

The 28 Percent

Women make up only 28% of the STEM workforce. This newsletter aims to change that.

By Ruby, 12th grade



May 2024

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SHEroes of the SEA

By: Cara Grace D. Martinez



"We're going to set up the first completely female coral conservation team in the world."
Rose Huizenga stated, and they did.

Marine conservationist, Rose Huizenga [27], titled 2023 Seiko Sea Hero of the Year. The SHEroe arrived on an Indonesian island called Gili Air, worked as a scuba diver instructor, and decided to call the ocean her office.

"Don't wait until you're 100% ready to start," the Dutch marine conservationist stated in an interview. Huizenga wasn't 100% ready when starting her marine biology conservation team. She funded her team with the money she and her husband earned from their hotel business. However, the COVID-19 pandemic appeared out of the blue and no tourists were allowed to enter the country causing her to lose profit and unable to fund the marine conservation team. This then, led to the band disbanding.

Huizenga, thankfully, received an email from her friend saying a grant was being offered to coral restoration projects by the United Nations.

"Whenever you think something is really, really crazy, most of the time, you have something good in your hands," she mentioned. This was proven when she decided to set up the first-ever all-female coral conversation group, Coral Catch Superwomen. The team of local women aims to "Change the world, one woman, one island, one reef, at a time."



Huizenga and her team didn't get the grant, but like she said "The thing that is most important is your drive and your passion, and you can make a change."

Origins and Evolution of Science Fiction

written by Ariana Soto, JMHS Chapter

The history of Science Fiction as a genre can be split into three periods: the Gothic Period (1818-1945), the Modern Period (1945-1996), and the Postmodern Period (1996-present). Science Fiction was brought about as a result of the cultural effects that advancements in science and technology have had on societies. These effects are then demonstrated in media like movies and novels.

The Gothic period represents the emergence of Science Fiction popularized by Mary Shelly's novel, Frankenstein. Shelly's novel, as most other Science Fiction works of this time frame, were influenced by the invention of the lightbulb and the dissection and theft of cadavers. This is shown by how Frankenstein gives his creation life through electricity and stitches him together from corpses. The invention of the lightbulb served as the first application of electrical power widely known by the public. Electricity was met with curiosity and misconceptions. Robots were created in Science Fiction at this time! Also during this time, dissection of human corpses became a practice in many schools of anatomy for further education on the human body. However, these institutions required more corpses than those provided through prisoner execution, so a black market where corpses acquired from graverobbers or "resurrection men" could be bought appeared.

The Modern Period came to be as a result of the Hiroshima and Nagasaki bombings during WW2. It was not yet known to the public just how destructive atomic bombs were until these bombings, and they instilled two major fears into citizens. Civilians were scared of dying at the hands of an atomic bomb and/or mutation due to nuclear fallout. Enola Gay's photographs of the aftermath of the two Japanese cities instilled the second fear. Well-known Science Fiction pieces that were made from these fears include Godzilla, Them!, and The Hulk. These stories all include themes of gigantism, which was a feared byproduct of nuclear mutation.

The Postmodern Period arose due to the successful cloning of a sheep dubbed Dolly. Seeing this manipulation of genetics, the limitations of eugenics and genetic modification were brought to question, and creators began toying with that idea. What if you could clone humans? Modify their DNA to keep or dispose of any traits? This, like ideas of Frankenstein of the Gothic Period, was met with opposition for directly contradicting religious ideologies of how God created humans. Gattaca is one of the earliest examples of genetic engineering on humans following the arrival of this period in science fiction. Gattaca follows Vincent, a "God-birther" man navigating a society where genetically engineered "Valid" are at the top of the socio-economic hierarchy. References to Christianity can be seen on employee keycards and medical records within the movie, where those belonging to faith-birther children like Vincent have a cross signifying the natural or God-given way of birth and genetically engineered

characters like Irene and Jerome have an infinity sign representing their lengthy lifespans. Gattaca uses eugenics as a metaphor for the Christian concept of original sin, which emphasizes humanity's mistakes and pursuit of perfection.

