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The Election of Our Lives

How Politics Affects Healthcare

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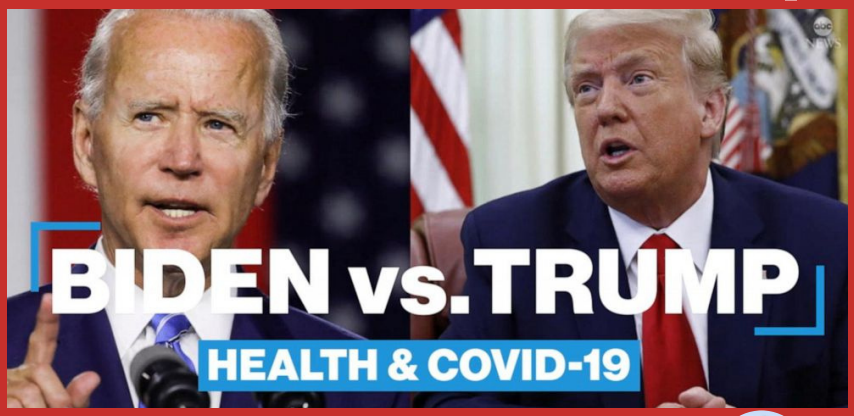
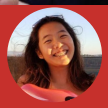
The Future of Healthcare: Trump vs. Biden



Trump on Healthcare



Jenna Min | Grade 11

In the years of Trump's presidential run in 2016, he promised that his fellow American citizens would be taken care of and revealed that he would get rid of the Affordable Care Act, also known as Obamacare. He stated that it was harming the United States' economy. He ensured that, "'The Republican Party will become The Party of Healthcare!'" But what exactly has Donald Trump done in regards to health care?

In March 2017, Amadeo, the writer of "Donald Trump's Health Care Policies," stated that, "Trump announced he wanted to allow Medicare to negotiate lower prescription drug prices with pharmaceutical companies." At the beginning of his presidential run, the President of The United States promised to reduce drug prices. The "American Patients First" plan was pushed forward in May 2018, and in the span of 100 days, the Trump Administration successfully lowered 60% of brand-drug prices. Throughout the four years of Trump's run, he preached that he wanted to repeal the Affordable Care Act. Although he has been ineffective in abolishing the ACA, he has greatly destroyed it. He cut the ACA's funding from insurance companies that offered coverage and reduced the opportunities for ACA's insurance exchanges. In the recent presidential debates, Donald Trump and Mike Pence have stated that they, in fact, do have a plan after they successfully remove the ACA. During the debate, however, they could not explain details on how they would implement a new health care plan. As questions arise, many answers remain unclear about what the Trump Administration has in mind.

In regards to COVID-19, the Trump Administration is heavily pushing towards a vaccine by the end of this year. They implemented Operation Warp Speed, which strives for 300 million safe and effective vaccines by the end of January 2021. Anthony Fauci, an American physician and immunologist, stated, 'The data is so good right now that you can say it's safe and effective. I feel cautiously optimistic, as a scientist, that we will have a safe and effective vaccine." Despite the words of America's top disease experts, the Johnson & Johnson medical company has paused all trials due to an unexplained side effect. Other medical companies, such as Pzifer, BioNtech, and Moderna, are still rushing towards a vaccine by the end of 2020.

Sources:
hhs.gov
thebalance.com
thehill.com

Biden on Healthcare

Safi Saleem | Grade 11

According to the federal government's survey, 27.5 million Americans do not have any health insurance, and a staggering 84.2 million are underinsured. This number is made worse due to the loss of healthcare benefits tied to unemployment from the pandemic. Clearly, the pandemic has highlighted the need for a huge change in America's healthcare system, and Democratic presidential nominee, Joe Biden, has a proposal to do just that.

Joe Biden's healthcare plan is to expand on Obamacare, which protects people with pre-existing conditions so that they can get insurance and choose a public option, like Medicare, in which most Americans can opt into. The plan allows Americans to choose a public option or private insurance, which would be cheaper, as co-payments would be removed. Additionally, Biden would increase the value of tax credits to working Americans and make sure that no person will spend more than 8.5% of their income on health insurance. Furthermore, Biden plans to break down the monopoly over the healthcare system and use antitrust laws to free up the market and create competition. The public option also aims to negotiate lower prices and cap the price of drugs. Finally, Joe Biden would ensure equal rights to healthcare for women by expanding the right of abortion and access to contraception through Planned Parenthood.

