. Eddie is more than a team player. He is a team builder! He believes no one fails or succeeds alone. Eddie's leadership style, in combination with his “can do” attitude, has created a positive culture within his department of Sponsored Programs Administration and has had a ripple effect throughout the entire organization. The STEM field can always use more devoted leaders like Eddie on its team!

Additional Materials

Eddie Meza's Story

DISCUSSION QUESTIONS

1. What characteristics are useful to be an effective team builder?
2. Eddie is a bridge-builder. What does that mean to you? Describe a situation where you have been a bridge-builder.
3. What is a grant?

SUGGESTED ACTIVITY

Brain-Storm: Think of careers that are needed to support science research. Locate programs in San Antonio or Texas where you could earn a certification or degree in these non-science careers.

TEKS

8.3A, 8.3D



From Life-Threatening to Life-Changing

Felicia Ponce's Story



Meet Felicia Ponce, one of the lucky San Antonians who works at the Texas Biomedical Research Institute (Texas Biomed) where she is responsible for the care of non-human primates. Felicia is the Manager for the Institutional Animal Care and Use Committee (IACUC). In this position, Felicia oversees the ethical care and treatment of all animals at Texas Biomed. In addition to making sure the animals are treated ethically, Felicia and her team are responsible to ensure animals are treated with care, determine if the research is necessary and valid, and determine if the research can be conducted in a financially responsible manner. Felicia advocates on behalf of the animals and feels strongly that the research being done at Texas Biomed is important for all of us. "We love the animals", says Felicia, "and do all we can to make sure they live their best lives."

Felicia is a San Antonio native who had life-changing experiences through a Texas Biomed mentorship program and an emergency stay in the ICU. As a teenager, Felicia did not

"Do not be afraid of change because the benefits outweigh the challenges. Be open to possibilities and new experiences."

understand why animals were needed in biomedical research. Through the mentorship program, Felicia realized the animals are loved and well taken care of. She also learned biomedical research benefits humans and animals. Soon after the mentorship program, Felicia developed a life-threatening blood clot in her lung, known as a pulmonary embolism. The medical care she received saved her life. Her life-saving treatment resulted from biomedical research! As she gained exposure to biomedical research, her beliefs about animal models in biomedical research changed. Through these experiences, Felicia came to understand the vital role animals have in advancing biomedical research: the very research that saved her life.

Through the mentorship program, Felicia gained a life-long mentor. After high school, this mentor helped her secure an animal care position at Texas Biomed. Felicia sought opportunities to learn and expand her responsibilities. She firmly believes that her work is impactful, important, and meaningful. Felicia says, "Do not be afraid of change because the benefits outweigh the challenges. Be open to possibilities and new experiences." Felicia believes without the research being conducted; humanity would cease to exist. Felicia is doing her part to ensure science continues while ensuring the animals continue to be well cared for as they live their best lives.

Additional Materials

Felicia Ponce's Story

DISCUSSION QUESTIONS

1. Research what the Institutional Animal Care and Use Committee is and does
2. How has your opinion changed about science-related careers after reading the story?
3. Describe what appeals to you or does not appeal to you about this job.

SUGGESTED ACTIVITY

Research a STEM-related career that you are interested in and write your own narrative featuring your "future self".

TEKS

8.1A &B, 8.10B, 8.11A, 7.10A, 7.10C, 7.11C, 7.12C, 7.14B, 6.12D



Wendy Rigby: A Developing Story

Wendy Rigby's Story



One of San Antonio's most iconic news reporters now works at a world-renowned research institute! If you grew up in the San Antonio area, it's likely you have seen Wendy Rigby on your TV at some point. As a child, Wendy's family was very news-centered; there was always a magazine or newspaper lying around the house. Her family would say, "If you can't understand the world, you can't do good work in the world!" Wendy's passions have always included helping people and sharing her love of science. While watching the news one morning, she saw a story about science and thought to herself, "I can do that, and I can do it better!"

