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RHO^{Rx}CHI *post*

St. John's University College of Pharmacy & Health Sciences

LEADS Initiative: 2nd Edition

FDA APPROVES NEW WEIGHT LOSS INJECTABLE,
ZEPBOUND™

ROCTAVIAN, THE FIRST GENE THERAPY TREATMENT FOR
HEMOPHILIA A

UTILIZATION OF TUMOR MICROENVIRONMENT IN THE
TREATMENT OF BREAST CANCER

FDA APPROVES LITFULO FOR ADULTS AND ADOLESCENTS
WITH SEVERE ALOPECIA AREATA

About the Rho Chi Post

The Rho Chi Post was developed by the St. John's University Rho Chi Beta Delta Chapter in October 2011 as an electronic, student-operated newsletter publication with a team of three student editors and one Editor-in-Chief. Today, our newsletter boasts 13 volumes, over 100 published issues, and more than 600 unique articles to date with an editorial team of first to sixth year student pharmacists, as well as returning PharmD graduates.

The newsletter is distributed by St. John's University College of Pharmacy and Health Sciences to more than 1,500 students and faculty members. Our monthly electronic mailing list continues to extend readership far beyond campus.



Mission

The Rho Chi Post is an award-winning, electronic, student-operated, faculty-approved publication that aims to promote the pharmacy profession through creativity and effective communication. Our publication is a profound platform for integrating ideas, opinions, and innovations from students and faculty.

Vision

The Rho Chi Post aims to become the most creative and informative student-operated newsletter within St. John's University College of Pharmacy and Health Sciences. Our newsletter continues to be known for its relatable and useful content. Our editorial team continues to be known for its excellence and professionalism. The Rho Chi Post sets the stage for the development of individual writing skills, collaborative team work, and leadership.

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A Message from the Editor-in-Chief, Isabelle Lim

As the 2024 Spring Semester progresses, I extend warm wishes to all students for success in their academic pursuits and personal endeavors. I especially want to share heartfelt thanks to our Editorial Team, Executive Board, advisors, and readers, as their contributions are integral to the success of our newsletter. Additionally, I am thrilled to announce that in the upcoming April Issue, we will be featuring our second publication dedicated to the Rho Chi Honor Society LEADS Initiative. Lastly, we are opening recruitment for the 2024-2025 Editorial Team positions, offering invaluable leadership experience and skill development opportunities in writing, editing, content creation, data analysis, and communication. Please find more information on the application process in this issue or on our social media pages. We are eager to continue our successful journey with the St. John's community.

Frequently Asked Questions

Who can write for the Rho Chi Post Newsletter?

Anyone can write for the Rho Chi Post! Our newsletter is not exclusive to St. John's University students. The Rho Chi Post accepts articles on a daily basis!

How do I submit an article?

You can submit an article by creating an account on our website! Go to www.rhochistj.org/RhoChiPost, click the login button from the upper menu bar, and click register. Upon making an account, you will be able to submit articles to our author inbox.

Who determines article topics?

You are free to choose an article topic of your choice. Take a look at our Author Guidelines for ideas.

What happens after I upload my draft article on the Rho Chi Post website?

Our Editor-In-Chief (EIC) will either edit the article directly or assign the article to a staff editor. If any revisions are needed, the editor will upload the article back to the portal, notifying the author via email. The author can then download the edited article, make the suggested revisions, and reupload the draft back to the portal. Additional drafts will be reevaluated by our copy editors and then EIC, repeating this process. Once no further revisions are needed, the article is accepted for publication.

Is there a deadline for authors to send revisions?

There is no deadline to submit revisions for an article. However, the quicker revisions are made, the quicker the article can move through our editing process. Once an article is accepted for publication, it will be moved into a queue to be placed into an upcoming issue.

FDA Approves New Weight Loss Injectable, Zepbound™

By: Katelyn Hoosein, PharmD Candidate c/o 2025 and My Tram (Sophie) Le, PharmD Candidate c/o 2028

In recent years, there has been an increase in the prevalence of obesity in the United States. According to the National Heart, Lung, and Blood Institute (NHLBI), nearly 3 in 4 adults aged 20 years or older in the United States are either overweight or obese, and nearly 1 in 5 children and teens ages 2 to 19 years are obese.¹ The World Health Organization (WHO) defines obesity as a body mass index (BMI) greater than or equal to 30 kg/m² in adults, weight-for-height greater than 3 standard deviations above the WHO Child Growth Standards median for children under 5 years of age, and greater than 2 standard deviations above the WHO Growth Reference median for children aged 5 to 19 years old.² Obesity results from energy imbalance as the body takes in more energy than it consumes, causing fat accumulation over time.¹ Obesity puts patients at risk for many conditions, including cardiovascular disease, stroke, diabetes, and osteoarthritis.²

Current treatment guidelines set by the American Association of Clinical Endocrinologists (AACE) and American College of Endocrinology (ACE) promote lifestyle modifications, such as reduced caloric intake, eating nutritious meals, and increasing physical activity, as first-line therapy for obesity. Lifestyle modifications combined with pharmacotherapy were seen to increase and sustain weightloss for individuals with a BMI greater than or equal to 27 kg/m², and in individuals with obesity stage 2, with a BMI

greater than or equal to 25 with a comorbidity.³ Current medications approved by the Food and Drug Administration (FDA) for weight loss include Alli (orlistat), Qsymia (phentermine-topiramate), Contrave (naltrexone-bupropion), and injectables Saxenda (liraglutide) and Wegovy (semaglutide).

On November 8, 2023, the FDA approved Eli Lilly's Zepbound (tirzepatide) for weight management in adults with a BMI of 30 kg/m² or greater or 27 kg/m² or greater with at least one comorbidity (i.e., hypertension, dyslipidemia, type 2 diabetes mellitus, obstructive sleep apnea, or cardiovascular disease). It is indicated to be used in addition to lifestyle modifications, such as a reduced calorie eating pattern and increased physical activity.⁴ Tirzepatide activates glucagon-like peptide 1 (GLP-1) and glucose-dependent insulinotropic polypeptide (GIP) receptors. GLP-1 hormone reduces appetite and increases satiety or feeling of fullness. GIP hormone is responsible for regulating food intake when combined with GLP-1.⁵ Activating both receptors helps target weight loss in patients taking the medication.

Tirzepatide, as Zepbound, comes in a pre-filled single-dose injection pen in doses 2.5 mg, 5 mg, 7.5 mg, 10 mg, 12.5 mg, and 15 mg per 0.5 mL. The pen must be stored in the refrigerator, but if left unrefrigerated, it must be discarded after 21 days.⁴ It is administered as a once-weekly subcutaneous injection. It

can be injected at any time of day, without regard to meals. The recommended starting dose is 2.5 mg, and after 4 weeks, the dose may be increased in 2.5 mg increments. The recommended maintenance doses are 5 mg, 10 mg, and 15 mg. The maximum dose is 15 mg weekly.⁴

Common side effects of tirzepatide are nausea, vomiting, diarrhea, stomach pain, and injection site reactions. Adverse reactions include hypersensitivity reactions, severe stomach issues, acute pancreatitis, depression and suicidal ideation, hypoglycemia, and gallbladder issues including jaundice, fever, and abdominal pain.⁴ These reactions require monitoring and immediate management if they do occur. Tirzepatide carries a risk of thyroid C-cell tumors, which was observed in a 2-year study involving rats. It is uncertain if this risk carries over to humans; however, tirzepatide is contraindicated in patients with past medical history or family history of medullary thyroid carcinoma (MTC) or multiple endocrine neoplasia type 2 (MEN 2).⁴ Patients who are pregnant should not use tirzepatide and the drug should be discontinued once pregnancy is confirmed.