However, Joe Biden's healthcare plan is not without scrutiny. His plan still leaves millions of Americans not insured, as it covers only 97% of Americans. Additionally, unlike other proposals, like Vermont Senator Bernie Sander's universal healthcare plan, known as "Medicare For All," Biden's plan would not be comprehensive and cover all dental, vision, and hearing charges. Plus, Biden's plan still leaves Americans paying out-of-pocket charges, unlike Bernie's plan. Overall, Biden's plan is a huge step forward for affordable healthcare in America, but still, there is room for improvement in terms of coverage and cost.

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The 2020 Summer Autopsy Report

COVID-19, BLM Protests, and Hurricanes

Ava Mack | Grade 10

There is no doubt that this past summer was completely unexpected and much different than our average summer. From the coronavirus to protests to devastating hurricanes, so much happened in such a short period of time. We had to quarantine at home because of the Covid-19 pandemic, so we were not able to enjoy our summer with friends. There were also many hurricanes along the East Coast that caused a lot of damage. But, there were many positive things that happened this summer, too. For instance, many people banded together during peaceful Black Lives Matter protests and stood up for those who could not stand up for themselves. Another positive thing was, during August, there was a significant drop in the number of Covid-19 cases in California. There is still a lot more to unpack about the summer of 2020, so let's dive right in.

Let's start off with the quarantine and the coronavirus. After an unexpected end to the school year, the summer was completely changed by Covid-19. In June, California ordered the mask mandate that required everybody to wear a mask when entering a public space. This was also around the time that some stores and restaurants started to open again.

Restaurants began food pick-ups and outdoor seating. Because of social distancing, many people had drive-by parties to celebrate their birthdays, having guests drive by and drop off gifts. The summer forced people to get creative and come up with new ways to stay connected with friends and family, while still being safe and respectful. It is mind blowing that, in a few years, our current experiences will be in history textbooks for future generations to learn about!

Another big component of the summer of 2020 was the Black Lives Matter protests. The death of George Floyd sparked strong feelings in many Americans, and this is one of the reasons the protests began. These protests stood up against police brutality, brought attention to the injustices that Black Americans face, and fought for equality for all people. The protests were successful in drawing attention to these injustices and truly showed the power that people hold when they come together. Also, many brands and big companies showed their support to the movement. Finally, protesters were mindful of the coronavirus pandemic, and most wore masks. Thus, this was an inspirational movement that brought many people together.

Our summer is right in the middle of hurricane season, meaning that many hurricanes caused destruction along the East Coast and other parts of the world. One of these hurricanes was Hurricane Laura, a Category 4 hurricane that tied with another hurricane for the strongest in history. Hurricane Laura caused 26 deaths across Texas, Louisiana, and the surrounding area. Many people evacuated, and even more suffered property damage and power outages. In some areas, it was even said that the level of storm surges was not survivable. Chemical companies had to burn extra chemicals and fuel in preparation for the storm, in case any pipes or storage containers break. This caused a huge release of pollution and drop in air quality in and around Texas, hurting people's health. The hurricane also caused lots of property damage, leaving many in debt and negatively impacting their overall health, as they could not afford medicine, proper shelter, and healthy food.

There is no doubt that the summer of 2020 was not what we were expecting. Covid-19 forced people to get creative and come up with new ideas to stay connected, Black Lives Matter protests brought people together and showed just how much of an influence we can have when we come together, and some awful hurricanes devastated many people in the US.

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CA Wildfires and AZ Monsoons

Connor Gregory | Grade 09

The California wildfires and Arizona Monsoons have both devastated the states that they took place in, causing many health hazards for the citizens affected. Property and community damages took money out of the economy, and some people were injured and even killed.

One of the largest California wildfires took place on September 5th, when a couple decided to have a baby gender reveal party. The fire started when the couple set off a device on dry grass, sparking flames which eventually took hold and evolved into the massive El Dorado fire. Roughly 22,500 acres were burned as a result. The fire cost California 8 million dollars for damages to multiple communities. However, the fire wasn't the worst of people's worries. The ash and smoke from the fire started to spread, causing officials to urge millions of citizens to take shelter inside of their homes as the air quality declined and became too dangerous to breathe. Finally, there were 12 injuries and one death of a firefighter as a result of El Dorado's flames.

