

An award-winning, bimonthly, electronic, student-operated newsletter publication by the St. John's University College of Pharmacy and Health Sciences Rho Chi Beta Delta chapter











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The Rho Chi Society encourages and recognizes excellence in intellectual achievement and advocates critical inquiry in all aspects of Pharmacy.

The Society further encourages high standards of conduct and character and fosters fellowship among its members.

The Society seeks universal recognition of its members as lifelong intellectual leaders in Pharmacy, and as a community of scholars, to instill the desire to pursue intellectual excellence and critical inquiry to advance the profession.



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Shivani, Sona, Connie, Ashley, Oudit, and Hajin (from Left to Right), pictured with Dr. Joseph Etzel (Back)

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### **PUZZLE OF THE MONTH**

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# Food and Drug Administration approves lofexidine (Lucemyra<sup>™</sup>): the first non-addictive opioid withdrawal therapy in the United States

#### By: Evanthia Siozios, PharmD Candidate c/o 2020

Anxiety, nausea, muscle pain, insomnia are some of the most common withdrawal symptoms experienced when users stop taking opioids. According to a randomized controlled trial entitled Prescription Opioid Addiction Treatment Study (POATS) conducted in outpatient treatment settings across the United States including Mclean Hospital in Massachusetts and University of California, Los Angeles, researchers found that the avoidance of withdrawal was the most important reason for continued opioid use. In May 2018, the Food and Drug Administration (FDA) approved lofexidine (Lucemyra<sup>TM</sup>), the first and only non -opioid, non-addictive treatment for symptoms of opioid withdrawal, in attempt to help extenuate continued opioid use.<sup>2</sup> The novel medication is manufactured by Salix Pharmaceuticals, Inc. and US WorldMeds, LLC and is indicated for mitigation of opioid withdrawal symptoms to facilitate abrupt opioid discontinuation in adults aged 18 years and older. It works by acting as an alpha 2-adrenergic agonist, decreasing the release of norepinephrine, which in turn, reduces the severity of withdrawal symptoms.<sup>3</sup>

To demonstrate lofexidine's efficacy, a randomized, double-blind, double-dummy clinical trial was performed by Dr. Song Guo, consultant psychiatrist and head of research at the Singapore National Addictions Management Service. The clinical trial was a collaboration between Singapore's National Addictions Management Service and the Singapore Clinical Research Institute and looked to explore the

effectiveness of non-addictive medications in an inpatient detoxification program. The study was ultimately published in the Journal of Substance Abuse Treatment in August 2018. In the trial, opioid dependent patients were given a ten-day course of lofexidine or diazepam to treat opioid withdrawal. Results found that lofexidine was at least as effective as diazepam in reducing opioid withdrawal syndrome while simultaneously increasing treatment retention.4 Lofexidine proved to be an attractive drug in this study because, unlike diazepam, it is non-addictive. Patients given lofexidine had fewer withdrawal symptoms, less opioid cravings, smaller changes in pupil size, and were more likely to finish treatment and complete detoxification. The aforementioned results indicate lofexidine's superiority over diazepam.

The opioid epidemic has affected communities across the United States including the greater New York City area. In 2017, the New York City Department of Health found that, one hundred and one Staten Island residents died of a drug overdose and that nearly all of these fatal drug overdoses involved opioids. Lofexidine could play a key role in decreasing fatalities without posing the risk of new addictions being caused by other classes of medications which have abuse potential, such as benzodiazepines.

A noteworthy characteristic of lofexidine, which is only available as 0.18 mg tablets, is its heavy pill burden – patients who are prescribed the medication must take twelve tablets per day as the standard starting



dosage. FDA approved prescribing information dictates that lofexidine should be taken as such: three 0.18 mg tablets taken orally four times daily during peak withdrawal symptoms, which are generally the first five to seven days following last use of an opioid, with dosing guided by symptoms and side effects. A gradual dose reduction should be implemented over a two to four day period, such as reducing one tablet per dose every one to two days or administering lower doses as opioid withdrawal symptoms wane.6 Lofexidine may be continued for up to fourteen days depending on patient symptoms or risk of fainting due to hypotension.<sup>6</sup> When compared to buprenorphine and naloxone sublingual films, which are available in a variety of different strengths that can be adjusted such that a patient is only required to take one or two films per day, the aforementioned pill burden may seem to be a significant barrier to adherence. However, the benefits of a nonaddictive withdrawal treatment far outweigh the potential barriers associated with a twelve tablet per day regimen.

