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PAYDIRT

The Res Life Article
p. 6-10

Home
February 28th, 2022



In This Issue:

General

SGA Rundown 1

Skyler Matteson

Campus Life

Bandage on a Bridge. 2

M. Dixon

House of Cards 3/4

M. Dixon

New, Cooler Organs - The Science of Tissue Engineering 5/6

Ella Eleven

The Res Life Article..... 7/8/9/10

Emma Nourse

Student Spotlight

Extremely Tiny and Very Cool 11/12

Ella Eleven

Relax and Unwind

The Tragedy of MacBeth Review..... 13

Tony Arant

Pet Day Promotional Poster 14

SGA Meeting Rundown: 02/22/2022

- In case you haven't heard, masks are now only required in certain locations indoors! Check your email for specifics.
- In our 2/14 issue, we included Kappa Sigma as a club. That information is incorrect as that club was disbanded with dishonor; we apologize for the mistake.
- If you don't know where to or who to complain to about anything, email michael.voegerl@nmt.edu, and he will get your complaint where it needs to go, completely anonymously.
- Several student concerns were brought up regarding hybrid classes and distance options
- The reserved parking lot in front of Fidel is slated to longer be an issue in the near future.
- The student forum is narrowed down to a few dates in the future. The 12th or 13th of April are the current top candidates due to travel plans for administration, but watch your email for what date is selected.
- The SAC is currently being updated but is underutilized. If you are interested in using the space for events, reach the SATD at sga.satd@npe.nmt.edu.
- Spring Fling will be March 31st through April 2nd.
- A bill was passed that requires clubs or any other body that receives money from the SGA to report in-person on said funded event. This would include a general summary of what happened, what was gained, and would include all receipts.
- The housing process in Residential Life is being rearranged based on appropriate research. Keep an eye out for emails on March 1st. The Residential Life article in this issue talks about these changes in brief detail only as they were not the primary subject, and it was written before the presentation on 2/22/22.

Join us for

Pet Day

A "Wellness Wednesday" Event

March 23rd

1:10 - 2:40

Outside of Skeen
Library



Come de-stress before
midterms with

- Dogs
- Cats
- Goats
- Bunnies

Hosted by the Mental Health Committee of the SGA.

The Tragedy of MacBeth Review

Written By: Tony Arant

“By the pricking of my thumbs, something wicked this way comes.” The quote from Shakespeare’s Macbeth encapsulates the mood of Joel Coen’s new adaptation of the play. The film, The Tragedy of Macbeth, is a dark and ominous film that brings the Bard’s work to life.

The story of MacBeth follows the titular Scottish Lord as he is given a prophecy by three witches, the Weïrd Sisters. The Sisters prophesize that MacBeth will be crowned King of Scotland. This prophecy appears to come true when MacBeth, by the urging of his wife, murders the reigning King Duncan in cold blood. This leads MacBeth on a dark journey as he wrestles with the morality of his actions.

The film is quite artsy. It is shot in black and white, and presented in a square 4:3 aspect ratio. The set design is minimalist, but expansive, leading to a feeling of artificiality. All lines in the film are spoken in the original Shakespearean English. These elements combine to create a work that has both the feeling of cinema, and of a theater production. Coen takes the template of the original work, and gives it a cinematic feel. Things like set design and action scenes are not described in Shakespeare’s original writing, and are therefore left up to the director. Coen uses these open elements to augment and enhance the themes presented in the original work.

MacBeth is a violent play, and the movie is no different. Chaos, bloodshed, and death are common occurrences after the murder of King Duncan. There are some quite brutal scenes, but nothing to warrant an ‘R’ rating.

The roles of MacBeth and Lady MacBeth are two of the most famous in the English-language cannon. They are played quite masterfully by Denzel Washington and Frances McDermott, respectively. Both actors convey a wide range of emotions, all while speaking in archaic verbiage. The true excitement, fear, and madness present in the actors’ lines really comes out. Washington’s rendition of the “Out brief candle” monologue was moving; it conveyed the deep nihilism present in MacBeth at that moment in the play. McDermott’s elocution during the “Out damn spots!” was more controlled than

previous interpretations, and showed the hidden grief in her character. A surprising standout performance was Kathryn Hunter as all three of the Wierd Sisters. Her physical acting by contorting her body and voice gives the Sisters a terrifying and Satanic air. Her scenes are genuinely upsetting, and set the tone for the entire film.

This adaptation is the best Shakespeare on screen I have watched. MacBeth is not anachronistic like Romeo + Juliet. The modern settings and dated dialogue of Romeo + Juliet did not go well together. Unlike 1996’s Hamlet (which was a good film), MacBeth is not a spectacle. It is the reserved nature and the abstract feel that make MacBeth quite engaging. It places focus on the main elements of Shakespeare: the brilliant dialogue and the actors who are performing the words of the poet.

If you are feeling classy and want to experience Shakespeare in his intended form, I wholly recommend The Tragedy of MacBeth.



Macbeth
William Shakespeare

Bandage on a Bridge

Written By: M. Dixon

In the past year there has been a lot of news on the Infrastructure Investment and Jobs Act. It’s no secret that the United States has a worrying amount of aging infrastructure. In a recent interview with Dr. Mor is, she stated “We have a lot of infrastructure in the US that is getting old and there hasn’t been a lot of money to monitor, maintain, or replace them.” With the passing of this bill, the organization in charge of our Nation’s infrastructure is getting that funding, but what does this mean for Tech and the students here?