The Arizona Monsoons have made a record with the lowest amount of rainfall during the season. The temperature peaked at 132 degrees Fahrenheit, one of the hottest in the state's history to date. Officials stated that Arizona is in the driest state it has been in for a while. This raises questions on how global warming is affecting the climates of different areas. A similar change can be observed in California's fire season. It was reported by the CalFire organization that the fire season lasted 75 days longer than average this year. Global warming has affected both of these disasters, causing issues for both communities to deal with. It also poses a question of how much worse conditions will get in the future.

Sources:
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ktar.com

Effects of COVID-19 on Collegiate Sports

Latest News on what this year has in store for college sports

Madison Lardizabal | Grade 09

Covid-19 has had a rough impact on all of our normal activities, including college sports. Many have taken a brief hiatus, but as we gain information every day, we are starting to see a major comeback. In order for sports to start back up again, there are specific guidelines and precautions that need to be taken to keep everyone safe. These precautions will cause major effects on each of the programs and how coaches approach the sport.

The CDC states that for all sports, players must stay home if sick, should try to bring their own equipment, keep six feet apart, wear a mask if possible, and clean hands before and after practice. Additional precautions, depending on the program, include constant testing, fewer people on teams, and little to no traveling for coaches to recruit or for players to play.

Although these precautions are set in place to keep us safe, they will cause some problems with each sporting program. Some examples are loss of playing time throughout the season, less opportunities to connect as a team, fewer scholarship opportunities and less money to travel. These effects will have an immense impact on every sport. Other than affecting how players play, it also makes it extremely difficult to build a family within a team, which is one of the biggest parts of college sports.

With these struggles in mind, coaching staff are determined to stay positive and continue to grow their programs. One of the most popular approaches is Zoom calls. An example of this is illustrated by the UCLA softball team, which has practice eight hours per week with virtual team meetings, a task proven to be difficult.

“You can’t take what we do in the gym and on the field and put it into eight hours on Zoom,” says Erin Adkins, UCLA’s Associate Athletic Director of Compliance.

Discussion of safety protocols included video workouts, tryouts and skills videos to showcase talents. This approach is used to help players get recruited, as well as tournament showcasing In addition, other approaches are to section teams so that they can be broken up into days, for a specific number of players. This allows the players to be active on the field and be safe by having a limited number of players. With this method, mandatory “off days” and more practice days are needed to ensure sufficient training time.

We are starting to see some re-openings, but there are also many future plans and expectations for many sports teams and programs across our county. The NCAA announced that the 2020-2021 men’s and women's basketball season will resume on November 25th. They will be holding “transitional period” workouts From September 21st to October 13th, and after that, programs can continue full practices. Mike Hopkins, Coach of the Washington Huskies, expressed that the decision is "incredible news for college basketball." Other than basketball, some sports, such as men's and women's cross country, field hockey, men's and women's soccer, men's volleyball, and men's water polo have received the notice that their 2020 fall championships will take place in the spring of 2021.

Overall, the coronavirus pandemic has had a tremendous impact on college sports as a whole. In order to get back and stay on the fields and courts, we must follow mandatory precautions to keep everyone safe. One of the most important things we can do is to maintain general optimism. Fortunately, we are seeing great progress with athletes training together on campus as they head into their 2020-2021 seasons. We are moving in the right direction, as we are finally seeing fans at professional sporting games. Many have high hopes for a return of packed, cheering stadiums.

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Healthcare in the Lion City

Lauren Gumarang | Grade 10

Universal healthcare: a system where a country's government provides access to quality medical services to all citizens. While the definition of this term may slightly differ depending on who one asks, it takes centerstage in political debates regarding the medical field in the US. Time and time again, the question returns: should universal healthcare be implemented? In politics, the debate on the ratio of total privatization of healthcare to government-run health services continuously persists in the United States, and other countries may have the answer to the question, Can universal healthcare work?

Singapore, the Lion city-state, is unique among its neighbors. It's one of the world's last city states, the others being Monaco and Vatican city. It comprises a multitude of different ethnic groups and benefits from this diversity in culture and in its economy. In the International Monetary Fund's 2019 estimate of GDP per capita, Singapore ranks as number eight, just behind the United States. While trailing behind the US in GDP, many argue that Singapore boasts the world's best healthcare system. According to Bloomberg, the city-state ranked as the country with the most efficient healthcare system in 2014.

Additionally, Singaporeans reportedly had the longest total lifespan and longest span of living while in good health in 2017.