Lofexidine is a new medication that we as pharmacists and health care providers should be informed about given the current climate surrounding opioid use and misuse. Although lofexidine's pill burden and increased risk of hypotension could be interpreted as deterrents, the benefit of a non-addictive withdrawal treatment is one that is unique and unparalleled by any of the other treatment options that are currently on the market.

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#### **Residency Starter Guide**

#### By: Yao Jiang, PharmD (St. John's University c/o 2019)

"Do you want to do a residency?" a senior pharmacy student asked me as I strolled past their booth on Pharmacy Organization Day during my first year of pharmacy school. I stopped for a minute, but everything they said about post graduate training and clinical rotations flew way over my head. I admit that at that time, I was only interested in checking out the different pharmacy organizations on campus and residency was not on my mind. Fast forward six years, I was approaching graduation and residency was a post-graduate opportunity I was seriously considering. I am writing this article because I want to educate and share some insight regarding pharmacy residency with the next generation of pharmacists. This article will explain what a pharmacy residency is, provide reasons why you may want to pursue a residency, how to apply for a residency, and resources available to aid the application process.

The American Society of Health-System Pharmacists (ASHP) defines pharmacy residency as, "an organized, directed, postgraduate training program in a defined area of pharmacy practice." Traditional pharmacy residencies take place in hospitals. However, residents can now complete their post graduate training at community pharmacies, long-term care facilities, ambulatory care settings, and managed care organizations. There are two levels of post graduate pharmacy residency training, fittingly named postgraduate year one (PGY1) and postgraduate year two (PGY2). A PGY1 program builds upon knowledge, skills, and abilities that were developed during a pharmacy student's last year of training during advanced pharmacy practice experiences (APPEs) and helps

recent graduates apply their clinical skills to patients who have a board range of disease states. A PGY1 program also provides pharmacy residents with opportunities to hone their skills in patient-centered care, clinical judgment, leadership, and knowledge of pharmacy operations while simultaneously strengthening professional values. Opportunities for learning include managing the medication use process, providing medication therapy management with interdisciplinary teams, managing projects, providing education, and utilizing medical informatics.<sup>1</sup>

A PGY2 residency focuses on a specific area of interest while building on competencies developed during a candidate's PGY1 experience. In order to complete a PGY2 residency, the candidate must first complete a PGY1 residency. Some PGY2 specialties include ambulatory care, critical care, drug information, infectious diseases, pediatrics, geriatrics, and more.<sup>1</sup>

#### Why should you do a residency?

Residencies may not be for everybody. When I was a student both in the classroom and on rotations, I would often get asked, "What do you want to do after graduation?" Do not feel pressured to say you want to do a residency to appease the crowd. Now you are probably thinking, "How do I know if residency is for me?" If as a pharmacy student, you know you want to work in a hospital, you should probably apply for residency. From my experience, many entry level hospital staff pharmacist positions in the New York City area now require candidates to have completed a PGY1 residency.



If you have developed an interest in pharmacotherapy in general or in a specific therapeutic discipline, residency is a post-graduate option worth considering. In order to practice as a general clinical specialist and apply for board certification, it is required that one complete a PGY1 residency or have at least three years of practice experience with at least 50 percent of their time spent in patient-specific pharmacotherapy, drug information, and population-based pharmacotherapy.<sup>2</sup> In order to apply for board certification in a specific specialty, it is required that one complete both a general PGY1 residency and a PGY2 residency in the specialty, a PGY1 residency and have a variable number of years of experience with at least 50 percent of their time spent practicing in a specific therapeutic discipline, or four years of practice experience with at least 50 percent of their time spent practicing in a specific therapeutic discipline.<sup>3</sup> Due to the potential career benefits a residency can provide, the competition of getting into one is harsh and the reality of not matching to one is even harsher. In 2014, 35 percent of applicants did not match to a PGY1 program. All applicants should have a backup plan in case they do not get a residency position.4