Multiple instances in the bill, specifically Division B Title V, refer to funding research initiatives. These initiatives are meant to better the methods of repairing and innovating on the current infrastructure system. While not guaranteed, it’s entirely possible that part of these funds will come to support Tech’s research initiatives. This could be in the form of testing the integrity of new designs, improving existing works, developing the electric vehicle support outlined in the bill (more on this later), and a myriad of other such initiatives. Additionally, even if the school doesn’t receive funding from the bill directly, the influx in funding to general infrastructure will lead to a boom in the field, which will be felt at Tech by new research and programs.

The largest way in which the bill will affect the people at Tech, and American people in general, is in the decrease in cost that comes from adequate infrastructure, as Dr. Moris said: “The ASCE (American Society of Civil Engineers) puts out a study that every year, not spending on infrastructure costs the average American family \$3,000. The costs of the failures of infrastructure are paid by the average person all the time.” This extra spending comes in many forms from time slowdowns on roads, to failures in manufacturing due to overuse of water resources, inadequate storm and flooding management, inadequate natural disaster relief, and failures of the power grid, as said by the ASCE on their website.

In addition to studies such as these, the ASCE puts out a yearly report card grading the infrastructure within the United States. In 2021 the US, the richest country in the world by GDP, scored a C-, barely a passing grade. The following paragraphs breakdown this grade by discussing several of the categories.

Aviation: D+. Even with the pandemic leading to less air travel, airports in the United States are lacking in air travel availability. In the last year there were nearly 96 million minutes of delayed flight times leading to millions of losses in the commercial sector. While the infrastructure bill does not explicitly mention funds for aviation, the airline companies have not been starved of government funding by way of government bailouts the past few years.

Bridges: C. 42% of the bridges in the US are over 50 years old and 7.5% are in poor condition. The bill has funds specifically set aside to help remedy this and improve the state of many of these bridges.

Drinking Water: C-. One of the main goals set out with the infrastructure bill was “no more lead pipes,” which directly contributes to improving drinking water. Another key part of this grade is the frequent water main breaks that cause 6 billion gallons of water to be lost every year. The bill will be putting funds to not only replacing aging water lines but to better maintain the system as a whole.

Energy: C-. The US has experienced several major outages in the past few years in part due to aging infrastructure and a failure to keep the grid maintained. In the bill there are funds being allocated to improve this and implement green energy. However, given the predicted cost to update the grid is nearly 340 billion dollars, a third of the bill, it’s likely more funds will be needed in the future given the scope of the bill. The drafters of the bill made it clear that the bill is for general infrastructure and not just the electricity grid.

Hazardous Waste: D+. While storage of hazardous waste in the United States is sufficient, this low grade is attributed to the lack of efforts towards cleaning up legacy sites and the 1300 Hazardous Waste sites with incomplete or no cleanup. There is no explicit mention of this problem in the infrastructure bill.

Ports: B-. In the US ports are a very important and huge driving force of the economy. They are in overall good shape and are well funded and supported, but despite this there is a funding gap that may begin to cause problems in the near future. The bill states that funding is being allocated to the prolonged support of these crucial parts of the economy.

Roads: D. The roads in the United States are critically underfunded, and considering the large amount of people and goods moving on them everyday, it’s critical that they stay in good shape. The bill lays out many different initiatives and strategies to work towards improving the nation’s roads, including repairs and research into better road technology.

Stormwater: D. With the rise in urbanization across the country, there is also a rise in impermeable surfaces. This is leading to increased pollution in runoff water affecting 600,000 miles of rivers and more than 13 million acres of lakes, reservoirs, and ponds. The bill allocates a large amount of funding to combat this by way of research and proven solutions in order to cut down on this pollution.

Overall this bill will lead to lower general cost for Americans and will have a noticeable affect not only here but across the country. It presents more opportunities in the world of civil engineering, so for anyone interested now is a prime time to look into the Civil engineering department. You can contact the Department Head, Dr. Richardson, at clinton.richardson@nmt.edu.

House of Cards

Written By: M. Dixon



Torres Hall, the newest dormitory on campus, is only 8 years old and has yet to receive a major renovation. This coming summer, the building will receive a lot of work in order to improve its current state. Many of the current and past residents of Torres have had concerns and complaints about the state of the building, so let's take a look at some of them.

The most well known problem with Torres is that the west side of the building is slowly sinking under its own weight. I was unable to find a definitive reason for this oversight in planning. The sinking has caused a lot of strain to be put on the building which has heavily contributed to many different problems, the most visible of which are the cracks on the outside of the building and the strain on the utility systems.

A problem that has hit the building hard in the last year is the plumbing situation. Last semester a pipe broke and flooded a third floor bathroom. However the problem was not discovered until the soon to be dubbed "Torres Waterfall" had reached, and partially flooded, the first floor. More recently, the east side of the building is suffering from severe water damage. Work is being done to fix the current water damage, however, walking into a dorm and seeing the

roof tiles taken out and the paint peeling and dripping isn't an ideal sight.