While working toward a bachelor's degree in Broadcast and Print Journalism from Trinity University, Wendy worked as a weekend news reporter for a local TV station. Wendy's love of science and storytelling led her to a television station in Waco, TX, where she delivered stories about biomedical sciences in everyday terms. In Waco, Wendy met and married her husband. Wendy decided to be a stay-at-home mom, but when she chose to rejoin the workforce, it was difficult to get back into broadcast

"I can do that, and I can do it better!"

journalism. She was able to secure a position as a medical reporter for a local television station. Wendy was presented with an unexpected career opportunity as Director of Multimedia Communications at Baptist Health System, a position created specifically for her! When the hospital system changed hands, she was offered a position at Texas Public Radio. It wasn't long before her unique skills caught the attention of Texas Biomedical Research Institute where she now works as their Media and Communications Specialist.

Wendy quickly realized there were many facets to her new position. Fortunately, she has two other colleagues who share outreach responsibilities. It is important to Wendy and her team that people see the incredible work done at Texas Biomed. Through social media, they take a proactive approach to share the life-saving discoveries made by scientists with the public. Wendy admits rapid changes in social media technology can be challenging, but it is extremely important to her to make science relatable to the public in every medium. By building a brand and creating transparency with the public, Wendy unites her news reporting skills with her love for science. She believed she could do it better...and she has!

Additional Materials

Felicia Ponce's Story

DISCUSSION QUESTIONS

1. After reading Wendy's story, do you think Wendy has a career in science? Why or why not?
2. In her current position at a biomedical research facility, Wendy advocates for "transparency" with the public. Explain what you think she means by this?

SUGGESTED ACTIVITY

QR Code Scavenger hunt:

- Connect selected narratives to QR codes and place the QR codes around the classroom or campus.
- Using a QR code reader (provided by the teacher or through an app on student phones), students locate and scan QR codes, read the associated narrative.
- Students take notes or answer specific questions about the narrative.
- After viewing each story, students participate in classroom share-outs and/or guided discussions and/or small group discussions.

TEKS

8.1A &B, 8.10B, 8.11A, 7.10A, 7.10C, 7.11C, 7.12C, 7.14B, 6.12D



Research Scientists: A New Type of Hero

Dr. Olena Shtanko's Story



Imagine a career studying incurable infectious diseases. Why would someone potentially risk their own health by investigating deadly viruses, including Ebola virus, knowing there is no cure? The answer is simple: because people are dying. The desire to help people motivates research scientists, such as Olena Shtanko, PhD. Olena works in a Biosafety Level 4 (BSL4) lab at Texas Biomedical Research Institute in San Antonio, Texas. As a Staff Scientist in the BSL4 lab, Olena and her colleagues strive to understand deadly viruses with the goal to develop effective treatments. Although her career led her to Texas, Olena grew up in Ukraine. How does a girl from Ukraine end up as a research scientist in Texas? Read on!

When Olena was a child, Ukraine was part of the Soviet Union. At the time, Ukrainian women were expected to adhere to mostly traditional feminine roles: getting married, running the home, and raising children. Career opportunities for women in the Soviet Union were limited. In school, Olena was

“Be proud of who you are and where you came from. Always follow your passion.”

recognized for her talent in math, but the biological sciences were her true passion. She regarded scientists as heroes whose commitment to research helped people. But a career as a scientist was not a traditional role for a woman. Fortunately, Olena had a strong role model: her grandfather. Knowing she would not be satisfied in a traditional role, he told Olena to follow her passion and it would lead her to the career she was meant to have. Life was challenging in Ukraine. When Olena had an opportunity to come to the United States, she took it. Her initial plan was to become a physician. Olena worked in a research lab during the day and attended college in the evening. While working in the lab, she discovered her passion for biomedical research. Remembering her grandfather's advice, she decided to follow her passion and pursue a career as a research scientist.

Throughout her life, Olena has had strong female mentors. One mentor recommended she read “The Coming Plague”, a book that described the discovery of deadly viruses and the effect social and environmental factors have on microbial transmission. Olena recognized the strong connection between poverty and disease. With her passion to help people, she decided to study viruses with no cure. Through biomedical research, Dr. Shtanko uses her research to help people, just like her childhood heroes. Dr. Shtanko's key to success is believing in herself. She shares the advice provided by her grandfather: “Be proud of who you are and where you came from. Always follow your passion.”