Prior to the approval of Zepbound, the FDA approved Eli Lilly's Mounjaro in 2022. Mounjaro has the same active ingredient, tirzepatide, as Zepbound; however, Mounjaro is indicated only for improvement of blood sugar levels in patients with type 2 diabetes mellitus, not for weight management. Because Mounjaro contains the same active ingredient as Zepbound, both have the similar dosage forms, dosing, administration recommendations, side effects, warnings, and contraindications.^{4,6}

The effect of tirzepatide on weight loss main-

tenance was studied by the SURMOUNT-4 trial, which was a phase 3 randomized withdrawal study with a 36-week, open-label tirzepatide lead-in period followed by a 52-week, double-blind, placebo-controlled period.⁷ The participants included adults that were overweight or obese with at least 1 complication (hypertension, dyslipidemia, obstructive sleep apnea, or cardiovascular disease). The study did not include patients with diabetes, previous or planned surgical intervention for weight loss or treatment with medication for weight loss 3 months prior to the study. The study was conducted at 70 sites in Argentina, Brazil, Taiwan, and the United States. A reduced calorie eating pattern and increased physical activity was maintained throughout the trial. The 36-week, open-label lead-in period consisted of administering the starting dose of tirzepatide (2.5 mg) and increasing the dose by 2.5 mg every 4 weeks until a tolerated dose of 10 or 15 mg was achieved. At the end of the lead-in period, participants who received and tolerated the maximum dose of tirzepatide (10 or 15 mg) were randomized into 2 groups: continue receiving the maximum tolerated dose of tirzepatide or switch to matching placebo for an additional 52 weeks.⁷ 783 participants were going into the open-label, lead-in period, but 670 participants were able to tolerate the maximum dose and be randomized at week 36.⁷

The study's primary endpoint was the mean percent change in weight from the time of randomization (week 36) to the end of the trial (week 88). The secondary endpoint was the number of patients in week 88 who kept at least 80% of the weight lost during the 36-week lead-in period. The results showed that a mean weight reduction of 20.9% was observed during the 36-week lead in period.⁷

Also, tirzepatide was seen to have a more significant mean percent change in weight. The mean percent weight change from week 36 to week 88 was -5.5% with tirzepatide compared to 14.0% with placebo (group difference, -19.4% [95% confidence interval (CI), -21.2% to -17.7%]; $P < .001$).⁷ Regarding the secondary endpoint, the results showed that 89.5% of patients who continued receiving tirzepatide vs. placebo maintained at least 80% of the body weight loss, compared to 16.6% with placebo [$P < 0.001$].⁷ The results from this study showed that tirzepatide helps lose weight and maintain weight loss.

The SURMOUNT-4 trial also measured the side effects and tolerability of tirzepatide use for weight loss. In this study, 634 patients (81%) reported at least one or more adverse events during the tirzepatide lead-in period (weeks 0-36), with 16 patients (2%) reporting a serious adverse event and 1 death occurred due to coronavirus disease 2019 (COVID-19) related pneumonia. The most common side effects were gastrointestinal-related issues, including nausea (35.5%), diarrhea (21.1%), constipation (20.7%), and vomiting (16.3%). Other side effects reported include decreased appetite (9.5%) and injection site reactions (8.2%).⁷ During the double-blind period (weeks 36 to 88) and safety follow-up period, 202 out of 335 participants (60.3%) in the tirzepatide group and 187 out of 335 participants (55.8%) in the placebo group experienced one or more adverse event.⁷ In each group, 10 patients (3%) of participants experienced serious adverse events. There was 1 death observed in the tirzepatide group due to congestive heart failure and 1 death in the placebo group due to adenocarcinoma of the colon. The most common adverse effects in the tirzepatide and placebo group were

COVID-19 (14% vs 14.9%) and gastrointestinal related issues including diarrhea (10.7% vs 4.8%), nausea (8.1% vs 2.7%), and vomiting (5.7% vs 1.2%).⁷ During the lead-in period, treatment discontinuation due to an adverse event occurred with 55 participants (7%). During the double blind period, treatment discontinuation due to an adverse event occurred in 6 participants (1.8%) in the tirzepatide group and 3 participants (0.9%) in the placebo group.⁷ These results show that tirzepatide has tolerable side effects with most participants who took the drug, with treatment discontinuation being minimal.

Obesity has been a rising concern in the United States in recent years among adults and children. According to WHO, obesity poses numerous health risks including cardiovascular disease, diabetes, and osteoarthritis. Obesity treatment involves lifestyle changes and may include medication. Approval from the FDA of Zepbound marks a significant advancement in obesity management.

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Meet the Mentor: Katelyn Hoosein

My name is Katelyn Hoosein and I am currently a 5th year (P3) pharmacy student. On campus, I am a member of the Rho Chi Honor Society, where I serve as a LEADS mentor and Head Chair for the Drugs & Diseases: Nervous System course. I currently work as a Pharmacy Intern at CVS Pharmacy and at New York-Presbyterian Weill Cornell Medical Center.

I am interested in clinical pharmacy and utilizing the knowledge I learned in the therapeutics portion of Drugs & Diseases. Therefore, I would like to pursue a residency. From what I have learned about it, ambulatory care seems interesting to me, but I look forward to my APPE rotations to solidify what I would like to specialize in.

For fun, I like to play with my 2 puppies, Graham and Georgia. I've also recently started cooking and experimenting with new recipes. I also enjoy watching movies and exploring the city!

Meet the Mentee: My Tram (Sophie) Le



Hi everyone, my name is Tram (Sophie) Le and I am a second year PharmD major. It was an honor for me to be working with Rho Chi Post this year. I joined Rho Chi Post because I wanted to develop a strong foundation in pharmaceutical sciences through researching and writing. Through my involvement in Rho Chi, I've learned the importance of collaboration, mentorship, and continuous learning in the field of pharmacy. Working alongside with my mentor has inspired me to strive for excellence in my academic and equipped me with the skills and necessary to excel in my future career.

As a second-year pharmacy student, I am currently interested in pursuing a career in industry pharmacy when I graduate. I am interested to the industry pharmacy career path for its innovative nature, diverse role, and collaborative environment. I'm excited about contributing to the development of new drugs, working with interdisciplinary teams, and advancing healthcare on a broader scale. Additionally, the potential for career growth and development is significant. I am eager to continue exploring this field and leveraging my education and skills to contribute meaningfully to the pharmaceutical industry.

In the free time I love to go out with my friends, working out and reading. I am very much a people person, so I enjoy going out and get to know new people, make connections and learn new things.

Roctavian, the First Gene Therapy Treatment for Hemophilia A

By: Paulina Maczko, PharmD Candidate 2027, Sarah El-Rowmeim, PharmD Candidate 2027, and Laura Pham, PharmD Candidate 2025

Valoctocogene roxaparvovec-rvox, sold under the brand name “Roctavian” by BioMarin Pharmaceuticals, was approved by the Food and Drug Administration (FDA) on June 29, 2023. It is a single-dose adeno-associated virus vector-based gene therapy infusion indicated for the treatment of adults with severe hemophilia A without antibodies to adeno-associated virus serotype 5 (AAV5).¹ Roctavian utilizes a modified virus, also known as a vector, and is used to treat hemophilia A. The vector transports a functional form of the Factor VIII gene to hepatic cells. The imported gene allows the production of clotting factors, preventing excessive bleeding.² Roctavian represents a significant breakthrough in treating severe hemophilia A, offering patients a promising option for managing the rare genetic bleeding disorder.

