THE MONOGRAPH

VOLUME 23, ISSUE 4

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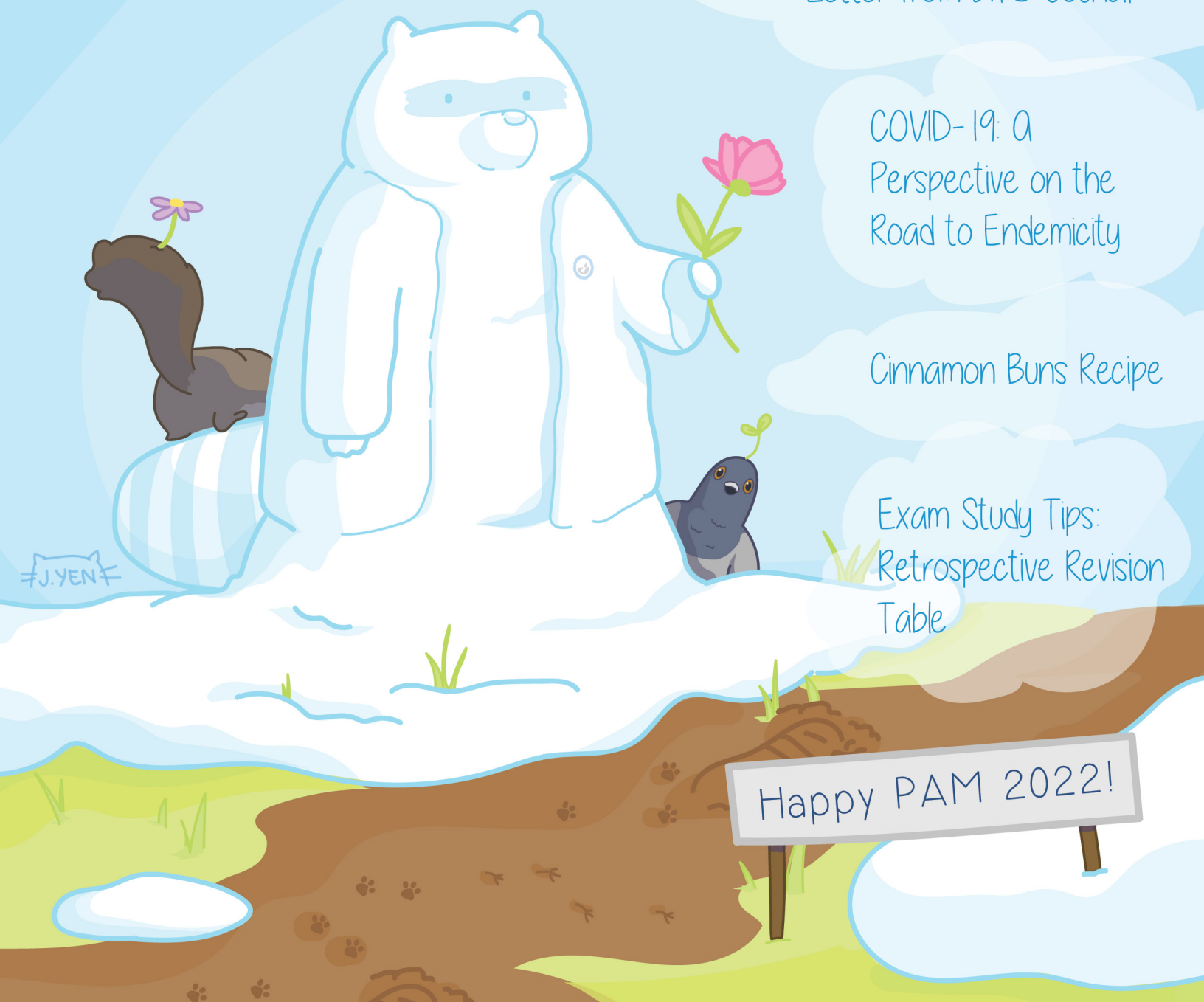
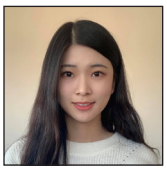


The Monograph Team

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EDITOR'S ADDRESS

Happy Pharmacy Appreciation Month!

Congratulations all - we are more than halfway done the second semester! With the busiest weeks having gone by, relax and refresh yourselves with the very new issue of the Monograph!

With PAM (Pharmacy Appreciation Month), this issue features various aspects of the scope of pharmacy practice including Smoking Cessation by Rachel Ma (2T4) from EVOLVE, and a piece on indigenization as a tool for allyship in indigenous healthcare by Yas Zareyan (2T5) from PAIH.

Stressed about the upcoming exam season? Joham Ahmad (2T4) shares some great tips and tricks on study methods using a retrospective revision timetable. Check out Ashish Gante's (2T5) insights of one of Kanye's most successful albums, fulfill your cravings with Kerstin Chow's (2T3) cinnamon roll recipe, and enjoy the St. Patrick's Day wordsearch with Maira Hussan (2T4). As always, have a glance at the creativity of our pharmacy students in our Artist Spotlight and Behind the Lens photography!

Don't forget to participate in the scavenger hunt for your chance to enter a rattle for 1 of 5 $10 gift cards.

We are always grateful to everyone who contributes and engages in reading the Monograph. Thank you all for being a part of the community!

Sally Jeon and Eulaine Ma
Monograph Co-Editors 2021-2022
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UPS Address

Hey Pharmacy!

We hope you all had a wonderful, restful reading week and hope all your assessments so far have gone well! We are all so close to finishing the 2021-2022 year. Keep your head high and feel free to reach out if you need any support during this busy time.

This March is packed with lots of exciting initiatives including Pharmacy Appreciation Month (PAM), Ontario Pharmacy Students Integrative Summit (OPSIS), and many other events held by Pharmacy Clubs! We hope you attend as many events as you can to advocate for our profession. We would also like to thank our sponsors, National Bank, Shaping Student Life and Learning, Pharmasave and Ontario Pharmacists Association, for supporting our PAM initiatives this year.

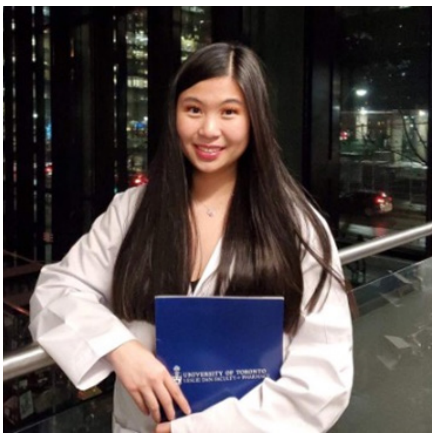
PAM Kick-Off Week
Date: March 1st, 2022

CAPSI and UPS are hosting Kick-Off Week this year to start Pharmacy Appreciation Month! From a live online kick-off event to messages from Dean Lisa Dolovich, OCP and OPA, stay tuned to the many challenges posted on our PAM Facebook event page to celebrate PAM and increase awareness of the pharmacy profession!

OPSIS 2022
Dates: March 25-27th, 2022

The 10th Ontario Pharmacy Students Integrative Summit (OPSIS) will be held online and in-person this year! Our "Prism of Possibilities" conference in collaboration with the School of Pharmacy at the University of Waterloo will include online case competitions, debates, and feature engaging talks from speakers that shine a light on all the possible career paths that pharmacy can take you. Aside from incredible prizes throughout these events, we will be hosting an all-inclusive in-person dining venue portion in the heart of downtown Toronto (with buses for UWaterloo students to attend!).

You do not want to miss out on this month's events as we end the year off with an amazing array of events in addition to those listed here. Once again, we would like to thank CAPSI and all clubs for hosting events to make PAM a huge success!



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2T3 Class Council 2021-2022: *Kevin Galido, Melissa Hubscher, Parth Shah, Brandon Handfield, Neil Patel, Logan Groves, Jacob Curtis, Sabih Jamil, Katarina Pessina, Marigrace Gorospe, Aysan Tafazoli, Vika Bardal, Cameron Ho, Moid Shah, Khaled Ismail*

Class Council's Letter to 2T3

Hey 2T3, Ever get that feeling of déjà vu? As I'm writing this in late January, I can't help but feel like we've already lived this once before: an amazing in-person Fall semester, getting to see all our friends every day, being able to go out to dinner or get a drink at a bar, but then struggling with an online Winter semester. I could wax poetic about positivity and encouraging everyone to continue working hard despite these familiar struggles, but I know everyone is tired of this. So, indulge me as I peek into our futures and what I hope for everyone to experience in the next chapter of their lives:

May 2022: It begins with an overall improvement in the restrictions associated with the COVID-19 pandemic. Restaurants are open, large groups of friends are allowed to meet; cancer/elective surgeries are resumed; the semblance of normality begins to return.

July 2022: Everyone has completed their first two APPE blocks and is on a study break. Now that COVID-19 has been defeated, we all decide to use our "study time" to explore the world and go on vacations that were missed these past two years. We open our Facebook/Instagram pages to see our friends getting to live their best lives. A wave of happiness washes over everyone, we're almost there.

September 2022: School is back for everyone, well everyone except for us APPE students. We laugh at the lower years while we enjoy the freedom of having no real homework, midterms, or exams.

December 2022: Most of us will have our second study block here. We're excited at having the first real Christmas/Holidays without worrying about exams. We can shop, we can enjoy the lights, and we can enjoy the at-

mosphere of cheer and joy for the first time in years. We make time to see and spend time with people whom we haven't seen in forever, understanding that life is short and that this was a hard truth we had to remember not too long ago.

February 2023: Two more blocks left. Friends are starting to hunker down and start studying for PEBCs/OSCEs. Graduation plans are announced; everyone thinks about what they're going to wear, who they're going to bring, and how they'll feel.

June 2023: It's finally over. Convocation arrives. All of 2T3 convenes for one last time together. A three-hour ceremony passes, tears are shed, hugs are shared, diplomas are awarded, hats are thrown… And a couple days after the cheer, the reality of adulthood slowly passes through us – what comes next? This time, it truly is all up to us.

2028: Five years have passed. We've all moved on. We're all working in a profession that we love. Some of us keep in touch, while others are lost in the pull of time and space. Some of us have gotten married, we may have attended each other's weddings: Wasn't Jas' dress beautiful? Some of us have kids now: Wow, doesn't Amar's son look like him? Regardless of what has happened in these last five years, everyone is happy and the memories of hardship in pharmacy school are either forgotten or recanted with bittersweet nostalgia.

There's so much in this world to be upset with, so much to feel disheartened from. Many of us may feel like these years of our lives have been stolen away from us. But there's so much more to be excited for in the months and years to come. So, heads up 2T3. Look at the horizon in front of you, take a deep breath, and start walking towards it.

Love you all,

Kevin,

2T3 Class President
On behalf of the 2T3 Class Council

CSHP: A Journal Club Year in Review

By: Al-amin Ahamed, 2T4

Did you know that the Canadian Society of Hospital Pharmacy (CSHP) Ontario Branch hosts many journal clubs throughout the year? Journal clubs are 30-60 minute discussions that center around evidence-based, timely and contextualized learning that is relevant to front-line practice. Presenters can submit papers and suggest topics to help lead important discussions. Articles in the past have included randomized controlled trials, systematic reviews, narrative reviews, meta-analyses, cohort/case control studies, clinical guidelines and so much more.

Participation is only open to CSHP members, but this is a great reason to sign-up for your membership today. This is only one of many amazing benefits to joining the CSHP community and immersing yourself in the hospital pharmacy community. Whether you are interested in hospital practice, community or industry, journal clubs are an effective way to stay up to date with immediate or near-future implications in front-line practice.

Continue reading for a summary of the journal clubs and speakers CSHP has hosted throughout 2021. For more information and to checkout articles featured in each journal club visit: https://cshp-scph.ca/ontario-journal-club.

