



MoNoGRaPh

Volume 25 Issue 3

FEATURED IN THIS ISSUE:

2T7 COUNCIL LETTER,
APPES, CLUB'S CORNER,
RECIPES & MORE!



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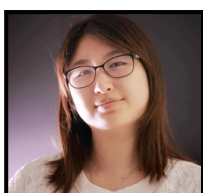
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EDITOR'S ADDRESS

Hello Phrends!

Welcome to the latest edition of the Monograph!

We're excited to present Vol. 25, Issue 3, which is full of various content for you to enjoy. This issue features a letter from the 2T7 council, as well as articles covering the experiences of our fourth-year students during their Advanced Pharmacy Practice Experiences (APPE). Get ready to gain valuable insights into their real-world encounters and the lessons they've learned.

But that's not all – we are also back with Club Corner, where we'll showcase our pharmacy community's vibrant activities and initiatives. We've even gathered recipes for quick and easy meals and indulgent treats to satisfy your taste buds.

To add to the excitement, we have another scavenger hunt for this issue. Check out your class Facebook page or the Monograph Instagram for the link to enter the raffle for a chance to win one of five \$10 gift cards!

As always, we are thankful for your continued support. The Monograph thrives on the collaborative efforts of our contributors and the enthusiasm of our readers.

Here's to a semester filled with discovery, growth, and inspiration!

XOXO

Sincerely,

Aqsa Ali and Sheena Ye
Monograph Co-editors 2023-2024
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UPS Address

Hello everyone!! Welcome back to a new year and another semester at LDFFP! We hope that your break was restful, and you were able to recharge for the upcoming few months.

It wouldn't be a back-from-winter-break UPS address without talking about Professional Development Week (PDW). Hosting a conference for 400+ delegates from all Canadian pharmacy schools in the heart of Toronto is a massive undertaking. The two of us, and UPS as a whole council, would like to acknowledge and say thank you to the entirety of the PDW planning committee (**Alyssa Matsumura, Lydia Wadie, Jasamrit Kaur, Cassandra Elias, Sheena Ye, Hwiyeon Kim, Lina Yacoub, Lina Lo, Emily Crosier, Risansha Chhabra, Negar Shavandi, Meriam Salih, and Ayman Lakhani**) for their tireless efforts in executing a fantastic conference. We also want to shout out each and every student who received an award at PDW this year:

- **Alissa Kong (2T4)** and **Sasha Mohindra (2T5)** for their 1st place standing for IPSF Health Campaign
- **Theodora Udounwa (2T4)** and **Ayman Lakhani (2T5)** for their 2nd place standing for CPhA Award of Professionalism,
- **Lydia Wadie (2T6)** for her 2nd place standing in the CPhA Student Literacy Challenge
- **Mackenzie Richardson (2T5)** for his 3rd place standing in the PharmaChoice Advice For Life Award
- **Sara Rough (2T6)** for presenting her research at this year's conference.
- **Hamza Farah (2T5)** for his 2nd place award in the Pyrls Over-the-Counter competition
- **Emily Crosier and Lina Lo (2T5)** for their CCCEP Excellence in Professional Development Award
- **Alyssa Matsumura (2T5)** and **Lydia Wadie (2T6)** for their Stephen Long PDW Co-Chair Award
- **Ayman Lakhani (2T5)** for the CFP Guy Genest Passion for Pharmacy Award
- **Mackenzie Richardson, Hamza Farah, Said Aoude, and Rachel Kuruvilla (2T5s)** for their 1st place standing in the Medisca Compounding Competition.

In terms of what we're working on for this semester, we're excited to bring back OPSIS (Ontario Pharmacy Student Integrative Summit) for its 10th iteration alongside the University of Waterloo. This weekend-long conference at the end of March is a great way to meet and network with students from other cohorts as well as from the University of Waterloo, so please keep your eyes peeled for ticket release. We've also started working with our CAPSI reps to plan for Pharmacy Appreciation Month (all of March) and we're excited for what we have in the pipeline so far.

It's unbelievable to type, but this is the last time we'll be writing a UPS address alone as President and VP. This is because by our next address, we will have elected our UPS President and Vice-President-Elects, the individuals taking over our roles for the 2024/2025 academic year.

Please make sure that you're taking every opportunity offered that interests you, as our goal is to provide as many opportunities as possible to expand your skills and experiences while here at LDFFP. Remember, we're always here as members of the Phamily, so never hesitate to reach out.

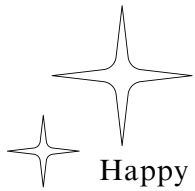


Adam Da Costa Gomes

Adam Da Costa Gomes

Nicolas Pham

Nicolas Pham



2T7 Council Letter

Happy new year Pharmacy!

This is Jesh, your 2T7 president! First off, I would like to congratulate the 2T7s on completing their first semester in pharmacy school! It's been a busy year for all of us, and transitioning into the heavy workload has been tough. Great work in keeping our heads up and pushing through!

It's been a great pleasure meeting so many of you and I look forward to meeting and working with all of you in our courses in the future. The council is abuzz with planning fun events, and ways to advocate for our cohort. Please feel free to drop by any of our council members and share your thoughts and suggestions whenever you see us! We are happy to help and support you any way we can.

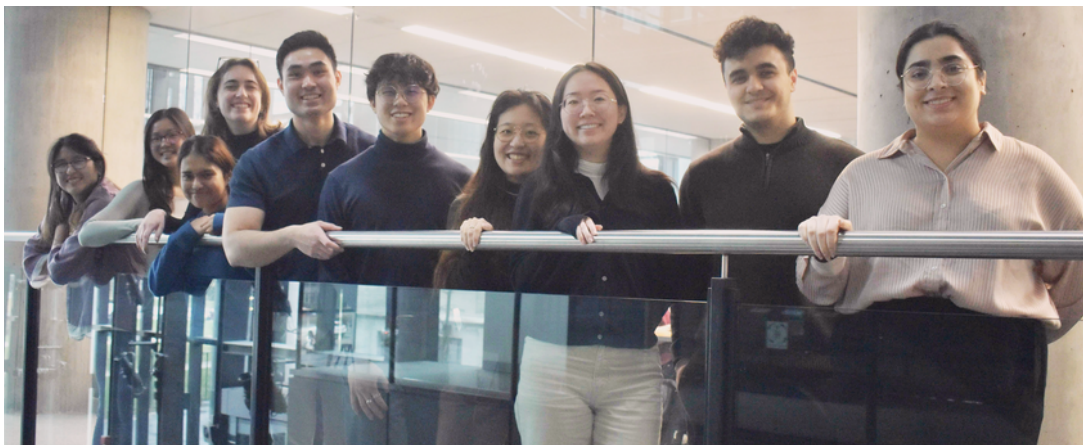
At the forefront of our advocacy projects, the council discussed having our induction ceremony at a different venue, and for guests to be allowed to watch the ceremony. We are grateful and excited that the faculty agreed to our requests, and that this year, we will be having our induction ceremony at Convocation Hall on March 27th, 6-7PM, and that up to two guests are invited to the ceremony. We know many of you are eager to learn more information, and the council is planning to meet with the faculty soon to discuss the pre-induction ceremony as well as more details upcoming. Hang tight!

As for social events, we hear your suggestions in making these events more inclusive, and we are working towards a REALLY fun after-induction ceremony party where everyone can attend and enjoy a good time with people in our cohort. It's a good way to meet new people (and maybe finally talk to your pharmacy crush :D)! We recommend everyone to show up and have some fun!

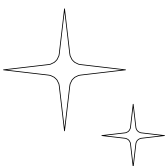
Being a student leader, I feel compelled to talk about the importance of self-care, mindfulness, and mental health. Pharmacy school is stressful, and can be a source of burn-out and avolition. It's important we take some time to collect ourselves and re-energize during times of high pressure. As future pharmacists, we can only help our patients when we ourselves are physically and mentally healthy. Whether it be going out for dinner with friends, going to the gym, playing sports or video games once in a while, destressing is an integral part of the life of a student, and should be promoted.

That's all from me! Stay tuned for more updates on our plans and projects, and as always, my door is always open ☺

On behalf of the council, We wish everyone a successful semester!



2T7 Council: Jeshua, Freddie, Emily, Sohila, Sam, Maggie, Gabra, Ayesha, Anica, Victoria, Jacqueline, Isabel



PDW 2024

By: Alyssa Matsumura & Lydia Wadie, Co-Chairs

Now that Professional Development Week (PDW) is behind us, we (Alyssa Matsumura & Lydia Wadie, Co-Chairs) would like to take a moment to appreciate the committee that made this conference possible. Fourteen months ago, 12 pharmacy students (and two local CAPSI reps) took on a position that was new, daunting, and an immense amount of work. Theoretically, we all “knew” what we were signing up for, but practically, none of us could predict all of the situations we would encounter.

What is PDW you ask? What is it not? PDW is a four-day conference that takes place every January and is hosted by one of the pharmacy schools across Canada. It includes the national levels of competitions hosted locally, sessions given by some of the brightest minds in pharmacy, an exhibition filled with pharmaceutical companies and organizations of every kind, and unforgettable social events like galas and the beloved Canada’s Next Top Pharmacist. PDW2024 was hosted by the Leslie Dan Faculty of Pharmacy at the Sheraton Hotel and welcomed guests from all across Canada (students, faculty, sponsors, and speakers) for a total of 400 attendees- double of PDW 2023.

If you’re wondering how one plans a large-scale conference, you’re in luck! Here’s a timeline of what our last year has looked like

Summer 2022- Will there be a conference?

There was a point in time when PDW2024 was not even a certainty. Due to COVID, it was unknown whether or not this conference would take place at all. So the timeline for planning was extremely tight- whereas schools would typically have 2 years to plan the conference, we had one! A fact we wouldn’t find out until November, when the co-chairs were selected

November 2022- Where, and with what funds?

The Co-Chairs are selected thanks to the CAPSI reps at the time, Theodora Udounwa and Ayman Lakhani, and a whirlwind of excitement commences. In a night and a day we have to become expert event planners, negotiating contracts with hotels and figuring out where to hold the conference- and how to put down an initial payment.

Our finance officer, Jasamrit Kaur was central in helping us secure the Sheraton Hotel and she was essential in drafting and managing our budget and bank account all throughout the planning process. Her diligence and commitment are truly what made the conference viable!

January 2023- The work begins!

Once the new year rolled around and PDW 2023 was complete, we could begin contacting sponsors and speakers. Our health fair and sponsorship officers, Lina Yacoub and Sheena Ye, worked tirelessly to find companies that were willing to generously sponsor the event and make it a reality. This was an ongoing process complete with obstacles of every kind: companies downsizing their budget, contracts to be negotiated, errors in payments, and continuous follow-up and reminders.

Of course, having sponsors and speakers does little good if no one knows about them. Risansha Chhabra and Negar Shavandi, our marketing officers, put together the website and made promotional posts for our social media account to share information about the conference. This all in addition to their constant engagement throughout the conference, capturing the memories that were being made every day!

Thanks to our translation officer Hwiyeon Kim, all of the content provided at the conference and social media was translated into French to accommodate the French-speaking schools: making the sessions held throughout the conference accessible to these students. Hosting a national conference truly highlights the need for bilingual skill, which Hwiyeon certainly demonstrated- often having to translate content to be published in a few hours!

As mentioned, one of the biggest parts of PDW is hosting the national/final level of competitions that begin in each school locally. The planning for these competitions requires an immense amount of work and organization which Lina Lo excelled in. From organizing materials to recruiting and orienting standardized patients and judges, she worked hard to ensure that these competitions ran as smoothly as possible. Here once again, a bilingual audience had to be accommodated for, and Lina was committed to making sure all competitors had an equal opportunity.

A national conference naturally means that people are coming into Toronto by planes, trains, and cars. Without our logistics officer, Cassandra Elias, organizing transportation and transport discounts for our delegates, this would have been a much more difficult (and expensive!) feat. Additionally, Cassandra secured our AV company after several price negotiations and worked with our education and social events officers, Emily and Meriam, to ensure our events were provided for.