It's entirely possible the plumbing issues have contributed to the flooring problems the building has experienced. In the halls the floors are, for lack of a better term, wobbly. It seems to have been water damaged, but if not, it's an odd architectural choice. According to the office of student affairs there have been lawsuits filed both from students and the school due to incidents caused by this. Moving into the rooms, there have been numerous problems with the tiles. The linoleum tiles in several of the rooms are visibly mismatched, cracked, and misaligned. The tiles have been known to crack under the weight of the provided chairs in the room. The person whose room the photos are from stated: "We put in a work order over a month ago, someone came to take a look at it and said they would be back in two weeks. It's been three weeks now and nothing has happened."

Another statement made by the interviewee was: "It's not like [the building] is treated nicely." This last semester there were many different instances of vandalism in the building.

on the gas emissions. Carbon dioxide, oxygen levels, water percentage, atmospheric pressure- it's really interesting."

"I am insanely obsessed with phages," Casia tells me. "So when I applied for my Masters and Dr. Duval came up and talked to me about this gas emission soil project, I thought that's really, really interesting." She's just getting started on this new project, though being a teaching assistant takes up a lot of her time (Casia does happen to do things that do not involve very-small particles). For those of you who have learned under Casia Esparza, Teaching Assistant; yes, she does like you guys: "The students are fun to work with, I like teaching them. They're always so inquisitive-always asking funny questions. Some of them are just a joy to [work with], they'll just sit around and joke. And it's fun. I like having them there."

I asked Casia what she wants to do for the future. Her answer: I don't know yet! "I've kinda just been winging it this entire time. I think going into industry would be very interesting. I kinda want to just jump into the workforce, start going for it. I don't know if I want to get my PhD yet, or if I ever will get one- that's a lot of school. I know that there's a lot of companies here in New Mexico that do some really cool things- like up in Rio Rancho, one company called Nature's Toolbox. They do vaccine and drug development. I think moving to a clinical setting and then maybe into the cancer route eventually is probably what I want to do in the future."

"I just hope that I can help people when they need it, you know? Because what helped me a lot in my undergrad and my research and stuff like that was that I had really good mentors who were in the lab with me, helping me in my research process and giving me a lot of confidence as a researcher. I think being able to foster that connection with someone else- that's what I want. And then have someone else do it, and have that progressively going down."

I pestered her for advice. "I know this is a very big cliché: just talk with your professor. Honestly. If you never do, then they'll either remember you positively, negatively, or they won't remember you at all. Your best route is that they remember you positively. If you go and ask questions, they love that. They love if you go to office hours and ask for help. Just fostering a connection with your advisor, as well, really, really helps."

In the personal realm, she recommends having friends, which is a real solid suggestion. "Making good connections, having those relationships with those people that are above you. Always go

and talk with people. And also having friendships, mentorships with people outside of your degree are very important. A lot of my friends are mechanical engineers, electrical engineers, some computer science and civil/petroleum engineering friends. Having that wide spectrum is super important. I feel like a lot of our departments don't connect with each other."

Outside of school, she likes oil painting, wood burning, and weaving. I myself have seen some of her photographic work taken in the Bosque; cranes framed by the rising sun. "I've made it my mission in my downtime to find all the quirks and novelty stores that are in Socorro, and it's to the point now that a lot of those random stores- they know my name and they know my face, and it's a problem because I've only ever been there like a few times." Casia recommends Harold's: "That man is a saint."

Additionally, "Bee Chama, in Lemitar, fantastic. I love those people." Note to interested parties; raw honeycomb is not as fun to eat as you would think. In your head it's a layered, sort of wafer experience with a honey taste right? Well, raw honeycomb is wax. And it has honey in it. So it just tastes like honey. And there's wax on your teeth, and your stepdad is like, I told you this would happen. That said, I still recommend the place.

Finally, a word to the tired; "School is important but it's not more important than you are. Yeah, you may want that A, but it's okay if you get a B as well. And a C. C's do get degrees."



Extremely Tiny and Very Cool

Written By: Ella Eleven



Playing in the dirt is always fun. But you have to grow out of it eventually, right? People begin to say, ‘you gotta get a job, get out of that ditch.’ But not if you go into ecology!

Casia Esparza joined NMT back in 2017, getting her bachelor’s in biomedical science with biology and chemical engineering focuses. Originally from Gallup, she came to Tech because “it sounded kinda neat.” Now she’s pursuing her Master’s degree, working with Dr. Benjamin Duval in the ecology lab, and analyzing dirt - lots and lots of dirt.