Background on Hemophilia A

Hemophilia A is an inherited bleeding disorder caused by a gene mutation that reduces the production of factor VIII (FVIII). FVIII is a protein responsible for blood clotting and thus, a deficiency in FVIII results in uncontrolled bleeding. A patient without hemophilia A exhibits factor VIII levels of 50% to 150%. Therefore, the severity of the disease is influenced by how much FVIII is produced; for example, patients with moderate hemophilia A have FVIII blood levels of 1% to 5% while those with mild hemophilia A have 6% to up to 49%.³ The majority of patients hemophilia A have a severe form of the

disease with less than 1% of FVIII in the blood, putting them at a much higher risk of experiencing bleeding into vital organs such as the kidneys and brains.⁴ Prior to Roctavian, available treatment options consisted of either endogenous FVIII or emicizumab, a monoclonal antibody that mimics activated FVIII.⁵

Gene Therapy Treatment

The approval of Roctavian presents the first gene therapy treatment available for this disease. This treatment utilizes the virus adeno-associated serotype 5 (AA5V) as a vector to insert the therapeutic gene into the hepatocytes. Thus, allowing the liver cells to produce the absent FVIII protein to permit proper blood clotting.²

In GENE8-1, an open-label, single-group, multicenter, phase 3 clinical study, Roctavian’s efficacy and safety were evaluated in men at least 18 years of age with severe hemophilia A.⁶ Participants had to be recipients of prophylactic FVIII concentrates for at least 1 year prior to enrollment. Those with pre-existing anti-AAV5 antibodies, liver cirrhosis, substantial liver fibrosis, or who were positive for FVIII inhibitors, were excluded. Diagnosis of human immunodeficiency virus (HIV) was also considered an exclusion criterion after a protocol amendment.⁶ 134 participants received a single infusion and completed more than 51 weeks of follow-up. Upon analysis of the modified intention-to-treat population (132 participants) which only

included HIV-negative patients, there was a significant average increase from the baseline of FVIII activity level was 41.9 IU/dL during weeks 49-52 (95% confidence interval [CI] 34.1 to 49.7; $P < 0.001$). Additionally, following the administration of Roctavian, the mean reduction in the rate of bleeding episodes was 83.8%, which was considered significant and superior to prophylaxis with FVIII concentrates.⁶ All 134 participants had at least one adverse event, with 16.4% experiencing serious adverse reactions. A few examples of serious adverse events that occurred in 2 or more participants include gastroenteritis, an increase in alanine aminotransferase (ALT), rectal hemorrhage, and diarrhea. However, the most common adverse reactions were headache (38.1%), nausea (37.3%), and an increase in aspartate aminotransferase (AST) levels (35.1%). More notably, 85.5% of patients experienced an increase in ALT levels and were treated with immunosuppressants.⁶

Though current treatments for hemophilia A are effective, most involve frequent intravenous injections. Not only this, but the risk of FVIII inhibitor development, a neutralizing immune reaction against FVIII, is especially high in patients with severe hemophilia A being treated with intravenous FVIII. Comparatively, Roctavian is a single treatment that allows the expression of the deficient FVIII for the entire lifetime of the recipient. Furthermore, Roctavian has demonstrated superiority in reducing the rate of bleeds and has shown a significant increase in FVIII levels.⁵

Conclusion

Roctavian represents a promising therapeutic advancement in treating severe hemophilia A, providing patients with a potentially transformative gene therapy option. Clinical trials

as GENER8-1, have demonstrated the efficacy and safety of Roctavian, with participants experiencing an increase in FVIII activity levels and a decrease in bleeding. Although adverse reactions were reported, further research and continued monitoring will be crucial in assessing the long-term efficacy and safety profile of Roctavian. In conclusion, although the approval of Roctavian displays the best of medical innovation, there are a variety of factors that will ultimately determine its real-world impact.

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Meet the Mentor: Laura Pham

My name is Laura Pham and I am currently a 5th year pharmacy student. If you were to ask any of my friends, you would know that I am really close with my family. Having 3 other siblings, my household has always been loud and busy but that doesn't come close to when all of my cousins come over for Thanksgiving or Christmas; on just my mom's side, I have over 20+ cousins! When I'm not studying or working on anything for school, I love to go on mile long runs as a way to clear my mind. Recently though, I have tried to start rereading the Harry Potter series again since I enjoyed it so much as a kid.

As I approach the end of my didactic courses, I look forward to graduating and becoming a clinical pharmacist specialized in the field of oncology. Why oncology? I owe my interest in the field to the faculty who taught the Drugs and Diseases courses at SJU.

Meet the Mentee: Paulina Maczko



My name is Paulina Maczko, and I am a 3rd year pharmacy student. As a first-generation Polish student, I spent my entire life immersing myself within my Polish community in Brooklyn. To find a sense of a similar community at St. John's, I joined multiple organizations like IPhO, SCCP, and AAPP to be surrounded by like-minded individuals in the pharmacy program.

At the moment, I am greatly interested in the pharmaceutical industry, especially the research and development field. The possibility of contributing to the healthcare system by helping patients on a national level is what intrigues me most about the pharmaceutical industry. However, I also have an interest in pursuing a specialty form of pharmacy, so I am looking forward to my next few years at St. John's to help me get a clearer picture of my future career.

Whenever I get a chance, I like to read, go to the gym, and go hiking. I studied abroad in my sophomore year, which really sparked my love to experience new cultures, try new foods, and learn new languages. I'm bilingual in Polish, but I am currently learning ASL with hopes to become fluent in a third language.



Meet the Mentee: Sarah El-Rowmeim

My name is Sarah El-Rowmeim, and I am a PharmD Candidate 2027. I am a contributing member of various organizations both on and off campus, with a few being the Industry Pharmacists Organization, Student College of Clinical Pharmacy, and the American Association of Psychiatric Pharmacy. I am a former EMT and have been a Pharmacy Technician at Walgreens Pharmacy for about two years. I enjoy pursuing new learning opportunities and experiences that permit my growth.

I am interested in pursuing a fellowship, particularly in Clinical Development for Immunology-related therapies. I am intrigued by the Drug Development process and passionate about making a difference in the pharmaceutical industry. My values align with the mission of many pharma companies in improving patient safety, ensuring the rational use of drugs, and minimizing drug-related competencies.

I am a former professional swimmer, so I appreciate restoring my skills as often as possible. I also like to travel, meet new people, admire different cultures, and learn from their perspectives.

Utilization of Tumor Microenvironment in the Treatment of Breast Cancer

By: Sameen Siddiqui, PharmD Candidate c/o 2025, Madelyn Lombardo, PharmD Candidate c/o 2027, and Gabriella Lamantea, PharmD Candidate c/o 2027

Breast cancer, besides skin cancer, is the most common cancer detected in women and one of the most common cancers linked to female mortality.¹ Due to the silent rapidity of the disease, breast cancer can be difficult to catch early on. Breast cancer can be diagnosed via screening, biopsy, or self-discovery of lumps on the breast. Metastasis, the spread of cancerous cells from a point of origin to other areas of the body, plays a significant role in a patient's prognosis. When it comes to breast cancer, bone is the most common mode of metastasis because it provides a viable environment for tumor cell growth. In later stages of the disease, metastasis induces bone deterioration via osteoclast stimulation. The highly vascularized nature of bone marrow allows for tumor cells in circulation to gain access within the marrow.² Upon their arrival, breast cancer cells rearrange these vessels in a disorderly manner, contorting and scrambling them. It is here that dormant cells are found to reside. Dormant cancer cells are typically found in secondary organs where they remain until a signal is released which activates cancer growth and metastasis. Interestingly, emotional states are involved with metastasis as well. Factors such as stress, trauma and depression were shown to alter marrow tissue and stimulate metastasis. Constant activation of the sympathetic nervous system by these emotional states has been shown in studies to increase osteoclast activity and promote the spread of osteolytic

lesions, a characteristic sign of metastatic breast cancer.²

The term "tumor microenvironment" (TME) refers to the physical surroundings of a tumor which involves components like immune cells, cytokines, and pH levels. When examining the complex territory, three levels exist: the local, regional, and metastatic. The local level refers to the environment within the tumor itself, while the regional micro-environment is the leading site of cancerous growth. In the case of breast cancer, the regional level is the breast. Finally, the meta-static level refers to any secondary cancerous growths in other distant body niches.³ Within these levels are several kinds of cells, each contributing to the tumor in some way. Cancer-associated fibroblasts (CAFs) comprise the majority of cells in cancerous breast stroma and play a significant role in tumor development and cell invasion. Through extensive study, we have come to understand that CAFs contain specific mRNA that is unlike that of fibroblasts residing in normal non-cancerous breast tissue.⁴ The origins of cancer-associated fibroblasts are not entirely understood, though some postulate that women with certain single nucleotide poly-morphisms have fibroblasts with increased expression of a protein called MMP3, which promotes cancer cell invasion.⁴

Tumor-associated macrophages (TAMs) are

another population of cells that make up a large percentage of the cancerous environment. They can be divided into two classes: M1 and M2. M2 macrophages, whose usual functions involve mending wounds and remodeling tissue, are the ones that are primarily involved with the survival and proliferation of cancer cells via cytokine secretion. Similar to the macrophages are tumor infiltrating lymphocytes, another cell type consisting of different classes. Of these classes, our main focus is on regulatory T cells. These cells work against the body's autoimmune responses.