FEBRUARY:
Efficacy and safety of the mRNA-1273 SARS-CoV-2 (Moderna) Vaccine -
With Sameera Toenjes, PharmD, RPh & Avery Loi, PharmD, RPh & Roshni Patel, PharmD, RPh

MARCH:
Bacterial co-infection and secondary infection in patients with COVID-19 -
With Bradley Langford, BScPhm, ACPR, PharmD, BCIDP

APRIL:
SGLT-2 Inhibitors – New indications and diabetic ketoacidosis –
With Peter Carducci, PharmD & Clarence Lam, PharmD

JUNE:
A Clot Conundrum: A pharmacist approach to Vaccine-Induced Thrombotic Thrombocytopenia (VITT) –
With Jennifer Pitman, BSc Pharm, ACPR

JULY:
Colchicine the Chameleon: A critical appraisal of its utility in secondary prevention off coronary artery disease. –
With Narthaanan Srimurugathasan, PharmD

AUGUST:
Opioid agonist therapy – what 'mu'need to know –
With Nicole Seymour, PharmD, ACPR

SEPTEMBER:
Knowledge translation for the busy clinician | Using a review on alcohol and antibiotic interactions as a case study –
With Mira Maximos, PharmD, MSc, ACPR, PhD Student

OCTOBER:
Prescription modification by pharmacists in a hospital setting: Are Ontario pharmacists ready? A review of a recent provincial survey and its practice implications –
With Vincent Vuong, PharmD, BSc, ACPR

NOVEMBER:
Integrating the PEN-FAST allergy assessment tool into practice –
With Tara Farquharson, RPh, ACPR

UNIVERSITY of TORONTO
CSHP

CLUBS CORNER:

Smoking Cessation

Rachel Ma, 2T4

Tobacco use continues to be the number one leading cause of preventable disease and death in Canada. A current estimate of 48,000 Canadians die each year due to smoking-induced diseases, and many others must live with chronic disease due to this common addiction [1]. With the exponential growth of smoking-related diseases and deaths, the Ontario Government has decided to enhance patient-centred care to help individuals quit smoking, and pharmacists have become key players to provide such care. Community pharmacists are currently funded by the Ontario Government to utilize their medical and drug knowledge and expertise to provide a smoking cessation program to Ontario Drug Benefit (ODB) recipients [2].

Pharmacists continue to be the most accessible health care workers for patients and with services, such as the MedsCheck program and consistent follow-ups. They familiarize themselves with the patient and their drug therapies. Pharmacists may provide counselling and MedsChecks to patients who are interested in quitting smoking, and they can distribute "quit smoking materials" or provide access to smoking cessation services [2].

The smoking cessation program includes a readiness assessment and several follow-up counselling sessions over one year. The pharmacist will help to facilitate access to and, where appropriate, supply appropriate medications and aids [2]. In addition to community pharmacists, there are smoking cessation clinics, such as CAMH, that offer a nicotine dependence clinic to extend a helping hand to reduce tobacco use in Canada.

5A's Algorithm: Ask, Advise, Assess, Assist, Arrange

The 5As are used at all points of contact between the pharmacist and patient and include documenting each point of contact using the smoking cessation template forms.

Table 1: Operationalized definitions of the 5As during smoking cessation [4]

5A's	Definition	5A-DOC operationalized definition
Ask	Identify and document tobacco use status for every patient at every visit	Is tobacco use identified in any way during the encounter?
Advise	In a clear, strong, and personalized manner, urge every tobacco user to quit	Are specific reasons to quit given that are intended to be relevant to the patient? Is there a clear message to quit smoking
Assess	Ask every tobacco user if he or she is willing to make a quit attempt at this time (ex. Within the next 30 days)	Is the patient's readiness to make a quit attempt in the near future determined?
Assist	For the patient willing to make a quit attempt, use counselling, pharmacotherapy, and supplementary materials to help him or her quit	Are attempts made to construct a plan of action for tobacco cessation? Are specific strategies suggested or explained? Is the patient referred to an outside source for assistance in cessation?
Arrange	Schedule follow-up contact, preferably within the first week after the quit date.	Is there a follow-up appointment scheduled with the stated purpose of monitoring tobacco cessation efforts?

1. Readiness Assessment:

Patients must complete this questionnaire assessment to determine the willingness of patients to quit smoking and adhere to this program [3]. Once the patient has agreed to enroll in this program, the patient will sign both an enrollment and consent form to share information within the circle of care. The pharmacist will then set a quit date that works best for the patient [3].

2. Smoking Cessation - 1st consultation:

The first consultation will take place in the community pharmacy for approximately 20 minutes. The purpose is to discuss the patient's smoking history (reason for smoking and impact on lifestyle); tobacco use (quantity); medication history; health risks, triggers/strategies and pharmacotherapy needs [3]. By the end of the meeting, the patient will understand the goals and objectives of the program and the importance of adherence and responsibility to successfully quit smoking [3].

3. Follow-up counselling sessions:

Follow-up sessions are to ensure consistent support for the patient, while updating their smoking status, addressing any concerns that may have arisen, adjusting pharmacotherapy and reinforcing smoke-free positive behaviours [3]. Affirmation is key to providing support to our patients and it helps them know that pharmacists are on their side.

i. Primary Follow-up sessions 1-3: These sessions take place within 3 weeks of the first consultation for approximately 10 minutes [3].

ii. Secondary Follow-up sessions 4-7: These sessions take place at intervals as agreed between the pharmacist and patients between one to two months; between three to four months; between six to seven months and between eight to twelve months; sessions are approximately 5 minutes [3].

Documentation Requirements:

Every point of contact must be documented to ensure program continuity and for data analysis, counselling and claims adjudication [3]. Documentations are written on standardized template forms provided by the Ontario Government to maintain a consistency of program protocol. As well, if a patient decides to withdraw from the program, the pharmacist is required to document the reasons for withdrawal. If the patient completes the program, the pharmacists are also required to document this success. All documents and records are submitted through the ODB PIN mechanism for auditing and must be maintained in a readily retrievable format for a minimum of 2 years, and kept for a minimum of 10 years as a part of the patient health record [3].

Evaluation PINs [3]:

- PIN 93899944 = Patient succeeded in quitting smoking (may be claimed once per year if applicable)
- PIN 93899945 = Patient did not succeed in quitting smoking (may be claimed once per year if applicable)
- PIN 93899946 = Patient quit smoking status is unknown (may be claimed once per year if applicable)

References

1. Breathe The Lung Association. 2021. Smoking and Tobacco Statistics. [online] Available at: <https://www.lung.ca/lung-health/lung-info/lung-statistics/smoking-and-tobacco-statistics> [Accessed 25 February 2022].
2. Service Ontario. 2019. Pharmacy Smoking Cessation Program. [online]. Available at: <https://www.health.gov.on.ca/en/pro/programs/drugs/smoking/> [Accessed 25 February 2022].
3. Service Ontario. 2015. Pharmacy Smoking Cessation Program. [online]. Available at: <https://www.health.gov.on.ca/en/pro/programs/drugs/smoking/factsheet.aspx> [Accessed 25 February 2022].
4. Lawson, P.J. et al. Development of an Instrument to Document the 5A's for Smoking Cessation. [online]. Available at: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2735336/> [Accessed 25 February 2022].

INDIGENIZATION:

A tool for pharmacists to become better allies of Indigenous healthcare

Yas Zareyan, 2T5

During the 20th century, legislation by the Canadian government solidified a framework that displaced Indigenous people from their territory and resources, stripping them of their cultural agency and political power. While these colonialist policies failed to undermine the self-determination of Indigenous people, they did have a direct impact on their social health determinants and health status. Although Canada ranks internationally in both quality and public policy in health, we maintain a double standard with respect to deficiencies in Indigenous healthcare, particularly in terms of poverty, reduced food security, poor living conditions, et cetera, all of which contribute to poor health outcomes.[1] Thus, it is becoming increasingly important that as pharmacy students we begin defining our roles as allies and pharmacy-educators for the Indigenous population.[2] While the current trend by some non-Indigenous people is to use the term "ally" as a symbol for their commitment, healthcare professionals must view allyship as a direct, lifelong commitment to building and honouring relationships with Indigenous partners.[2] To respect the self-determination of Indigenous people, we must establish a healthcare framework that incorporates Indigenous methodology, rather than continuing with our historic trend of assimilating the Indigenous paradigm into a Eurocentric Western healthcare model.[3]

Larry Leung and Jason Min, non-Indigenous pharmacists & allies living in Vancouver, BC, spent 9 years with BC's rural Indigenous communities to determine how we can foster more meaningful and collaborative relationships with Indigenous populations. They found that while allyship varies between different communities, the practice is consistently rooted in educatory practices of decolonization, reconciliation, and Indigenization.[2] To better approach these roots as an institution, we must begin shifting away from defining allyship by what curriculum is taught, and rather incorporate it through a constant act of self-reflection that forces us to determine the "how" and "why" behind Indigenous healthcare inequality. In our curriculum, we are taught culturally safe practices such as self-reflection or cultural humility that help us participate in decolonization and reconciliation, however the role of Indigenization is often overlooked in our allyship. Indigenization refers to integrating Indigenous ways of knowing and learning with current Western knowledge system, and not just adding Indigenous content or activities.[2] To adhere to Indigenous practice, Indigenization requires a strong Indigenous voice to supplement pharmacy-specific knowledge that is provided from a non-Indigenous individual.[2] While this may be difficult in pharmacy or other health programs that focus on an evidence-based approach, we must accept such Indigenous methodologies as valid and needed in pharmacy practice and education to further avoid appropriation and assimilation of Indigenous culture.[3] A strong first-step in incorporating Indigenization into our practice is through the creation of an advisory committee with majority representation from external Indigenous experts and scholars (including Elders), traditional knowledge keepers, Indigenous community members, and health administrators.[2] This committee will carry the responsibility of leading, guiding, and making decisions around Indigenous health topics, and must be treated as experts in their field, for example, by providing honoraria at rates equivalent to non-Indigenous expert consultants or reimbursing travel costs.[2] As a result, these committees can serve as an integral method for determining and assessing the needs of the Indigenous population, without infringing Western paradigms upon them.

Furthermore, in October 2021 we were lucky to welcome Dr. Jaris Swidrovich, the first self-identified Indigenous person in Canada with a Doctor of Pharmacy, to our faculty. In his paper Introducing Indigenous Methodologies to Pharmacy Practice Research, Dr. Swidrovich provides an expert opinion on Indigenous methodologies, arguing that they must flow from an Indigenous paradigm founded on three core aspects: relationality, reciprocity, and storytelling.[3] By incorporating this paradigm into our healthcare interactions with Indigenous

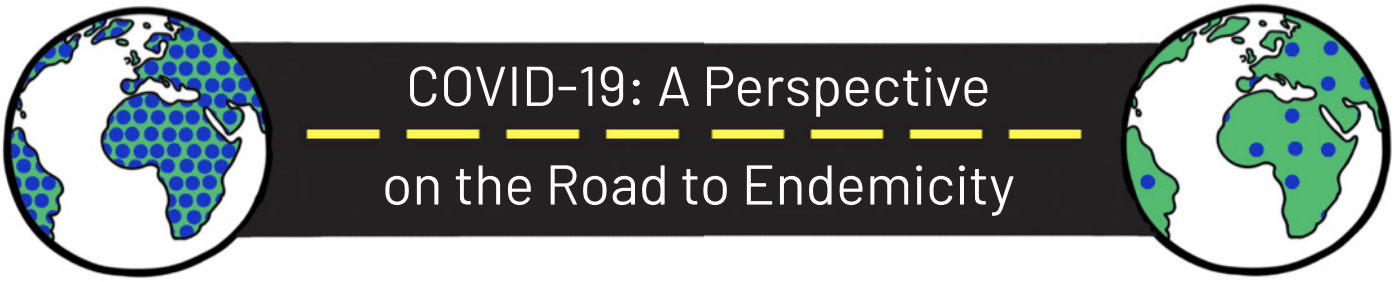
populations, we can better continue our practice of Indigenization. In the Indigenous paradigm, the idea of relationality is the belief of all things being interconnected in a system that orders our universe, and thus relationships must be shared and mutual.[3] This means, the health practitioner cannot "own" or "discover" certain knowledge or information, but rather knowledge is relational and shared between all creation.[3] Ignoring this paradigm by not establishing and honoring this relationship means participating in the appropriation of Indigenous culture.[3] To move forward, it is vital to form a strong foundation so that the concept of relationality is properly established.[3] Similarly, the practise of reciprocity in all relationships is practiced in the Indigenous paradigm; however, this reciprocity does not always have to be direct - for example, it can come in the form of offering gifts to the land or environment.[3] In the pharmacy practice, this means participating in respectful and reciprocal relationships where research is taking place; when gaining something from the community, the practitioner must ensure they give back to the community as well.[3] Finally, the Indigenous paradigm uses storytelling as not only a method of teaching, learning and discovery, but also to strengthen relationships with the storyteller.[3] Considering that knowledge cannot be owned in this paradigm, storytelling is not only used to build and establish a relationship, but also as a means of reciprocity which is necessary for incorporating Indigenous methodologies.[3] Therefore, as pharmacy students, we must consider the concepts of relationality, reciprocity, and storytelling as valid and useful Indigenous methodologies that we can incorporate into our respective health sectors, further allowing us to better practice and incorporate Indigenization.