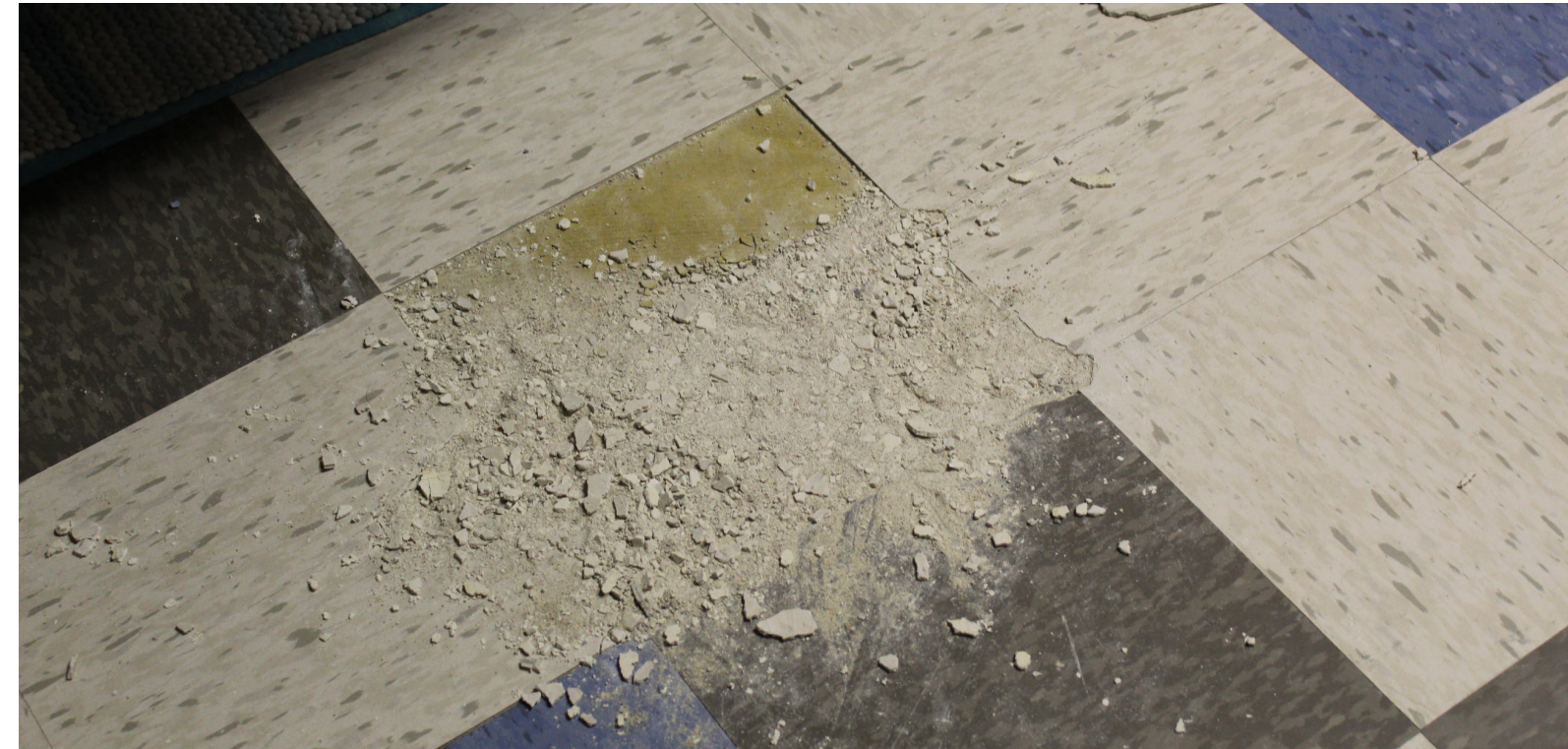
Their current project concerns the role that bacteria infecting viruses called bacteriophages play in the emission of greenhouse gasses from the soil. Bacterial colonies in the soil spend their time processing nitrogen and carbon out of the soil for fuel. The gasses they produce then seep out into the soil and water, into the plant’s roots, and eventually, into the air. If a colony gets infected with a virus, the cells die, decompose, etc, and the output of gasses changes. That’s the general picture; Casia and Dr. Duval are working on the specifics.

In the ecology lab, there’s a lot of running and setting up tests: “What I’m doing is inoculating the soil with some known bacteria that we have. Then we allow that to sit with the soil for about a month- get some good bacterial colony growth. After that we’re

going to add a known phage for that host and then we’re going to measure what our bacterial death is, how our phage counts are (increasing or decreasing), and then how that affects our greenhouse gas emissions.”

Bacteriophages, for being such a large feature of the ecosystem, are relatively unknown. “Dr. Duval focuses on desert ecology, and there’s not a lot of information on phage ecology in desert settings. It’s very novel. If we can find out, basically, how these phages are interacting with these hosts in our soil samples that we took from, say, San Antonio, how much of a transition do we need to do for Box Canyon? Or more of the Chihuahuan desert?”

Casia and her team have also gone to the Quebradas, San Marcial, and Escondida, but mainly they work along the Rio Grande. That’s the other fun part about her project; time outside! “We’re not in the lab that much, that’s the thing- the ecology lab- it lives there, and it basically houses our tools. So we’re primarily out and about. Most of our equipment you have to haul it with you, you have to hike it. For getting the greenhouse gasses we use this instrument called the Gasmeter. It has this giant generator, and it’s a good twenty-five pounds. You have to lug that around. But it’s cool because it’s designed to go out in all types of weather. You hook it up to your sample and let it run for a good three, five minutes, and it just takes in all the data that you could want



Some of the larger destructive situations, such as the Torres Waterfall, have been suspected to have been acts of sabotage. There is no way to prove this, but many confirmed cases of vandalism and destruction lead to the RA’s in Torres to have multiple meetings with the residents to ask them to stop.