Regulatory T cells normally halt autoimmune reactions, though when residing in the TME, block anti-tumor responses. They also have a role in cancer progression by producing high amounts of a protein called receptor activator of nuclear factor kappa-B ligand (RANKL). RANKL can activate breast cancer cells with RANK receptors, therefore leading to metastasis.⁴ Higher amounts of RANKL are associated with increased osteoclast activity as well; this increased osteoclast activity may lead to the advancement of tumor growth in bones, which is a frequent site of metastasis for breast cancer.²

Within tumor-associated stroma are immature dendritic cells whose normal function is marred. Due to incomplete functionality, these cells cannot act on their anti-tumor capabilities; in fact, they even work against the body to promote tumor development. Finally, the extracellular matrix, which is usually a stable and supportive environment, is observed to be quite the opposite in cancerous tissue. The rigid stroma of cancerous extracellular matrix forms the characteristic lumps of breast cancer. An enzyme known as lysyl oxidase causes this rigidity to occur and

serves as a marker of cancer progression. Cancerous extracellular matrix may also interfere with regular immune function via stunting regulatory T cell growth and disrupting their abilities.⁴

Breast cancer has many options for treatment depending on how far the cancer has spread based on medical scans and decisions made by patients. Presently, there exist three treatment options utilizing breast TME as a target: aromatase inhibitors, human epidermal growth factor receptor 2 (HER2) inhibitors, and angiogenesis inhibitors.⁴ Aromatase and HER2 inhibitors work against certain aspects in the stroma. For example, aromatase inhibitors such as anastrozole, letrozole, and exemestane block the aromatase enzyme which prevents the conversion of androgens to estrogen, ultimately decreasing tumor growth in hormone receptor-positive breast cancer patients.⁵ HER2 inhibitors (i.e., trastuzumab and pertuzumab) are specific to breast cancer patients whose tumor growth is due to overexpression of human epidermal growth factor 2 HER2 receptor-positive breast cancer. These drugs function by blocking HER2 signaling triggered by stromal growth factors in breast cancer patients. Vascular endothelial growth factor (VEGF) inhibitors such as bevacizumab is a cytokine produced by TAMs that prevent the growth of new blood vessels. Dendritic cells show some promise in being a possible target for breast cancer treatment as well. By promoting the development of immature dendritic cells in the tumor-associated stroma, this method may increase their anti-tumor activity and therefore decrease proliferation of the malignancy.⁴

TME is a topic undergoing continuous research. In order to help patients with cancer, investigators must understand how the var-

ious cells of TMEs communicate with one another. Once the communication within these signaling networks is prevented, tumor growth can be suppressed.⁶ Present-day technology lends itself to studying TMEs; for example, the development of multi-omics technologies that combine methods such as transcriptome and proteome. This provides an advantage to scientists when comprehending the cancer because it provides the diverse makeup of the tumor in the TME, resulting in a better understanding of the cancer stage and developing a more precise and accurate treatment. In addition, TMEs aim to have better therapeutic advantages than cancer treatments like immunotherapy and radiation therapy. In TME, cells that are non-tumor are more exposed and stable compared to tumor cells. This shows a therapeutic advantage due to their instability because cancer cells are more inclined to drug resistance.⁷

In conclusion, breast cancer is a major topic in women's health and a disease state that is important to regularly screen for. Metastasis, the spread of cancerous cells, is expected mainly in the bone and can happen when a patient experiences major emotional imbalances such as high stress as this can cause an anatomical change to the marrow tissue. TME and its components play a unique role in the development and metastasis of cancer. Each cell involved in the cancerous environment contributes in their own way to tumor development, with cancer-associated fibroblasts being the largest population of these cells. Others include the M2 class of tumor associated macrophages which facilitate cancer cell proliferation, a kind of tumor infiltrating lymphocyte known as regulatory T cells which suppress autoimmune responses increase osteoclast activity, and immature dendritic cells which promote tumor develop-

ment. Today, TME is still being researched to help patients with cancer. Technology, such as multi-omics, has improved significantly over the years, which can help scientists figure out more ways to develop treatments for patients

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TUMOR MICROENVIRONMENT



Meet the Mentor: Sameen Siddiqui

Hi everyone! My name is Sameen Siddiqui and I am currently a P3 student. Throughout my academic career, I have been involved in multiple student organizations, one of them being Rho Chi Society and the opportunity to be a LEADS mentor. The Rho Chi Society is an academic organization that fosters the growth and development of intellectual leaders and encourages academic excellence by expanding knowledge of pharmacy practice. The LEADS mentor program has allowed me to expand the mission of leadership, ethics, academic, professional development and service to my younger peers, as they gain knowledge about the field of pharmacy. Through being a LEADS mentor, not only am I professionally developing my leadership and service skills, but I am given the opportunity to influence the younger students and help them navigate through their P1 academic year.

After graduation, I am interested in pursuing a residency because it provides me with an opportunity to apply the knowledge and skills I have learned throughout the years and directly impact patient's lives. While working and through rotations, the smile on patient's face when they understand the purpose of their medications and see its therapeutic effectiveness motivates me to continue helping them and connect with them by developing an individualized care plan.

Some things I like to do for fun is trying different restaurants, drinking boba and playing tennis.

Meet the Mentee: Madelyn Lombardo

Hi! My name is Madelyn Lombardo and I'm a third-year pharmacy student. I'm from Queens, New York and I have two cats, Penelope and Sandy.



I'm currently undecided in what path in Pharmacy I'd like to follow, though I look forward to learning about all the different possibilities there are!

I love doing anything involving art! When I'm not doing pharmacy, I'm involved in film and animation, as well as a dance group.



Meet the Mentee: Gabriella Lamantea

Hi, my name is Gabriella and I am a P1 pharmacy student. I live in New Jersey, and I love taking my dog, Leo, on long walks.

I am not too sure on what career path I will follow into since pharmacy has multiple fields you can go into. I'm still learning what route of study is the best for me.

In my free time, I love to hang out with my family/friends and watch rom-com movies.

FDA Approves Litfulo for Adults and Adolescents with Severe Alopecia Areata

By: Anjali Thykattil, PharmD Candidate c/o 2025 and Isabelle Lim, PharmD Candidate c/o 2024

Effective June 23rd, 2023, the United States Food and Drug Administration (FDA) approved Pfizer's LITFULO™ (ritlecitinib) for the treatment of severe alopecia areata in adults and adolescents above the age of 12 years. While ritlecitinib is the second FDA approved treatment for alopecia areata, it is the first FDA approved treatment for alopecia areata in adolescents.¹ Ritlecitinib oral therapy is recommended at a once daily dose of 50 mg.² It is not recommended to be used in combination with other Janus kinase (JAK) inhibitors, biologic immunomodulators, cyclosporine, or other potent immunosuppressants.