While appreciating the benefits, Leung and Min warn that tokenism and complacency serve as the biggest threats against genuine Indigenization.[2] This can be seen in a culture where Indigenization is approached through a checklist of strategic plans an institution undertakes as a symbolic effort, rather than an authentic allyship. Or reported comments by Elders that faculties often shift the responsibilities of all content creation, delivery, and assessment to Indigenous partners, or they grow complacent and begin to delegate responsibilities to representatives of the Indigenous community, without providing culturally appropriate support. In cases such as these, it becomes more apparent how integral the practice of self-reflection is in establishing reciprocal relationships with the Indigenous community. Thus, as we move forward in our pharmacy careers and we are provided with opportunities to assess our institutional policies, we must ensure that we remain diligent and self-reflective when considering Indigenous people. This means participating in a culture that accepts the Indigenous paradigm and uses Indigenous methodology to validate the culture and practice of Indigenization. We do not have to be Indigenous to be allies for Indigenous healthcare, but we do require a strong understanding and application of the paradigms and methodologies that exist in Indigenous communities for us to be successful in our role.

References:

1. Smylie J, Firestone M. Back to the basics: Identifying and addressing underlying challenges in achieving high quality and relevant health statistics for Indigenous populations in Canada. Stat. J [Internet]. 2015 [cited 2022 Feb 24]; 31(1): 67-87. Available from: https://content.iospress.com/articles/statistical-journal-of-the-iaos/sji00864 doi: 10.3233/SJI-150864
2. Leung L, Min J. Navigating Allyship through Indigenization, Decolonization, and Reconciliation: Perspectives from Non-Indigenous Pharmacy Educators. Innov Pharm [Internet]. 2020 [cited 2022 Feb 24]; 11(1). Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8132532/ doi: 10.24926/iip.v11i1.2300
3. Swidrovich J. Introducing Indigenous methodologies to pharmacy practice research. Canadian Pharmacists Journal / Revue des Pharmaciens du Canada [Internet]. 2021 [cited 2022 Feb 24];154(2):93-99. Available from: https://journals.sagepub.com/doi/full/10.1177/1715163521990058 doi: 10.1177/1715163521990058

Clubs Corner: GMI



Maeryl Sumagang, 2T2

It has become quite difficult to envision what a post-pandemic world would look like. Nearly two full years have passed since COVID-19 was declared a global pandemic by the World Health Organization and since then this long and winding tunnel has led to over 400 million confirmed cases and 6 million deaths worldwide. Now, with our current scientific advancements (including vaccines) and case counts decreasing for most regions of the world, this begs the question of how or when COVID-19 will transition from being a global pandemic to one of endemicity.

To even begin to tackle this question, it is first important to define the terms epidemic, pandemic, and endemic. An epidemic is defined as the "occurrence in a community or region of cases of an illness, specific health-related behaviour, or other health-related events clearly in excess of normal expectancy" according to the U.S. Centers for Disease Control and Prevention. For instance, measles outbreaks continue to result in epidemics in parts of the world with insufficient rates of immunization. Meanwhile, a pandemic is generally thought to be "an epidemic occurring worldwide, or over a very wide area, crossing international boundaries and usually affecting a large number of people."

For an infection to be endemic, it is generally considered to be of "constant presence or usual prevalence… in a population within a geographic area." This definition remains ambiguous, however, with some experts disagreeing on the extent of what endemicity truly entails. Moreover, an illness that is considered endemic does not mean that it is harmless, only that it allows for some level of predictability. Even the flu which we have come to accept as a seasonal occurrence kills 290,000 to 650,000 people globally per year as of 2019.

One possible scenario to endemicity that has been proposed is that COVID-19 will be much akin to the flu, with surges in certain months and the possibility of yearly vaccinations similar to the flu shot. Fundamentally, the flu is caused by another respiratory virus that is widespread and known to mutate very easily. However, this analogy is not only imperfect, but it can also be dangerous, with individuals potentially using it as a reason to shrug off the continued threat of COVID-19.

Another proposed scenario is that COVID-19 will become a childhood virus once populations at large develop immunity to SARS-CoV-2 through vaccination and/or natural infection. Infected children have generally been thought to develop less severe symptoms and early childhood infection is proposed to lead to at least some level of immunity up to adulthood, ideally leading to mild symptoms (if at all) upon reinfection.

The post-pandemic world is affected by numerous other factors, including animal reservoirs. SARS-CoV-2 has been shown to readily infect animals, including minks, cats, rabbits, and hamsters, thereby making it difficult to evade entirely as the virus can continue to spill back into the human population. Moreover, the virus' ability

to mutate in ways that evade the immune system (unlike that of the measles virus, for instance) makes it all the more challenging to manage.

Two years into the pandemic and we still do not know what the future of COVID-19 will look like. It is difficult to predict how or when COVID-19 will transition to endemicity, but we must not simply succumb to resignation or complacency. The post-pandemic world can still be shaped by the choices and actions that we make. Proper and equitable access to vaccines and health care in all areas of the globe continues to be a necessity to lead us out of this long and winding tunnel.

References:

1. Kelly, H. (2011). The classical definition of a pandemic is not elusive. *Bull World Health Organ, 89*(7), 540–541.
2. Lindmeier, C. (2019). *WHO launches new global influenza strategy*. Geneva: World Health Organization.
3. Phillips, N. (2021). *The coronavirus is here to stay — here's what that means*. Nature.
4. Stern, J., & Wu, K. (2022, February 1). *Endemicity Is Meaningless*. Retrieved from The Atlantic: https://www.theatlantic.com/health/archive/2022/02/endemicity-means-nothing/621423/
5. World Health Organization. (2022, February 24). *WHO Coronavirus (COVID-19) Dashboard*. Retrieved from www.covid19.who.int

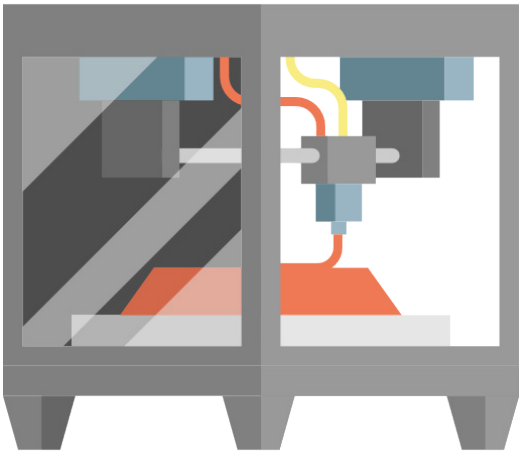
Global Medicine Initiative

CLUBS CORNER Rx COMPPS

3D Printing in Pediatric Therapeutics – It's Not Just Limited to Plastics!

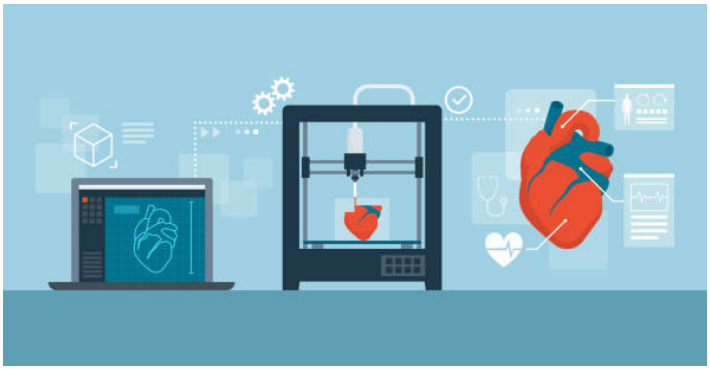
by Joy Wu, COMPPS 2T5 Representative

You may have seen artists and engineers create fascinating art pieces and devices with 3D printing, but did you know that it can also be implemented in pharmaceutical compounding? Specific dosage forms are particularly important in pediatrics as younger children have not yet developed the full ability to swallow common dosage forms such as whole tablets. Alongside that, children commonly refuse medications because of its taste. When the majority of the drug market is targeted to adults, treating sick children often poses many additional challenges due to lack of availability of suitable products. Compounding really shines in pediatrics as it can tailor the medication in flavour, dosage form, and other customizations necessary for each individual young patient.



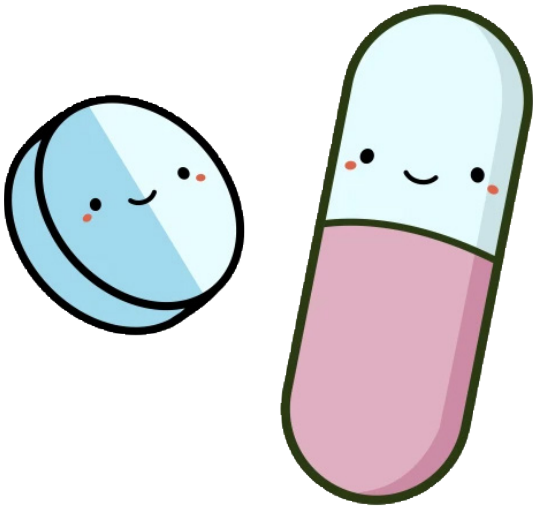
The same procedure to 3D print a plastic replica of a monumental structure can be applied to printing a customized tablet suitable for children. There are several methods of 3D printing that have been tested for pharmaceuticals, but the core concept is to build the object of interest layer by layer utilizing a digital model. Different printing techniques provide different advantages and specifications appropriate for different drug properties. Inkjet 3D printing is highly precise and is best for low dose medications. Extrusion-based printing techniques have different operating temperatures and can be chosen based on the compatibility with drug stability. 3D printing has the flexibility to produce appropriately small sized tablets or other solid forms that can be easily swallowed, dispersed, dissolved, or chewed.

One of the key advantages of 3D printing is the precision of manufacturing. Doses often need to be manipulated and adjusted in children due to their changing physiology and the lack of pediatric-specific products. Unlike the conventional tablet compounding process, 3D printing does not require milling or compression. Additionally, human manipulation of a solid tablet dose via splitting is prone to inaccuracy or asymmetrical dose division. In contrast, 3D printing can produce accurate doses that can be verified with drug content assays. 3D printing is thus a favourable alternative in bridging the gap between prescription customization and technology.



Palatability is another fundamental advantage that 3D printing can provide in compounding for children. Molecularly dissolving the medication in the drug vehicle can help mask the taste. Other flavourings and additives can further improve the look and palatability of the medication. 3D printing also creates the opportunity to produce tablets in attractive and cartoony tablet shapes.

Like any other new advances in technology, 3D printing is not without its limitations and risks. Further studies are required in all aspects of compounding via 3D printing, such as drug stability in the printing procedure, safety of excipients, and altered bioavailability. 3D printing is currently only limited to solid dosage forms. Specialized dosage forms, such as minitablets, need to be developed to provide use in neonates and infants.



The extent of increased palatability and visual appeal also needs to be implemented with caution, as it may result in over-eagerness and accidental consumption in young children.

Possibilities of customizable dosages seem endless when pharmacists incorporate a 3D printer into their practice. It may be a promising option for practitioners to consider when individualizing the care required for each patient, if executed carefully with the risks and limitations in mind. The technique of 3D printing in compounding can also be extended to other areas of specialization, such as geriatrics or dermatology. Children are quite vulnerable as many of the pharmaceutical companies primarily focus on developing medications for adults, but they remain as an area of importance in the pharmacists' care and the utmost concern of all parents.

Reference:

Lafeber I, Ruijgrok EJ, Guchelaar H-J, Schimmel KJM. 3D Printing of Pediatric Medication: The End of Bad Tasting Oral Liquids?—A Scoping Review. Pharmaceutics. 2022; 14(2):416. https://doi.org/10.3390/pharmaceutics14020416

Advice For Future APPE Students

Shaista Malik, 2T2

As 4th year APPE placements come to an end, I can say with confidence that this year has not only allowed me to enhance my knowledge of therapeutics but also to learn about the vast roles pharmacists play within the field of healthcare. Throughout this year, my experiences have included placements at Toronto General, Shoppers Drug Mart, Mississauga Hospital and GlaxoSmithKline (GSK). From these experiences, there are some key pieces of advice I would like to share with future APPE students.

Firstly, I would like to encourage you all to be curious. This is your time to explore your interests and the different fields within pharmacy. Whether it be community, hospital, or industry, use your time to network and branch out to learn about different roles. This will allow you to learn about all the options you have after graduation and enhance your understanding of the different fields within pharmacy! Ask questions, show interest, and demonstrate a general passion for learning more. This will allow you to further refine your interests as you learn more about the career options within pharmacy.

Secondly, when choosing placements try to select a variety of different sites that fuel your interests. There are so many options to choose from! Personally, after taking the PHM321: Selected Topics in the Pharmaceutical Industry course by Monica Gautam, I've been drawn to the field ever since! This interest led me to select a placement at GSK during blocks 9 and 10. I am happy to say this experience has been quite rewarding so far as it has allowed me to learn more about medical affairs that I would not have otherwise come across. I am fortunate for this rotation, and I encourage you all to pursue your interests during 4th year placements!