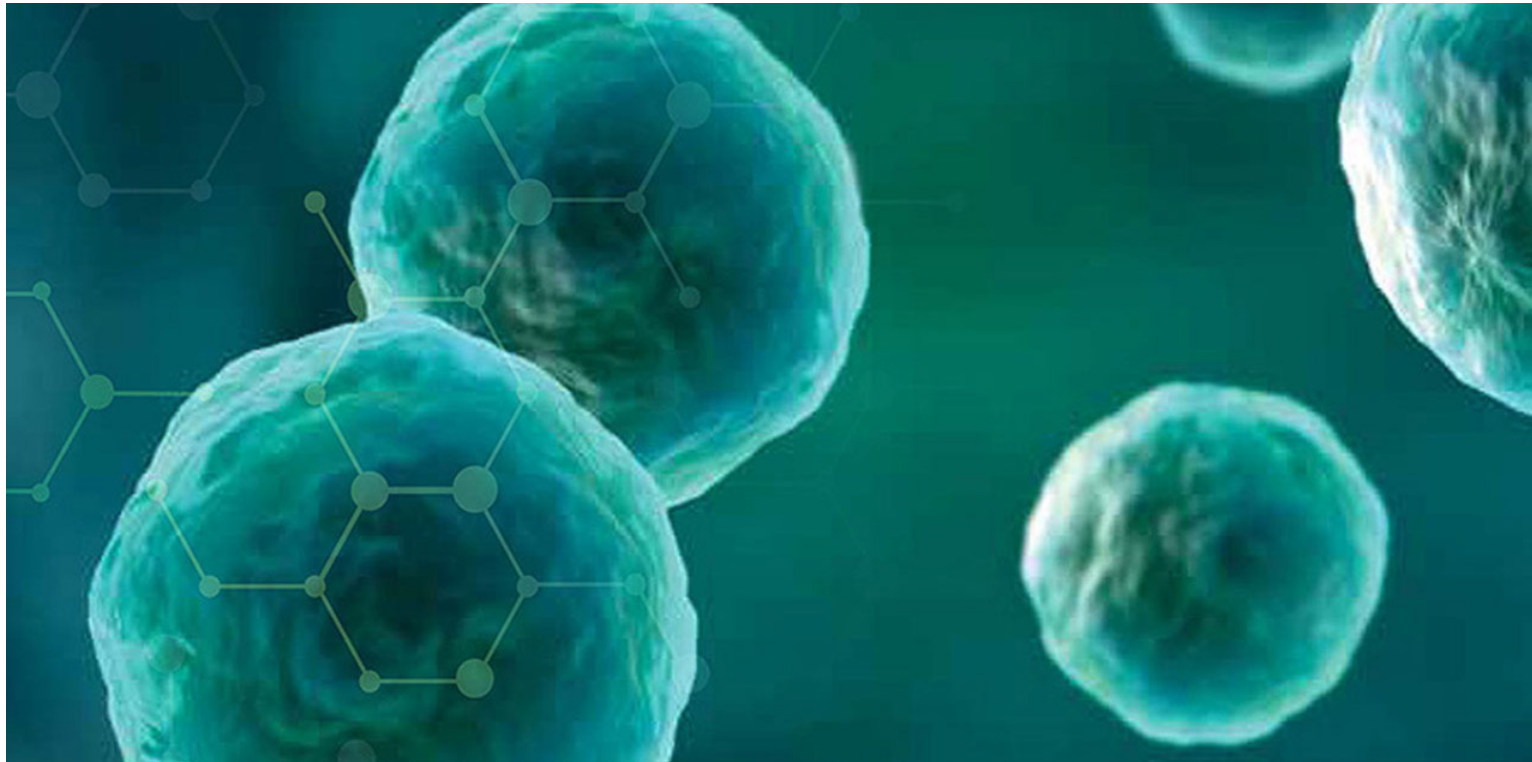
This coming summer the school is going to renovate Torres from the ground up. They have reported that there will be major work done to the plumbing and repairs to the water damage. Additionally they will be addressing the lumpy floor and replacing the hall carpets. In the rooms the tile will be taken out and replaced with sturdier materials and the rooms will be repainted.

Moving into the future, Torres’ first renovation plans to address many student concerns and provide well built and maintained housing for a growing number of students.



Newer, Cooler Organs - The Science of Tissue Engineering

Written By: Ella Eleven



Lab grown organs -- when are they going to be a reality?

We can grow tissues in the lab. Organs, not so much. Currently, full organ transplants are dependent on donations. This means the organs are composed of another person's cells, making the patient's immune system recognize it as an enemy. It leads to either rejection- a loss of the organ and sometimes the patient- or a lifetime of immunosuppressant drugs. It's an imperfect system. Matches aren't always made, and any number of complications can get in the way.

The organ transplant waiting list can have a lag of three to five years. One hundred thousand people are on the list now. Most will never receive an organ due to preexisting conditions: HIV, cancer, diabetes, and other diseases all disqualify a patient. But lab grown tissues are made of the patient's cells. It means no issues with incompatibility. Theoretically, organs could be engineered for everyone who needs one. Nobody would need to live with genetic disabilities or dialysis machines.

Before we can live in an organ-filled heaven, we have to start with the basics. The science of tissue engineering has existed since the 90's, with the first artificially-grown organs developed and transplanted way back in 1999. Cells were extracted from patients with malfunctioning or undersized bladders and cultivated into thin sacs. The new tissue was then put back in the patient. The doctor waited until 2006 to report the results until he was sure they worked- and worked they did! While the bladders had to be emptied using catheters, they were still a huge step in repairing human bodies with laboratory parts.