#### How does one apply for a residency?

Now that you have been sold on the idea of residency, it is time to start applying. Begin by visiting the

National Matching Services website. It contains a roadmap of the residency application process including registering to be part of the matching process, applying to different institutions, ranking the institutions, and finally, viewing your results.<sup>5</sup> The website also provides a handy schedule of important dates including deadlines for registering for the match and submission of rank order lists. It is important to keep in mind that there is a 150 dollar fee to register for the match and varying fees depending on how many institutions you apply to.6 As a piece of advice for any student looking to apply for residency, always put your best foot forward on your APPE rotations and seek out preceptors for letters of recommendation early. Some residency programs may require letters of recommendation from faculty members so look to get involved in student organizations, research, or schedule faculty rotations prior to application deadlines.

#### What are some available residency resources?

While the technical aspects of how to apply for a residency have been laid out previously, applying for a residency involves much more. Intricacies like knowing which programs to apply to, drafting and finalizing a curriculum vitae (CV), and preparing for interviews all play into the application process. St. John's University's College of Pharmacy partners with various pharmacy student organizations, such as Rho Chi and Student Socie-

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ty of Health-System Pharmacy (SSHP), to hold a number of events meant to aid residency candidates. For example, the College of Pharmacy and Health Sciences held their annual Residency and Fellowship Showcase in the Fall of 2018 which featured various institutions such as Kingsbrook Jewish Medical Center, Veteran Affairs medical centers, Northwell Health, and many more (College of Pharmacy and Health Sciences, email communication, October 2018). At the showcase, current residents and residency program directors were present to answer questions and share their experiences regarding their specific programs. Following the showcase, pharmacy student organizations hosted the annual Residency and Fellowship Workshop. During the workshop, a panel of current residents and fellows talked about the residency and fellowship application process, their experiences so far in their positions, and answered questions. SSHP also held a series of workshops throughout the academic year that delved further into the application process, CV structure, and interview advice. (SSHP, email communication, October 2018). Lastly, the university's very own Career Services Office held mock interviews to help prepare residency candidates and build their confidence.

As the future of pharmacy evolves from a dispensing landscape to a more clinical one, pharmacy students are likely to hear about pharmacy residencies from the moment they enter their first year. The benefit of this is that it will allow students to research what a residency entails, why one might want to pursue it, and prepare early. Take advantage of all the resources the College of Pharmacy offers, including your professors who most likely completed a residency of their own.

With that, I leave you with one of the biggest questions of your career: to be or not be a resident. Good luck!



Residents, fellows, and students after the Residency and Fellowship Showcase and Workshop. Photo taken by Sarah Hewady, SSHP Historian co-chair 2018-2019.

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#### The rising cost of insulin

#### By: Daniela Farzadfar, PharmD Candidate c/o 2020

Over 30 million Americans are currently living with diabetes. According to the American Diabetes Association (ADA), in 2017, the total cost of diagnosed diabetes in the United States was 327 billion dollars with 237 billion dollars alone attributed to direct medical costs. Among these direct medical costs is the cost of insulin, which has continued to increase over the last decade.

Insulin is used to help control blood sugar in patients who have Type 1 Diabetes – a disease in which the body cannot make insulin, and Type 2 Diabetes - a disease in which the body does not produce enough insulin or cannot use insulin properly. The amount of insulin a patient requires varies based on factors such as weight and diet.<sup>2</sup> Consistent price increases have made insulin unaffordable for many, particularly those who are uninsured and those whose insurance coverage requires substantial cost sharing. According to the Health Care Cost Institute of the University of Chicago, patients with Type 1 Diabetes paid an average of 5,705 dollars perperson for insulin in 2016, almost double the average cost per-person in 2012.3 In addition, according to an official letter from the United States Senate Finance Committee, the price of one vial of insulin lispro (Humalog®), which is manufactured by Eli Lilly and Company, rose from 35 dollars in 2001 to 234 dollars in 2015. In comparison, the cost of Novo Nordisk's insulin aspart (Novolog®) surged from 289 dollars in 2013 to 540 dollars in 2019, and the cost of Sanofi's insulin glargine (Lantus®) increased from 244 dollars in 2013 to 431 dollars in 2019.4 Patients whose health and livelihoods rely on insulin administration have to buy insulin regardless of cost, further empowering large pharmaceutical companies who manufacture it.