Thirdly, throughout your placement your preceptor will test your knowledge and provide you with constructive feedback on areas to improve. This is there to show you what you need to work on. Never take this feedback personally - your preceptor is there to help you grow into a knowledgeable pharmacist. There will be days when you don't know the right answer right away, and that is completely okay! Your placements are meant to allow you to learn as you enhance your knowledge of therapeutics. Try to focus on your weaknesses and work with your preceptor to improve and turn them into strengths! Collaborate with your preceptor and never be shy to share anything that might be on your mind. Placements are a great learning experience for both you and your preceptor!

It's important to keep in mind that although placements provide amazing experiences, they can also cause burnout very quickly. During your APPE year it is very important to allow your body and mind to rest and relax after a long day of placement. Be sure to get an optimal amount of sleep each night, fuel your body with healthy foods, and take care of your mental health.

Lastly, always feel free to reach out to upper years. We have been in your shoes and are always happy to offer advice 🙂

Remember to go into your placements with a fresh perspective and be eager and excited to learn! Each placement is different and will help you grow in different ways. You are all going to do amazing, 2T3s. I wish you all a very happy APPE year ahead!

SELF-CARE WHEREVER YOU PRACTICE:
A FEATURETTE FROM PHARMACISTS OF 2T2

Rolan Vaisman, 2T2

Earlier in February, I was invited by Shaista (2T2 Monograph Rep) and Minahil (2T2 Pharmakon Rep) to participate in our class's Pharmacists of 2T2 project to reflect on my experiences as an APPE student. As many of my classmates are finishing up their last blocks of rotations and are nearing graduation and licensure, I thought this would be the perfect opportunity to think about where I see myself practicing in the near future.

Where do you see yourself practicing after graduation?

I'm fairly confident that I'll be committing most of my time post-grad practicing as a community pharmacist. After all, that was my goal before setting foot into the PharmD program, and that goal hasn't changed. While the past 4 years have shown the many other wonderful things pharmacists can do, I've always liked the retail aspect of pharmacy, being able to interact with people front and centre, and fiddling with a bunch of computer software to get my work done. And fortunately, I was blessed with the teams I work with on my weekend shifts to help reinforce my aspirations.

There's only one thing that's been bothering me: the lack of self-care. Specifically, how we let ourselves get exhausted in the process of doing our job. Far too often I see my coworkers forgetting to stay hydrated or delaying their opportunity to use the washroom. Worse is when they would scarf down their lunches or skip out on them altogether, substituting them with a supplement drink or just snacks. Honestly, despite being advocates for patient self-care, we suck at practicing what we preach.

This only got worse with the pandemic. As more doctors switched to working remotely and the overall increase in virtual care, the flux of the workflow has gotten more chaotic. We've been handling larger volumes of calls about vaccines and rapid tests, taking in more verbal orders, faxes printing out prescriptions nonstop, all while having little change to our workforce. Not to mention all the complications in screening people, promising longer wait times, and maintaining diplomacy when dealing with people who can't appreciate everything that's happening behind the scenes. And although the demand for COVID services has started to decline as we begin to return to some state of normalcy, we hear of new pressures in keeping up with professional services to make up for the change in trends.
The bottom line is, we can't catch a break.

It's a tough, exhausting time to be a pharmacist, let alone a pharmacist-in-training. You'd think with all that's happened I'd have more reason to find alternative careers in pharmacy. But my goal hasn't changed. I'm still excited to be a community pharmacist, because despite all the ruckus that goes on in the daily life of a dispensary, I look forward to that feeling of comradery when working with my teams and those rare but heartwarming moments of someone truly appreciating our hard work.

This doesn't mean I'm going to settle with the current state of our profession, though. As the next generation of pharmacists, I believe we have the most leverage in making a change. I've already started by encouraging my coworkers to go eat or use the washroom if they need to because really, you can't care for others if you don't care for yourself first. Hopefully, many of you do the same no matter where you end up working, but that's just the beginning. I hope we all would have the leverage to ask for better treatment, starting with better pay reflecting the higher cost of living and ending with being able to take proper breaks during shifts. Ultimately, as much as it is a privilege to work in the realm of pharmacy, it shouldn't have to come at the cost of our access to proper self-care.

APPE INSTITUTIONAL REVIEW:

St. Joseph's Healthcare Hamilton

Mehran (Ron) Sabbaghi, 2T2

Right off the bat, I'll just come out and say the most important thing: I absolutely loved my APPE institutional rotation at St. Joseph's Healthcare Hamilton, and that's coming from someone who went into it with little enthusiasm and a lot of anger at the CORE ELMS matching system. My Mississauga to Hamilton commute of about 50 km each way was by no means easy or fun, but it was definitely worth it given the great experience that I ended up having.

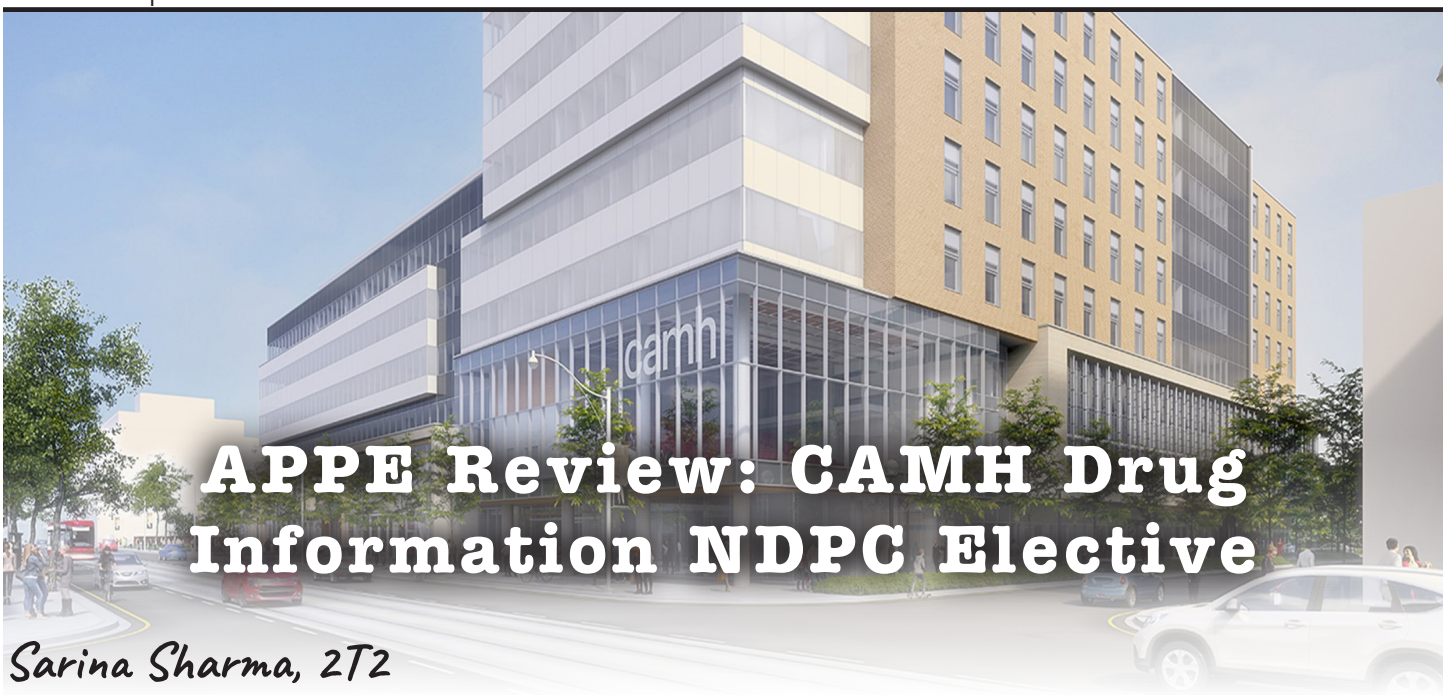
During my one block here, I was mainly stationed in the hemodialysis department, but I ventured into peritoneal dialysis, nephrology, multi-care kidney clinics and renal transplant as well. My main duty at St. Joseph's consisted of conducting medication reviews with the patients and/or their caregivers, then proceeding to update their file and resolving the identified drug therapy problems. Doing the medication review interviews for the hemodialysis patients was quite easy and never rushed, mainly because I had a "captive audience" (i.e. the patient would be at the center for 3 to 4 hours stuck to the same bed or chair and not going anywhere). There were also a number of instances where I was consulted by prescribers regarding medication-related questions, such as renal dosing, drug interactions, or medication alternatives.

My preceptor at this rotation was wonderful to work with and learn from. She always made the time to help me with my questions and inquiries, which were numerous given that this was my first time working in hospital pharmacy. She also went above and beyond to make sure I had a well-rounded and varied rotation experience, arranging for me to spend time in other departments and parts of the hospital, including drug dispensing and distribution; I even got the chance to accompany the nephrologists and nurse practitioners on their rounds and see their patient care process. Just as with my preceptor, the other pharmacy staff and healthcare practitioners at the site were all supportive of my learning and happy to impart their knowledge and experiences.

St. Joseph's, like quite a few other hospitals nowadays, uses the Epic system, which is very aptly named given the level of functionality it brings to practice. By logging onto Epic, a hospital practitioner can access virtually all the pertinent patient information in one place, including medication orders and history, allergies and intolerances, immunization history (if recorded), lab and imaging results, medication administration record (MAR), progress notes from different practitioners (for procedures, admissions, discharges, etc.), and so much more, all along with a robust search function. Furthermore, communications and messages can also be sent using Epic, allowing easy and secure sharing of patient-related information with other practitioners at the site. Having experienced this fully electronic system as my first and "default type" of hospital practice, I find it hard to fathom how some hospitals still have paper-based systems in place.

Overall, I was very satisfied with my rotation experience at St. Joseph's, and I am glad that my first exposure to institutional pharmacy was at this site. I ended up enjoying hospital practice a lot, to the point that I am now regretting not applying for any hospital residencies. Parking may have been a little tricky and quite expensive ($55 for a two week student pass!), but other than that I cannot think of any complaints; a solid 10/10 for St. Joseph's Healthcare Hamilton.

St. Joseph's Healthcare Hamilton



APPE Review: CAMH Drug Information NDPC Elective

Sarina Sharma, 2T2

When selecting my APPE rotations, I felt a great need to diversify as much as I could. My experience is largely in community with some industry exposure, so I decided to do an elective that was a bit different from my existing experience, that could provide me a primer on hospital pharmacy. So, for Block 8, I completed a drug information NDPC rotation as my second elective.

This rotation was remote, and I enjoyed the flexibility it gave me. I live quite far from CAMH but was very interested in doing a rotation there as I am passionate about mental health. In this rotation, you can be expected to give approximately 1000-word answers to drug information questions using research and guidelines. In the CAMH setting, this includes many questions concerning psychotropic medications, so I strongly recommend that you take the mental health and addictions elective to have a helpful background. In addition, you present an article at an informal journal club and attend weekly clinical meetings along with monthly Pharmacology and Therapeutics (PT) meetings. In the clinical hours, I recommend trying to ask at least one question. You may or may not be able to ask one at the PT meeting but do make notes of points to bring up with your preceptor.

My preceptor was very helpful and understanding of the lack of experience I had starting off. Over the course of the rotation, I built up a very good rapport with her, and she even gave me good tips on entry to practice. Feedback was very clear and timely. She put forth a great effort to integrate my personal passions of social justice and experiences in methadone dispensing in a CAMH context.

Throughout this rotation, I really diversified my literature search skills and learned about many new databases we do not typically learn about in class. I learned about more specialized tools available from Pharmacy e-Resources. For example: did you know you can check interactions between NHPs and prescriptions on the Natural Medicine Database? I also learned a lot about presenting articles and interpreting research. This rotation taught me highly transferable skills that can easily be applied in both DPC and NDPC contexts in industry, hospital and community positions.

Above all, this rotation really helps to grow the scholar/professional role, and through CAMH's position focused on many vulnerable populations, I was able to be an advocate as well. However, since my professional identity is more focused on the advocate role than the scholar role, I don't think I would pursue drug information pharmacy as a career.

But that is not to say I did not have a valuable and positive experience at this rotation. My preceptor was very helpful in building up my basis of competencies, and no matter what choice I make with respect to my eventual career path, I am sure I can apply the skills I acquired. I strongly recommend this rotation, as it certainly is one with a lot of cross applicability in many contexts!