Bladders are relatively simple, however. They're composed of two types of cells that are 'poured' into a scaffold- which is pretty much a balloon. It's much harder to make a lung, for example. 600 million air sacs, all linked together, with little roadways for blood and air that line up with the structures in a body. The multiple types of composite cells have to be harvested, cultured, and appropriately arranged. The hormones, pH, and temperature all have to be just like a real body. It's been a science of trial and error.

Pictured Below: Matt 'Moose' Young



While earlier in this piece I did mention how one of the major time constraints on RAs - program planning - is going to be pulled back to the Prostaff level, other possible changes to the workload of RAs were suggested. One of those was to better streamline how Covid fits into the RA job: "An area of growth for Res Life is if Covid is not going anywhere, it needs to be considered a new normal and if it's a new normal, how can we better support our RAs in still doing Covid things but still having a life outside of their RA role," said Melvin. Some things have already changed, such as providing a car for off campus meal deliveries and ensuring that no one RA needs to deliver all of them alone.

Another aspect of the workload that is currently being reduced is the bulletin boards. While the number of boards that need to be completed have gone up by one, for the first and last boards of the semester, "RAs are given all of the information [for opening and closing], they just need to put it up," said Kerfoot.

In addition to the changes to the bulletin boards and programming, there is also going to be a shift in how the RA positions function in the residence halls versus apartments. In an apartment community "build community differently and interact with students differently and [resident] needs are different, so [Res Life is] going to be more intentional so that [Res Life] can address those differences versus trying a one size fits all method," said Koreen.

It has been suggested that in order to help with the high turnover rate, Res Life should raise the pay of their RAs. One person said the current pay after room and board is deducted "is not worth it." While there has been a recent raise to the RA pay at the state level, raising the pay anymore is not possible at the moment without

increasing housing rates to match: "In order to pay RAs more we have to charge residents more. [Pro Staff] knows [being an RA] is a lot of work and that [RAs] deserve compensation," said Koreen.

There is also a push to allow RAs to pursue paid research alongside working for Res Life to help with the RA turnover rate. According to the Director of Res Life, in the past two semesters 8 RAs have left to pursue research. As Melvin says the policy "inhibits student success," and if an individual has the "ability and time management skills to do paid research and serve as an RA, they should be afforded the opportunity."

In looking at the concerns with respect to the handling of the resident situations, both people had suggestions for how they would have liked the events to have been handled. One person said they "would have preferred [that Res Life had] handled it on a flexible timeline." The other student said that they would have liked to have "been informed sooner about the possible solutions about [their] living situation."

Before the end of this article, I would also like to touch on some of the positive aspects that I heard in the interviews. One of the RAs I interviewed talked about how they enjoyed being a "big brother" to their residents. A few others also mentioned how they enjoy interacting with their residents as well. Allison Colvin talked about how Techies are her "kind of people" when asked why she stayed.

One anecdote from a current RA was that they were sitting alone in Chartwells and one of the Pro Staff came up and invited the RA to sit with them. The RA said that they had been having a hard time and that had made them feel better. Another RA mentioned how they felt supported by Pro Staff during an exchange in the Res Life Discord where a resident was being rude to the RAs in chat where Tyler came in and defended the RAs to the resident in question.

Circling back to the main topic of the article, Moose said: "[We] can always get better. We can always do a better job of finding and addressing the needs of our residents." That was a general theme throughout the interviews with the Pro Staff as well, that they are actively looking for ways in which they can improve how they serve the needs of the students in their facilities and their RAs.

The proposed solutions to the concerns listed above will take time and patience. If you would like to get in contact with Res Life to learn about how these changes are proceeding or if you would like to bring up your own concerns, contact Res Life on the second floor of Fidel or at residential_life@nmt.edu. As Koreen said, "if you have questions, just ask."

something Monday, then by Wednesday the information could have completely changed. On the Pro Staff level, Tyler Melvin said they felt “there is a disconnect between Pro Staff and RA staff [regarding] what students need.”

One of the other concerns shared by interviewed RAs was the large workload. A few RAs, both current and former, felt as though they did more work than they were originally told they would have to. “We feel like we are doing a lot more than 20 hours,” one RA said. Some also mentioned that with meetings, rounds, and other administrative work they do, they only have around a few hours a week to plan programs, make bulletin boards, and do other general RA duties. While it is possible to only work the contracted hours, it does come at the cost of the quality, as one past RA said: “Res Life requires much more than 20 hours a week to do things well.”

One cannot talk about the work without the pay. Here at Tech, RAs are given a stipend that first goes towards their Room and Board, with the excess going straight to their pockets. A former RA said: “[I] was paid very little for the amount of work that I did.” Another person said: “when I became an RA, I didn’t realize I was losing money as quickly as I was.”

However, not all concerns about Res Life were about the RA position and communication. There was a general theme of concerns regarding how Res Life handled situations with residents. For example, one person who was interviewed talked about how they “had a really bad time with roommates” to the point they were “feeling unsafe.” This person detailed their attempts to follow the proper channels to solve the issue, including in-person meetings and roommate mediation, however, they felt that Res Life “did not handle the situation correctly and that [Res Life] was not being accommodating.”