If you've seen footage of PDW, however, it was almost definitely from one of our social events. From a creative opening gala to a festive closing one, our social events officer Meriam Salih planned the parts of the conference that allowed students to have fun and get to know the other pharmacy schools across Canada. She is also credited with planning an extremely fun and memorable Canada's Next Top Pharmacist contest- a competition all pharmacy students look forward to every PDW.

December 2023- The final countdown

2023 was our planning year and it had no shortage of concerns throughout. From sponsors declining to speakers dropping out, the budget being reworked and items being cut-out, and negotiations at every turn- we all Rose to a Challenge in ways I don't even think we expected of ourselves.

As for us co-chairs, we constantly supported the committee all throughout the process: checking in to see where help was needed, sitting in on meetings with sponsors, or speakers, or AV to answer questions, coordinating all the hotel details and accommodations, reporting to CAPSI national about the planning process and above all: learning what it means to lead while allowing people the space to also take charge. We also had the invaluable support of Ayman Lakhani, our CAPSI liaison. Thanks to her, we had extra support from someone on the CAPSI National Committee. She was our direct contact between the committee and CAPSI National, and she helped communicate on behalf of the planning committee. Ayman often also stepped up to answer questions, provide details, and raise points that truly helped make our conference a success.

After dedicating so much of our time to PDW over the past year, no one could truly believe how close the conference was. Yet now was absolutely not the time to rest. The moment our exams wrapped up, we were at the Sheraton to visit the site of our conference and meet with the hotel. Every moment of our break was used to address all the last-minute details that were bound to come up and get ready for the real deal.

While we scavenged for sponsors, our education officer, Emily Crosier, was gathering a group of esteemed individuals and leaders in the pharmacy profession, who were willing to share their knowledge and experiences with the delegates of PDW. With great enthusiasm, she selected some of the most interesting and promising voices in pharmacy: people with incredible stories and innovative ways of problem-solving that were fascinating to listen to. Her dedication made for incredible sessions and keynotes.

January 2024- Showtime!

And at last, the event we had all saved in our calendars finally rolled around. After a complete run-through of the event from beginning to end, packing hundreds of goodie bags and getting them to the hotel- PDW2024 had begun. And if we had thought the work would be over once we got to the hotel, we were mistaken! Throughout the conference, our committee worked tirelessly to ensure the event ran smoothly, problem-solved the issues that came up, and truly came together as one team to complete this conference.

It is evident that planning this conference was no easy task, but with a group of intelligent and devoted women on the planning committee, the event became a reality. And it was a success! We are so honoured to have received many congratulations and sentiments of gratitude, in person and online, from sponsors, speakers, and students. We will leave you with one of our favourites from Dr. Cheyenne Matinnia, a pediatric pharmacist at SickKids and grad student at UofT LDfP:

“Students are in the perfect place to bring fresh ideas and innovation to our profession. Their value is **CRUCIAL** to the longevity of our profession – simply by being themselves and bringing their curiosity to our work and systems. Students, never let anyone make your ideas feel small or place limits on your possibilities. Writing this keynote taught me a lot about myself as a forever learner. Thank you to PDW for the opportunity and platform to engage with students on this level. None of this would have been possible without the incredible PDW planning committee.”



By: Ayman Lakhani, 2T5 - CAPSI Senior



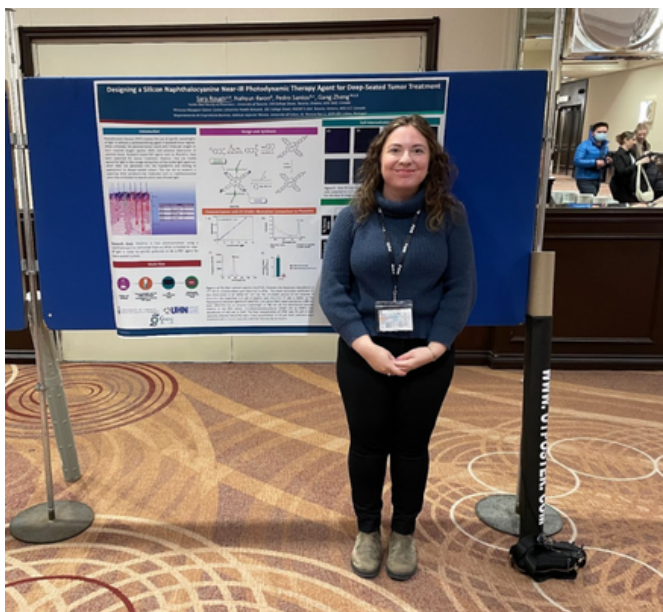
Professional Development Week (PDW) is a week-long, student-run conference sequentially hosted by a different pharmacy school in Canada, in collaboration with CAPSI National, every January. For the first time in 14 years, UofT had the opportunity to host PDW, right here on our home turf! Co-Chaired by Alyssa Matsumura (2T5) and Lydia Wadie (2T6), the PDW Planning Committee worked tirelessly to bring PDW to life in our home city, and they did not disappoint! The theme of PDW 2024 was “Rise to the Challenge”. 82 delegates from UofT attended the conference for a week of networking, competitions, educational sessions and social events. Below is a recap of the week:

On January 3, our PDW Planning Committee excitedly welcomed delegates and sponsors from across the country for the Opening Gala. Themed “Around the World”, delegates enjoyed dinner and an evening of mingling with pharmacy students from other schools. Meriam Salih (2T6), the Planning Committee’s Social Events Officer, organized an interactive passport activity to get students moving from table-to-table to test their knowledge of flags and sceneries displayed as centrepieces! Students enjoyed the challenge and made new phriends along the way.

The following morning, delegates tuned in to the opening keynote motivational speaker session, delivered by Dr. Cheyenne Matinnia. She delivered an insightful presentation that encouraged students to reflect on what gives their goals purpose, their ideal performance environments, and how to keep pursuing their passions even when faced with setbacks. Students felt inspired by her supportive words and anecdotes - we were lucky to have such a compelling talk kick off our week of speaker sessions! Throughout the day, students tuned in to concurrent speaker sessions of interest. Organizations such as CPhA, Health Canada, and NCODA provided insight into their roles in pharmacy practice, while industry and community speakers elaborated on trajectories pharmacy students could explore with them. Also on January 4, UofT’s PIC, OTC and Compounding competitors competed at PB for national titles! The suspense was palpable as we waited for the winners to be announced at the Closing Gala. To round off the day, delegates were given a free night to explore the city with phriends, old and new.

On January 5, delegates arose bright and early to catch yet another insightful keynote speaker session, delivered by Dr. Jaris Swidrovich. Dr. Swidrovich gave an eye-opening talk on the disparities faced by Indigenous Peoples, both in recent history and at present. His experiences, as well as those of his family members, drove home just how harrowing our treatment of Indigenous Peoples has been. He provided simple ways in which we can do better as pharmacists and people to respect Indigenous culture and practices, even just by adjusting the terminology we use! Dr. Swidrovich’s talk was moving and educational - we are so appreciative to have received a reminder of how we can be supportive of Indigenous Peoples and make them feel cared for. His talk was followed by other educational sessions, including ones on advocacy, continuing education, and minor ailments. Concurrent to these sessions was the Health Fair and Research Poster Presentation.





Approximately 30 health organizations and prospective employers were present at the Health Fair to network with students. We were proud to have Sara Rough (2T6) represent UofT at the Poster Presentation, with her poster titled “Designing a Silicon Naphthalocyanine Near-IR Photodynamic Therapy Agent for Deep-Seated Tumor Treatment”. In the evening, students brought their school-spirit to Canada’s Next Top Pharmacist, a pharmacy-themed pageant where one student from each school dazzled the crowd with their talent and charm. UofT wore their best Toronto gear to CNTP, themed “Rep Your City”, to cheer on Tina Zhou (2T4) as she wowed the crowd with her dance moves. Our judging panel was equally impressed, and Tina placed 2nd!



On the final day, closing keynote speaker Dr. Karen Agro delivered a memorable, musical performance. She led a great discussion on how music can increase motivation and productivity - a welcome topic for pharmacy students! Students appreciated her passion and calming demeanour as we rounded off the week. Dr. Agro also hosted the Pharmafacts Bowl. Students cheered on the teams of four from each school. UofT was represented by Mohammed Mohammed-Said (2T4), Said Aoude (2T5), Amira Bouchema (2T6), and Nidhi Andrews (2T7). Finally, the PDW Planning Committee saw delegates off at the Closing Gala, themed “Gatz-bye”. The formal event included a closing address from Dr. Natalie Crown, thanked the conference sponsors, acknowledged the hard work of our Planning Committee, and announced the competition winners! Newly-elected CAPSI National executive members were also announced, including 2 students from UofT. We were excited to celebrate the successes of our students, and especially heartwarmed by Dr. Crown’s support every time UofT was called to the stage. The Closing Gala provided a final opportunity for students to mingle with phriends and make core memories at the photobooth and on the dance floor!





We'd like to thank the PDW Planning Committee for putting together a conference we won't forget. Your hard work did not go unnoticed, and you should be proud of the feat you accomplished! If you missed out on PDW this year, not to worry - PDW 2025 will be hosted in Dalhousie next January, so stay tuned for details as they're made available to us. In the interim, there are ample opportunities to get involved with CAPSI, both locally and nationally. National by-elections are currently underway, and local PAM subcommittees are being formed as we speak. Don't hesitate to reach out to your CAPSI Representatives for more information :)



Awards Won:



- IPSF Health Campaign Award:** 1st Place, awarded to IPSF UofT
- CPhA Award of Professionalism:** 2nd Place, awarded to CAPSI UofT
- CPhA Student Literary Challenge:** 2nd Place, awarded to Lydia Wadie (2T6)
- CCCEP Excellence in Professional Development Award:** awarded to PDW Planning Committee
Education and Competitions Officers, Emily Crosier (2T5) and Lina Lo (2T5)
- CFP Guy Genest Passion for Pharmacy Award:** awarded to Ayman Lakhani (2T5)
- PharmaChoice Advice for Life Award:** 3rd place, awarded to Mackenzie Richardson (2T5)
- Pyrls Over-the-Counter Competition:** 2nd place, awarded to Hamza Farah (2T5)
- Medisca Compounding Competition:** 1st place, awarded to Said Aoude (2T5), Hamza Farah (2T5), Rachel Kuruvilla (2T5), Mackenzie Richardson (2T5)
- Stephen Long PDW Co-Chair Awards:** awarded to Alyssa Matsumura (2T5) and Lydia Wadie

Oral Dosage Form Modifications: Important Considerations to Safeguard Patient Safety and Treatment Outcomes

By: Karnie Garabedian, 2T4



Lily's Case

Lily, an 18-year-old patient, has recently been prescribed Venlafaxine Extended Release capsules to address her symptoms of anxiety. Lily is facing challenges when it comes to swallowing these capsules due to their size and finds herself at a loss on how to proceed. Despite her attempts to find a solution, she is unsuccessful. Lily ultimately decides to visit the pharmacy, hoping to gain clarity and guidance.

In the ever-evolving realm of pharmaceuticals, continuous strides are being made to enhance drug delivery, patient adherence, and overall treatment efficacy. Refinements to oral dosage forms, such as tablets and capsules, present tailored solutions to address diverse patient requirements. However, when these modifications are not executed properly, they can lead to dire consequences that compromise patient safety and treatment effectiveness.

The Delicate Balance of Pharmaceutical Formulation

Oral medication administration is an intricately designed process to precisely deliver therapeutic agents to the body. The ability to modify an oral dosage form depends on various factors including the drug's chemical properties, the tablet or capsule's formulation, and patient requirements. Modifying dosage forms can be advantageous for patients struggling with swallowing whole tablets or capsules, those who require precise dosage adjustments, or those with unique medical conditions. However, it is imperative to note that improper alterations can lead to unintended effects.

Tablets: Crush or Split?