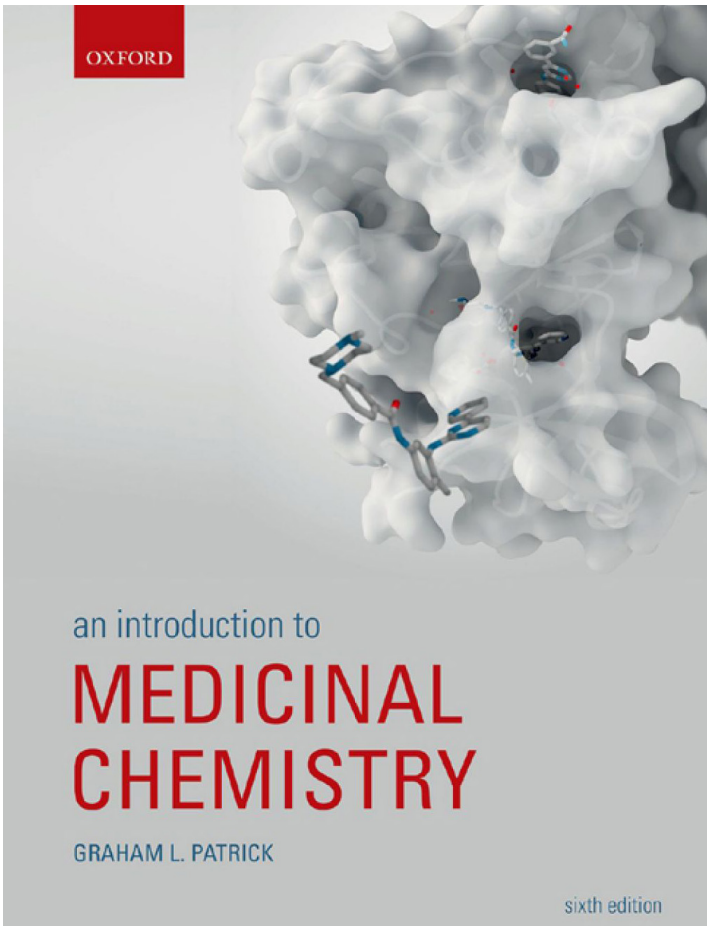
A Bifunctional Overview of Drug Discovery and Design Books:
Phase I – An Introduction to Medicinal Chemistry

Huy Pham, 2T4

An Introduction to Medicinal Chemistry by Graham L. Patrick is a textbook that has been used for required or recommended readings for university courses on the subject. Currently on its sixth edition, it is intended for both those with basic knowledge of chemistry and those studying medicinal chemistry, a field that integrates knowledge from a multitude of subjects including cell biology, pharmacology, and chemistry. The textbook employed the use of graphics, a "key points" summary section, and chapter questions to aid in the learning of concepts.

The book is divided into five parts with an introductory chapter that serves as a review on drugs, drug targets and how they interact with each other at a molecular level. Part A focuses on the structure and function of biological targets — enzymes, receptors, nucleic acids and many others. Part B covers the pharmacodynamics of drugs at their targets and pharmacokinetics. Part C is devoted to the process of identifying a lead compound (whether it's from natural sources, synthetic compound libraries, in silico or by pure serendipity), modifying the structure to obtain optimal pharmacodynamics and pharmacokinetics, and getting the drug into market. Part D looks into three different tools used in drug design, those being combinatorial and parallel synthesis for the creation of compound libraries, computers for molecular modelling, and quantitative structure-activity relationships (QSAR) for the correlation of physicochemical properties to biological activity. Part E explores the medicinal chemistry of selected drug classes such as opioid analgesics, antiviral agents and chemotherapy.

The coverage of general pharmacodynamics and pharmacokinetics in Part A and B is sufficient as an introduction for those with basic knowledge. Compared to *The Organic Chemistry of Drug Design and Action* by Richard Bruce Silverman, the book is adequate in explaining the concepts though *The Organic Chemistry of Drug Design and Action* provides a more in-depth look into the organic chemistry of drug metabolism, enzyme catalysis and inhibition, and prodrugs. On the topics of drug discovery and design, the concepts are explained adequately for those with a basic and advanced understanding of



medicinal chemistry. However, those with a more advanced knowledge of the field would benefit from "The Bible" *The Practice of Medicinal Chemistry* by Camille Wermuth, David Aldous, Pierre Raboisson, and Didier Rognan, as the book is a more comprehensive overview of medicinal chemistry and has entire chapters dedicated to topics such as fragment-based drug discovery, the applications of conformational restriction and steric hindrance, and selective optimization of side activities, all of which are briefly touched upon in *An Introduction to Medicinal Chemistry.*

While the textbook does not examine the medicinal chemistry of every drug class (that description might be more applicable to F*oye's Principles of Medicinal Chemistry, Wilson and Gisvold's Textbook of Organic Medicinal and Pharmaceutical Chemistry*, and the 8-volume *Burger's Medicinal Chemistry, Drug Discovery and Development*), it does provide a good examination in the selected

drug classes. Other than those discussed in Part E, the book has seven case studies to illustrate the concepts of a given part. Case study 1 at the end of Part A is about the target identification and lead compound identification for hyperlipidemia, the development of statins and their mechanism of action and binding interactions with HMG-CoA reductase. Case studies 2, 3, and 4 analyze the discovery and design of angiotensin-converting enzyme inhibitors, artemisinin and its derivatives, and oxamniquine respectively. Case study 5 looks at the application of the tools introduced in Part D in the *de novo* drug design of a thymidylate synthase inhibitor. Finally, case study 6 and 7 covers the medicinal chemistry of anti-inflammatory steroids and antidepressants.

Anybody who is interested in drug development process beyond pre-clinical and clinical testing would find chapter 15 of the book useful as it also explores drug patenting, regulatory affairs and chemical and process development, which ensures the intended drug product is synthesized at a large scale in a safe and efficient manner with high yield and purity and low cost.

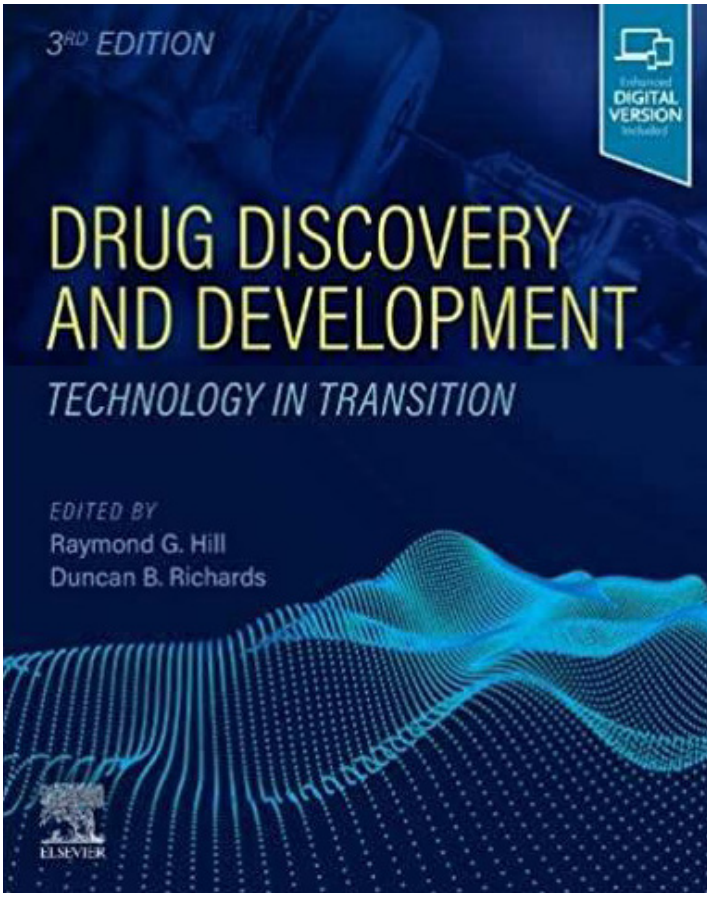
As mentioned previously, the book uses graphics to aid in the understanding of concepts. Specifically, they provide the molecular structure of drugs and their binding interactions with drug targets. These can help in understanding target selectivity and why certain molecules act as agonists and why others act as antagonists. There are also figures on the synthesis of drugs, though the route used in the book may differ from the synthetic routes used by pharmaceutical companies in practice due to reasons discussed in the book.

The author states that the book is an attempt to create an understanding of drug design and action for a general audience and he did succeed. It is a must-read (or at least a starting point) for those interested in drug discovery and design.

A Bifunctional Overview of Drug Discovery and Design Books:

Phase II – Drug Discovery & Development: Technology in Transition

Huy Pham, 2T4



Drug Discovery and Development: Technology in Transition (3rd edition) by Raymond G. Hill and Duncan B. Richards is a textbook that covers the key stages of drug discovery and development, from target selection to pharmaceutical marketing. The editors have some experience working in the pharmaceutical industry, Hill having worked in the industry for over 25 years and Richards having worked at GSK. This book is divided into four sections: "Introduction and background", "Drug discovery", "Drug development", and "Facts and figure".

The first section is composed of three chapters and begins with a history of the pharmaceutical industry starting with the Ebers papyrus of 1550 BCE Egypt that contains over 800 remedies. The chapter continues on through the key discoveries and developments in the pharmaceutical industry such as Ehrlich's discovery of salvarsan in 1910. The next chapter looks at the nature of disease, examining 'health' and 'disease' as a concept and the aims of therapeutics. Chapter 3 gives an introduction of the many therapeutic modalities. This does not only include the conventional small-molecule drugs but also enzymes, antibodies and gene therapy.

"Chapter 4: Target Selection" provides descriptions on how one identifies a potential target and public databases that can be used to assist with the process such as Reactome and Human Protein Atlas. The section incorporates elements of both classical (forward) genetics (determining the genetic basis of a phenotype) and reverse genetics (determining the phenotype associated with a gene). One example included in the chapter is a series of genome-wide association studies to identify loci associated with hearing loss. The subsequent chapter builds upon the discussion on target selection and examines key criteria for starting a drug discovery project and the phases of an early-stage project such as assay development. Chapter 6 introduces high-throughput screening (HTS) and describes the different formats of assays for HTS which may be categorized as either biochemical and cell-based along with their respective advantages and disadvantages. Given the scale of HTS, the section ends with an overview of the logistics of screening libraries. Chapter 7 covers the application of medicinal chemistry in target selection, lead identification, and lead optimization, in addition to a role of medicinal chemists in addressing the issue of attrition. Chapter 10 looks into strategies for optimization drug metabolism and pharmacokinetics in the various stages of drug discovery and includes strategies like competitive cytochrome P450 inhibition assays to elicit any potential drug-drug interactions. The next two chapters are on pharmacology, with chapter 11 being about the in vitro and in vivo studies for evaluating pharmacology and chapter 12 on the non-clinical assessment of drug safety. Some therapeutic modalities are discussed in detail in Section 2, primarily therapeutic antibodies, vaccines, gene therapy, cell-based therapeutics and nucleotide-based therapeutics.

The introductory chapter of the drug development section outlines the main components of the drug development process and the key decision points prior to entering the next stages. Chapter 15 serves as continuation of chapter 12, summarizing the safety assessment that occurs during clinical trials and post-market surveillance. The next chapter, which is on pharmaceutical development, encompasses preformulation studies, formulations, and the principles of different drug delivery systems. Chapter 17 expands further on the types of studies involved in clinical development, whether they are Phase II proof of concept studies or bioequivalence studies. Chapter 18 examines different clinical imaging methods including positron emission tomography and their applications in drug development. Chapter 19 covers intellectual property in drug discovery and development, explaining the criteria needed for something to be patentable and the process of filing a patent. Chapter 20 outlines the role of regulatory affairs in drug development, looking at subjects such as quality assessment and market approval. The final chapter of the section describes the functions of pharmaceutical marketing, with topics like the product life cycle and market access.

The book ends with a section on the future of drug discovery and development. The chapter provides a look into recent advances in the technology involved in drug discovery and development, the aspect of spending, the issue of attrition in the pipelines and biotechnology-derived medicines.

The book does well in explaining the concepts of drug discovery and development, presenting the information in a concise manner. In addition, a number of figures and tables used in the book are derived from published literature. For instance, a diagram explaining the quick win/fast fail model of drug development in the last chapter is taken from a 2010 article in Nature Reviews, Drug Discovery. Each chapter is also supplemented by interesting resources that serve as their references and further readings.

This book is an ideal read for those interested in drug discovery and development, as well as the pharmaceutical industry. It's available for purchase at the UofT Bookstore. In terms of further readings, those inclined towards discovery should read The Textbook of Drug Design and Discovery while those inclined towards development would benefit from Modern Pharmaceutical Industry: A Primer. There is also Careers with the Pharmaceutical Industry by Dr. Peter D. Stonier, which is available at the Gerstein Science Information Centre and may or may not be getting its own review in the future.

Exam Study Tip: Retrospective Revision Timetable

By: Joham Ahmad, 2T4

I first learned about the retrospective revision timetable (RRT) from the YouTube content creator and Cambridge University medicine graduate, Ali Abdaal. The concept of the tool is to use your familiarity with courses or course modules to guide your study schedule, rather than arbitrarily dedicate blocks of time to different courses. Generally, each student's goal is to become as familiar as possible with each course's content by the time exam period rolls around. To gauge familiarity, active recall is used.