A situation that was brought up by another person was in regards to a potential new roommate that they were extremely uncomfortable with. They and their current roommates went to talk to a member of Pro Staff about their concerns, and they were “accused of being bigoted towards neurodivergant people and unaccepting towards [the potential roommate.]” Although the individual stated that they received genuine support from a few members of the Pro Staff, they also felt that the “experience was very negative overall. Every moment was a battle, every discussion that [they] had with Residential Life was something [they] had to fight for. [They] were often talked over when [they] shouldn’t have been.”

How can these concerns be addressed? Starting with communication between RAs and Pro Staff, a suggestion from one RA was to form an “RA expectations and guidelines committee,”

Pictured Below: Tyler Melvin



with a focus on effective, direct communication between RAs and Pro Staff regarding potential changes. This would be a way for RAs to stay informed on and involved in the way Res Life runs. Director Melvin said that they “want RAs to be included in the decision making process,” and that they have taken steps to involve the RAs in some of those conversations.

An option for better office to student communication is to hold a student forum where the student body could come and ask questions regarding policy changes and other unclear information. This idea came from a former RA where they discussed how “when Tech offices tend to make a large amount of changes in a short period of time, there’s typically some type of [student] forum.”

A possible issue with the student forum idea that is brought up by Koreen Kerfoot is that before Res Life can talk to students there is the “matter of wanting to make sure that [Res Life] can answer [students] questions” accurately and without having to backtrack later. They want to have “the details worked out so that [they] can communicate those pieces” effectively.

It is also important to remember that there are several new employees both on the Pro Staff and here at Tech that need to find their groove. As Koreen states “some of it is with a new VP [of Student Life] and a new director that [Res Life] is doing a lot of reevaluation in terms of where priorities are and what [Res Life] is doing and how can [Res Life] meet the needs of students as well as the needs of the institution.” It was also mentioned that this can create philosophical differences in their priorities of “what students are learning and coming out with.”

Organs are tough to grow. But if bioengineers get the science down, it will revolutionize the medical industry. If kidneys could be replaced as easily as hips, life expectancy wouldn’t be outpacing medical technology. People could be as spry at ninety as they were in their teens.

If scientists can make tissues, how do we get to the full-size organs? Right now it’s easy to grow simple flat layers (skin) and tube structures (tracheas). The next step is hollow organs, like the stomach. Compared to bladders, stomachs are bigger and thicker, with more functions and cell types. The biggest issue is blood flow. Currently, grown tissues have to be thin or small to be sustained without blood vessels. Irrigation of blood, lymphatic fluid, and nerves are necessary between cells and between the organ and the body’s systems. Vasculature isn’t easy, but bioengineers have figured out how to 3D print scaffolds that are the same water content and density as real blood vessels. The first printer used was a good old inkjet. (Scientists can make it print organs, and I can’t even fix a paper jam). These scaffolds aren’t as complex as natural vasculature, but they’re getting there.

The next step is solid organs. They’re much more difficult; thick, dense, and with crucial architecture. A multitude of cell types are needed – even hearts, which are ostensibly just ‘muscle,’ have four discrete cell varieties. The most difficult is the kidney. They’re easily damaged, so they’re the most needed organ for transplants. Two sets of one-way capillary roads, close to a million nephrons (cells which filter waste and add back in necessary proteins), and more than 26 different cell types, all for one kidney. There hasn’t been any success (yet) with growing solid organs of the necessary size or complexity to be considered for transplants.

Unfortunately, we can’t forget about the limitations. There’s funding, naturally. The US Food and Drug administration, or FDA, is responsible for regulating human cells intended for transplants (while the Health Resources and Services Administration, HRSA, oversees organ donations). Lab grown organs are a gray area – not drugs, not medical devices. The FDA has to decide regulations for totally

novel technology. For now, they seem to not be doing anything. The last statement issued on the subject was that review was needed to establish regulation. Without a more official statement, investors are hesitant to throw themselves in to what may be an illegal enterprise. This makes funding a hard ask for many organ-engineering startups.

Growing your own organs seems like clean work, right? No donations, no animal subjects, just a vat in a lab. But anything using human cells needs to be strictly managed. Ethical debate surrounds the use of embryonic stem cells. The nature of ‘ethical debates’ means that no amount of careful oversight will please everyone; a compromise or alternative must be found. Induced pluripotent stem cells (IPS cells) are a promising replacement for embryonic stem cells. IPS cells are adult cells reprogrammed to act like embryonic stem cells. It means a patient’s cells can be harvested from a patient’s skin and ‘reprogrammed’ into a heart!

It all seems too good to be true, doesn’t it? That, or far too hard. But bioengineers have come an astonishing distance in the last forty years. Teeny-tiny brains have even been developed. Computer chips can be programmed to alter cells within the very body of the patient. In twenty more years, we’ll be leagues ahead of where we are now.

Theoretically, we can grow organs. But what about the logistics? Can they be produced quickly and consistently? Will everyone who needs an organ truly be able to get one? How expensive will they be for the manufacturer and the patient?

Luckily, we don’t have to answer all these questions now; the field’s just getting started. Keep an eye out in the next few decades for the Grow-A-Kidney at-home playset!

The Res Life Article

Written By: Emma Nourse

Pictured Below: Koreen Kerfoot



If the Registrar is the heart of an institution, Residential Life is the umbilical cord. 'Res Life' functions as a tether to campus, keeping students close to the action and ensuring adequate support. Recently, I have heard about a few changes that are coming to the office. Alongside those changes I have also heard some concerns, some in relation to those changes and some not, and that's where this article comes in.