Being American and unfamiliar with the application and execution of universal healthcare, one may wonder how this is possible. In the United States, the government works on managing insurance programs. In contrast, Singapore's government manages most, if not all, hospitals, with doctors employed by the state. However, Singaporeans still pay for healthcare much of the time, not insurance, like in other countries with universal healthcare. After all, universal healthcare doesn't mean free medical services; it simply means universal access to quality healthcare. So, if citizens still pay, what makes it different?

In the US, the cost of the same medical procedure may drastically differ in different states, cities, and even blocks on the same street. In one hospital, appendix surgery may cost as low as $1500, and in another, it may cost more than 100 times that amount at $18000. Also, most patients are unaware of the exact price of procedures until after the fact. In contrast, Singapore works to regulate the cost of medical care to keep it low for its citizens. In addition, Lion City actively promotes a healthy lifestyle to prevent hospital visits in the first place, which is not in the US, and even further subsidizes costs; subsidies can range from 50-80% of the total bill. One could argue that the fact that Singapore places the responsibility of medical bill payments on the citizens fosters a sense of responsibility of one's health throughout the population. Singapore is built upon their 3M system to further cover citizens' medical costs: Medishield Life, MediSave, and MediFund. MediShield Life is the basic insurance all citizens are eligible for and is most often used to pay for large treatments. Medisave is the compulsory program citizens have that uses part of one's income to pay for hospitalization and other healthcare needs. This program is tailored for saving money for costs associated with old age medical needs. Lastly, MediFund is set up for needy Singaporeans and is for helping those who have remaining costs after subsidies. The 3M system helps lift some of the burdens in medical care, and it works to ensure that all Singaporeans can enjoy access to medical services.

Singapore combines the conservative and liberal ideals on both sides of the US's debates, so why can't it be used in the US? Well---- no. Singapore is a small country with only around six million people, whereas 300 million people inhabit the US. Scaling up such a system, and overhauling the existing system, could lead to much discourse and new political and economic problems. A medicine that works well for one person could be deadly to another; a system that works well in one country could prove disastrous in others. Even so, every place yields a lesson to learn, and what lesson the US chooses to learn or ignore from Singapore is anybody's guess.

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The Canadian Healthcare System

Wesley Nguyen | Grade 10

The most unique feature of the Canadian Healthcare System is its universal Canadian Medicare. Under this plan, all Canadian citizens have access to medical services, including hospitals and physicians, without paying out-of-pocket. This means that citizens do not directly pay for their service. Instead, this system is publicly funded, meaning that Canada's government and provinces are responsible for funding it. The main financial source is personal and business income taxes; other sources are sales taxes and lottery proceeds. Additional funding contributions could come from provinces charging a health premium, an amount each person pays for healthcare every month.

These funding methods are met by the Canada Health Act, a legislation that sets conditions for health insurance and funding plans and provides supplementary health care to qualified people. For example, "...First Nations people living on reserves; Inuit; serving members of the Canadian Armed Forces; eligible veterans; inmates in federal penitentiaries; and some groups of refugee claimants," are included in this service (Canada, Health). This act also discourages Extra-billing by health services, which charges substantially more than the amounts that the universal healthcare system covers. In addition to enforcing this system, the government is in charge of "...health protection and regulation, consumer safety, and disease surveillance and prevention" (Canada, Health).

Overall, Canada has a distinctive healthcare system that provides comprehensive and accessible services to all residents.

Sources:
canada.ca
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Changing the Culture of Healthcare

A Study on South Korea

Wynn Phaychangpeng | Grade 12

During this quarantine and the concurrent summer, I have been spending my time watching K-dramas and getting into K-pop groups, watching documentaries and programs about the language, food, and truly indulging in the rich culture of South Korea. However, aside from aweing over their thriving entertainment industry (meaning its products), I have also grown a respect and admiration for their healthcare system and the revolutionary culture, surrounding hospitals and medical treatment, they are creating.

To truly understand the exceptionalism of Korean healthcare, we must draw a comparison between it and our current U.S healthcare system.

Imagine this: After forgetting your umbrella on one of California's only rainy days in the year, you wake up the next morning with a sore throat and a slight sniffle. What would you do? You would likely just down some cold medicine you have in your cabinet and be off with your day, right?

Well, in Korea, you can go to the hospital to get an IV bag for hydration and medication in order to treat that same cold the average American would do nothing about. And, you could receive the same for much quicker and cheaper than at your nearby hospital or pharmacy here. Or, perhaps, if you were feeling really sick, you could get a full body checkup, inclusive of a CT or MRI, for about 50 U.S. dollars. 50!!!