The practice of crushing tablets is often employed to facilitate administration, particularly for patients who have difficulty swallowing. Nevertheless, not all tablets can be crushed. Tablets formulated for immediate release (IR) are generally more suitable for crushing as they are designed to disintegrate and release the drug quickly upon ingestion. Conversely, drugs with special formulations such as extended-release (ER, XR, XL), sustained-release (SR), controlled-release (CR), enteric-coated (EC) tablets, and dissolvable tablets must never be crushed. Such actions could alter the intended drug release profile, potentially inducing dose dumping and adverse effects. Additionally, medications that are hazardous, irritating or have a narrow therapeutic window should also be spared from crushing, as doing so can lead to unpredictable and potentially dangerous fluctuations in drug absorption, distribution, and overall efficacy.

Tablet splitting also allows for dosage adjustments, particularly when a lower dose is required. Tablets with a score line, indicating their suitability for splitting, are generally safer for such purposes. Ensuring even splits is essential for precise dosing. Like crushing, ER, SR, CR or EC tablets should not be split, given the potential compromise to therapeutic efficacy and safety. Nevertheless, exceptions do exist, such as Toprol XL (metoprolol succinate) and Sinemet CR (carbidopa and levodopa), which are scored and amenable to division, but not to crushing.



Other factors to consider are film coating and taste. Splitting or crushing film-coated tablets could compromise drug integrity due to exposure to light, moisture, and air. Furthermore, this may expose patients to the medication's full taste, which might be unpleasant or bitter.

Capsules: Open or Not?

Hard gelatin capsules often encapsulate powders or small granules of medication. In some cases, these capsules can be opened, and their contents sprinkled onto soft foods or directly consumed for easier ingestion. However, this should be approached cautiously, as consuming the entire contents of the capsule is vital to obtaining the full therapeutic dose. Soft gelatin capsules that contain liquid or semi-solid formulations are typically not designed to be opened, as doing so can expose the contents to air and moisture, potentially compromising safety and efficacy.

Returning to Lily's case, Venlafaxine Extended Release is supplied as a hard gelatin capsule filled with pellets. Therefore, these capsules may be carefully opened and the entire contents sprinkled onto soft food, such as applesauce, and swallowed completely.



Importance of Healthcare Professional Involvement

Inappropriate modifications can result in several complications ranging from altered drug release, drug degradation, inconsistent dosing, and altered drug absorption, metabolism, and distribution. Healthcare professionals are pivotal in mitigating these risks by assessing each patient's medical history, conditions, and preferences before recommending any modification. Their guidance extends to recommending appropriate modification methods, ensuring patients follow safe practices that preserve drug efficacy and safety. There are several resources that can be consulted to determine which modifications, if any, would be appropriate. For example:

- Drug monographs (available at the Health Canada Drug Product Database: <https://health-products.canada.ca/dpd-bdpp/>)
- Institutional Formularies
- Compendium of Pharmaceuticals and Specialties (CPS: Drug Information) (available at <https://www.pharmacists.ca/products-services/cps-print/>)

Modifying oral dosage forms to meet patient needs is a delicate and complex process that requires a deep understanding of pharmaceutical science, drug properties, and patient considerations. While some tablets may be crushed or split, and certain capsules can be opened, these actions should always be taken under the guidance of healthcare professionals. Safety, efficacy, and patient well-being remain paramount when exploring modifications of oral dosage forms. Consulting healthcare providers and referring to reliable sources is essential to making informed decisions that support patient safety and optimal treatment outcomes.



AI AND TECHNOLOGICAL ADVANCEMENTS IN THE PHARMACY PROFESSION

NOUMAN ZULFIQAR 2T6,
EVOLVE EVENT COORDINATOR

The use of AI has been rapidly entering into all aspects of our life, and the same holds true for the pharmacy profession. Even our learning has aspects of AI and technological advancements improving it; Waterloo's pharmacy program has been utilizing generative AI for experiential learning and is looking into incorporating ChatGPT into this to enhance these patient interaction simulations with more organic dialogue practice.

Outside of learning and education, technology is changing how retail pharmacies operate by the utilization of robots to fill medications and minimize time filling and packaging medications in the pharmacy.

AI is being used in unique ways, in some US pharmacies, cameras are utilized to take pictures of pills and appropriately analyze them which is useful for product check accuracy, and it can be used for other elements like drug interactions and patient education. There even is the use of pharmacy technician robots in one pharmacy in Turkey that helps patients with basic inquiries they may have. I'm sure many have you have had a patient coming into the pharmacy recently asking for Ozempic and you realize it is still on backorder. AI and technological advancements may even help with this dilemma to predict changes to the supply and demand curve. Consequently, production of medications like the Ozempic pen can be adjusted based on the AI's prediction of future events that might result in changing necessities of the medication.

On a similar note, companies like Amazon and places like Australia are utilizing drone delivery services to send medications that allow them to fly over traffic with the right aviation certifications in place.



In the future this could become autonomous for pharmacies to ship the medications in a timely and confidential manner to patients' homes.

This is not to say that only retail pharmacies will reap the benefits of AI, but its benefits will be seen in other forms of pharmacy. It can help with patient therapeutic drug monitoring in hospital pharmacy. On the other hand, it can help with new drug discovery and determine the costs of medication using predictive AI tools. As future pharmacists we need to not be afraid of AI and technological advancements, rather we should learn more about these specific advancements to better adapt to our rapidly changing work environment.



Is Frankenstein's Monster a Compounded Human?

Varun Gupta 2T5

As I plan to spend yet another Valentine's Day with the most amazing and lovely person in the whole world, myself, I do sometimes feel like there is something amiss. Despite being my own best company, I have to wonder what it would be like to have another who could understand the intricacies of my life. Since there is no other who could fulfill that role, it led me to think, what if I just create the perfect partner for myself? As a member of Compounding Opportunities & Mentorship Program for Pharmacy Students (COMPPS), I have always wondered, was Frankenstein's monster simply a compounded human, and if so, can I make my own? Well first, we need to define the terms compounding and human. Health Canada defines compounding as "The combining or mixing together of two or more ingredients (of which at least one is a drug or pharmacologically active component) to create a final product in an appropriate form for dosing".¹ Human is defined as "a bipedal primate mammal (*Homo sapiens*)" according to Merriam-Webster.²



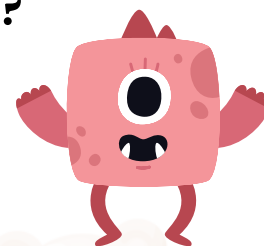
With these two definitions in mind, could Frankenstein's monster be considered a compounded human? Well, not really, as the creature is not a drug, but they could be considered human. However, in the human that I am compounding, I don't want it to hurt when I shock them to life so if I include a drug like acetaminophen into them while compounding them, it will loosely meet the definition of compounding. Furthermore, since it will be serving the custom need of me wanting it, Health Canada will probably be okay with this since I don't plan to sell them and will be making them in a limited quantity of one.³ Therefore, if we make a lot of assumptions, we can compound our very own human, much like Frankenstein's monster. Now, let's follow the recipe.

Mary Shelley's Frankenstein follows scientist Victor Frankenstein and his experiments to ultimately create life. In his efforts, he created the creature, which while commonly referred to as Frankenstein in pop culture, is not actually given a name. Unfortunately, this is not the only thing that wasn't provided. There is no recipe, nor really anything much to do with how the creature was even made. Victor Frankenstein never even shouted 'IT'S ALIVE!!!', so needless to say, it will take a bit more research to design my own Human creature.



Is Frankenstein's Monster a Compounded Human?

Varun Gupta 2T5



The first step is obtaining the excipients. Well, this is the issue, it is kind of illegal.⁴ Instead, we can 3D print a body. It will be made from Plastic, so at least the creature will feel at home in Hollywood. Next, we need a super top-secret solution that was never provided, so I will be using coffee, as it is what gives me a reason to live. I will also add some acetaminophen so that there is at least one active ingredient. Finally, I need a source of electricity. It is currently winter which makes me suffer from static electricity, so that should do. Given that this is a non-sterile aqueous compound, and this is not intended to be an oral dosage form, I do need to plan for a beyond use date of only 30 days.

Maybe I should just stick to sourdough.



After getting all the ingredients ready, I don my lab coat, gloves, and goggles, remembering to wear pants and closed toe shoes. In order to comply with NAPRA standards, I require a spacious and clean room to when compounding non-sterile non-hazardous products.⁵ I have decided to use PB 850 as I cannot afford to rent out a space in Toronto. I then start to put everything together. After charging up my static electricity, I touch the plastic carcass, and with the familiar zap and numbness in my finger, I have done it, I have compounded a human. Wait, it is actually just a human sized piece of plastic covered in coffee.



Forging Futures: The Pharmacy Mentorship Program (PMP)

By: Aqsa Ali (2T5), Christina Kang (2T5), Edwin Thomas (2T7)

Embarking on pharmacy education at the Leslie Dan Faculty of Pharmacy can be thrilling but overwhelming. Pharmacy Mentorship Program (PMP) is a student-led organization that provides mentorship, networking sessions, and guidance to students interested in pharmacy. Founded in 2011, PMP has worked with over 50 pharmacists, ranging from recent graduates to decades of experience, across community and retail, hospital, industry, education, and government fields. PMP is not only a club but a community where the wisdom of experienced pharmacists guides the ambitions of budding pharmacy professionals for the rest of their careers.

What Sets PMP apart from other UPS clubs?

In the competitive field of pharmacy, connections matter. PMP provides a platform to build meaningful connections with established professionals across multiple fields, creating opportunities beyond LDFP. With PMP's mentorships, connections, and supportive community, we emphasize how our mentorship program and networking events provide a transformative journey for students and their careers. As a pharmacy student, you do not just join PMP; you will gain experiences, insights, and a network that extends beyond the academic realm. PMP offers a glimpse into the real-world applications of pharmacy by providing firsthand insights into various, allowing mentees to align their academic pursuits with practical experiences.

Past events

Our past events include speed networking, pharmacist panel interviews, and professor profiles for Pharmacist Awareness Month. We plan to hold a speed networking event later in the semester, so stay tuned!!

Get Involved: Your Journey Starts Here!

At the heart of PMP lies the invaluable connection between seasoned pharmacists (mentors) and pharmacy students (mentees). This bridge facilitates learning about diverse fields in pharmacy, including community, hospital, industry, and more. By attending our social events and connecting with our mentors, you will have a guide and a source of inspiration to help you navigate the multifaceted landscape of pharmacy. PMP strives to unlock your true potential as a future pharmacist.

As you embark on your pharmacy education journey, let PMP guide you toward a future enriched with knowledge, connections, and the unwavering support of a pharmacy community that believes in your potential. Join PMP, where mentorship is not just a program....



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**Pharmacy Mentorship
Program - UofT**

...it is the essence of a thriving phamily.

PHARM BUDDY'S GUIDE TO HEART-HEALTHY VIBES

By: Purvi Mahida, 2T6

Hey there, fellow life jugglers and heart enthusiasts! I'm your friendly pharmacist-in-the-making, and guess what? We're in this journey to heart-healthy living together. Balancing studies, life, and health can be a challenge, but fear not!

I've got some tips and insights that even a busy pharmacy student can squeeze into their schedule. Let's dive into the world of heart-healthy habits without turning our lives upside down!

1. Take Small, Mighty Steps:

No need to sprint – let's start with a stroll! Small changes can lead to big impacts. Begin by swapping out that afternoon sugary snack with some heart-loving nuts or fruits. Gradually, these mini-changes become habits that stick around for the long run.

2. Deskercise Breaks:

Who says studying has to be sedentary? Every hour, take a quick deskercise break. Stretch, do a few squats, or even a mini dance party – it's a great way to keep your blood pumping and make studying more fun!

3. Power Naps – Not Just for Babies:

Sure, pharmacy students are known for burning the midnight oil, but don't forget the magic of power naps. A quick 20-minute nap can recharge your brain and give your heart a mini-vacation. Dreaming of acing that exam? It's a win-win!

4. Love Your Greens (and Reds, and Yellows):

Eating for heart health is not about deprivation; it's about celebration – of vibrant, colorful foods! Fill your plate with a rainbow of veggies and fruits. These little powerhouses are packed with nutrients that love your heart back. Plus, they're delicious, and who doesn't want to savor a rainbow?