Prior to working here at Paydirt, I was an RA. While doing research for this piece, I was able to use my prior knowledge and connections within the department to my advantage. Before I continue, I would like to state that the intention of this piece is not to target any person, group of people, or organization, but instead to accurately report on student testimonies and the inner workings of Res Life.

In talking about Res Life, I would be remiss if I did not start off the conversation with RAs. As one of the professional staff members, Matt 'Moose' Young, said: "The RAs truly are the connection between us and the residents."

In order to be that connection between the 'Pro Staff' and students, RAs have several duties to fulfill. It is fairly well known that RAs are responsible for the well-being of their building and its residents. This is accomplished through one-on-ones, bulletin boards, programming events, and 'rounds' throughout their designated areas. However, this is not all the work they do.

Behind the scenes, RAs are also required to help out in the Res Life office during assigned hours, serve on committees, attend staff meetings, perform health and safety inspections, enforce and uphold community standards, and more.

It's no secret that Covid changes everything. For RAs, the rules and regulations shift week to week and the pandemic consistently creates new duties and challenges. One of the new duties is delivering meals to those in quarantine. During the initial lockdown of Fall 2020 and Spring 2021, there was a struggle to engage with residents as everything had to be moved online. As one former RA put it, "it was incredibly defeating. I worked really hard on all of my programs only to have very few people show up."

Covid did not only affect RA workload. Res Life Assistant Director Koreen Kerfoot mentioned how "there is so much time that is taken up" in tracking vaccination statuses, test results, exposures, and ensuring that the spread of Covid is mitigated on campus. Which brings up another important piece of the Res Life office: the Professional Staff. The head of the office is Tyler Melvin, Director of Residential Life. Their job is to manage the two sides of the residential life program, both the housing operations and student facing, as well as directly manage the Pro Staff and indirectly manage the RAs.

Koreen Kerfoot, as stated previously, is the Assistant Director of Residential Life. Her job is primarily focused on the operations piece "which is the housing assignments and meal plan management," but she also works on "leadership development in terms of the RA programming model and training." However, Koreen did mention that there are going to be changes to her job in the future.

Residential Life Coordinators Moose and Allison Colvin are directly in charge of different teams of RAs; Moose is in charge of the residence hall staff and Allison the apartments. On top of that, Allison is also responsible for the selection and training of new and current RAs. Moose handles the housing components for summer conferences here at Tech. There is also Residential Life Specialist Mari.

I mentioned that there were going to be changes to the office of Res Life. There is currently a plan to hire more Pro Staff to "pull away some of the work that is on the RAs back to the Professional Staff," said Tyler Melvin. This shift has a two fold effect: RAs will no longer spend a large chunk of time trying to put together events, and dedicated Pro Staff members will be better equipped to plan educational, effective programs and assess the learning outcomes.

The RAs would still run the events, but they would be given the necessary materials and a facilitation guide to the event itself. This would be a "step-by-step guide of what to consider, what conversations to have, how to navigate things, etc," said Melvin. This correlates to Res Life's notion that RAs are people first, students second, and RAs third as this will "free up a lot of time [for] RAs."

This is part of a directional shift: the office is working towards "a residential curriculum approach," said Melvin. Res Life will be "extremely intentional about clustering students that have similar identities and similar experiences." This will be done through the creation of 'affinity spaces' within the halls to enhance a sense of belonging and community on campus.

Launching in fall, there will be a restructuring of the halls to include "first year residence halls, and second year/upperclassmen communities and residence halls," says Melvin. Within those specific communities there will be subcommunities as well. For example, Melvin mentioned that there will now be two queer affinity spaces as opposed to just one. "We are moving away from gender neutral and gender inclusive language and concepts because all of that space is valid and needed and will stay. We are going to broaden that community to not just include trans and non-binary people but to be the entire queer community."

One of the biggest reasons for these changes is because research suggests "students are more likely to be successful and more likely to have a higher GPA and more likely to stay on campus if they have a sense of belonging." Later down the line there will be a requirement that first year students live on campus as research shows that when they do live on campus they are "30% more likely to be retained," said Melvin. I was informed by both Koreen and Melvin that this will have to wait until West Hall comes back online.

There will also be changes to management of the Mountain Springs and Desert Willow Apartments. They will be handed over to Auxiliary Services: "the thought is to treat them more like apartment living and more independent living," said Koreen. It was emphasized by Melvin that they "are having the exact same spaces that [they] had this year and the year before, there is not going to be an occupancy concern."

One of the biggest concerns people across the board had when talking about Res Life was communication. This has been echoed throughout the majority of my interviews, on a student and faculty level.

On a student level, one person said "if Residential Life is going to make [a lot] of changes, they should make an effort to explain the changes to the general public." It was also mentioned in some interviews that RAs had felt as though they were not properly informed about changes that were occurring, and that they didn't have a voice in the changes before they happened. For example, one RA commented that had the RAs had the chance to talk to Prostaff about the updates to the RA duties this semester, "people would have been more agreeable to them, and [they] feel like some of [the changes] might not have even gone through."

RAs also mentioned how they felt general communication in the office was ineffective. One former RA said that "information was not being handed down quickly enough," and that led to a lack of clarity. One of the examples given was that an RA could be told

Continued on Page 9