Additional Materials

Felicia Ponce's Story

DISCUSSION QUESTIONS

1. Women are underrepresented in STEM careers. Why do you think this is? How can this trend be changed?
2. Dr. Shtanko's grandfather advised her to always follow her passion to the right career. What are your passions and how can you envision these passions connecting to a future career?

SUGGESTED ACTIVITY

Identify women currently working in one of the following STEM careers. Include their name, degrees, organization, and what you believe is their most notable achievement. Start locally, checking company websites, professional organizations and higher education institutions.

Physicist	Astronomer	Medicine
Computer Scientist	Architect	Biomedical Researcher
Chemist	Engineer (indicate type)	Meteorologist
Robotics	Volcanologist	Biologist

Extension: If possible, contact the individual. Identify you are working on a school project about women in STEM careers and would like to interview her about her career. Potential questions:

- When did your interest in science develop?
- What appealed to you about your chosen career?
- What challenges, if any, did you face as you pursued your career?
- Describe what it is like to be a woman in a STEM career.
- Knowing what you know now, what advice would you give your younger self?
- Who had a strong influence on your decision to pursue a STEM career?

TEKS

8.10A-C, 8.11A-C, 7.12B, 7.12D, 7.12F, 6.12D



Safety First, Last, and Always!

Silvia Zemgals' Story



Conducting biomedical research requires many people: research scientists, veterinarians, vet techs, animal caregivers, and support staff. Each of these positions have different requirements and safety concerns. One department at Texas Biomedical Research Institute is responsible to ensure the safety of all these individuals - the Environmental Health and Safety (EHS). Silvia Zemgals is the Safety Manager, but maybe safety cheerleader is a better description! Silvia is dedicated to maintaining the highest levels of safety throughout the institution. Without Silvia and her commitment to safety, research on infectious diseases would not be possible.

Silvia is originally from Boston but thanks to her military roots, she has lived in multiple places, finally coming to a stop in San Antonio. Through the Alamo Community College System, Silvia completed safety training and obtained her Hazardous Materials Management certification. In her position, Silvia needs to stay up to date with the ever-changing regulations regarding safety and

“Without Silvia and her commitment to safety, research on infectious diseases would not be possible.”

the disposal of biomedical and chemical wastes. She also needs to maintain multiple local, state, and federal certifications. With the other members of the EHS team, she keeps Texas Biomed in compliance with all these regulations while creating a safe work environment for everyone. Silvia conducts safety trainings targeting the specific needs of the diverse work environments at Texas Biomed. From maintenance to pathology and every department in between, Silvia's energetic training sessions are designed to keep everyone safe. She also ensures the well-being of the animals! Silvia provides personal protection equipment (PPE), such as gloves, masks, and goggles, to anyone who works with animals. The PPEs are to protect the animals, not the humans! The animals are susceptible to contracting illnesses from humans, such as the common cold and flu.

The health and well-being of animals is important to everyone at Texas Biomed, and Silvia is the first line of defense to keep everyone, including the animals, safe. Silvia admits safety training can be quite boring, so she uses her cheerleader-type personality to make training sessions engaging and interesting. In an environment that studies infectious diseases, everyone must be diligent about safety. Silvia is there to ensure regulations are followed, doing her part to ensure Texas Biomedical can continue to conduct research in the safest way possible.

Additional Materials

Silvia Zemgals' Story

DISCUSSION QUESTIONS

1. Why would organization skills be important for Silvia to fulfill her position?
2. Silvia provides safety training from maintenance to pathology and every department in between. What safety issues do you think are needed for the maintenance department and pathology departments?

SUGGESTED ACTIVITY

Silvia earned her certification in Hazardous Materials Management Certification. Conduct an internet search and describe the types of training needed to obtain this certification.

TEKS

8.1A & B, 8.2E, 8.4B

CLASSROOM *to* CAREER



STEM Career *Stories*
from Texas Biomedical
Research Institute



UT Health
San Antonio
Teacher Enrichment
Initiatives (TEI)



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