About Alopecia Areata

Alopecia areata is a T cell mediated autoimmune disease characterized by non-scarring hair loss. The disease may progress to total loss of scalp hair (alopecia totalis) or total loss of hair on the body (alopecia universalis).³ While the etiology of alopecia areata is unclear, it is suspected to be related to genetic disposition, oxidative stress, and psychological stress. Unfortunately, alopecia areata has an unpredictable prognosis. It is typical for patients to have periods of remission followed by periods of relapses.⁴ It is worth noting that the hair loss experienced by patients can be psychologically distressing and can have a substantial effect on quality of life.

Current Treatment Guidelines

Current treatment options for alopecia areata include topical and/or systemic agents and are individualized for patients based on their symptoms. Off-label treatment with corticosteroids or other immunosuppressants is a common choice. Baricitinib is an oral inhibitor of JAK1 and 2.⁵ It was approved by the FDA in June 2022 for the treatment of severe alopecia areata in adults. Standard dosing for baricitinib is a starting dose of 2 mg once daily, which may then be increased to 4 mg once daily if an adequate response is not seen. Additionally, those with severe hair loss all over their body may begin the medication at the 4 mg dose. Once improvement is seen at the 4 mg dose, patients may be lowered to the 2 mg dose for consistent use.⁶ Prior to the approval of ritlecitinib, baricitinib was the only approved treatment for the disease.

Ritlecitinib, Clinical Trials, and Relevancy

Ritlecitinib is an orally administered kinase inhibitor. The drug irreversibly inhibits JAK3 and the tyrosine kinase expressed in hepatocellular carcinoma (TEC) kinase family. As previously mentioned, the pathophysiological cause of alopecia areata is uncertain. However, it is known that there is dysregulation of the cytolytic activity of T cells. Ritlecitinib allows for selective dual inhibition of JAK3 and TEC which may block signaling of various cytokines and the cytolytic activity T cells. Additionally, in patients with alopecia areata,

ritlecitinib treatment was associated with dose-dependent early reductions in absolute lymphocyte count (ALC), CD3+, CD4+, and CD8+ T cells, and natural killer (NK) cells.⁷

Ritlecitinib's efficacy in the treatment of alopecia areata was assessed in ALLEGRO-2b/3.⁸ ALLEGRO-2b/3 is a randomized, double-blind, multinational, phase 2b/3 trial. Patients in this trial were adults (18 years or older) and adolescents (aged 12 to 17 years old) with alopecia areata who experienced greater than 50% hair loss of the scalp. Patients with alopecia totalis and alopecia universalis were also included. Exclusion criteria for this trial included any other causes of alopecia and previous use of any JAK inhibitor.⁸ To assess improvement, the Severity of Alopecia Tool (SALT) was used. Scores range from 0 (no scalp hair loss) to 100 (total scalp hair loss).⁸ Patients were randomized to receive ritlecitinib 200 mg for 4 weeks followed by 50 mg ($n = 132$), ritlecitinib 200 mg for 4 weeks followed by 30 mg ($n = 130$), ritlecitinib 50 mg ($n = 130$), ritlecitinib 30 mg ($n = 132$), ritlecitinib 10 mg ($n = 63$), placebo for 24 weeks followed by ritlecitinib 200 mg for 4 weeks then 50 mg ($n = 65$) or placebo for 24 weeks followed by ritlecitinib 50 mg ($n = 66$). Medication was administered orally, once daily, for 24 weeks.⁸ At 24 weeks, the proportions of patients achieving the primary endpoint of a SALT score of greater than or equal to 20 were 31%, 22%, 23%, 14%, and 2% in the ritlecitinib 200 + 50 mg, 200 + 30 mg, 50 mg, 30 mg and 10 mg groups, respectively, compared with 2% in the combined placebo group. The difference between ritlecitinib and placebo was significant ($p \leq 0.0002$) in all but the 10 mg group which was included for pharmacokinetic, dose-response, and safety assessments only.⁸

In a longer term, ongoing phase 3 clinical trial, ALLEGRO-LT, ritlecitinib was further studied on its sustained clinical efficacy in patients with alopecia areata.⁷ This trial includes both rollover patients from ALLEGRO-2a and ALLEGRO-2b/3 and de novo patients who had not received treatment in other ALLEGRO trials. Eligible patients were aged ≥ 12 years with $\geq 25\%$ scalp hair loss due to alopecia areata, no evidence of terminal hair regrowth within 6 months and maximum duration of current episode of hair loss ≤ 10 years.⁷ All the patients were given ritlecitinib 200 mg once daily for 4 weeks followed by 50 mg once daily. In an early analysis of de novo patients ($n = 447$), 62% of patients were categorized as responders; 44% were early responders (SALT score of greater than 20 at weeks 24, 48 and 96), 11% were middle responders (SALT score of greater than 20 by week 48 and at week 96) and 6% were late responders (SALT score of greater than 20 by week 96). Greater than 84% of patients sustained their clinical response through week 96.⁷

Conclusion

Ritlecitinib has exhibited sustained long-term efficacy in patients with alopecia areata, as described in the ALLEGRO-2b/3 and ALLEGRO-LT trials. Often, patients with the disease experience social isolation due to the hair loss which then causes sadness and stress. This mental anguish may then cause further hair loss to occur. Alopecia areata is a psychologically debilitating disease for patients who experience it, especially for adolescents. Currently, the only treatment option for adolescents is the off-label use of corticosteroids. Ultimately, the approval of ritlecitinib is a major step in providing a treatment plan for adolescents with alopecia areata.

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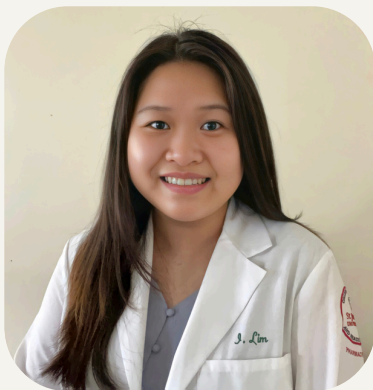
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MEET THE TEAM

Meet the 2023-2024 Team Members



Editorial Team



Isabelle Lim
Editor-in-Chief

The Rho Chi Post serves as a platform for students and faculty to collaborate in sharing their knowledge and ideas with the pharmacy community while offering a unique experience to develop writing skills outside of the classroom. As future pharmacists, it is important that we continuously keep ourselves updated as well as voice our opinions on healthcare matters. I am honored to be a part of the Editorial Team and look forward to serving as this year's Editor-in-Chief!

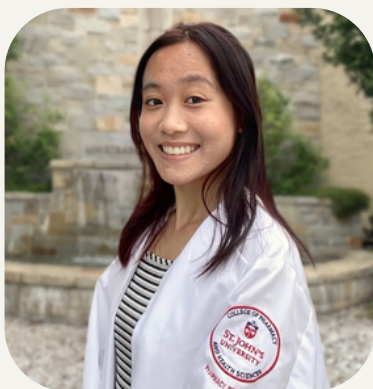
John Ortiz
Managing Editor

Rho Chi Post is an opportunity for students to foster their writing and investigative skills concerning the pharmacy practice. Through Rho Chi Post, students are also exposed to novel information and perspectives that are present in the pharmacy community and in our own student body. By honing our understanding of new innovations and developments in pharmacy, we will be better adept at providing accurate information to readers and maintaining the continuous education expected of pharmacists.



Joanne Fung
Senior Content-Focused Copy Editor

To me, Rho Chi is a great opportunity for all pharmacy students to advance themselves. This society offers something to everyone, whether you are a member of the society, a part of the newsletter staff, or a student taking advantage of the resources offered by Rho Chi. The effort put forth by every person affiliated with Rho Chi is amazing, and I will always appreciate this society's mission and values.