Science Fiction was created through the convergence of science and art. Media of this genre share common themes and topics categorized into 3 different periods: the Gothic, Modern, and Postmodern periods. By observing and analyzing prominent literary, artistic, and cinematic works of Science Fiction, we can get a better understanding of how the humanities were affected by societal and scientific happenings of their respective times.

A Cool Woman in Astrophysics: Laura Fredericks

written by Mallika Sheshadri

Laura Fredericks was a 7th grader at McKinley Middle School in the Math Academy program when she applied to Cal State LA's Early Entrance Program (CSULA EEP), designed for 11-16-year-olds to begin their undergraduate degree at Cal State LA without finishing (or, in Laura's case, even starting) high school. Now 16 and a fourth year in college, Laura plans to graduate in 2025 with a major in physics and minors in mathematics and women's, gender, and sexuality studies. Having been a friend and classmate in elementary and middle school, I was curious to learn about what she's been up to recently, and what it's like to take this unusual path.

Q: Why did you choose physics and math?

A: Mathematics has always been at the forefront of my academic interests. Despite deciding on physics in my first semester, I had never taken a physics class before my third semester in college. So it was actually my curiosity about the universe and astronomy combined with my interest and enjoyment of math that pushed me to pursue a physics degree with a focus on astrophysics. Upon considering my field of concentration, I was influenced by the excitement of research—innovation, experiments, and being the first to know a piece of information that shapes the way humanity perceives the universe. After about three (discontinuous) years of studying physics, I don't regret my choice. I have had opportunities to experience physics research in a more hands-on way—experiments with optics and coding. Learning physics can be grueling, but being able to build off of and problem-solve with what I learned makes the painful studying worth it.



Q: Why did you choose EEP?

A: From age eleven to thirteen, I felt a lot of existential dread and a need for a greater purpose in life. Since starting middle school, I had felt bored in my classes, especially math, so I transferred to McKinley School for its Math Academy program. I wanted to accumulate as much knowledge as quickly as possible so that I could begin to contribute to the advancement of humanity at the earliest conceivable occasion. That transition period (around the time I turned twelve) was particularly hard for me because I had to catch up on a year's worth of an accelerated math program in about four months, and the workload sent me into a depression, which exacerbated my existentialism throughout the seventh grade. I felt the need to advance as quickly as possible in life, so I decided to start the process of applying to the Early Entrance Program (EEP) at Cal State LA towards the end of 2019.

Q: What did the process of enrolling in EEP look like?

A: The current application process to enroll in EEP no longer requires SAT results for consideration. I prepared for my application to EEP beginning in the Fall of 2019 with SAT practice and took the SAT in December. It was about four years ago (Spring 2020) that I submitted my initial application to EEP. It consisted of an online form where I was required to attach my SAT score receipt and an essay. I also had to send in three letters of recommendation. There was an interview stage and then I had to complete a 5-week evaluation period/summer program known as “Honors Academy” where I and 100 other students took three university-level courses to be evaluated for our college readiness. Then the other students and I all waited anxiously for our decision emails. I danced down the hallway with joy after receiving my acceptance letter.

Q: What is your favorite part about EEP and CalState LA?

A: My favorite part about EEP is the community. The small cohorts (20-30) per year are conducive to the close-knit community you’ll find in EEP. My upperclassmen were very warm and personable, which I appreciated as a first-year. There is also an EEP student body that manages the “EEP Club” which organizes social events and fundraisers to enrich the entering-college-as-a-minor experience. EEPsters, as we like to call ourselves, always jump at leadership roles and play very passionate and responsible characters as the officers of our club. The club is entirely student-run, so it is the students that make calls to venues, bussing agencies, or caterers. EEP Club and its respective government is something that has stayed proud and consistent about EEP, and I consider myself a huge proponent of it.

Q: What are some challenges you've faced during your undergrad so far?