Step 1:
Attend classes, write good notes, and make active recall questions every week.

This is the most important step, as you cannot use the RRT tool without this. To make active recall questions, you can use software like Anki or Quizlet. I prefer to set aside a block of time at the end of the week to make Anki cards on the new content from that week.

Step 2:
Divide each of your courses into the main topics or modules, and write it down on a spreadsheet

For the sake of simplicity, I've only included one course in this example: physiology. This course can be broken down into the organs or body systems. Just listing these topics is already helpful as it reminds you of all of the topics that will be covered on exams. Jot down the date that you first listened to each lecture for each course.

Physiology	Listened to lecture	Date of Revision 1	Date of Revision 2	Date of Revision 3
Lungs	08-Jan			
Heart	08-Jan			
Liver	10-Jan			
Kidneys	10-Jan			
GIT	11-Jan			
CNS/PNS	11-Jan			

Physiology	Listened to lecture	Date of Revision 1	Date of Revision 2	Date of Revision 3
Lungs	08-Jan	13-Jan		
Heart	08-Jan			
Liver	10-Jan			
Kidneys	10-Jan			
GIT	11-Jan			
CNS/PNS	11-Jan			

Step 3:
For each day that you decide to do some review, pick the topic that you are least comfortable with.

Extenuating circumstances, like upcoming midterms that you're most concerned about, may influence which topics you prioritize. However, the RRT is designed to be implemented from the beginning of the semester so that there is no fear of cramming. In the example provided, let's say it has been 5 days since you reviewed the lungs and heart. You may decide to review these topics with your active recall tool (Anki, Quizlet). Use traffic light colour coding to indicate whether your feel great (green), okay (yellow), or bad (red) about your performance in recalling material.

Step 4:
Repeat this process of picking the topic you're least comfortable with until you feel comfortable with all material from each course.

The goal to consistently feel "great" (green colour) about all topics leading up to the test dates. While this spreadsheet only shows 3 revisions, you may need to revise material more or less times depending on the course and test dates. If you use Anki, you'll notice that the system prompts you when to review material, which you can use as a substitute for RRT. However, if you find that the timeline Anki suggests is not feasible for you, RRT is a good and flexible option.

Physiology	Listened to lecture	Date of Revision 1	Date of Revision 2	Date of Revision 3
Lungs	08-Jan	Y 13-Jan		
Heart	08-Jan	Y 13-Jan		
Liver	10-Jan	R 14-Jan		
Kidneys	10-Jan	Y 15-Jan		
GIT	11-Jan	G 16-Jan		
CNS/PNS	11-Jan	Y 16-Jan		

Physiology	Listened to lecture	Date of Revision 1	Date of Revision 2	Date of Revision 3
Lungs	08-Jan	Y 13-Jan	Y 19-Jan	G 23-Jan
Heart	08-Jan	Y 13-Jan	G 20-Jan	G 25-Jan
Liver	10-Jan	R 14-Jan	Y 18-Jan	G 23-Jan
Kidneys	10-Jan	Y 15-Jan	Y 19-Jan	G 24-Jan
GIT	11-Jan	G 16-Jan	G 21-Jan	G 25-Jan
CNS/PNS	11-Jan	Y 16-Jan	G 20-Jan	G 26-Jan

As a person who has been using active recall from before entering pharmacy school, the biggest takeaway I had from the RRT tool has been reframing the way you look at studying. Regular schedules may force you into a routine that is inflexible to emergencies and doesn't account for topics that you found harder than others. RRT keeps constant tabs on your preparedness for each topic of each course; a recipe for success. Best of luck this exam season.

Brampton Civic Hospital's Capacity Crisis:

An Overview

Amar Deonandan, 2T3

Brampton Civic Hospital is a hospital that has made the news multiple times, and for good reasons. The hospital is known to have one of, if not the busiest hospitals in the country with the odds stacked against them.

Located at 2100 Bovaird Dr. East in Brampton, the Brampton Civic Hospital was constructed in 2007 as a part of the William Osler Health System to replace the old and now-demolished Old Peel Memorial Hospital1. At the time of construction, the hospital was a technological and architectural marvel to the community. Over 600 beds, in addition to plenty of ample natural lighting, provided Brampton the assurance of a bright healthcare future[2].

Unfortunately, hospital resources could not compete with the explosive population growth Brampton was experiencing. From 2006 to 2016 alone, Brampton's population has increased by over 160,000[3]. The hospital also serves as a community hospital for less populous municipalities surrounding Brampton, including Caledon, Orangeville, Georgetown, and Woodbridge.

When looking at the average number of hospital beds per capita, while the provincial average is 2.16 beds per 1,000 people. Brampton sits well below half of that statistic, at 0.96 beds per 1000 people[3]. Both Mayor Patrick Brown and Peel's Medical Officer of Health Dr. Loh have sounded alarm bells to the Province, stating that Brampton is suffering a severe hospital capacity crisis[3].

The hospital will continue to be pushed beyond its limits, especially in the Emergency Department[4]. Patients who clear the prolonged wait times would often remain on beds in the hallways, often coined "hallway medicine" since pre-existing rooms are already filled. Not only are there concerns of patient privacy and safety, but such conditions are often dehumanizing to patients.

The issue was only exacerbated once COVID-19 arrived. Brampton is a city that relies on primarily retail, logistics, and manufacturing to drive its economy with minimal ability to work from home[5]. The necessary in-person nature of jobs provided the means for high rates of transmission which further strained Brampton Civic Hospital. This was especially seen during the Omicron wave, where a Code Orange-reserved for mass casualty incidents was called to enact procedures to improve hospital flow.

This is not to underscore the commendable work of physicians, nurses, the pharmacy department, as well as other allied health and support staff. The staff there are working to the best of their abilities to ensure that despite the overwhelming odds and lack of resources, patients continue to receive the best care they can get.

The Province has responded by adding 41 beds to Brampton Civic Hospital[6] and pledging to expand the newly built Peel Memorial Centre (currently an urgent care center) with a new inpatient wing featuring an additional 250 beds[7]. However, considering the rate at which Brampton is growing, this will not be enough to offset Brampton's critical hospital capacity crisis.

While a complex issue to overcome, the Province is not doing enough to counteract Brampton's hospital crisis. The Province needs to commit more resources to ensure that the citizens of Brampton have access to timely, effective care.

References

1. https://www.williamoslerhs.ca/en/visiting-us/brampton-civic-hospital.aspx
2. https://web.archive.org/web/20101122112714/http://www.williamoslerhs.ca/body.cfm?id=58
3. https://toronto.ctvnews.ca/there-s-always-been-a-hospital-capacity-problem-in-brampton-covid-19-made-it-worse-1.5755669
4. https://www.cbc.ca/news/canada/toronto/brampton-civic-hospital-hallway-patients-1.4379032
5. https://www.cbc.ca/news/health/covid-communities-immigrants-workers-study-1.6351415
6. https://www.insauga.com/brampton-civic-hospital-to-receive-41-additional-patient-beds/
7. https://www.cbc.ca/news/canada/toronto/hospital-levy-brampton-peel-memorial-1.6250638

War Movies

Moid Shah, 2T3

Disclaimer: *Given the current events in Ukraine, be aware that this article contains discussion about war, violence, and heavy subject matter.*

Hey everyone! I'm here to give you another list of movie recommendations. For no particular reason, I decided to make a list of some of my favourite war movies of all time. Given the subject matter the movies can be hard to watch and I will give that disclaimer now and in each review. That being said, I think these movies give a great insight into the grave nature of the impact of war and are movies I enjoy a lot. This list is in no way comprehensive, so if this is a genre you enjoy please explore it further because there is a lot to discover.

1. Come and See (1985)

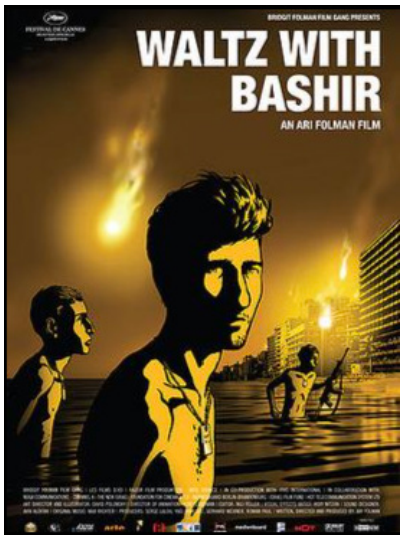
Starting off my list is quite possibly the most difficult movie watching experience I've ever had to endure. The story of this movie follows a Belarusian teen named Flyora who is captivated by the excitement of war and decides to enlist to fight against the Nazis in World War II. The brutality of the war proceeds scene after scene. The young soldier is abandoned by his troop, he is separated from his family, and he is left to fight on his own. It seems like anyone who can possibly help him is bound to die in front of him. What makes the imagery in this movie so unforgettable is how unrelenting it is, but also how clearly the impacts of the series of events are shown on Flyora's face. You can see how the events literally age this child. The innocence is ripped from him and he emerges traumatized and with wrinkles on his face. As I've mentioned before, this movie is unrelenting and runs quite long. This movie is definitely not for the faint of heart. I believe this movie is unforgettable, and extremely effective as an anti-war movie. This child is extremely motivated to fight, but this comes at the cost of his humanity. The war that the soldiers are fighting is a noble one to some extent, but the brutality of the war shows that there aren't truly any winners. if you can stomach the brutal imagery of this movie I highly recommend it because it is an experience that is unforgettable.

2. Saving Private Ryan (1998)

I would consider this a classic war blockbuster, that if you haven't seen already you definitely should. It stars Tom Hanks who is on search for an army private played by Matt Damon who is missing in action during World War II. Private Ryan's two brothers were killed in action and Tom Hanks' character is on the search to bring closure to the mother of private Ryan and to share the news with private Ryan. What makes this movie a classic is the use of filmmaking to convey the experience of war. There's one particular scene near the start of the movie where soldiers are storming a beach and we, as the audience, get to experience the shell shock that the soldiers see. The use of sound causes a disorienting experience of whistling in the ear that quickly transitions to a sensory overload of explosions and bullets flying in every direction. From then on we follow a troop of soldiers who have to carefully make their way through battlefields to find the missing private Ryan. Along the way the movie uses black humour to show the dehumanization that the soldiers display to their enemies. One scene shows

American soldiers pointing their guns at a German soldier who has his hands up and is begging for his life in German. The American soldiers mock him and say they don't understand before shooting him. Even the "good guys" in this movie show a sense of inhumanity when they are fighting in this war. Despite the run time, the movie is engaging and has great direction, sound editing and action choreography. This movie is nowhere near as difficult to watch as my previous recommendation and if you feel like you need a lighter introduction to the genre then this is a good place to start.

3. Waltz with Bashir (2008)



This is one of the most stylistically interesting movies on the list in my opinion. Waltz with Bashir is an animated documentary about the 1982 invasion of Lebanon. The movie follows an Israeli soldier who tries to regain his memory of the events by interviewing fellow veterans and talking with his psychologist. The animation style in this movie is incredibly unique and visually striking. The animation appears to be hand-drawn but has a depth to it that makes it feel very realistic. It is some combination of 3D and 2D animation that I find very visually pleasing. If I were to compare it to anything I would say it's somewhat similar to the show Archer; but this movie is gritty and harsh, whereas Archer is a comedy. This style makes all of the surreal sequences in the movie all the more striking. When a dream sequence happens in this movie it feels incredibly entrancing and makes the viewer question the state of mind of the narrator whose perspective the movie is being told through. Despite this, the movie is extremely realistic. It shifts between genres, but the story stays intact. The way the movie pieces back the events that transpired and slowly show the damaging impact they had on the victims as well as the main character is exceptional. At the end of the movie, the animation stops and we see archival footage of women crying in Lebanon at the fallout of the war. This is one of the most unique movies that I have ever seen and I highly recommend it if you want to see something made in a style like no other movie.