MEET THE TEAM



Maliha Akter
Content-Focused Copy Editor

In my pursuit of becoming a knowledgeable and skilled pharmacist, I remain committed to staying informed about disease treatment and public-health policy. Being a part of Rho Chi Post provides an excellent platform for continuous education and knowledge-sharing with peers. Engaging with individuals from diverse backgrounds fosters critical viewpoints and discussions, all focused on enhancing patient-centered care. Additionally, the newsletter enables me to nurture my lifelong passion for writing while staying updated on the latest healthcare developments. As I embrace this transformative journey, I am dedicated to adapting, learning, and making a positive impact on patient well-being as a compassionate and competent pharmacist.

Bao Qi Chen
Content-Focused Copy Editor

The Rho Chi Post is a bridge between students and the world we will soon enter once we graduate. My ambition is to promote intellect, values, and opportunities that not only allow students to be heard but also impact the pharmacy profession as a whole. I am honored to be a part of the Rho Chi Post's editorial team and work with colleagues who share this ambition. I am excited and grateful for this opportunity, and I look forward to working with everyone!



Warda Basher
Content-Focused Copy Editor

Joining this esteemed team excites me with the opportunity to gain invaluable experience and insights into the latest trends in pharmacy. I am eager to expand my professional network and make significant contributions to the field. As a member of the editorial team, I'll be at the forefront of disseminating the most current news and knowledge, effectively impacting pharmacy professionals worldwide with timely and relevant information.

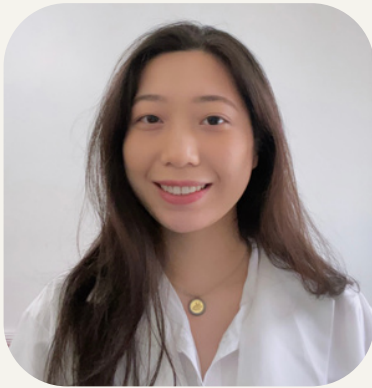


Kristen Joy Mathew
Content-Focused Copy Editor

Being a part of the Rho Chi Post is a rewarding experience where I can work with other students and colleagues to bring forth educational and pertinent information in a renowned newsletter publication. This is a rewarding experience to express my passion for pharmacy and spread awareness of current issues. Collaborating with other students, faculty, alumni, and professionals, it is an incredible experience to continually learn from numerous perspectives and incorporate such experiences into a publication. Working as a Content-Focused Copy Editor, I am happy to be alongside this wonderful team in producing well-researched articles in a respected and widely read newsletter.



MEET THE TEAM



Mandy Zheng

Senior Graphics-Focused Copy Editor

The Rho Chi Post allows pharmacy students the opportunity to be well informed about the amazing contributions in the field of pharmacy. It is a great platform for students to report current advancements in healthcare. My passionate for writing began at a young age as I began to understand just how powerful words can be to communicate. I look forward to being a part of the editorial team and to share new information to my peers. I am so excited to be a part of the Rho Chi Post team.

Ruksabha Zaman

Senior Graphics-Focused Copy Editor

It is an honor to be able to contribute to the Rho Chi Post, a publication that promotes intellect, values, and inclusivity in order to allow student voices to make an impact not only in our school but in the pharmacy profession as a whole. The role of pharmacists is constantly evolving and it is more important than ever for us to not only be aware of the changes and new discoveries that are occurring in our field of practice but to be able to collaborate with other professionals on our team as well. The Rho Chi Post serves as a bridge between students, faculty, pharmacists, and other healthcare professionals outside of the classroom. I look forward to gaining new knowledge on current events from my peers and providing my own insight to further the excellence of this newsletter.



Celestine Van Sertima

Graphics-Focused Copy Editor

When applying to the Rho Chi Post, I was initially fascinated by their goals of providing the highest quality of information to the St. John's community through a student operated newsletter that cultivates both student spirit and expansion of knowledge. Through my passion for writing and health care, combined with my experience in graphic designing, I look forward to what I can contribute to the Rho Chi Post.



Nalisha Xu

Graphics-Focused Copy Editor

By becoming a part of the Rho Chi editorial team, I wish to learn more about the pharmacy field and community by gaining insight through our publications. This position will not only allow me to broaden my views on the profession of pharmacy, but also explore topics related to the medical field as a whole. Through Rho Chi's team, I will utilize this experience to grow professionally, develop leadership skills, and be more involved in our community to improve my confidence and professionalism on my journey to becoming a pharmacist.



MEET THE TEAM



Zainab Masood
Graphics-Focused Copy Editor

Being part of Rho Chi Post, which provides information on discoveries and research to others, is an honor. Taking insight from professionals and peers to educate others is a rather significant effort in the expanding and evolving role of pharmacists. I look forward to collaborating with the team in pushing this effort further while also learning from them.

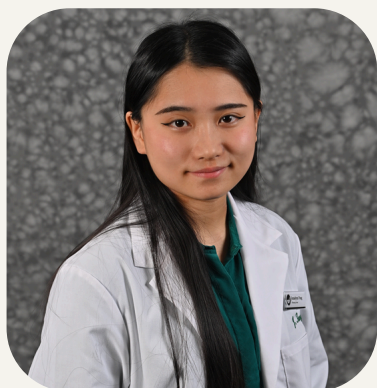
Sana Ahmed
Senior Staff Editor

I believe Rho Chi Post is a means to serve the university and impact its professional and health-oriented student community through its various stories. With exposure to a myriad of areas of the healthcare field throughout my work experience, I have secured much knowledge from assisting a diverse array of patients. I will prioritize staying up to date and aiding student writers in presenting the latest pharmaceutical and medical advancements. Through Rho Chi Post, I intend to promote the pharmacy profession through creativity and effective communication. I am honored to serve as a Staff Editor for this organization and hope it will facilitate meaningful connections with my peers.



Jennalynn Fung
Staff Editor

I am thrilled to have the opportunity to express my creativity, critical thinking, and research skills through contributing to the Rho Chi Post. The mission to promote intellectual discourse and showcase diverse perspectives aligns with my values; I look forward to putting my writing and editing experience to use in each issue, and hope that my involvement can ensure that future cohorts will also have this valuable platform available to them.



Paulina Maczko
Staff Editor

As pharmacy students, I believe we have an obligation of staying informed on current healthcare topics, topics that the Rho Chi Post sheds light on. To be part of such a team is an honor, as students are granted the opportunity of a creative outlet, whether that is by writing the articles or organizing the newsletter. As a copy editor, I look forward to seeing first-hand how students voice their opinions, thoughts, and academic learnings. I'm grateful to be part of a team that allows students to understand what they are capable of, and simultaneously advance their writing, comprehension, and communication skills.



MEET THE TEAM



Shakhzoda Rakhimova

Staff Editor

As a staff editor for the Rho Chi Post, I am thrilled to have the opportunity to be part of a team that is dedicated to providing high-quality and thought-provoking content that is relevant to pharmacists, healthcare professionals, and the broader public. I am excited to bring my skills and knowledge to the table as we work together to create meaningful and impactful content for our readers.

Natalia Turowska

Staff Editor

Joining the Rho Chi Post is an opportunity I am immensely grateful for! I am very excited to be a part of an award-winning publication that promotes the pharmacy profession through creativity and effective communication like the Rho Chi Post.

In being a Staff Editor, I look forward to reading about ideas, opinions, and innovations, as well as seeing these topics blossom into articles for others to enjoy. I know that throughout holding this position, I will grow in terms of professionalism, teamwork, and creativity, which are all key attributes in the pharmacy world!



Sharupa Azmal

Staff Editor

The Rho Chi Post serves as a notable forum for pharmacy students who wish to expose themselves to medical journalism. Being a staff editor of the Rho Chi Post means amplifying the voices of our writers and educating our readers regarding current events in healthcare. This role provides me with the opportunity to present insightful stories that are relevant to the pharmacy community and contribute to the advancement of the profession through writing.