In fact, many Koreans often report going to the hospital to get an IV simply for being hungover, and, in their society, it is completely normal to make visiting the hospital a part of your day.

This is one highlight of what Koreans are able to do due to their well established National Healthcare system. The healthcare system, and its coupled National Health Insurance (NIH), rapidly became universal to Koreans in a short span of 12 years.

While a unified national healthcare system is not uncommon to the developed world, the Korean one nonetheless ranks high in comparison to other national systems, such as the UK's NHS and other European nations. Having said that, the U.S. still staunchly pales in comparison to either nation, as it remains one of the only countries lacking one, despite being (or claiming to be) the richest country in the world.

Here, our prices are high for necessary medications, patients frequently go into debt for surgeries, and an ambulance ride just to get to the hospital costs hundreds, if not thousands, of dollars.

This has resulted in a culture in the U.S. of only visiting the hospital "when you feel like you're going to die," especially in underprivileged communities and in families who lack access to healthcare insurance. Why would you go to the hospital for abdominal pain when you can't afford it at the chance that it could simply be nothing more than a stomachache?

This predicament is one facing millions of Americans on a daily basis. It is one that not only reflects the utter incompetence of the current U.S. healthcare system, but also demonstrates the interconnectedness of healthcare and a nation's culture surrounding the importance of health.

In the United States, health is not valued. It is valued less than a basic right or freedom, which is reflected by our broken healthcare system. It personally shocks me that some people in our country are either not given the privilege or just simply do not value health, when the health is by definition "a state of physical, mental and social well-being in which disease and infirmity are absent", inferentially crucial to every person's livelihood and productivity. The inefficacy of the U.S. healthcare system is a direct variable; time and time again, Americans cite their distrust and distaste for its current state. Distrust and unreliability become even greater issues because, when people lose trust in a system, they are more likely to lose value for what it offers.

There is no better demonstration that reveals the stark differences in health culture between Korea and the U.S than the current COVID-19 pandemic. Korea has recently been praised by many countries and health officials for their rapid control on cases and "flattening of the curve" early on. Now, eight months into the pandemic, life in South Korea is almost back to normal and their total deaths have yet to reach 500. They were able to accomplish this by mass, high capacity screenings and testing, coupled with increased healthcare workers and facilities being supplied. The Korean response was clear, organized, and effective due to the harmony between government, healthcare, and often forgotten, but highly important, citizen compliance. Meanwhile, the U.S. pandemic response has been ununified between government, health system and people, as citizen compliance was (and continues to be) a key flaw. While this can be attributed to many factors, I believe that a lack of compliance is another consequence of a culture that undermines the importance of health.

So, the question remains: how does the healthcare system have cultural repercussions? The key centers on the relationship is between trust and value. South Koreans see that their healthcare system has great insurance options, high quality doctors, and is backed by the government. Simply put, they can trust their system. This reliability allows them to not be afraid to go to the doctors and view it as normal to get check ups and diagnoses, creating the countrywide culture that health is important and should be regularly treated as such.

In essence, there is much we can learn from the South Korean healthcare system, but there is greater to learn in noticing the positive cultural effects of having reliable healthcare. South Korea is a perfect example in showing us how a good healthcare system can produce sociocultural effects that, in turn, assist the healthcare system in maintaining citizen health as a priority.

Sources:
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Face Mites: The Creepy Crawlers Underneath Your Skin

Esther Kim | Grade 10

If you're reading this, raise your hand and touch your forehead. Now, press down gently. Do you feel them crawling? You do? Then push down as hard as you can. Good job. You killed one. What? Just kidding, but you might want to stop reading if you're afraid of the creepy-crawlies.

Feel your forehead again. You probably can't sense it, but your hands are offering shade to one of your tiny, flesh-eating roommates. Or two. If you don't wash your face every once in a while, you might even have five.

At this point, you're probably thinking, "What on Earth is she talking about?"

What I am talking about is something that lives in both you and me. Obviously, it's not courage. Or whatever appears in cliche motivational quotes. I'm talking about wriggling, flesh-nibbling arachnids.

Face mites are a unique species of mite that dwell inside human skin. Measuring only 0.15-0.2 millimeters long, they cannot be seen or felt with our naked senses. According to Michelle Tantwein, an entomologist at the California Academy of Sciences in San Francisco, they look like eight-legged "stubby little worms." These intradermal parasites feed on dead cells and sebum.

There are two types of face mites, demodex brevis and demodex folliculorum. Both mites look and function alike, but demodex brevis dig deep in the meibomian and sebaceous glands, while demodex folliculorum live in hair follicles.