4. Grave of the Fireflies (1988)

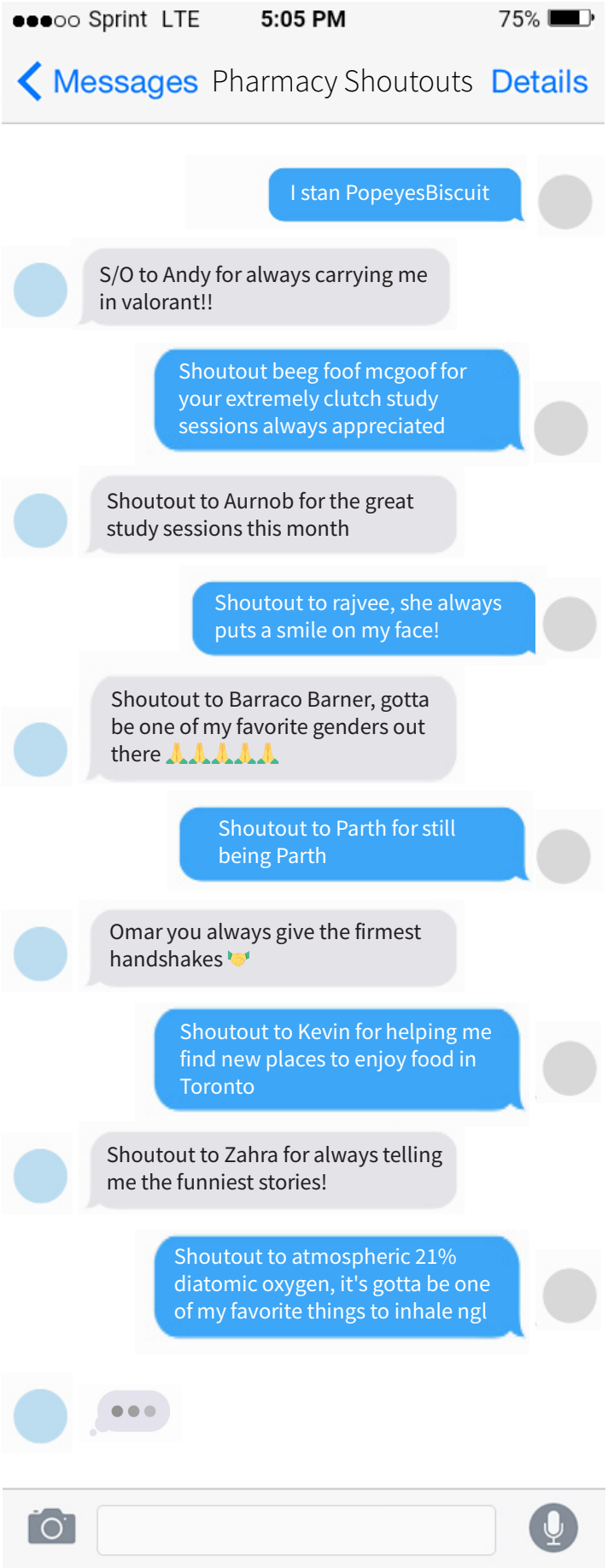
From the studio that brought whimsical classics such as Spirited Away, My Neighbour Totoro and Howl's Moving Castle, this movie is definitely not that. This movie, similar to Come and See, uses childhood innocence as the plot device to show how devastating war is. The movie follows a small boy who takes care of his younger sister while Japan is fighting during World War II. Both of them must fend for themselves and find joy and solace in a time of extreme terror. The two of them do have adults to watch over them early on in the movie. But, this experience is less than adequate for developing children and soon enough they get abandoned. Just like the previous movies this one does an excellent job of showing how desperation can quickly escalate to inhumanity. But, unlike the other movies on this list, the children retain their humanity and it's both heartbreaking and heartwarming to see the two siblings confide in each other in these times. Unfortunately, this movie doesn't spend a lot of time in the "good moments" the two share together. This is one of the saddest movies I have ever seen. Seeing such young and innocent children get abandoned and then struggle to fight for their survival is devastating. Despite this, the movie shows a very touching depiction of the strength of family and like all Studio Ghibli movies it is incredibly beautiful. I would recommend this movie for fans of animation, because very few studios do it as well as Studio Ghibli.

5. Battle of Algiers (1966)

While the other movies do strive to show realistic depictions of war, none of them do it quite like Battle of Algiers. This movie is extremely dedicated to showing

a neutral depiction of the battle between the French government and Algerian rebels in the Algerian War. Battle of Algiers is shot like a documentary, and there are no stylistic exaggerations to elevate any aspect of the war. The result is a movie that methodically shows the strategies, motivations, and mistakes of both sides and shows that even small victories come at a tremendous cost. Unlike the rest of the movies on the list, the movie doesn't necessarily demonize any side, but instead shows an objective view of how war transpires and the resulting consequences. The movie is tense, and makes the viewer feel like they are on the front lines. If you care about historical accuracy in a film and have that film retain objectivity, then I highly recommend this movie.

I hope you enjoyed my list. The genre for war films is incredibly vast and I will end this list with some honorable mentions. Apocalypse Now and Full Metal Jacket are great depictions of the Vietnam War. 1917 and Dunkirk are both visually striking movies that came out more recently, the first of which showing the first world war, while the second showing the second world war. Two movies that I enjoy that are about more recent military struggles are The Hurt Locker and American Sniper. These movies are good at showing the PTSD that results from fighting in war. I can go on forever, but if you are looking for more war movie recommendations then I'd say to start with these movies and then explore the genre yourself.



Kanye West, undoubtedly one of the most polarizing figures of our generation, is someone who has captivated me ever since I was introduced to him (not personally of course). I've been enamored by his controversial opinions and his sometimes-overbearing personality. He is no stranger to the spotlight, from ranting about President Bush, to his comments on slavery. Kanye West has always said just enough to keep his name relevant in the media. In fact, I actually think My Beautiful Dark Twisted Fantasy (MBDTF) is the best album of the 2010's. Why do I say this? I'll paint you a picture.

The year is 2010. Kanye is fresh off of interrupting Taylor Swift at the MTV music awards. His mother had only passed away a couple of years ago. So what does he do? Like a child sent to the corner, he exiles himself to Hawaii in order to rid himself of any distractions. Unlike his previous album, MBDTF is not focused on his romantic life nor the untimely death of his mother. Instead, MBDTF revolves around the idea of Kanye's dreams of becoming a high-profile celebrity; an idea that he manifested back from his Chicago days. But what makes this album so iconic is not his idea of being successful one day. Kanye intricately weaves in ideas of his ego, persona, and his love life in order to give listeners insight into his dark and beautiful fantasy.

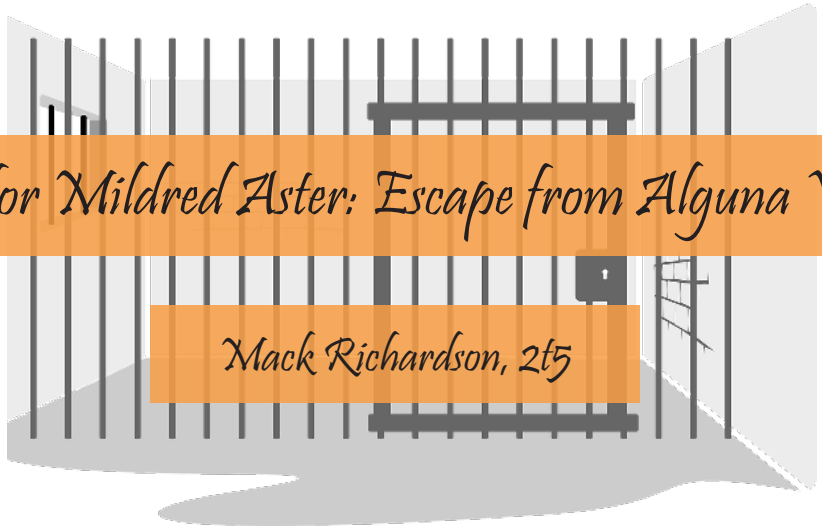
The album opens up with "Dark Fantasy", a song narrated by Nicki Minaj. While Nicki Minaj's fake British accent is iconic, for me, it's the stunning and glamorous piano chords combined with the arranged chorus of vocals that make this one of the best opening songs to an album I have ever heard. This song perfectly introduces listeners to Kanye's mindset. Quite literally, Kanye has reached a whole new level of stardom with this album.

As we move on to the next song of the album, "Gorgeous", Kanye introduces more ideas about the then political climate of the U.S. He ironically calls the US "gorgeous" because of the social injustice happening at the time… and unfortunately, still happening to this day.

As we move on to perhaps the most popular song on the album, "Power", I was absolutely astonished to hear a fact about this song. In an interview with a radio station, Kanye said, "the song took 5000-man hours to produce". To me, listening to what Kanye has to say on this song is peak Kanye. He not only continues to bring up political injustice but also talks about how this new level of stardom has given him this newfound power. Kanye does an incredible job of portraying himself as the villain who has all this "power", which at the time he most definitely was regarded as.

As we progress through the rest of the track list, Kanye produces an incredible nine-minute ballad with "Runaway". We also see Kanye team up with a slew of phenomenal rappers on "Monster" to create this song that gives off this incredibly sinister energy. This song also continues Kanye's idea that the newfound power has created a maniacal monster within him.

From Nicki Minaj to Rick Ross, to Jay-Z, Kanye expertly uses this star-studded cast alongside his incredible knowledge of producing music to craft this gem of an album. He does an incredible job of keeping listeners engaged from track one through track thirteen. Is MBDTF an album I listen to everyday? Definitely not. But is it an album that I think everyone should listen to at least once, whether you are a fan of Kanye West or not? Absolutely, without a doubt.



The Hunt for Mildred Aster: Escape from Alguna Vez Prison

Mack Richardson, 2t5

Introduction:
Following up on our previous issue of The Hunt for Mildred Aster, congratulations to Ubaid Rehman for winning a $10 to Tim Horton's! Ubaid correctly solved all three riddles, proving himself worthy in the world of riddling.

Make sure to submit your answers to this week's riddle to mack.r08@gmail.com for your chance to win a $10 gift card to your choice of location!

Escape from Alguna Vez Prison:
Disaster has struck. In your hunt for the elusive criminal mastermind Mildred Aster, you have been captured and incarcerated in the infamous Alguna Vez Prison after being framed for seditious activity against the government. You find yourself locked up with 20 hardened criminals in a common holding cell, trying to come to grips with your sentence: life in prison.

However, the warden of the prison has an interesting proposition for you: a nearby university is conducting an experiment on teamwork and cooperation. They want to investigate how well criminals can work together under different circumstances. The warden explains that, if you agree to participate, you and the other prisoners will be given a challenge to complete: if you are successful, you will all be immediately released. But if you fail, you will all be locked away for the remainder of your lives. With nothing else to lose, you agree to take part in the challenge.

The Challenge:
21 prisoners (you and the 20 others) will be held in isolated cells, unable to communicate, see, or interact with each other in any way. Once an hour, a random prisoner will be brought to a room which contains two switches, both starting in the down (off) position. In the room, a prisoner will be able to flip exactly one switch one time. They will not be able to do anything else in the room and will be under close supervision to make sure nothing happens. Although the selection of the prisoner who goes to the room is random, over time, every prisoner will visit the room more than once. The guards will never stop taking prisoners, and they will not bring the same prisoner to the room and infinite number of times in a row.

Your challenge is this: you must tell the warden when every prisoner has visited the room at least once and explain how you know every prisoner has visited. If you are wrong, you and all the other prisoners will be jailed for the rest of your lives.

How do you win your freedom?

(Hint: saying "I waited a long time so everyone must have gone" is not the answer!)

CINNAMON ROLLS

By: Kerstin Chow, 2T3

Since my life is pretty boring, I don't have an inspiring life story to put here… Nonetheless I had some time to make these cinnamon rolls over the reading week. They were a lot easier to make than I thought so if you guys have the time, please give it a try!

Total time: 2-3 hrs

Yield: 12-13 cinnamon rolls

INGREDIENTS:

Dough:

- 3 ½ cups (420 grams) of all purpose flour, + more for dusting
- ¼ cups (50 grams) granulated sugar
- ¼ cups (50 grams) light brown sugar
- 1 tsp of salt
- 2 ¼ tsp of instant yeast (= 1 package)
- 1 tsp of ground cinnamon
- ½ cups (120mL) milk
- 1 tbsp (15 mL) vanilla extract
- ½ cups (120grams) sour cream
- 6 tbsp (85 grams) unsalted butter
- 1 large egg, room temperature

Filling:

- 6 tbsp (86 grams) unsalted butter, room temperature
- 4 ½ tbsp granulated sugar
- 3 tbsp light brown sugar
- 1.5 tbsp ground cinnamon

Glaze:

(original recipe makes a lot, so this is adapted to half)

- 2 oz (57 grams) cream cheese, room temperature (= A quarter brick of cream cheese)
- 1 tbsp (14 grams) unsalted butter, room temperature
- ½ tbsp (7.5mL) vanilla extract
- 1 pinch salt
- 1 cup (100 grams) powdered sugar
- ½ tbsp milk (Can add more prn for consistency)
- Equipment:
- 9 x 9 inch baking dish or larger
- Rolling pin

DIRECTIONS:

1. In a bowl, add the dry ingredients together: flour, granulated sugar, brown sugar, salt, instant yeast, and cinnamon, then whisk it together to combine and set aside.
2. In a separate bowl, add the wet ingredients together: milk, vanilla extract, sour cream, and butter. Microwave until warm to the touch and stir until butter is melted.
3. Pour the wet ingredient mixture into the dry and mix. Drop the egg in and mix until the dough comes together but doesn't stick to your fingers.
4. Dump the dough onto a floured surface and knead for about 5 minutes, sprinkling with additional flour as needed, and then transfer the dough to a large oiled bowl. Cover and let it rise in a warm place for about 1.5 to 2 hours, or until the dough doubles in size.
    - While waiting for the dough to rise, prep the filling by mixing the room temperature butter, granulated sugar, light brown sugar, and ground cinnamon together.
5. On a well-floured surface, roll the dough out into a rectangle that's about 0.5 to 1 cm thick (Mine rolled to about 30cm x 45cm).
6. Spread the filling over the surface of the rolled-out dough, and make sure to coat the edges so the side pieces will get the filling.