A: Depression. Even someone that was used to studying and working hard was crippled when pushed to navigate college. It's not that starting university at such a young age and flourishing is impossible, but—for me—it revealed and foddered a chronic mental illness. I have had two semesters so far where depression has wrecked my ability to learn and work, including the one gap semester I'm taking now. My mental struggles are not unique, so I hope that others will heed my advice that pushing through is not always possible and that it's important to be kind to yourself.

Q: What are you most proud of? (accomplishments, personal growth, etc)

A: As someone who's suffered from depression and a variety of offshoot mental issues, there isn't anything to look at and think, “I feel proud of this” but if I were to choose something noteworthy throughout my academic career, it's probably either starting university at age 13 or living abroad (alone) at age 16. I tend to be very self-critical and ambitious to a fault, so it's easy to feel as though I haven't achieved anything.

Q: You recently studied abroad in Korea. What was that process like?

A: Studying abroad in South Korea was stressful at entry and greatly eye-opening throughout. The first stage was simply filling out application forms and submitting an essay. Then came figuring out logistics and coordinating with the host university. Finally, I arrived and stayed in Korea for four months, which has been the most interesting experience of my life.

Q: What was life in Korea like, especially compared to life here?

A: South Korea is the first Asian country I have traveled to, and I would say that life there is quite similar to what it's like here. There are many differences in etiquette and lifestyle, and I feel like if I had gone abroad as an adult, I probably would have been able to experience more of them as there is a prominent nightlife culture in Korea. Obviously in Korea they speak Korean, so navigating the language barrier was both entertaining and mortifying despite knowing some basic Korean.

The food in Korea is a lot more affordable than it is in the U.S., and it's much easier to find cheap, healthy food. All the on-campus dining options were fresh, healthy, and indulgent. The subway is really packed in Seoul since most people take public transit as opposed to driving for their commute.

Q: What did you enjoy most about Korea?

A: Hands down, the food. Even though I am vegan, the food culture in Korea doesn't really cater to vegetarian or vegan diets, and I ended up living omnivorously while I was there. Living in LA now, I am so grateful that there are so many Korean restaurants around.

Q: How did classes work in your semester abroad?

A: I attended Yonsei University in Seoul, South Korea, and I would say that the courses worked similarly to those at Cal State LA. Classes at Yonsei were a bit more intense and much more standardized in midterms, finals, and testing in general. It is fairly common for those in higher education and research to speak English, and there are many English-only courses at Yonsei, so there was no language barrier in the classroom.

Q: What are your plans after you finish your undergrad?

A: After I finish undergrad, I plan to take a gap year to find work, gain experience, and probably do some self-reflection to make sure that where I'm headed is where I want to be and then go to grad school to earn a Master's if my plans haven't changed. I'm not worried about losing time like I used to, and I don't feel pressure to follow a particular academic/career track and be done with it in the most efficient manner possible. Especially after my time abroad, my goals have shifted from “PhD at the earliest possible age” to “pursuing something that makes me genuinely happy and fulfilled,” and making sure that goal is independent of the societal pressures forced upon myself and other youths.

Q: What is your advice to women/girls hoping to pursue a career in STEM?

A: Don't let people invalidate you or cross boundaries in what should remain a professional academic setting, especially because of how male-dominated STEM is, particularly in the field of physics, always be aware of the resources around you and stay safe. Just because a man is in a position of power relative to you, whether that be a professor, mentor, advisor, or even fellow student, does not mean you should put up with mistreatment. People shouldn't be able to get away with mistreatment just because they hold the power to help you move up in your field. However, that doesn't mean shy away from reaching out to professors or expressing interest in a professor/mentor's field of research, because the best way to accumulate experience is by making connections and letting people know you're ready to work hard. The moral of my story is—no matter what the situation is—advocate for yourself.

Biden Expands San Gabriel Mountains National Monument, a Victory for Humans and Wildlife Alike

written by Paulina McConnell

There are dozens of universal experiences that every Pasadena High student shares, but one is often taken for granted. Think about it: when was the last time that you stopped in the middle of the quad and looked up? Past the flagpole and over the rooftop of the G-building, you saw them: the San Gabriel Mountains. Sky-high, folded like the curve of a marble dress, dusted a shade of not-quite-purple but definitely-not-green.