What role do pharmacy benefit managers (PBMs) play in increasing insulin prices? Pharmacy benefit managers serve as middlemen between health insurance companies and drug manufacturers. They are the professionals who negotiate drug prices on behalf of health insurers and have the ability to demand rebates from drug manufacturers because they have leverage — in exchange for rebates, a PBM may offer to place a drug on a health insurer's formulary. As a result, the drug manufacturer that offers a lower rebate than a

competitor, may not have their product included on a health insurer's formulary, or, may have their product placed on an insurance tier that is less desirable and requires consumers to pay more when they receive it. A PBM's role in the establishment of insulin prices can also be seen by looking at insulin manufacturers', "list prices" and "net prices". While the "list prices," or the amount insulin manufacturers charge, have greatly increased over time, the "net prices", or the amount insulin manufacturers make after fees, discounts, and rebates to wholesalers or PBMs, have risen more modestly. <sup>5,6</sup>

Patients living with diabetes are experiencing great adversity as a result of the rising costs of insulin. Due to being unable to afford insulin, many have resorted to rationing their medication, meaning that they purposefully take less insulin than prescribed to make it last longer. Others use insulin from friends and relatives or do not fill their insulin prescriptions at all. Taking less insulin than is physiologically required can ultimately lead to serious health consequences including diabetic ulcers, which can lead to amputations or kidney damage. <sup>5,7</sup>

The issue of astronomically priced insulin has drawn national attention leading to Congress' evaluation of the factors contributing to rising insulin prescription prices, particularly since the United States does not have federal laws in place which regulate the prices of prescription drugs. During the United States Senate Finance Committee hearing which was held in January of 2019, the public health impact of rising insulin prices was discussed at length. Potential solutions that were considered in attempt to reduce costs included restructuring Medicare Part D and re-evaluating the aforementioned PBM rebate system.8 It was also suggested that an effective solution would involve greater competition among those that supply insulin. 5,6,8 Insulin manufacturers have tried to address the issue of increasing insulin prices by offering co-pay cards to limit patients' out-of-pocket expenses and initiating patient-assistance programs which provide free medications to qualifying Americans.<sup>5</sup> Eli Lilly and Company also recently released a half-priced, generic version of Humalog® called insulin lispro. A single vial of insulin lispro has a list price of 137.35 dollars.7

While some argue that these changes were made far later than public need required and that the price of



even a generic insulin alternative is still exceedingly high, there are signs that more positive changes are in the works to ease the burden of insulin prices for frustrated Americans. The insulin price hikes that have occurred over the years have served as a cautionary tale and helped identify legislative flaws in terms of the lack of prescription drug pricing regulations in the United States.

As future pharmacists, we can do our part to help patients living with diabetes in both community and hospital settings by ensuring that they are adhering to their insulin regimens through counseling or refill reminders. We can also help in the effort to reduce costs by applying discount cards or finding more affordable alternatives for patients based on their insurance plans. The pharmacist is often the last health care professional a patient sees before being left on their own with their prescribed medications. It is, therefore, our responsibility to ensure that patients not only understand how to use their medications but that they actually have access to them in order to optimize health outcomes. This way, we can significantly impact our patients' lives and simultaneously help address the issue of increasing insulin prescription prices.

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#### **RHO CHI POST: TEAM MEMBERS**



@ Anna Diyamandoglu 6<sup>th</sup> Year, STJ; Editor-in-Chief

Throughout my time in the PharmD program, my understanding of pharmacy as a profession has evolved and deepened as much as my desire to create awareness, particularly to non-science students, about the diverse role pharmacy plays in various healthcare and non-healthcare settings. I have always had an affinity for writing and look forward to combining my interests in literary composition, editing and pharmacy to produce relevant issues which both pharmacy students and non-pharmacy students alike will find relatable and take an interest in.