A face mite's daily routine consists of burrowing under your skin during the day, eating dermis cells and sebum, and crawling outside at night to mate right on your face. Female mites then carry out their primitive functions, laying eggs deep within the epidermis.

To the great relief of humans, face mites don't litter their droppings all over our already-suffering pores, unlike most living creatures. Instead, they relieve themselves in a great explosion of feces at the end of their lives. It is rather horrific to imagine live waste bombs in our skin, especially considering that the average lifespan of demodex is 14 days.

So, the real question is, how do we rid ourselves of these burrowing, flesh-eating waste bombs? Prescription medications are available for purchase, and there's always the old-school method of washing your face twice a day with a nice-smelling foaming cleanser, but why kill these compact critters? Skin mites can actually have health benefits if possessed in moderation. They act as vacuums inside our skin, eating dead tissue and harmful bacteria. They also do not cause much harm (surprisingly), unless possessed in large numbers, in which a condition named demodicosis occurs. Demodicosis can cause hair loss, itching, and inflammation.

To properly manage your petite pets, make sure to maintain basic hygiene and regularly change your bedsheets, as demodex can also dwell on dirty sheets. If you are showing symptoms of demodicosis, it might be wise to visit your local dermatologist for a face mite checkup.

Feeling a bit queasy? Don't worry too much. If you're one of the lucky 3% who manages to not catch a single face mite until now, congratulations, you're bug-free! For the other 97%, your compact companions will always be there to keep you company through thick and thin... literally.

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Bioprinting Human Tissues and Organs

Grace Su | Grade 11

There are currently 109,000 people in the United States on the waiting list for a lifesaving organ transplant, with another patient added to the list every 9 minutes and an average of 17 people dying each day because of the lack of available organs (Organ Donation Statistics). Imagine you are one of them. Imagine the tens of thousands of other patients in need of the same organ, competing for one. Imagine the cycle of happiness and then disappointment you would endure when trying to find a possible organ donor. Imagine the joy that would come from receiving an organ, only to be followed by the grief that comes with experiencing organ rejection. While all of this would be a common issue of the past, technology and medicine have evolved so drastically that printing organs and tissues can be used as a solution to treat diseases, such as cancer.

What is bioprinting exactly?

Bioprinting is the artificial creation of human skin, tissue, and internal organs, and the production of complex living and non-living biological products from raw materials, such as living cells, molecules, extracellular matrices, and biomaterials. Artificial organs and tissues are created with the aid of 3D printing and bioprinting, which starts by taking a simple sample of a patient's cells, which bioengineers aim to recreate. By using a bioreactor, bioengineers are able to recreate enough cells needed for the artificial organ or tissue. An extracellular matrix is then used as a foundation for the cells to grow on, and additional promoters and biochemicals are added to the matrix to initiate cell development, allowing the cells to grow onto the matrix. Biospinning, which is a process that manipulates hydrogel polymer into specific fibers, then spins together to form the desired structure of the organ or tissue. The cells from the matrix are added to the structure, and carefully layered to mimic the complex arrangement of human skin. The cells finally begin to grow onto the structure and are placed into an incubator, which resembles conditions in the human body, to enable the cells to grow naturally, creating an artificial tissue. However, this process is only simple enough to recreate skin and blood vessels, not complex three-dimensional organs, such as the human heart.

For more than 25 years, a team of bioengineers at the Wake Forest Institute for Regenerative Medicine, led by Anthony Atala, has been researching the process of bioprinting through biospinning and 3D printing, and can now successfully create 40 different organ and tissue structures, including fingers, ears, kidneys and hearts (Kelly). There needs to be extensive research upon the subject, as a functional organ or tissue needs to be able to allow the transport of nutrients and oxygen via blood vessels and must be functional in waste excretion as well. Dr. Atala's team of scientists and researchers have been working on this problem of the network of blood vessels, and a potential solution upon research has been to preserve the skeleton of a real donor organ in order to mimic its functionality. The first step in this process involves receiving a real donor organ and placing it in a shaker (Kelly). "After going through the shaker, you could hold the organ and it would look and feel like the organ, but it would have no cells," Atala said. "Essentially, we'd preserved the skeleton of the organ (Kelly)." The organ skeleton, then combined with the patient cells, would allow the organ to function like it did previously; however, it would be considered the patient's organ instead of the original donor's organ. While this method is a good solution and would help combat the potential problem of organ rejection, it still requires a donor organ, and as mentioned previously, it is difficult to obtain one. However, the research revolving around 3D printing and bioengineering is continuing to evolve as technology evolves, and Atala and his team are still engineering printers to carry out the complex processes of solid organs. "There's so much going on in an organ like the heart that we can't see unless we start from scratch," Atala said. "We're looking at the structure from a 360-degree perspective to make sure we can replicate the functionality of the organ in every way possible, or it won't survive (Kelly)." Likewise, although the method of 3D printing may be a possible future for organ transplantation, there are still many details to consider before a bioengineered organ is actually transferred into a patient. Through trial and error, Atala and his team have been successfully programming the printers to deposit even the tiniest blood vessels within a complex organ. The research in bioengineering organs has come far, compared to previous years, and scientists have even been successful in developing organs and tissues that function exactly like how a real organ or tissue would. Nevertheless, there is still a long and difficult journey ahead to weave the complex web of cells, tissues, and nerves into correct positions on the organ, as well as to perform additional safety tests and regulations to make them readily available to the public (Mischa).