5. Hydration Game On:

Being dehydrated can make even the most exciting lecture feel like a snooze fest. Keep a water bottle handy during classes and study sessions. Sipping on water is an easy way to show love to your heart while acing those exams.

6. Tech-Free Zones:

With all the screens in our lives, our eyes – and hearts – need a break. Have a tech-free zones during meals and before bedtime. It's a small change that can make a big impact on your heart and overall well-being.

So, fellow pharm buddies, let's take a moment to embrace these heart-healthy habits. We might be juggling lectures, workshops, and mtm, but our hearts deserve some love too. Whether you're a pharmacy student or not, these easy lifestyle changes are the secret sauce to keeping our hearts happy while navigating the crazy adventure called life. Cheers to heart-healthy vibes and acing life – one heartbeat at a time! 🍌📚❤️



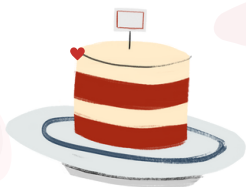
The Best Red Velvet Cake Recipe!

By: Sarah Rough, 2T6

When someone mentions Valentine's Day, what usually comes to mind? I can name two things: the colour red and chocolate!

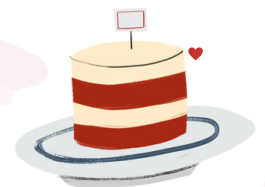
This red velvet cake is the perfect Valentine's Day treat for yourself, your friends, or your sweetheart! It is a super fluffy chocolate cake that just screams Valentine's Day with its bright red interior. Bonus, if you love cheesecake or cream cheese, the frosting is a cream cheese frosting! Whether you make this as a whole cake or cupcakes, I'm sure it will put you (and whoever sneaks a bite) in the Valentine's Day spirit!

Recipe Modified From: <https://divascancook.com/the-best-red-velvet-cake-recipe-easy-homemade-moist-with-southern-flair/>



The Recipe

The recipe makes two, 9-inch round cakes to make a two-tiered cake



Cake: Prep time: 15 minutes

Cook time: 30 minutes

Total Time: 45 minutes

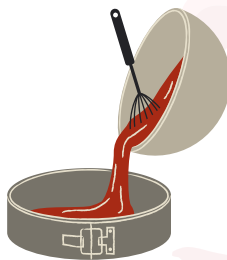
Frosting: Prep time: 5 minutes

Total Time: 5 minutes

Ingredients:

For the Cake:

2 cups of flour
1 teaspoon baking soda
1 teaspoon baking powder
1 teaspoon salt
2 tablespoons of unsweetened cocoa powder
2 cups of sugar
1 cup of vegetable oil
2 eggs
1 cup of buttermilk
2 teaspoons of vanilla extract
1-2 oz of red food colouring
½ cup of plain, hot coffee



For the Frosting:

16 oz of cream cheese, softened
1 stick of butter, softened
¼ cup of heavy whipping cream
1 teaspoons of vanilla extract
3 cups of powdered sugar (or to taste)

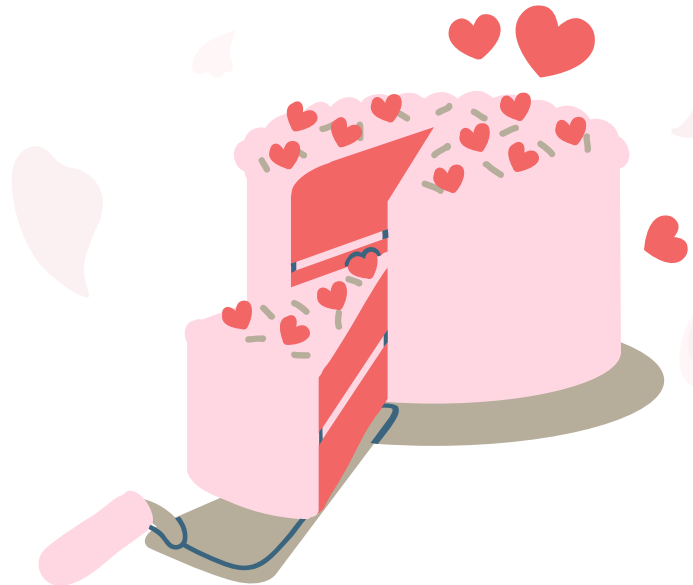


Cake Instructions:

- Pre-heat the oven to 325 Fahrenheit
- Grease two, 9-inch cake pans
- In a medium bowl whisk together the flour, baking soda, baking powder, cocoa powder and salt
- In another large bowl, combine the sugar and vegetable oil
- Mix into the sugar and oil mixture the eggs, buttermilk, vanilla and red food colouring until combined and then stir in the hot coffee
- Combine the dry ingredients with the wet ingredients in small increments until all is combined and the batter is thin in consistency
- Pour the batter in to each pan
- Bake for 30 minutes (If a toothpick was inserted, then it have moist crumbs on it to know it is done); Do not overbake the cakes
- Gently remove cakes from the pan and let them cool before frosting

Frosting Instructions:

- Beat the cream cheese, butter and heavy whipping cream until fluffy
- Stir in the vanilla
- Mix in powdered sugar in small increments
- Stir until all are combined and creamy
- Use it to frost your delicious cake!



CHOCOLATE CHIP BLACK BOTTOM CHEESECAKE

By: Fariha Hamid, 2T5



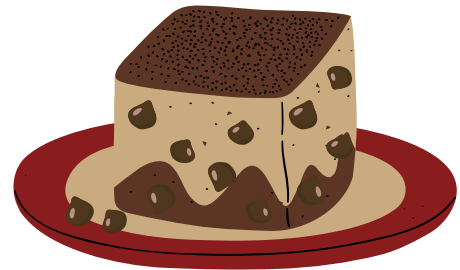
Chocolate Batter

- 1 egg
- ½ cup sugar
- 1 tsp vanilla extract
- ½ cup vegetable oil
- ¼ cup yogurt
- 1 cup + 2 tbsp all purpose flour
- ¼ cup cocoa powder
- ¾ tsp baking powder
- ¾ tsp baking soda
- ¼ cup lukewarm water
- ½ cup semi sweet chocolate chips



Cream Cheese Filling

- 500 gm cream cheese
- 300 ml condensed milk
- 2 eggs
- ½ cup yoghurt or sour cream
- 2 tsp vanilla extract
- 1 ½ cup semi-sweet chocolate chips; divided



Preheat 350 degrees Celsius, grease a 10" (4L) tube pan or line with parchment paper.

Filling: Beat cream cheese with an electric mixer at medium speed until fluffy, about 1 minute. Gradually beat in sweetened condensed milk until smooth. Add yogurt, eggs and vanilla extract. Beat well. Stir in ¾ cup (175 mL) chocolate chips. Reserve.

Batter: Beat eggs, sugar and vanilla in a separate large mixing bowl at medium speed using an electric mixer. Add oil and yogurt. Add the next 4 ingredients. Mix until well combined. Carefully stir in boiling water. Add chocolate chips and mix.

Pour into the prepared pan. Spoon cheesecake batter on top. Sprinkle with remaining ¾ cup (175 mL) chocolate chips.

Bake in a preheated oven for 60 minutes, or until a toothpick inserted into the cake comes out clean. Cool on a wire rack. Wrap well with plastic wrap and chill for 4 hours or overnight in the refrigerator.

HOW TO MAKE THE MOST OF YOUR APPEs



By: Joham Ahmad, 2T4

As a fourth year pharmacy student, I've noticed a stark difference between my APPE and EPE rotations. Contrary to the belief I held in third year, these rotations are not at all daunting. They are enriching and precious experiences that deserve your best efforts. In this piece, I describe three interrelated concepts that should be considered before entering APPEs.

1. Focus on the journey, not the evaluation.

Seize every learning opportunity in every rotation, even if that means putting your weaknesses on full display. Is there a complex patient available to work up? Volunteer to do it! Does your preceptor give you the option to complete an APPE presentation on a condition you've never heard of? Perfect! Allow yourself to be completely immersed in these valuable and fleeting moments. There are few times in life when mentorship is offered to you on a silver platter. Take advantage of this year, where you can freely explore areas for improvement under the comforting supervision of your preceptor. If you feel your patient work-ups could be more comprehensive, or you lack finesse when navigating literature, share these in the first week of your rotation. Center your learning objectives around hard and soft skills that you truly want to improve. Sharing your weaknesses does not make you vulnerable to a bad grade on your evaluation – in fact, your preceptor will commend your efforts to constantly improve your practice.

2. Take self-reflection seriously.

At some point or other, we've all phoned in on self-evaluations or self-reflections. However, you will quickly learn the value of this act during APPEs. For example, in the previous point I've written "center your learning objectives around hard and soft skills that you truly want to improve." How could you possibly know what these are without reflecting on your strengths, weaknesses, and interests?

Consider the patient care process – Collect, Assess, Plan, Implement, Follow-Up. As you are reading this right now, take a moment to reflect: how confident are you in your abilities to perform each of these steps? On a granular level, which skill or action are you most and least proud of? (E.g. Prior to the start of APPEs, I was least satisfied with my ability to conduct a systematic follow-up on patients. It was difficult for me to translate monitoring plans into actionable items. Now, I set reminders for follow-ups in my hospital email calendar and know the top 2-3 safety and efficacy parameters to check on their chart or ask in-person). Reflect thoroughly, reflect honestly, and reflect often. At the very least, take a solid 30 minutes to complete your midpoint and final evaluations.

- Bridge the gap between your current and future self.

Although you are still in the infancy of your career, APPEs is a formative time. If you hadn't already, you may begin to ask yourself: Where do I see myself in 5 years from now? Do I prefer the hospital environment, community pharmacy, or industry non-direct patient care? What do I value about my practice – frequent patient interaction, interprofessional collaboration, research?

As you ask yourself these questions, consider how you can use APPE rotations to bridge the gaps between your current and future self. If you are interested in research, do you have a research rotation scheduled? If not, are there research projects your preceptor is involved in that you can contribute to, either during or after your rotation? If not, you can always take the initiative to improve your critical appraisal and literature search skills while on rotation. The key to a successful APPE rotation is not to take on an overwhelming number of responsibilities, it is to find the responsibilities that are most meaningful to you. Not only will this provide you a running start on your career goals, but it will prevent you from burn-out as you are engaging in tasks that you sincerely enjoy.

GETTING READY FOR EPE-1: ADVISE FROM 2T6S FOR 2T7S

By: Elin Foulds, 2T6

As we commence 2nd semester, I am reminded of last year and the stress that came with taking my first pharmacotherapy course, tackling molecular pharmacology, and ‘learning how to be a pharmacist’ in MTM1. Reminiscing on the past, I see how helpful those courses have continued to be in my journey through 2nd year thus far, and how helpful MTM1 ended up being during my EPE-1 placement last May. We learn to use Kroll at school, and I was lucky to get a placement that also used Kroll as their Pharmacy Practice Management System (PPMS) and that immediately made me feel at ease in my placement.

However, there were aspects of my placement that didn’t go the way I was hoping they would, and that was ok. I think as a first-year who had never worked in a pharmacy before, I had expectations of what I would get to achieve during my EPE-1 placement that weren’t always met. Nonetheless, I worked hard, got a job at an independent pharmacy following my EPE-1 placement, and have continued to develop my skills as a pharmacy student. I can confidently say that I enjoy community pharmacy, despite not feeling so sure following my EPE-1 placement.

For the 2T7s who have EPE-1 coming up this summer, it’s important to remember that your placement is only one month in one type of community setting. If it doesn’t go the way you expect, don’t close the door.



You will have many more opportunities to learn if community pharmacy is something you want to do – from part-time jobs to EPE-2 and APPE rotations – you have time to figure it out.

My goal with this article is to provide you with some advice and remarks from 2T6s like me, who completed their EPE-1 rotation last summer. Some of us had an amazing experience, and some of us left our rotation with both positives and negatives to look back on. I think it’s important to share these thoughts from my classmates to give you an idea of what you might expect during your EPE-1.

I hope that our advice helps to answer some of the questions you may have about your upcoming EPE-1 placement.

I’d like to thank my classmates who chose to help me with this article. I could not have put this together without you!