Nimra Gul

Staff Editor

My name is Nimra Gul and I am currently entering my 6th year of the pharmacy program at St. Johns. Being involved in a cause that serves to educate those pursuing a career in the healthcare field allows me to contribute to the knowledge that these very people will utilize in practice. I hope that my time with the Rho Chi Post Editorial Team will be memorable with much to contribute!



MEET THE TEAM



Muskan Basra

Staff Editor

As a staff editor for the Rho Chi Post, I am thrilled to have the opportunity to be part of a team that is dedicated to providing high-quality and thought-provoking content that is relevant to pharmacists, healthcare professionals, and the broader public. I am excited to bring my skills and knowledge to the table as we work together to create meaningful and impactful content for our readers.

MEET THE TEAM

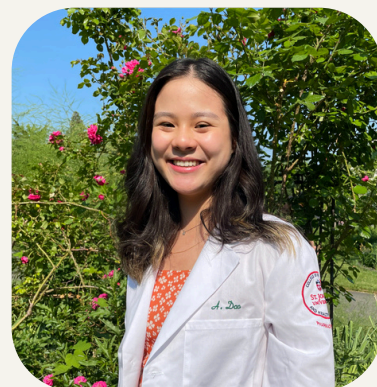


Nancy Yousry
Senior Staff Writer

It was such an amazing opportunity to become part of Rho Chi Post's Editorial Board last year, and I am really excited to continue being a part of Rho Chi Post this year! I believe one of our responsibilities as Student Pharmacists is to be aware of the current events impacting our profession as well as the critical and unique role Pharmacists play in a variety of healthcare settings. As a Staff Writer and Engagement & Outreach Manager, I look forward to bringing these current events to light and to serve as an educational resource for passionate readers and writers alike.

Ashley Dao
Senior Staff Writer

Rho Chi Post is an opportunity for students to be involved in publication regardless of their year or interest. I have always had an interest in writing and research, and I was afraid I would lose these skills in pharmacy school. Being part of Rho Chi Post has allowed me to continue writing and learning beyond the classroom!



Sairah Sheikh
Senior Staff Writer

Ever since I was little, writing has always been a passion of mine. As a senior staff writer for Rho Chi Post, I am excited to merge the knowledge I have gained in pharmacy school with my love for writing to create thought-provoking pieces for our community to read. Since pharmacy is an ever-evolving profession, it is important for our community to stay informed on the latest events in our field and I am looking forward to playing a part in that as a member of the incredible Rho Chi editorial team,



Urooj K. Malik
Staff Writer

The Rho Chi Post is a valuable platform that connects students and faculty with the most up-to-date information within the pharmacy profession. The field of pharmacy is constantly expanding with vital developments, so it is important for us to stay informed in the world of healthcare. The Rho Chi Post serves as a creative outlet for student pharmacists to voice their various perspectives and ideas for others to utilize as an educational resource. As a staff writer, I hope to channel my passions and interests through this newsletter in an effort to impact those around me.



MEET THE TEAM



John Ortiz
Staff Writer

Rho Chi Post is an opportunity for students to foster their writing and investigative skills concerning the pharmacy practice. Through Rho Chi Post, students are also exposed to novel information and perspectives that are present in the pharmacy community and in our own student body. By honing our understanding of new innovations and developments in pharmacy, we will be better adept at providing accurate information to readers and maintaining the continuous education expected of pharmacists.

Anureet Kaur
Staff Writer

Professional writing is a powerful tool. As pharmacists, amongst many other things, we can use our writing to advocate for our profession, to summarize new guidelines, and to spread the word about novel drugs. Thus, being a part of the Rho Chi Post 2023-2024 Editorial Team will help me strengthen the skills I need to be a capable pharmacist in the future. I am very excited to contribute to RCP!



Enjelique R. Adams
Staff Writer

Being a member of the Rho Chi Post will qualify and enable me to branch out to network and connect with others who are older than me and are a part of the Rho Chi Honor Society and others who are a U1, U2, or P1 who have an interest in writing. This opportunity that was blessed and given to me can expand my passion and love for writing to another level. Writing for this post can grant me the chance to learn more about my level of pharmacy through a different scope by reading about current events on insurance, Big Pharma, the FDA, and new medications coming out but also use the knowledge I have from my classes and working at an independent community pharmacy and apply it to my work. Rho Chi Post is an additional additive to the list of organizations and extracurriculars that I partake in; however, this is a new step to a new beginning for my P2 year that I cannot wait to take on.



Holly Nguyen
Staff Writer

Being a member of the Rho Chi Post will qualify and enable me to branch out to network and connect with others who are older than me and are a part of the Rho Chi Honor Society and others who are a U1, U2, or P1 who have an interest in writing. This opportunity that was blessed and given to me can expand my passion and love for writing to another level. Writing for this post can grant me the chance to learn more about my level of pharmacy through a different scope by reading about current events on insurance, Big Pharma, the FDA, and new medications coming out but also use the knowledge I have from my classes and working at an independent community pharmacy and apply it to my work. Rho Chi Post is an additional additive to the list of organizations and extracurriculars that I partake in; however, this is a new step to a new beginning for my P2 year that I cannot wait to take on.



MEET THE TEAM



Bhojranie Brahmanand

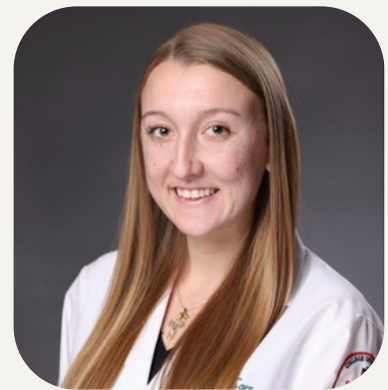
Staff Writer

The Rho Chi Post uses its platform to spread knowledge of groundbreaking discoveries that are changing the standard of care for society. It delivers a creative and innovative scope of the pharmacy world. As a school of pharmacy, it is pivotal to become aware of healthcare matters. In turn, we can strengthen our understanding of the field and become more competent pharmacy practitioners. I am excited to be joining the team this year as a staff writer. I look forward to working alongside like-minded individuals in cultivating writing pieces that will share the importance of this profession.

Giavanna Carr

Staff Writer

Rho Chi is a society with members who all have the same goal, which is to excel in their academic careers. As a member of this society, we use our skills and knowledge in order to better our education as well as assist our peers in the process. Being part of this society has been so rewarding thus far, and I look forward to further developing Rho Chi in my time with the organization!



Ariella Zadrina

Staff Writer

As a pharmacy student and future pharmacist, I believe it is a quintessential duty to educate ourselves on current media regarding the medical field and continuously adapt to the new ideas we may face as we enter the pharmacy profession. With topics from emerging diseases to scientific advances made, it is important to be accustomed to new ideas that pertain to our potential responsibilities as a pharmacist. As a Rho Chi Staff Writer, I hope to discuss matters that will inform not only pharmacy students but the St. John's community as a whole on topics that have to do with general health and scientific developments. With my interest in writing and the pharmacy field, I hope to touch upon subjects passionate to me that can benefit our community and inspire our readers to integrate themselves into the ever-growing profession of pharmacy.



Ashley Medina

Staff Writer

It is an honor to be welcomed as a new member of a prestigious team of students contributing to the pharmacy profession through its publications that reach an audience beyond our campus. The Rho Chi Post has provided students with an opportunity to express themselves creatively and fosters professionalism through impactful communication. Joining the team will allow me to give back through writing that will embody the ideas and ambition that house my passion for the pharmaceutical profession. I am looking forward to providing relevant and up-to-date information to my audience and am eager to operate with fellow students to provide high-quality content that is devoted to the advancement and encouragement of our student body.



MEET THE TEAM

Executive Board



Anjali Thykattil

Engagement & Outreach Manager

I am beyond grateful for this opportunity, and I am excited to have the honor of serving on the Executive Board as the Engagement and Outreach Manager. The Rho Chi Post is not only a creative outlet for students, but also one that is invariably relevant to the ever-changing world of healthcare. In this position, I aim to further expand the growth of the Rho Chi Post among pharmacy students here at St. John's. Let's not forget, it is us students who will become the healthcare leaders of tomorrow.