And maybe you thought, wow.

Because as much as the students of PHS groan about dirty bathroom floors or peeling paint, we can't deny the breathtaking mountains. Our campus sits right at the foothills of these giant hills. I look to them to feel grounded - for stillness and wonder.

As residents and regulars of Pasadena, we move through at least half of every single day with these mountains just to our North. They're our silent companion through four years of high school, our permanent backdrop in times that are always changing.

But the San Gabriels are more than a pretty face. Believe it or not, the watershed located within the mountains accounts for over 30% of LA County's water supply and over 70% of its accessible natural landscape. In other words, the San Gabriel Mountains are essential to the stability of LA County. They're the backyard and the tap water for nearly 10 million people, in some way or another.

The environmental and cultural significance of these hills was recognized in 2014, when former President Barack Obama designated the San Gabriel Mountains with the official title of "national monument". In technical terms, a national monument is any land or historic area that has been given permanent protection through the use of the Antiquities Act. How does this differ from national parks, such as Yellowstone or Joshua Tree?



While a National Park can be signed into protection by Congress, a national monument must be established by the President of the United States. This tradition began in 1906, when Theodore Roosevelt declared Devil's Tower the first national monument. Over a century later, there are now 130 national monuments across the country. The title applies not only to parks and mountain ranges, but everything from the Statue of Liberty to prehistoric fossil sites=

And yet, President Obama was pushed by conservation and Indigenous groups for years after to expand the monument further, who insisted that the 347,000 acres of San Gabriels weren't enough. Encompassing more lands under the monument title would increase access to wildlife in LA County, which many residents (particularly low-income residents) have been historically deprived of.

And just last week, these activists, along with Pasadena and LA County residents, scored a major victory: President Biden signed off on the expansion of the San Gabriel National Monument. Biden's expansion will increase the amount of land protected by 30%, adding over 100,000 acres to the monument. One local site encompassed in this expansion is the popular Millard Canyon in Altadena, known for the breathtaking waterfall hidden away in its walls.

But the "protection" of the San Gabriels doesn't mean they're off-limits to humans at all. In fact, almost all recreational activities are allowed on national monuments, including hiking, camping, fishing, and even motorbiking. In this way, parts of our mountains that were fenced off or inaccessible will now be open for business. The California State Water Resources Control Board has vowed to pitch in with funding for trash cleanups and pollution control at the East Fork of the mountains, and amenities will also be established along this river to provide better access for Lower Los Angeles residents. In other words, the title of "national monument" will open up hundreds of hiking trails and educational centers, advancing public access to nature.

At the same time, the administration's goal is to preserve the original landscape of the San Gabriels. President Biden has set a goal for addressing climate change internally - by 2030, he hopes to conserve at least 30% of public lands and water. At the same time, he aims to respect Indigenous heritage and history in the land. The leading advocates of the expansion, who have largely spearheaded the movement since 2014, are Indigenous leaders from the Fernandeño Tataviam Band of Mission Indians and Gabrieleno Tongva Band of Mission Indians. Advocates from these groups have made clear the significance of the San Gabriel Mountains in their tribal history, as well as the ecological services that the mountains provide to thousands of organisms.

For instance, the San Gabriel Mountains encompass the Bear Divide migratory grounds, which serve as a critical passageway for roughly 50,000 birds as they make their annual trek from Central America to the Arctic. To preserve the monument's critical habitats such as Bear Divide, \$2.3 million has been allocated to expanding conservation efforts. These funds will go towards paying for additional rangers and wildlife guide positions.

While it's true that the Biden administration's decision to expand the national monument is largely a political move designed to bolster Biden's popular appeal for the upcoming presidential election, there's no doubt that this is an enormous win for San Gabriel residents, Indigenous groups of this area, and conservationists alike.

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