What advice do you have regarding the EPE-1 ranking/selection process?

Only rank locations that you are willing to travel to and blocks that work for you. It's important to remember that you might get a block or location that's outside of your top 20. I got my 5th choice but would still recommend choosing at least 50 options to maximize your potential of getting an option you want. It would also be a good idea to read any Google reviews on the location and preceptor descriptions if provided on CORE ELMS. It's also helpful to talk to upper years who've worked there before!

- Anonymous

If you are trying to use your EPE-1 to get a summer job, you need to pick block 1. When I got there as a block 2 student, the block 1 student before me had already received a job offer to work at that location.

- Madeleine

Once I've been matched with a placement, what should I do before the 1st day?

Send a friendly introductory email to your preceptor and express your excitement about learning from them in the upcoming four weeks. In the email, ask them if there are any specific things to prepare before the first shift, what the dress code is, what supplies to bring, and details about your schedule. This proactive approach shows readiness, eagerness, and a commitment to making the most of the experience.

- Samir Kanji

If you are in one of the later blocks, ask your classmates if anyone has been at that location for their EPE-1 and get their perspective on the location to set realistic expectations for your work environment.

- Anonymous

Try to do some independent learning before your placement starts so that you're able to tell your preceptor what you're excited to practice doing.

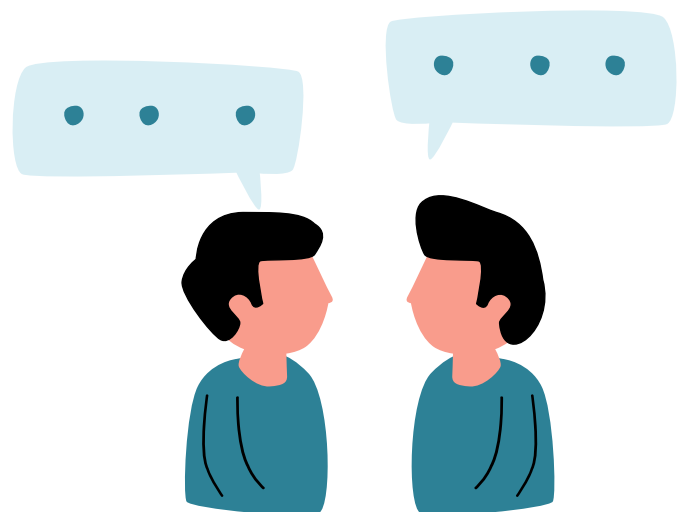
- Anonymous

What advice can you share about your specific EPE-1 experience?

It's normal to feel overwhelmed at first, especially if you have minimal experience in a pharmacy or with their PPMS. You aren't alone and you'll get through it!

My preceptor wasn't around that often, so I had to get used to different expectations for the pharmacists on duty, even if they weren't the ones marking me. I think this happens to a lot of students who are in big corporate pharmacies for EPE. My advice would be to have a conversation with the pharmacist on duty about what they would prefer for you to do when they are on shift so that you can set your expectations for that shift.

Once you feel comfortable with some of the tasks they've assigned you (e.g., filling prescriptions, putting orders away), ask for more responsibility! This could include minor ailment follow-ups, taking phone orders, and seeing how prescriptions are checked.





It's normal for patients to come into the pharmacy and make you feel bad because of something out of your control. A common example of this is when their prescription isn't ready on time. Learn not to take it personally and always make sure to speak to patients in a professional manner. It's ok if some days are harder than others, you'll be done before you know it!

- Anonymous; completed EPE-1 in a SDM.

I found that my preceptors followed my lead on how much I felt ready to do on my own. If you are excited to learn and put independent effort into the experience, I think you can get a lot out of it.

- Anonymous; completed EPE-1 in a small SDM.

The preceptor is a huge part of the EPE experience, so my experience was amazing because my preceptor was so willing to teach me and help me learn.

Ask so many questions! At the end of every week, my pharmacist would walk me through an OTC aisle and talk to me about the products. This was really useful for me, so I recommend asking your preceptor if they're willing to do that with you at the end of every week.

- Madeleine; completed EPE-1 in a SDM.

The most important thing is to be confident enough to ask questions. They know you just finished 1st year and more often than not, they are very happy to help you, teach you, and pass on their knowledge and experience.

It's important not to get discouraged when something doesn't go smoothly or if you make a mistake. You are still learning, and the important point is to learn from the mistake and try your best not to make it again.

Not everyone is a teacher and not everyone wants to tell you how to do everything. That's okay. One of our most important skills as pharmacy students is our ability to know where to look to find answers.

- Anonymous; completed EPE-1 in a SDM.

Attitude is everything! Approach your first experiential rotation with enthusiasm and an open mind. Your EPE-1 will provide you with a real-world glimpse into daily pharmacy practices. By having a positive attitude, your four weeks will go by very quickly as you observe how a community pharmacy operates.

Bringing a small notebook is very beneficial. Use it to jot down step-by-step instructions during explanations. This will help you remember the information and boost your confidence to try procedures independently in the future. It also shows your preceptor that you are there to learn and want to succeed as a pharmacy student.

Do not shy away from questions, especially about medications you haven't encountered in your coursework. Your preceptor is there to guide you. Use this time to understand medication details, potential side effects, and dispensing procedures. This is your first step into the real-world pharmacy setting. Embrace it with positivity, curiosity, and a willingness to learn. You are not just observing, you are actively contributing to your growth as a future pharmacist. Good luck on your experiential journey!

- Samir Kanji; completed EPE-1 in a community pharmacy in a grocery store.



APPE Abroad: Cell Engineering at Ritsumeikan University

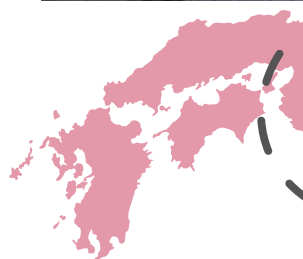
By: Al Amin, 2T4

From November 2023 to January 2024, I had the exciting opportunity to complete an international non-direct patient care (NDPC) rotation at the College of Pharmaceutical Sciences at Ritsumeikan University. Located in Kusatsu, Japan, my role was to work in Dr. Tatsuyuki Takada's Cell Engineering Lab to conduct research on endemic species conservation and the impact of BPA on Hox gene expression. I know what you are thinking, this sounds complicated, but the entire experience was anything but that. The international APPE rotation provides students with the opportunity to co-create with international scholars while building networks that last a lifetime.

Much of my time spent in the lab involved observing various lab techniques such as flow cytometry, antibody staining, in situ hybridization, and more. While you may not directly lead your own project in the lab, you develop strong familiarity in international pharmaceutical research and intra-professional collaboration.

Aside from the unique research/work/global health experience, the APPE rotation abroad allows you to explore a new culture and traditions. I have had such a wonderful time exploring the many different temples, markets, restaurants, and attractions the country has to offer. Thankfully the program coordinator from Japan helps you along all steps. From seeking accommodations to navigating transportation, Professor Amagase is a great resource that came from participating in this experience.

Please note that my comments are limited to my experience of a rotation in Japan. The support you get seeking accommodation and such may not be the same if you pursue a rotation in another country. Also, any of the information I provide may be subject to change on a yearly basis so take everything with a grain of salt and/or seek confirmation of information from relevant stakeholders, like OEE, when you decide to apply.



Continued: APPE Abroad

How to Pursue APPE Abroad:

In your third year of the PharmD program, a survey of interest goes out around the beginning of December from OEE where students will be able to review and rank their selections of available international rotations. Selection is based on a randomized matching system, so it really is up to luck to decide if you get the rotation or not based on supply and demand. There is a slight exception to this that I discuss below when explaining priority enrolment. There is a tight deadline to submit your rankings so be sure to check your emails and submit accordingly. Keep in mind that rotations are subject to change very year based on availability so you may not see the same rotation offered in a subsequent year.

The blocks of rotations can also change on a yearly basis so don't make any vacation plans until see what blocks/rotations are offered.



Priority Enrolment

Most students do not know that if you are completing the certificate in Global Studies in Pharmacy, you are given priority enrolment for specific APPE rotations that have a focus on Global/ Indigenous/ Migrant and or Refugee health which may be local, provincial, national, or international. This includes any of the international APPE rotations that are outlined in the survey provided by OEE in early December.

If you know that you want to do an APPE abroad and/or have an interest in global studies, I highly recommend enrolling in the certificate program. Enrolment in the certificate does not guarantee that you will get a spot, but I do think it increases your chances. There are many other certificate requirements you must complete so take a look at the faculty website prior to committing.

To declare participation in the program all you must do is email globalu.phm@utoronto.ca prior to September 15th of the calendar year when starting your third year in the program.

Cost

One of the drawbacks of an APPE abroad is that all funds must be paid out of pocket. This includes transportation, accommodation, food, visas (if applicable), and more. You can apply for financial assistance through the Shaping Student Life and Learning fund and/or CIE International Experience (IE) awards. However, funding is strictly limited and not guaranteed for all applicants so please consider the significant expenses associated with a rotation abroad prior to applying. Should you apply for funding, apply as early as possible, ideally as soon as you get matched, to ensure there is enough time to process your application. To help put things into perspective my roundtrip flight ticket to Japan was roughly \$2,300 CAD, my apartment was \$2,100 CAD, I spent roughly \$10-20 CAD on food everyday (this accounts for three meals a day, but that depends on where you decide to eat), buses/trains range from \$2-10 each ride. Depending if you want to travel and do touristy things on the weekend your total spending can range anywhere from \$5,000 - \$10,000 CAD.

After Getting Matched to an APPE Abroad:

There are a bunch of things you must complete prior to embarking for your trip. Secure things like visas, accommodation, and flight tickets as soon as possible to help you save some money. You should be able to get some support from whoever is hosting your rotation to secure these things. You must also register your trip with Safety Abroad and secure a comprehensive travel health insurance prior to departing.

Continued: APPE Abroad

Interesting Things to Know About Japan:

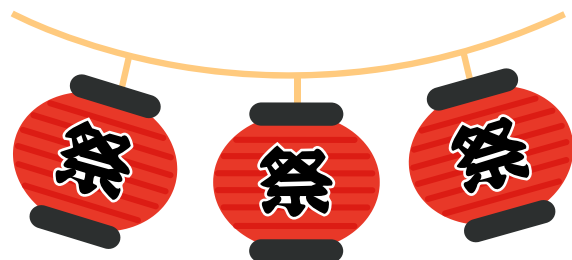
There are many cool things in Japan that I didn't know about until I started my rotation. For example, when purchasing commercial goods like clothing and souvenirs, you do not have to pay tax on your purchases if you show a valid passport. This does not count toward restaurants and groceries. People line up for the subway here and are super respectful to wait for all passengers to get off before boarding (Toronto could never lol). The subway is also pretty much always on time and accurate. If a bus is supposed to leave at 3:50pm, you best believe that it will on the dot. I recommend also purchasing an ICOCA card, like a PRESTO card when you arrive to Japan. They can be purchased from most ticket machines at train stations in Japan, just look for a blue platypus. Alternatively, you can load the card on your phone using the app or PASMO. While we have Starbucks available on every block in Toronto, Japan offers a wide variety of vending machines at almost every block for drinks, toys, snacks, and even full hot meals.



I recommend creating a list of places you want to visit prior to your arrival. However, I would try and be flexible with your schedule and commitments because things might change when you get here. For example, in Japan we had a few spontaneous outings with our lab members, so I'd encourage you to prioritize hanging out and getting to know your peers rather than doing your own travelling all the time.

I found this experience to be such an incredible opportunity for learning and international partnership. It is a great way to learn about global health and the role that pharmacy and research can play to lead initiatives in it. I know you may all be second guessing and overthinking this

type of opportunity, but I say go for it. It is unlike any other experience you will have in pharmacy school and will surely leave you with such incredible lasting memories.



THE SITUATIONSHIP

By: Radhika Thakkar, 2T6

A Modern Romeo and Juliet

Valentine's Day is just around the corner, and love is in the air. That can only mean one thing: it's time to start thinking about meaningful gifts for the *love of your life*.

While expressing affection is straightforward for friends, family and significant others, what about those in-between relationships?