While bioengineered organs may not be available to the public, they can still serve in other processes, such as testing drugs and medications on a synthetic organ to mimic the effects on real human organs. 3D printing has even helped further research in the current coronavirus pandemic by creating tiny replicas of human organs heavily affected by this virus to test drugs fighting against COVID-19. However, the significance of bioprinting comes from its ability to test for treatments against cancer and drug effects, and also to minimize animal experimentation, as bioprinted organs can more accurately determine effects that would occur in the human body. For example, a common drug used to treat diabetes, known as Rezulin, was recalled in 2000 for potential evidence of liver failure (Rosen). Upon testing on a bioprinted organ, test results revealed that after two weeks, liver toxicity became apparent, further emphasizing the importance of bioprinting (Rosen). This research is also partnering with other fields in the medical world, such as biotechnology and pharmacy. Dr. Atala and his team have partnered with a technology company on a project called "body on a chip" system to potentially combine data from the bioengineered organ with a chip, allowing the artificial intelligence to more accurately analyze data about the drug's effects on the organ. This involves printing living tissue on a microchip to allow drugs to be studied for toxicity and efficacy even before clinical trials begin (Rosen). "We work a lot with researchers, pharmaceutical companies and biotech companies, and we are trying to seed advances as quickly as possible, analyze data and develop new drugs," said Rebecca Laborde, the master principal scientist in Oracle's health sciences division (Rosen). "This is the most exciting project I've worked on in a long time (Rosen)."

The future for organ transplantation is definitely still uncertain. With new discoveries and advances for those working in the field, our understanding of replicating the complex and detailed processes in the human body is still evolving (Mischa). Simple organs and tissues, such as ears, skin and the nose, may be easier to replicate more than others. However, it's the process of combining these bioengineered organs and tissues with the human body, and the placement of nerves and tissues to a functional position with the organ, that makes this process of organ transplantation so difficult. Given the acceleration of technology's evolution, it may be tempting to make the first step in transplanting a bioengineered organ into a human. However, we need to take extra steps and caution, as the human body's cast and extremely complex processes may need additional time to fully understand and replicate.

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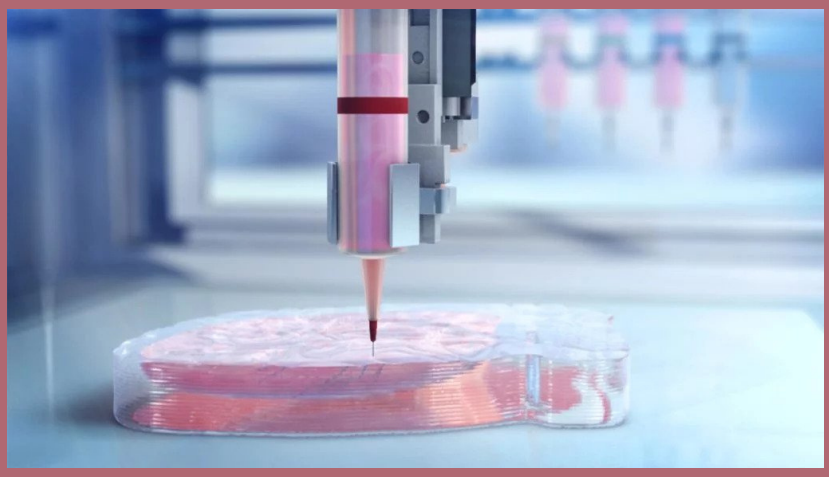


My Summer Internship Experience

Priya Patel | Grade 10

What does it mean to have a passion? Having a passion is when an individual has intense love for someone or something. How do you know what you are passionate about in life and as a career? An internship can help you decide what you would truly love to do for the rest of your life by looking into others' lives. In the summer of 2020, many students in HSA were able to engage and be involved in two astonishing virtual internships that changed their lives.