7. Next, start rolling from the shorter side from one end to the next. You might have to stretch the dough a bit to ensure the ends are more even.
8. The dough will now be a cylindrical roll, but if one side is bigger than the other you can lightly massage/roll out the thicker end to ensure the rolls will have similar width
9. Cut the dough every 3-4 cm into even pieces. You can also use dental floss to loop around the roll and pull it into clean cuts.
10. Place the rolls cut side up in a baking dish and allow it to rest in a warm place for about 40 minutes.
11. Set the oven to 350°F and bake for 20 min first until the top is lightly browned.
    - While waiting, make the glaze by combining the cream cheese, butter, vanilla extract, salt, powdered sugar, and milk if needed. The glaze may appear off-white or beige in colour, but this is normal and won't be noticeable when applied onto the cinnamon rolls
12. Then, cover the top of the pan loosely with foil and continue baking for 15 mins
13. Once the cinnamon rolls are finished baking, drizzle the glaze over the cinnamon rolls immediately after taking them out of the oven.

ACKNOWLEDGEMENTS:

I want to thank (?) a certain Monograph co-editor for pestering me to submit a recipe and for being my free labour in baking projects that I am too lazy to do myself.

wi(l)d-screen pharmacy

(To the tune of wi(l)d-screen baroque by Moeka Koizumi. あなた分かりますか？)

Anonymous, 2T4

Now student, do you understand?
The road ahead, do you understand?
Welcome to the LDFP
Read, write, compound, counsel for your life

Day by day, the semester flows like raging rapids
So please tell me when is next? Where is next? What is next?
What's your next destination?

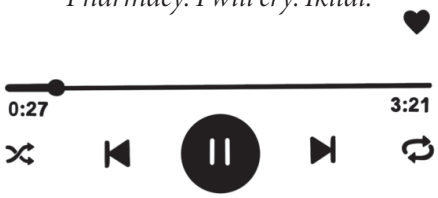
Eternally bound to duty
A service to the society
Heavy responsibility
An identity that'll follow you not just here, not just there, anywhere, everywhere
Just take one single step outside
The impact of your practice
First-hand, you'll truly understand
Hey, just give it your all.

Hospital and community
Pharmaceutical industry
Endless possibilities
(And yet) many years of strife is your destiny

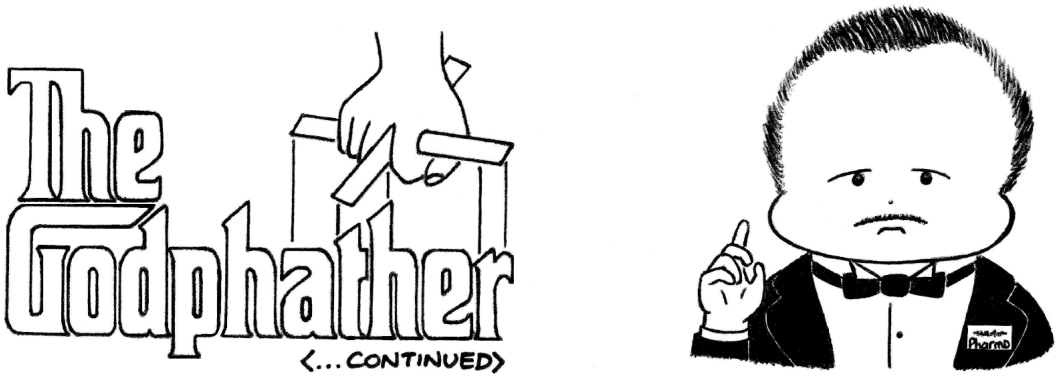
Utsukushiki Doctor of Pharmacy
Does this profession meet expectations?
At the very end, that is for you to decide

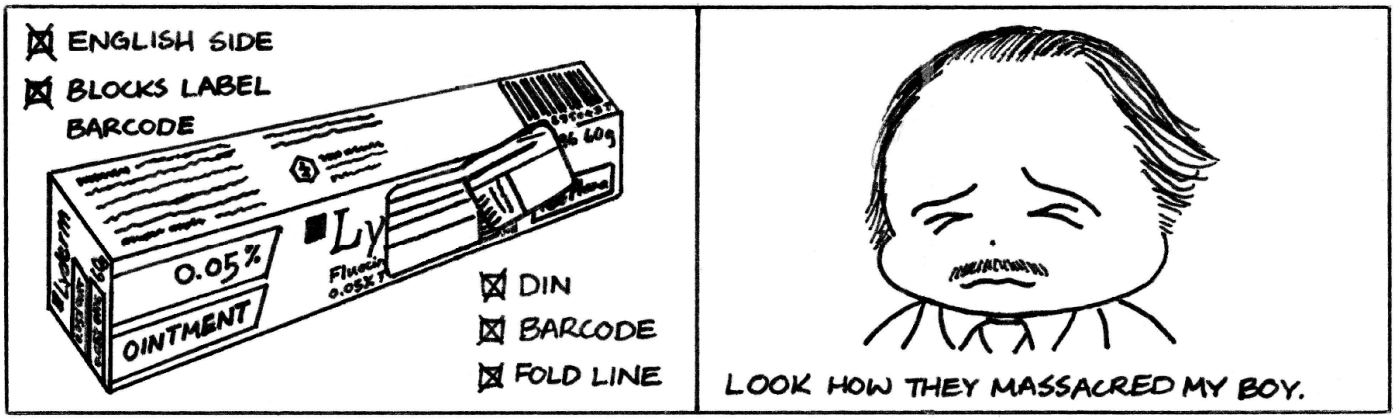
Who here will rise! Who here will fall!
A furious storm has approached
Shout out now. Never give up.

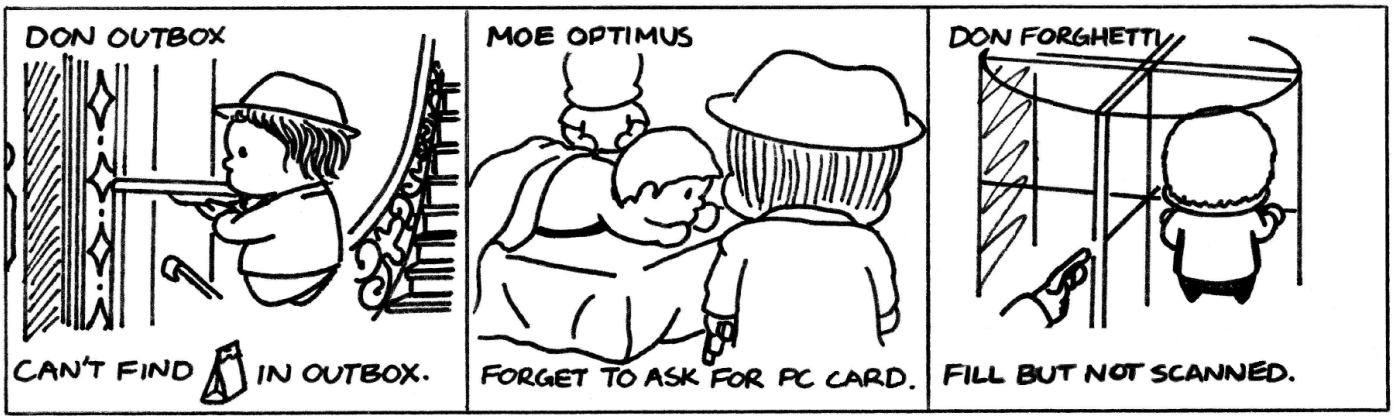
We shall see. Will I cry. Shinanai.
Pharmacy. I will cry. Ikitai.



Official release date: NEVER!
Besides, I am currently putting my efforts into another song.







For monograph only

St. Patrick's Day Wordsearch

by Maira Hassan, 2T4

R	A	I	N	B	O	W	O	I	E	D	L	L	O
E	V	P	R	D	S	E	D	L	L	L	L	G	A
L	A	W	I	A	H	H	G	E	U	I	E	O	M
N	D	I	R	T	A	G	E	C	C	C	P	T	A
H	S	O	I	R	M	R	E	O	K	L	R	K	O
D	I	P	S	A	R	N	R	I	D	R	E	C	G
C	O	A	H	D	O	R	U	L	T	O	C	R	B
L	I	R	C	I	C	I	O	I	T	A	H	P	O
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V	P	D	A	I	F	R	H	S	C	D	U	G	K
E	O	E	M	O	S	E	E	L	O	R	N	E	O
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R	O	O	O	N	F	N	R	E	N	M	P	E	K
T	P	A	H	L	R	M	E	C	S	H	S	A	C

POT OF GOLD
SHAMROCK
LUCK
LEPRECHAUN

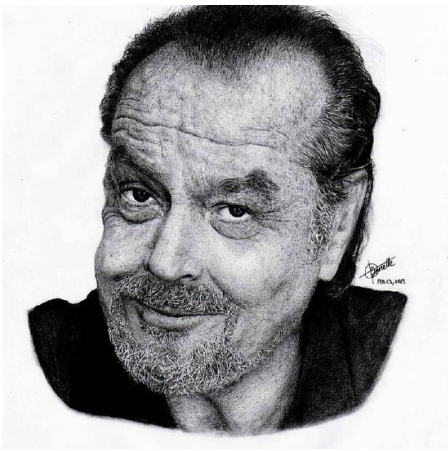
PARADE
IRISH
GREEN
COINS

CLOVER
TRADITION
RAINBOW
MARCH

Artist Spotlight

Ruba Ullah, 2T5

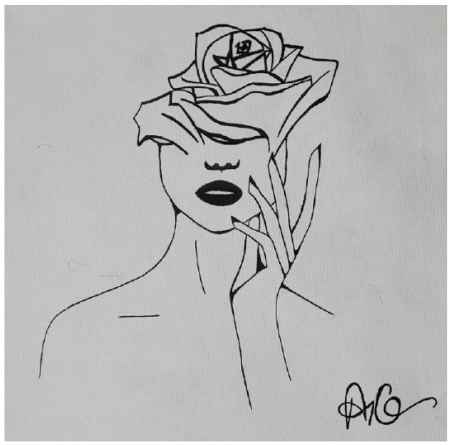
Ya Ping Guo, 2T3



Ben D'Mello, 2T2

Selina Luong, 2T4

Ya Ping Guo, 2T3



Ashish Gante, 2T5

Selina Luong, 2T4

Samra Ghazi, 2T4

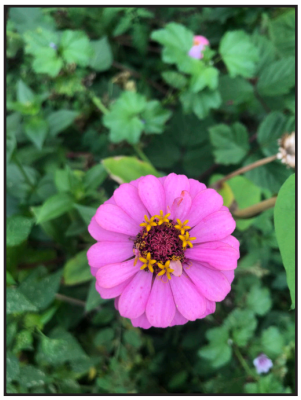
Galit Moroz, 2T4

Galit Moroz, 2T4

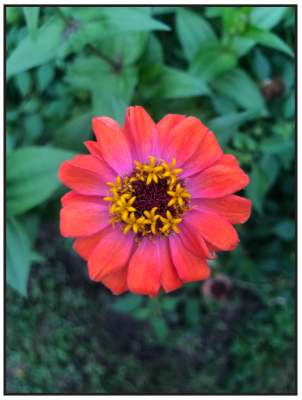
Behind the Lens
PHOTOGRAPHY

Ann Chang, 2T2

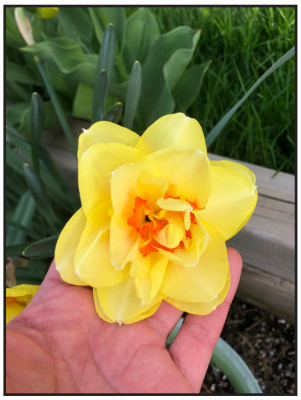
Kevin Leung, 2T2



Arnold Ruste, 2T3



Arnold Ruste, 2T3



Arnold Ruste, 2T3