@ Shireen Farzadeh, PharmD
Graduate Copy Editor [Content-Focused]

I am excited to join Rho Chi Post and contribute to the award-winning newsletter for students to share ideas, opinions, and pertinent topics! Writing for the Rho Chi Post is an opportunity to express our appreciation for pharmacy and educate ourselves and our peers. I hope to inspire students to discover their passion for writing and to stay up to date on our evolving profession!



@ Karen Lin, PharmD

Graduate Copy Editor [Content-Focused]
The Rho Chi Post allows me to have an appreciation for interactive pharmacy learning as well as the art of writing. With each newsletter, my goal is to provide current information to readers who come across the Post. As an editor, I hope to make the newsletter one-of-a-kind and motivate and influence writers to explore science with their creative talents.



@ Jonathan Mercado, PharmD

Graduate Copy Editor [Content-Focused]

The Rho Chi Post breaks barriers for students that want a glimpse of their future and acts as an inspiration to work harder to achieve their goals. It is an embodiment of the motivation and intelligence that drives pharmacy students to be the most informed and capable professionals they can be. I am glad to a part of that mission and to channel my passion and interests through this newsletter.



@ Nicollette Pacheco, PharmD
Graduate Editor [Graphics-Focused]

As a member of the Rho Chi Post team, I have a vast appreciation of what it means to be a pharmacist in the rapidly evolving world of healthcare. As a graduate editor, I will continue to bring my passion for science and creativity to the Rho Chi Post.



@ Joseph Eskandrous, PharmD
Graduate Staff Writer

In the world of pharmacy, knowledge becomes outdated within hours of when you learned it. The miracle drug that used to be considered the standard of therapy is replaced by the latest and greatest. My role as a Staff Writer for the Rho Chi Post is to bring these changes to the forefront in order to empower future pharmacists and to improve the quality of patient care.



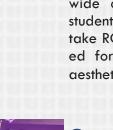
#### **RHO CHI POST: TEAM MEMBERS**



@ Obaid Zia

6<sup>th</sup> Year, STJ; Copy Editor [Graphics-Focused]

I am honored to be a part of the Rho Chi Post team. I see so much potential and value in having this kind of student driven platform available to a nationwide community of pharmacists and student pharmacists. I'm excited to help take RCP in a new direction better suited for our contemporary needs and aesthetics.



@ Adrian Wong

5<sup>th</sup> Year, STJ; Finance & Outreach Manager

As future "drug experts", I believe it is our responsibility to keep up to date with the ever-changing and dynamic world that is pharmacy. The Rho Chi Post provides a unique platform for students to stay well informed on current healthcare related events, as well as fine-tune their writing skills--both of which are essential for being a successful pharmacist. I am excited for the privilege to work alongside the editorial board to produce a newsletter that can be appreciated by everyone!



@ Kathleen Horan 6<sup>th</sup> Year, STJ; Staff Editor

I have always loved writing, and I hope to couple my passion for writing with my interest in clinical pharmacy by becoming a writer and staff editor for the Rho Chi Post. As a writer and staff editor for the Rho Chi Post, I hope to write and edit informative and interesting articles that relate to the world of healthcare and pharmacy. I am so excited to join this team of student pharmacists and writers.



@ Oudit Balkaran

5<sup>th</sup> Year, STJ; Social Media Manager & Website Liaison

The Rho Chi Post is not only a great way for students to voice their opinions, but also a great way for them to continue expanding their knowledge of pharmacy. Today's news becomes old news very rapidly in the ever-changing world of pharmacy. Though my involvement in Rho Chi Post, I hope to help students learn and motivate them to take a deeper dive into the vast world of pharmacy. It is crucial we stay on top of our knowledge as future pharmacists. By doing so, we can maximize our abilities to help our patients.



@ Sarah Hewady 6th Year, STJ; Staff Editor

The importance of staying updated on relevant healthcare matters cannot be overstated. I appreciate the mission of Rho Chi Post in that it successfully compiles clinically relevant and up-to-date information for its audience. Wanting to contribute to this cause is what sparked my interest to become a staff editor. I hope to broaden the scope of knowledge of the public as well as aid healthcare practitioners in the clinical decision-making process.