Nancy Yousry

Engagement & Outreach Manager

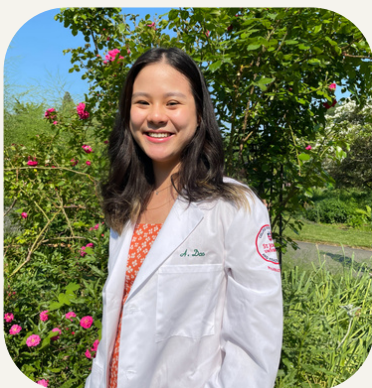
It was such an amazing opportunity to become part of Rho Chi Post's Editorial Board last year, and I am really excited to continue being a part of Rho Chi Post this year! I believe one of our responsibilities as Student Pharmacists is to be aware of the current events impacting our profession as well as the critical and unique role Pharmacists play in a variety of healthcare settings. As a Staff Writer and Engagement & Outreach Manager, I look forward to bringing these current events to light and to serve as an educational resource for passionate readers and writers alike.



Ashley Dao

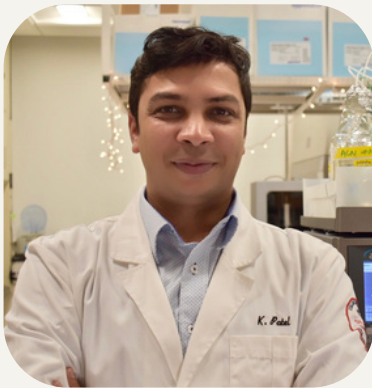
Engagement & Outreach Manager

Rho Chi Post is an opportunity for students to be involved in publication regardless of their year or interest. I have always had an interest in writing and research, and I was afraid I would lose these skills in pharmacy school. Being part of Rho Chi Post has allowed me to continue writing and learning beyond the classroom!



MEET THE TEAM

Advisors



Dr. Ketan Patel
MPharm, PhD

It is an honor to serve as a faculty advisor of Beta Delta Chapter of a 100-year-old prestigious society of pharmaceutical professionals – The Rho Chi Society. With great enthusiasm, I am committed to assist the Rho Chi member's endeavors in: (1) disseminating the latest information/technology in healthcare system; (2) promoting pharmaceutical field & career propulsive networking of current students, alumni, and faculties; and (3) facilitating the scholastic activities and recognizing the scholars.

Dr. Joseph Etzel
BS Pharm, PharmD

Dr. Etzel served as the Rho Chi Post's interim faculty advisor for the 2022-2023 academic school year and continues to aid the Rho Chi Honor Society as we welcome in our new advisor. Dr. Etzel is not new to our organization, as he has previously served as the faculty advisor for the Rho Chi Honor Society. He has been a huge influence to the success of Rho Chi in the past, and we look forward to continue working with him!



Dr. Mohammad Rattu
PharmD, BCOP, BCPS, BCGP

I am thankful to have been the 2012 editor-in-chief of the Rho ChiPost newsletter, as well as on the 2019 alumni honor roll of the national Rho Chi organization. This is one of the most successful longitudinal projects at my alma mater, as evidenced by its decade-long persistence and teams of highly-motivated students. I remain available for professional support and assistance with the new year's initiatives.



The Rho Chi Society

Executive Board



Geraldine Ciaccio

President

The Rho Chi Society prides itself on fostering intellectual achievement and cultivating professional development. It provides opportunities for students, faculty, alumni, and colleagues to expand their knowledge of pharmacy practice. Through events, seminars, and fundraisers, Rho Chi allows pharmacy students to develop leadership skills that are vital to the profession. I have learned valuable lessons about pharmacy and myself from Rho Chi thus far, and I am honored to be able to give back to the organization. I am humbled to hold such a position and work with a dedicated executive board.

Javeria Amir

Vice President

The Rho Chi Society is an organization that contributes to the development of intellectual leaders in pharmacy. Through this, Rho Chi Society fosters collaboration and initiatives to advance learning in the field of pharmacy. Being part of this organization has allowed me to reach out for help when needed, and continuously improve my skills as a future pharmacist. To be a part of the executive board that will continue to uphold these initiatives is an honor and responsibility I take on with pride. Wishing all a wonderful and successful academic year ahead of us!



Anjali Rana

Secretary

Being a part of Rho Chi has provided me with invaluable opportunities for professional development, connection, and mentorship. The society's commitment to academic excellence and ethical pharmacy practice has inspired me to strive for continuous improvement in my studies and future career. Serving on this year's executive board, provides a sense of belonging among a supportive and inclusive community.



Giavanna Carr

Treasurer

The Rho Chi Honor Society encourages and recognizes intellectual achievements, stimulates critical inquiry in order to advance the future of pharmacy, provides its members with the ability to develop into intellectual leaders, promotes high ethical standards for its members, and fosters collaboration. Through being a member of Rho Chi, we are able not only to grow ourselves, but to help uplift our colleagues and allow them the chance to excel academically through the events we provide. Rho Chi has been a great influence on my studies during my time in this program and being given the opportunity to serve on the executive board allows me to become the influence for the younger students in our program. I'm inspired by every member of this year's executive board and can't wait to see all we're able to accomplish together this year!



The Rho Chi Society

Executive Board



Christine Mauceri

Historian

Rho Chi is an amazing organization that encourages leadership and support among its members. Not only does it offer a space where all pharmacy students can help each other academically, but the opportunities for networking and professional growth are endless. I am proud to be a part of an organization that has helped me immensely throughout my studies, and I am excited to give back to my pharmacy community!

Sammi Wu

Development and Outreach Coordinator

The Rho Chi Society is committed to the development of future pharmacists that excel in both areas of professional expertise and acts of service. It forms a community for pharmacy students to motivate each other's academic growth and provide support within a challenging degree program. It also keeps students informed on news related to breakthroughs in drug therapy and patient care. I am honored to accept my position on the executive board for this upcoming academic year and I hope to fulfill my duties so Rho Chi can continue to have its positive impact on the pharmacy profession!



Daya Biju

Academic Committee Chair

The Rho Chi Honor Society is a distinguished academic organization that recognizes excellence in pharmaceutical studies. It promotes ethical conduct, leadership, and research in pharmacy education. With chapters across the United States, Rho Chi fosters a sense of community and offers valuable networking and mentorship opportunities. Members actively engage in service projects to improve public health awareness. I am truly honored to serve this esteemed organization and embrace the opportunities it offers for personal and professional growth.



Angel Gao

Academic Committee Chair

Rho Chi fosters a community where students can collaborate with each other, upholding the core principles of service and professional development. Being a part of this supportive community is an honor, and I take pride in contributing to the culture of excellence that Rho Chi cultivates.



RHO^{Rx}CHI post

St. John's University College of Pharmacy & Health Sciences

FEBRUARY

SUN	MON	TUE	WED	THU	FRI	SAT
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29		

MARCH

SUN	MON	TUE	WED	THU	FRI	SAT
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

Feb 19: President's Day - University closed/No classes

Feb 26 to Mar 2: Spring Break - No classes

Mar 28 to Apr 1: Easter Recess - University closed/No classes

The Rho Chi Post wants to wish everyone good luck on midterms as well as a happy Spring Break and Easter!

Interested in writing for the Rho Chi Post?

Go to <http://rhochistj.org/RhoChiPost> and click on the login option from the menu bar to make an account! With an account, you'll have access to the article submission portal where you can submit your writing for publication in an upcoming issue!

Remember, you do NOT have to be a member of Rho Chi, a member of the editorial team, or a student of St. John's to write for our newsletter!

If you have any questions, feel free to email us at rhochipost@gmail.com!