A medical internship is when a student works in an organization or hospital in order to receive work experience and to explore the numerous professions in the field. On June 8th 2020, these students' views of the medical field was diversified and remodeled. A week into an internship with Mrs. Ziegler, students began to uncover the true beauty of the medical field. When individuals talk about the medical field, the only career people eulogize is a doctor. However, there are various career types that are untouched. From a Nuclear Pharmacist to a Biomedical Engineer, medicine has many arching branches. This internship gave students the opportunity to uncover these branches and dive deeper into their passions and purpose.

While researching different occupations and doing various activities, students had the opportunity to interview medical professionals and ask them questions on how they achieved their level of success. Talking about medicine on travel missions and their worst moments really touched the students and influenced them into getting a tangible perspective of this field. At the end of the day, many students' imaginations ran wild with the possibilities.

Another internship that assisted with students' shifts of their viewpoints of medicine was the UCR Medical Leaders of Tomorrow program. In this internship, as student Priya Patel stated, "I felt as if adrenaline was rushing through my body the whole week. I was a hero during the entire internship that rescued my patients from death. I met amazing students from UCR that understood where I was, as they just graduated and were about to go to medical school."

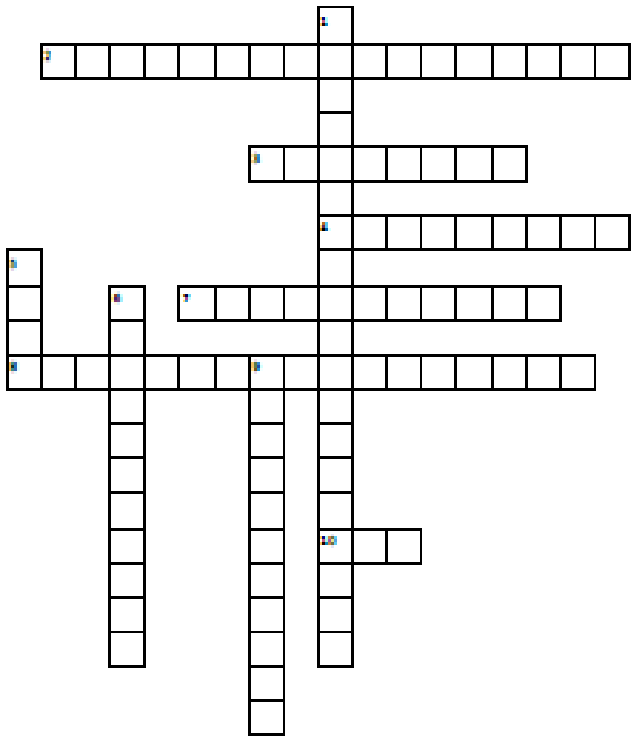
The students did a research community project which taught them about different diseases and how to solve them within the community, as well as the types of disparities faced between different races. These internships shaped their mindset for what was to come in the future.

The importance of experiencing an internship is ineffable. Not only is it a great source of knowledge on the different types of careers and interests you may have, but many employers favor employees with lots of internships. When the time comes for you to decide what area of medicine you want to go into, you will be prepared and know what to anticipate.

Crossword

Enrico Hernandez | Grade 09

Crossword: Fall 2020



Down:

1. The system where a country's government provides access to quality medical services to all citizens.
5. The abbreviation of "University of California, Los Angeles".
6. The process that manipulates hydrogel polymer into specific fibers, then spun together to form the desired structure of the organ/tissue.
9. The artificial creation of human skin, tissue and internal organs from raw materials.

Across:

2. A _____ _____ is when a student works in an organization or hospital to get work experience and to explore the many professions of the medical field.
3. The Democratic presidential candidate who plans to expand on Obamacare
4. This city-state's government manages a majority of the hospitals in the nation, and the doctors are employed by the state.
7. The current President of the United States. He campaigned to get rid of the Affordable Care Act.
8. also known as Obamacare, the Democratic presidential candidate wants to expand it.
10. The baseline for any sports team, rec or professional, is the ___ guidelines.