@ Katharine Russo 5<sup>th</sup> Year, STJ; Staff Editor

In my first two years as a pharmacy student, I was exposed to numerous opportunities to write medical based articles for classes and clubs. This is what first sparked my interest in health care literature and I look forward to being a Staff Writer for the Rho Chi Post in hopes of being able to share my passion and enthusiasm in writing health-care related publications.



#### **RHO CHI POST: TEAM MEMBERS**



@ Daniela Farzadfar 6th Year, STJ; Staff Writer

Pharmacy is a constantly evolving profession. Writing for the Rho Chi Post gives me the opportunity to enlighten my peers and myself on changes occurring in the field that we are often not taught in the classroom. The Rho Chi Post serves as a creative outlet where students can express their opinions and share new information by combining their passion for writing and the pharmacy profession. I hope that my contribution to this newsletter inspires others to improve patient outcomes by staying up to date on recent changes.



@ Michael Lim
6th Year, STJ; Staff Writer

In the spirit of advancing the pharmacy profession, the Rho Chi Post never ceases to produce valuable content showcasing the innovation and diversity of the career. As a Staff Writer for the Post, I am honored to have the opportunity to use writing to both educate and push readers to strive for excellence in their professional pursuits. I hope that my contributions to the newsletter are able to foster growth in an informative and accessible manner.



@ Mah Noor
5th Year, STJ; Staff Writer

Rho Chi Post is an amazing studentoperated newsletter publication that is
doing an astonishing job delivering updated news as well as giving students the opportunity to give back to the pharmacy
community. As a staff writer, I hope to
play a key role in educating students on
the different aspects of pharmacy and
how much growth takes place in this field.
Reading the Post since freshman year has
helped me gain a better understanding of
what it means to be a pharmacist and I
hope to achieve that same understanding
in students who read my articles.



@ Shivani Shah 5<sup>th</sup> Year, STJ; Staff Writer

As students in an dynamic healthcare profession, it is important to keep up to date with literature and publications regarding the pharmacy profession. Rho Chi Post serves as a great outlet for students to catch up on pharmaceutical innovations and progress going on in the career. Being a staff writer motivates me to constantly research and share new, exciting advancements with fellow students. I look forward to reading articles in the Post and hope to spark others curiosity and interest!



@ Evanthia Siozios 6<sup>th</sup> Year, STJ; Staff Writer

Rho Chi Post is a newsletter that gives students the opportunity to learn and write about novel topics and broaden their knowledge while demonstrating their writing skills. For me, being involved with this newsletter is not just about learning something new but also sharing relevant topics which have an impact on patients' lives. I have learned so much from writing for the Rho Chi Post and hope to inspire others with my words. As a future pharmacist I want to learn to teach and get to give.



@ Yeonah Suk 6<sup>th</sup> Year, STJ; Staff Writer

As a student interested in various branches of healthcare, the Rho Chi Post has provided me the opportunity to be part of an organization that discusses this field in a broad scope. As modern society continues to amalgamate and globalize multiple disciplines, it is important that we harmonize these elements and keep ourselves updated on their interactions. I joined the Rho Chi Post to both learn and contribute to a team that has immense diversity and my goal is to continue exploring innovative ideas through writing.



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#### MISSION

The Rho Chi Post is an award-winning, monthly, 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, faculty, and administrators.

#### VISION

The Rho Chi Post aims to become the most exciting and creative 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 essentially sets the stage for the future of student-operated publications in pharmacy

#### VALUES

**Opportunity** 

**Teamwork** 

Respect

**Excellence** 

#### GOALS

To provide the highest quality student-operated newsletter with accurate information

To maintain a healthy, respectful, challenging, and rewarding environment for student editors

To cultivate sound relationships with other organizations and individuals who are like-minded and involved in like pursuits

To have a strong, positive impact on fellow students, faculty, and administrators

To contribute ideas and innovations to the Pharmacy profession

# St. JOHN'S UNIVERSITY College of Pharmacy and Health Sciences

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