Here's a thoughtful gift guide for those who find themselves in a "casual-hookup-no-label-not-dating-but-not-friends" scenario, often referred to as the unfortunate *situationship*.

Words of affirmation

Since the man/woman of your dreams has struggles when it comes to committing to a relationship—hence the situationship, it's time to give a quick easy DIY gift idea that only requires two things: pen and paper.

Mommy issues, daddy issues or anything in between, it can be exhausting to constantly reassure your situationship. Maybe a jar of handwritten affirmations might just do the trick.

Burner Phone

Yes, you've taken steps like blocking them and keeping your distance, but what about simplifying the communication process? This Valentine's Day, consider giving your situationship a burner phone.

It's a discreet way to maintain contact without the hassle of turning off locations and you can throw them out once you've had enough.

Hearing aids

The "What are we?" question can often be elusive in situationships.

Maybe they just aren't hearing you right. Solve the mystery by gifting them hearing aids this Valentine's Day. With improved hearing, perhaps they'll finally hear your question and provide the answer you've been waiting for.

"Couples" Therapy

Some situationships could use a little extra help. This one doesn't require much explanation. Consider gifting a session or two with a couple's therapist that specializes in couples that aren't couples to navigate the complexities of your situationship.

THE SITUATIONSHIP

A Modern Romeo and Juliet

By: Radhika Thakkar, 2T6

Alphabet Book

Ghosting, the sudden and complete cessation of communication, can be disheartening. It leaves you wondering if you did anything wrong. Maybe it's time for your situationship to go back to the basics and learn how to form words and sentences. Remind your situationship of the importance of communication with a thoughtful gift this Valentine's Day – an alphabet book. It's a playful way to encourage them to brush up on their communication skills starting with the basics.

Ankle monitors

In situationships, emotions can complicate matters. The once casual, no-strings-attached situation can fall apart when one of you catches feelings. Whether it's you or them that falls first, it's never a good ending.

If you both agree to keep things casual but find that feelings are creeping in, consider a unique solution. This Valentine's Day, gift each other pink heart shaped ankle monitors to establish a foolproof "no-contact" plan, ensuring a healthy emotional distance. Now, neither of you can get within a 100-meter radius of each other, offering a lighthearted approach to maintaining boundaries.

P.S. This is all for jokes, but maybe this Valentine's Day focus on your mental health, gift yourself a box of chocolates and drop that toxic situationship.



*Happy
Valentine's
Day*

HISTORICAL TEATIME: IN SEARCH OF IMMORTALITY

By: Isabel Wang, 2T7

I like to think that, had I not come to the Leslie Dan Faculty of Pharmacy, I might have become a practitioner of traditional Chinese medicine. The history of medicine has always fascinated me, after all, and what better example of living history being practiced than TCM? It certainly would befit me, in all my Ming dynasty brocades and enameled hairpins. When I was sick as a child, my parents took me to a TCM shop a few times—there, a graying man with an impressive beard would examine my inflamed tongue and throat, and prepare a mix of herbs and roots before boiling the most foul-tasting concoction known to mankind. I'd have to drink it out of a paper coffee cup, still piping hot. I'm surprised I still look upon TCM fondly with how awful it tasted.

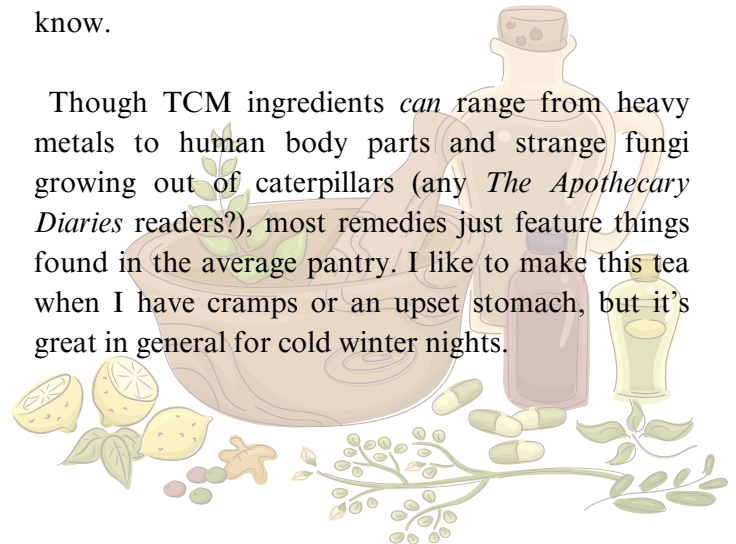
TCM is a field that has thrived to the modern day thanks to thorough documentation. The archetypical TCM text is the 本草纲目 (ben3cao3gang1mu4) or the Compendium of Materia Medica, a pharmacopoeia compiled by the Ming dynasty author Li Shizhen, but similar texts from far-earlier dynasties have been preserved as well. It is, however, notable that the 本草纲目 is far from safe in its recommendations: it asserts that quicksilver, or liquid elemental mercury, is not toxic, but simply unsafe for the human body in large quantities. After all, has it not been a component in immortality elixirs for thousands of years? Is it not the product of heating cinnabar, the most prized of ores?

It is no small wonder, then, that many Chinese emperors have historically died of immortality elixir poisoning. The Yongzheng Emperor, who reigned in the Qing dynasty, is the last emperor to be known to have died of toxicity from immortality elixirs; the first recorded was Qin Shi Huang, the emperor who first united China.

Whereas their Western contemporaries sought to transmute base metals to gold, Chinese alchemists tried to cure senescence. Evidently, they were not successful in this regard. Every imaginable avenue was explored: the Jiajing Emperor, ruling from 1521 to 1567, was notorious for pursuing immortality through the menstrual blood of young women, extracting a product known as 红铅 (hong2qian1) or “red lead”. His death was likely due to mercury toxicity—one of the few emperors to have fallen to such a fate in the Ming dynasty.

However dangerous, these immortality elixirs have had their own strange merits. Immortality, after a sense, is a state of permanence, which can even be pursued in death. Preservation of corpses is a difficult task, even in the modern day, and Chinese artifacts such as suits of jade were thought to be used in an attempt to prevent the decomposition of human remains. Many of the heavy metals in immortality elixirs, such as mercury, lead, and arsenic, were found in the body of Xin Zhui, Lady Dai, who died circa 169 BCE—nearly 2200 years ago—and yet her body has been preserved well enough that her fingerprints are still distinct, and an autopsy performed in the modern era was able to identify her last meal. Perhaps immortality elixirs were not meant to grant eternal life to the living, but rather undying to the dead. We will never truly know.

Though TCM ingredients *can* range from heavy metals to human body parts and strange fungi growing out of caterpillars (any *The Apothecary Diaries* readers?), most remedies just feature things found in the average pantry. I like to make this tea when I have cramps or an upset stomach, but it's great in general for cold winter nights.



HISTORICAL TEATIME: IN SEARCH OF IMMORTALITY

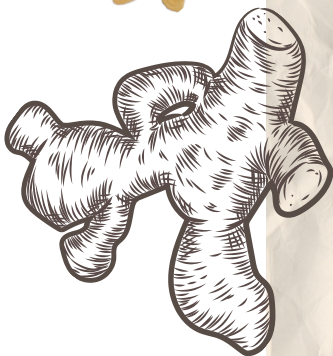


GINGER TEA RECIPE

You will need:

- A heaping tablespoon of brown sugar, or more to taste
- 4 large slices of ginger (optionally cut into strips)
- (optional) 5 or so goji berries
- (optional) dried mandarin orange peel (can be substituted for the zest of a navel orange)
- (optional) 2 dried jujube dates, cut in half and cored
- 500 mL water (about two cups)

Put all ingredients into a saucepan and bring to a boil, stirring to ensure that the brown sugar is melted. Upon boiling, lower the heat to a simmer for five minutes. Strain if desired, or ladle directly into mugs. Serve while hot.



An Artist's Muse

Oh to be an artist's muse
To inspire creation
A drawing or a painting
A poem dedicated
How will the creator create?
The tilt of a jaw
And the curve of one's eyes
Hidden in the brushstrokes
Weaving between the charcoal lines
The up tilt of a nose
The veins in one's hands
Sculpted out of marble, out of clay
The artist continues to create
The sparkle of one's eye
The brightness of a smile
Typed and written between the lines
In the books and their spines
To be an artists muse is to cheat death
Immortalized in these material things
One might return to that soil
But one is reborn and never dies
Because one was once a beauty in a creator's eye
- SE, 2T7



This Drug Is Indicated for Sustainability: Green Chemistry and Pharmaceuticals

By: Huy Pham, 2T4

Sustainability is a pressing topic. This is especially true in healthcare, which is responsible for 4.6% of total greenhouse emissions in Canada. Prescription medicines alone account for 21% of total life cycle healthcare GHG emissions, with pharmaceuticals as whole representing the largest expenditure category by emissions with 25% of total emissions.¹ The ecological impact of pharmaceuticals is not restricted to greenhouse emissions. The production of pharmaceuticals has a high environmental factor, meaning a high volume of waste is generated during the production process (25 – >100 kg of waste per kg of drug product).² In addition, pharmaceuticals excreted from the human body via urine will find their way through sewage treatment plants that are likely incapable of removing pharmaceuticals and its metabolites, effectively enabling their entry into natural waterways. The issue of pharmaceuticals in aquatic environments is so dire that a study of pharmaceutical pollution in the world's rivers found that over a quarter of the sampling sites had concentrations of ≥ 1 active pharmaceutical ingredient that exceeded what is considered safe for aquatic organisms or raised concern for antimicrobial resistance. The authors described the issue as posing “a global threat to environmental and human health”.³ Improper disposal of pharmaceuticals also has ecological impacts, as their presence in landfills as solid waste can result in the leaching of active pharmaceutical ingredients into the soil. Finally, the incineration of pharmaceutical waste released pollutants in the atmosphere, lowering the overall air quality.

One possible solution can be found in green chemistry. Green chemistry is an area of chemistry that primarily focuses on the elimination or minimization of the use and production of hazardous materials. Green chemistry has twelve principles: (1) preventing waste, (2) atom economy (the percentage of atoms in the reactants are incorporated into the final desired product(s)), (3) less hazardous chemical synthesis, (4) designing safer chemicals, (5) safer solvents and auxiliaries, (6) design for energy efficiency, (7) use of renewable feedstocks, (8) reduce derivatives, (9) catalysis, (10) design for degradation, (11) real-time analysis for pollution prevention, and (12) inherently safer chemistry for accident prevention.

There are several metrics of green chemistry. One can assess a process's atom economy in line with Principles #2 and #8.⁴ This method regards any material (including protecting groups, catalysts used in stoichiometric quantities, and acids or bases utilized for hydrolysis) that is integrated into an intermediate or product as a reactant. There is the assumption of a complete and balanced reaction when in actuality, some of the reactant atoms may remain as unreacted reactants or be lost in side reactions. Alternatively, the chemical yield of the process can be used as a metric for green chemistry. It is the quotient of the actual mass or moles of the desired product over the theoretical mass or moles of the desired product. The concept of atom economy and chemical yield can be incorporated into another metric called reaction mass efficiency. Reaction mass efficiency as defined by Curzon can be calculated either as the percentage of actual mass of desired product to the mass of all reactants or as the product of the atom economy, chemical yield, and the inverse of the excess reactant factor (itself the quotient of the sum of the stoichiometric mass of reactants and the excess mass of reactants and the stoichiometric mass of reactants). The generalized reaction mass efficiency as defined by Andraos accounts for every material involved in a chemical process and is the quotient of the mass of desired product and the sum of the mass of the reactants, catalysts, reaction solvents, and work-up/purification material.⁵

Chemical processes may be analyzed through life-cycle assessments, which examines the environmental impact of products throughout their life-cycle. A cradle-to-grave life-cycle assessment analyzed the ecological impacts of raw material acquisitions, product synthesis, use and disposal, in addition to intermittent transportation.⁶ Other metrics include the reactant and product toxicities (invoking principles #3 and #4), occupational hazards, energy usage, and degradation potentials (in line with principle #10).⁴

One example of green chemistry being applied to the manufacturing of pharmaceuticals is the anti-diabetes drug sitagliptin. The initial synthetic route involves the formation of a beta-lactam intermediate that overall generated 60 kg of aqueous waste and 205 kg of organic waste per kg of sitagliptin synthesized. The synthesis has an overall yield of 45%. An alternative route involves asymmetric hydrogenation to reduce aqueous waste by 97% and organic waste by 68%. The last step of the process was further refined to utilize transamine rather than rhodium-catalyzed asymmetric hydrogenation, avoiding the use of the extremely rare metal and increasing yield by 10–13%.⁷ Another drug for green chemistry principles has been applied is paclitaxel. The process of obtaining paclitaxel initially required extraction from Pacific yew tree bark then a semi-synthetic route that employed a multitude of hazardous reagents and solvents. Bristol Myers Squibb would later develop a green synthesis route that used tissue cultures of *Taxus* cells. Compared to the semi-synthetic route, the tissue culture route eliminated several steps and avoided the use of a plethora of hazardous solvents.⁸

Green chemistry addresses the ecological impacts associated with pharmaceuticals and provides a pathway towards a more sustainable future. Its principles have already found applications in pharmaceuticals and will expand into other aspects such as drug discovery and formulations.

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Further Readings

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An Infectious Cancer Treatment: Overview of Oncolytic Viruses

By: Huy Pham, 2T4

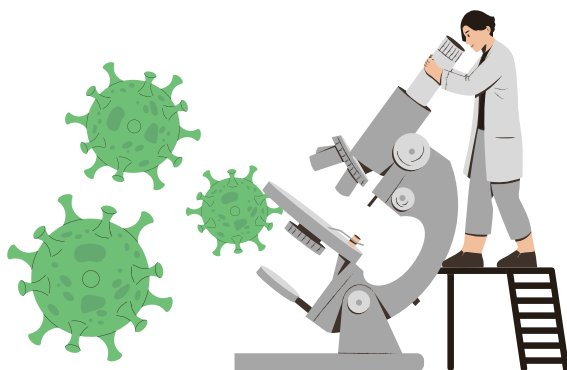
Oncolytic viruses are a class of immunotherapy that employs viruses that specifically target cancer cells to induce their lysis. Oncolytic viruses include a wide range of DNA and RNA viruses that may occur naturally or be created through the genetic engineering of naturally non-oncolytic viruses.¹ These genetic modifications typically involve reducing pathogenicity via gene deletion, the enhancement of the virus's lytic potential, or the enhancement of immunogenicity. The more commonly utilized viruses include herpes simplex virus type 1 (HSV-1), oncolytic adenovirus, and oncolytic pox virus.²

The mechanism of action of oncolytic viruses has two aspects. The first aspect is the infection of cancer cells and subsequent lysis due to viral self-replication. The new viruses released from the lysis proceed to infect more tumour cells. Local inflammation might also be induced, which can cause destruction to the tumour microenvironment. While it is possible for an oncolytic virus to infect healthy cells, these cells have response pathways absent in cancer cells that are capable of inhibiting viral propagation. The second aspect is the release of tumor antigens and cytokines to recruit and activate tumor-infiltrating immune cells, thereby stimulating strong systemic antitumour immune responses.³

There are several approaches in genetic engineering to enhance specificity. One way is to reprogram virus particles to be dependent on proteases secreted by cancer cells for their activation.

Matrix metalloproteinases are notable for being over-expressed in human cancers. Oncolytic viruses may also be engineered to be bound to target receptors expressed preferentially on cancer cells but to their native target receptor(s). The transcription and replication of viruses could be modified to be preferentially dependent on tissue- or cancer-specific promoters. Alternatively, oncolytic viruses may be attenuated to exploit the accumulated defects in innate immunity functions. The efficacy of these viruses may be enhanced through the addition of genes that express prodrug convertases, pro-apoptotic proteins or immuno-activating proteins.⁴

Many routes have been investigated for the administration of oncolytic viruses. The most common route is intratumoural delivery. The direct administration at the tumour enables a high concentration at the tumour tissue and precise control over the viral concentration. It also limits any adverse event due to off-target and non-target effects. It is particularly useful for surface tumours like melanoma but less so with deeper tumours. Intravenous administration enables systemic coverage and is ideal for situations where direct administration of oncolytic viruses to tumours is difficult and where metastases are present. It is also relatively simplistic and convenient. However, this route necessitates highly selective tissue targets and has a relatively greater risk of toxicity. Intraperitoneal administration has been investigated and is ideal if one is targeting organs in the abdominal cavity, though the rate of absorption is slower compared to intravenous administration. Intrathecal administration is ideal for (and restricted to) central nervous system tumours. Subcutaneous administration has great ease of operation but its use is limited to small animals where veins are difficult to find.²



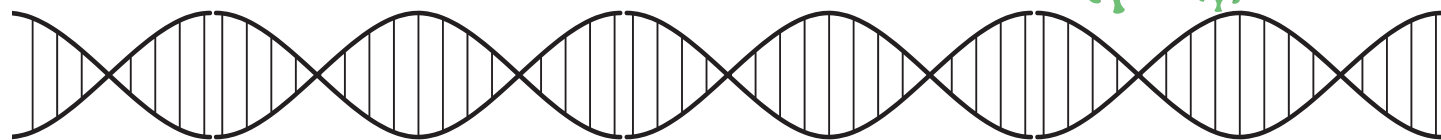
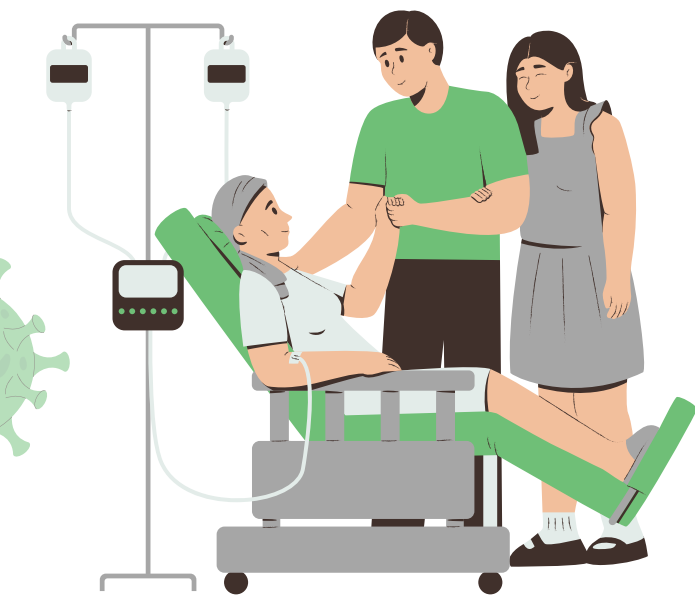
Oncolytic viruses have certain advantages over other therapeutic modalities. For instance, their targeting of multiple oncogenic pathways and multiple modes of cytotoxicity limits the probability of resistance being developed. In addition, the in situ amplification as a result of viral replication enables the increase in virus dose over time. This is opposed to the decrease over time seen in small molecules as a result of drug metabolism and excretion. Finally, their selectivity to tumour cells and relative non-pathogenicity means that systemic toxicities should be at a minimal.¹

However, this therapeutic modality is not without challenges, one of which concerns host immunity. The antiviral response generally occurs more rapidly than the antitumour response. Oncolytic viruses may be neutralized by antibodies as part of humoral immunity if the immune response is too strong. This issue can be resolved through transient immunosuppression or shielding via cell carriers, capsid changes, or polymerization.^{4,5} The biosafety of oncolytic viruses is a concern as there is a risk of viral shedding and unintentional transmission to healthcare providers. Storage necessitates the use of -80°C freezer units. Preparation and handling of oncolytic viruses require a sterile biosafety cabinet.⁵

Some oncolytic viruses currently approved for clinical use include Oncorine (H101), Imlygic (talimogene laherparepvec, T-VEC), Delytact (teserpaturev/G47Δ), and Adstiladrin (nadofaragene firadenovec-vnecg). Imlygic was the first oncolytic virus approved by the FDA and is an oncolytic herpes virus indicated for Stage IIb-IVM1c inoperable melanoma. Oncolytic viruses are generally well-tolerated with the common adverse effects having fever, fatigue, flu-like symptoms and injection site reactions.^{2,3} None of these are currently approved in Canada though the hope is that the presently approved therapies enter the Canadian market during the next decade as well as the introduction of many other oncolytic viruses into clinical trials and into market.

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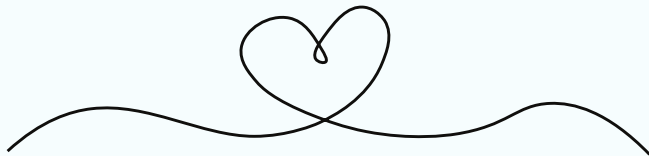


We Are Already on Stage: Review of Revue Starlight: The Movie

By: Huy Pham, 2T4

“The train will go to the next station without fail —
Then what about the stage?
What about you?”

Gekijōban Shōjo ☆ Kageki Revue Starlight (Revue Starlight: The Movie) is a sequel film for the anime series and serves as the concluding act to the story (at the very least, the anime story). The movie follows nine students at Seisho Music Academy as they approach their graduating year. The movie, and the series as a whole, has elements of Takarazuka Revue, a Japanese all-female musical theatre troupe. Specifically, the series has “revues” that one can describe as “close-combat musical theatre”. The influence of the Takarazuka Revue is also found in other media properties, specifically The Rose of Versailles, Revolutionary Girl Utena, Sailor Moon, and Swordfighter Peach.



The nine students/Stage Girl of focus, collectively referred to as the “Kukugumi” by the fandom, are as follows: Karen Aijo (CV. Momoyo Koyama), Hikari Kagura (CV. Suzuko Mimori), Mahiru Tsuyuzaki (CV. Haruki Iwata), Claudine Saijo (CV. Aina Aiba), Maya Tendo (Maho Tomita), Junna Hoshimi (CV. Hinata Sato), Nana Daiba (CV. Moeka Koizumi), Futaba Isurugi (CV. Teru Ikuta), and Kaoruko Hanayagi (CV. Ayasa Itou).

The overall plot is somewhat disorderly upon first watch so encores may be needed (at least, someone seems to think so since there are still theatre screenings to this day despite the original run and Blu-ray release occurring in 2021). After an opening sequence involving a giraffe running in a desert and yelling about how he won't make it (confusing, wakarimasu), the audience are introduced to the Kukugumi san Hikari and their plans after their graduation. There are also intersplitted flashbacks to a younger Karen and a younger Hikari's first meeting. Soon, while riding the subway on their way to an audition for a national theatrical troupe, their train gets separated and these girls are suddenly thrust into a battle.

Rest of the movie can be described as essentially the continuation of the childhood story of Karen Aijo and her promise with Hikari after separating, with revues performed by the rest of the Kukugumi being interwoven, all ending with a spectacle.



We Are Already on Stage: Review of Revue Starlight: The Movie

By: Huy Pham, 2T4

The highlights of the movie are the revues themselves, each with their accompanying song. First is the Revue of Annihilation, an 1 vs. an uncertain 6 to the tune of “wi(l)d-screen baroque”. Then, there is the Revue of Resentment, a fight between childhood “friends” on the “Selfish Highway”. Afterward, the audience is brought to the Olympics with the Revue of Co-Stars, which will cause a “MEDAL SUZDAL PANIC◎○●”. For the next act, the Daiba Movie Company presents the Revue of Hunting, accompanied by the intense “Pen:Power:Sword”. This is succeeded by the four-act play about an eternal rivalry, the Revue of Souls, featuring “A Beautiful Person, Or Perhaps It Is a Love Song”. Lastly, there is the finale as the Last Line is spoken with a “Super Star Spectacle”. A mention should be made for the end credits song, “Watashitachi wa Mō Butai no Ue”, which translates to “We Are Already on Stage”, a jazzy, energetic song by all nine of the characters/voice actors. The accompanying revue songs have been performed in a live orchestral concert setting, where the intensity of the songs has heightened for certain sections.

“The stage design of the revues is noteworthy. For example, the Revue of Resentment has a Japanese-style background that has a yakuza setting in one part and a cabaret club in another, culminating in a head-on bout on incoming trucks. While the Revue of Annihilation has adjacent trains bringing in stage props like the lights and the weapons. The establishing shots also provides the audience the vast scale of the stage the girls are performing on. An interesting aspect in some of the scenes is that it displays an incorporation of elements of a performance theatre into a train station. For example, there is an overhead sign that directs someone to rooms such as the theatre lobby and the stage; the dressing rooms are at Platform 7-10, the stage controls at Platform 3 and 6, costumes and wigs at Platform 4 and 5.

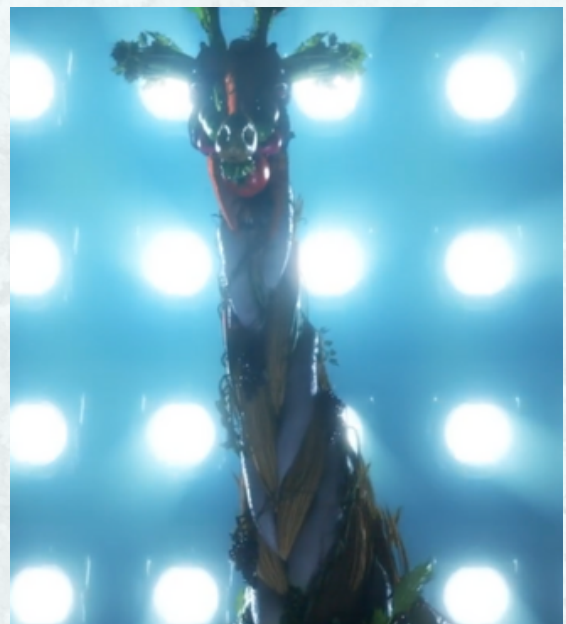
There are also some Easter eggs to the schools outside of Seisho that are featured in stage plays and the mobile game, as well as a possible teaser to the yet-to-be-released visual novel.

The very last section of the movie does immediately become very metatheatrical.

Specifically, curtains open and the Stage Girls directly look at the audience through the fourth wall. The audience is watching. The selfish and greedy audience desires to see their stage.

Audience close, the lights hot, the stage scary.

Gekijōban Shōjo ☆ Kageki Revue Starlight is a musical experience that can serve as an introduction to the Takarazura Revue. Granted, this member of the audience has yet to watch a production by Takarazura though intends to in the near future. The movie also got me thinking, the train will go to the next station without fail. Then what about the stage? What about us?



Why Democracy?

By: Vidish Upadhyay, 2T4

The troubles we face as a society are innumerable, this is obvious. We rely on our democratic institutions to take our impetus and create change through means of suffrage. When change does not come, we accost our politicians and government (who are rightly to blame) and expose their incompetence, hoping for true progress. Our indignancy towards our politicians is well deserved – but with true criticisms come misguided attacks aimed at the flag of democracy. For example, when we propose higher wages and fairer working standards for nurses, we are often met with stagnation and bureaucratic platitudes from our leaders that results in no change. To be fair, most people don't jump to the idea of abandoning democracy, but you could flirt with the thought of it. Why wait for parliament to prepare, debate, and litigate upon a bill just to kill it in the end despite the fact most citizens are in favor of it? Is this not against democratic principles?

There's no simple answer, and I can relate to the anger felt by those affected by the passing or unpassing (is that a word?) of a bill that they so ardently supported. In this case, we are fighting the institution of democracy, not the idea itself. Anything created by human hands, whether tangible or not, is inherently flawed. But to attack democracy in the name of bringing systemic change is contradictory in nature. What I'm saying is that we should fight to change the institutions of democracy, without blighting its nature. No one is making the claim that democracy is perfect, undoubtedly it will always be flawed if malicious agents are present within the voting population. But with proper education and reinforcement of its core tenants, we can see meaningful change without calls for other forms of governance.

If tomorrow Canada enters a dictatorship with a just leader, one that emphasizes freedom and equality above all else, can we say we are better off? What if we had a leader, although autocratic and subject to their will and their will alone, made changes for the betterment of all individuals? Provided housing for all, lifted the economy beyond its means, significantly reduced crime, established a robust healthcare system, etc. What argument can you make in favor of our former democratic nation?

Can we guarantee their successor will be just as benevolent? Democracy avoids the formation of autocrats, whether cruel or kind. Whether we live in a dictatorship or a democratic society, suffering falls on all in varying degrees. Democratic nations are unable to prevent such harm, but the goal of democracy is to minimize turmoil while preserving liberties and freedoms to their fullest potential. While we would thrive in a just autocracy mentioned prior, we are stripped of the very tools to protect us from tyranny. Freedom of expression and speech, freedom of the press, and freedom of knowledge. "Absolute power corrupts absolutely," is a hex cursed on those wielding ultimate power, even those with noble intentions. "You die a hero or live long enough to see yourself become the villain," is another suitable quote.

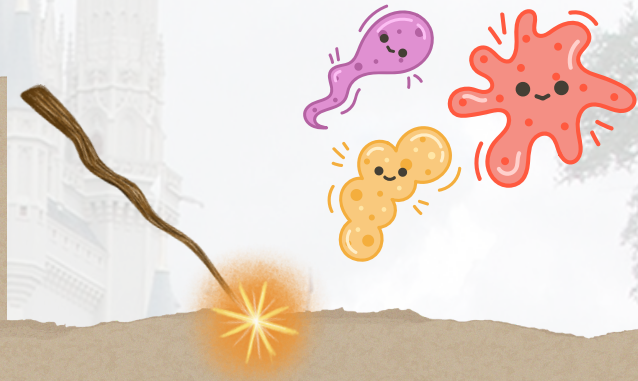
In the end, I believe we must focus our resolve towards democratic principles by strengthening our political institutions. While we have every right to feel anger towards those in power, we must remember that the best vehicle for progress is one that profits from conciliation rather than separation. We aim to build better democratic institutions by working together, not by departing from the very ideas that enable our freedoms.



ONCE UPON A TIME ...

*In a teeny-tiny kingdom, where wizards stand,
Protecting our body, a magical land.*

*Monsters hide with many tricks
Seeking ways to make us sick...*



*...But fear not, for a spell is near,
It's a **vaccine!** Whose magic works
strong and clear.*

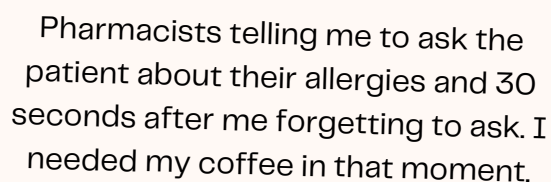
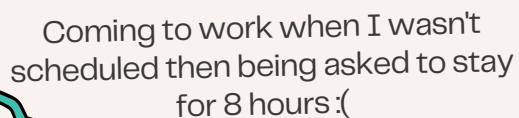
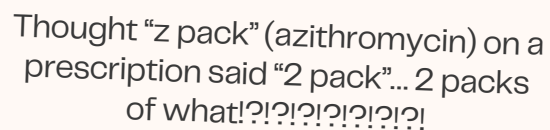
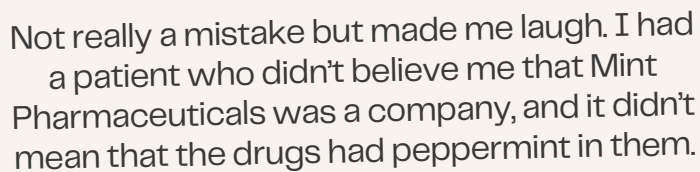
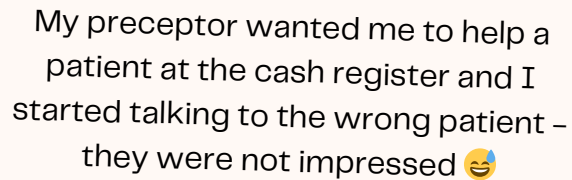
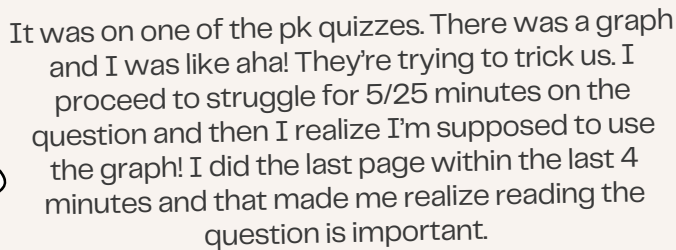
*The vaccine tells them,
"Here's a way,
To keep those monsters far
away."*

*The vaccine teaches where to
fight and look
It's kind of like the perfect
"spell book"*

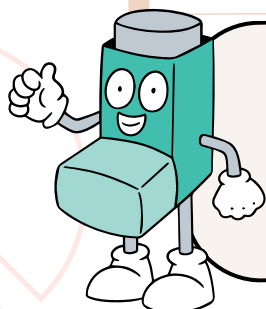
*So our wizards practice their
chants and brews,
Preparing for the monster
crews.*

*When monsters come with
their scary breath,
The wizards fight to avoid
our death.*

*A vaccine is like a magical song,
It prepares our wizards and makes **us** strong.
For in this kingdom, we will win,
Against the monsters, **let the battle begin!***



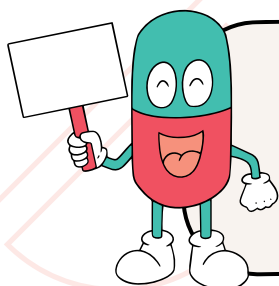
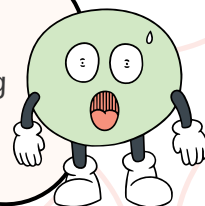
RxFAILS: Unplugged pt. 2



Thought the person picking up a female patient's meds was her husband....he was her son. Poor guy didn't deserve that!

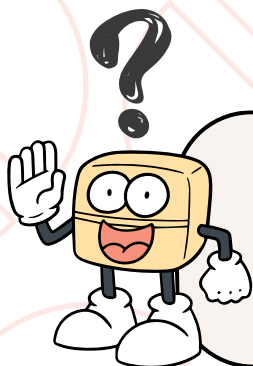
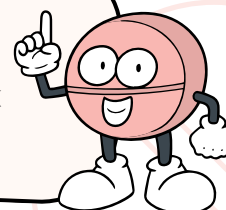


Letting a patient know we had a medication in stock when in fact we didn't... they were not too happy coming back 20 minutes later with no medication ready



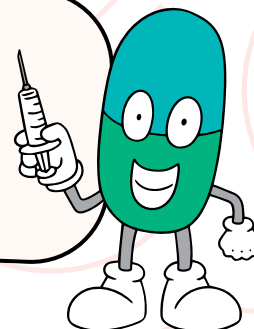
Confusing Advil with Acetaminophen in my interaction

Confusing bupropion and buprenorphine during a medscheck



Compounding a cream and realizing after I finished the powder expires in 10 days

I blanked out on an exam's short answer section so bad I used my leftover time to draw a cat in my answer booklet :(



BEHIND THE LENS



Clara Chen, 2T6



Hitisha Solanki, 2T5



Bakhshish Brar, 2T5



Sheena Ye, 2T6



Havane Uluturk, 2T5



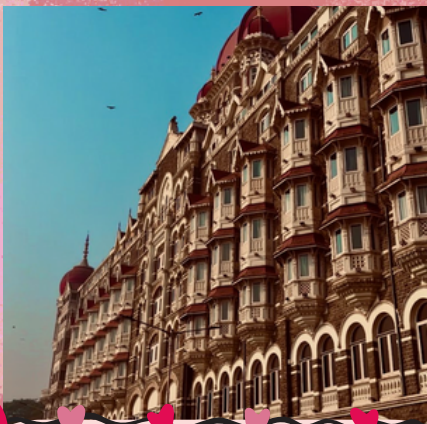
Deep Shah, 2T6



Zinab Mahdi, 2T5



Bakhshish Brar, 2T5



Purvi Mahida, 2T6



Sheena Ye, 2T6



Zinab Mahdi, 2T5