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RHO CHI post

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**An award-winning, monthly, 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 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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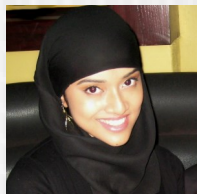
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RHO CHI POST: TEAM MEMBERS



@ Tasnima Nabi

6th Year, STJ; Editor-in-Chief

Writing has always been my greatest outlet for experience and knowledge, through which I hope to keep you engaged and informed. It is imperative to keep up with our changing profession and community. I look forward to bringing pertinent information to the newsletter.



@ Katharine Cimmino, PharmD

Graduate Copy Editor [Content-Focused]

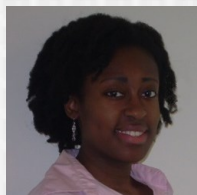
I have always been an avid reader and writer. As a member of the Rho Chi Post I am able to merge my passions with the professionalism that comes with aspiring to be a healthcare provider. I am eager to be a part of a publication that promotes my interests and vocation.



@ Bharat Kirthivasan, PhD

Graduate Copy Editor [Content-Focused]

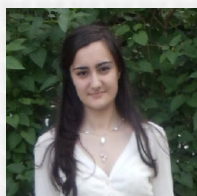
I received my doctorate in Industrial Pharmacy researching nanoparticles for delivery to the brain. The only thing I enjoy more than reading a well-written piece of work is writing it. I am glad to work for the Rho Chi Post, and I encourage others to do the same.



@ Davidta Brown

5th Year, STJ; Copy Editor [Content-Focused]

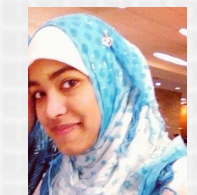
My two great loves are innovative science and quality writing; the Rho Chi Post is an insightful combination of both. As an editor, I look forward to bringing relevant information and fresh perspectives to the student and faculty of St. John's University, as well as to making the Rho Chi Post a newsletter that offers something new to every reader.



@ Tamara Yunusova

5th Year, STJ; Copy Editor [Content-Focused]

I enjoy articulating information in a captivating and insightful way. I hope to make this publication more informative, student-friendly, and innovative.



@ Fatema Elias

6th Year, STJ; Copy Editor [Content-Focused]

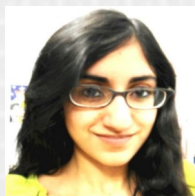
I am honored to be a part of the Rho Chi Post team. In this age of technology and the continuously changing healthcare profession, I hope to engage like-minded students and professionals. Writing is something that I hold dear to my heart and I hope with this newsletter we can all stay well informed, interested, and educated.



@ Sang Hyo Kim

4th Year, STJ; Section Editor: Puzzles

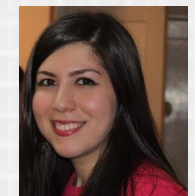
Advancing technology and medicine, as well as prolonging the lifespan and improving quality of life, have increased the geriatric population. Pharmaceutical industries and healthcare systems persistently work to find solutions to changing demands and new problems of the society. I wish to learn, educate, and prepare myself and others for the future.



@ Azia Tariq

5th Year, STJ; Section Editor: News

The Rho Chi Post is a prominent and highly esteemed resource for pharmacy students and professionals. I am privileged to be a part of the team and hope to contribute informative and engaging pieces to the newsletter.



@ Svetlana Akbasheva

6th Year, STJ; Section Editor: Clinical

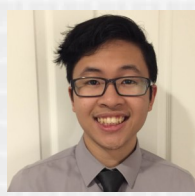
I am very excited and honored to be part of the Rho Chi Post! In a profession that is constantly evolving with new developments, it is so important to remain informed and current. The Rho Chi Post helps do just that, and I look forward to contributing to this unique publication.



@ Nicollette Pacheco

5th Year, STJ; Staff Editor [Graphics-Focused]

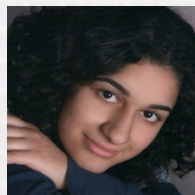
As a new member of the Rho Chi Post team, I have a vast appreciation of what it means to be a future pharmacist in the rapidly evolving world of healthcare. I am looking forward to being on the team as a graphics-focused staff editor, and I hope to bring my passion for science and creativity to the Rho Chi Post.



@ Andrew Leong

6th Year, STJ; Staff Writer

Students have to do more than what is required of us in classes to truly learn about our profession. That's why I joined the Rho Chi Post. This publication represents a channel by which our team members, faculty, and readership can share information - something I believe is important in this ever-changing pharmacy world.



@ Sylva Ohanian

5th Year, STJ; Staff Writer

The Rho Chi Post is a refreshing outlook on our profession. I am thrilled and grateful to be able to work with the other members in continuing its success, and hopefully to bring greater attention to it, which it deserves.

RHO CHI POST: TEAM MEMBERS

**@ Fawad Piracha****6th Year, STJ; Finance and Outreach Manager**

I am delighted to join the editorial team. I have the firm intention of broadening readership and facilitating growth of the Rho Chi Post.

**@ Joshua Bliss****6th Year, STJ; Social Media Manager**

By providing student-organized, reliable healthcare information, the Rho Chi Post helps us all in fulfilling our education both in and out of the classroom. Education is the tool we use to set paths for our futures, and every chance to expand our education is a chance at building a better future. I am honored to be a part of the Rho Chi Post & look forward to the future!

We are always looking for
creative and motivated
students to join our team!

If you are interested in
becoming a Rho Chi Post
editorial team member, visit:

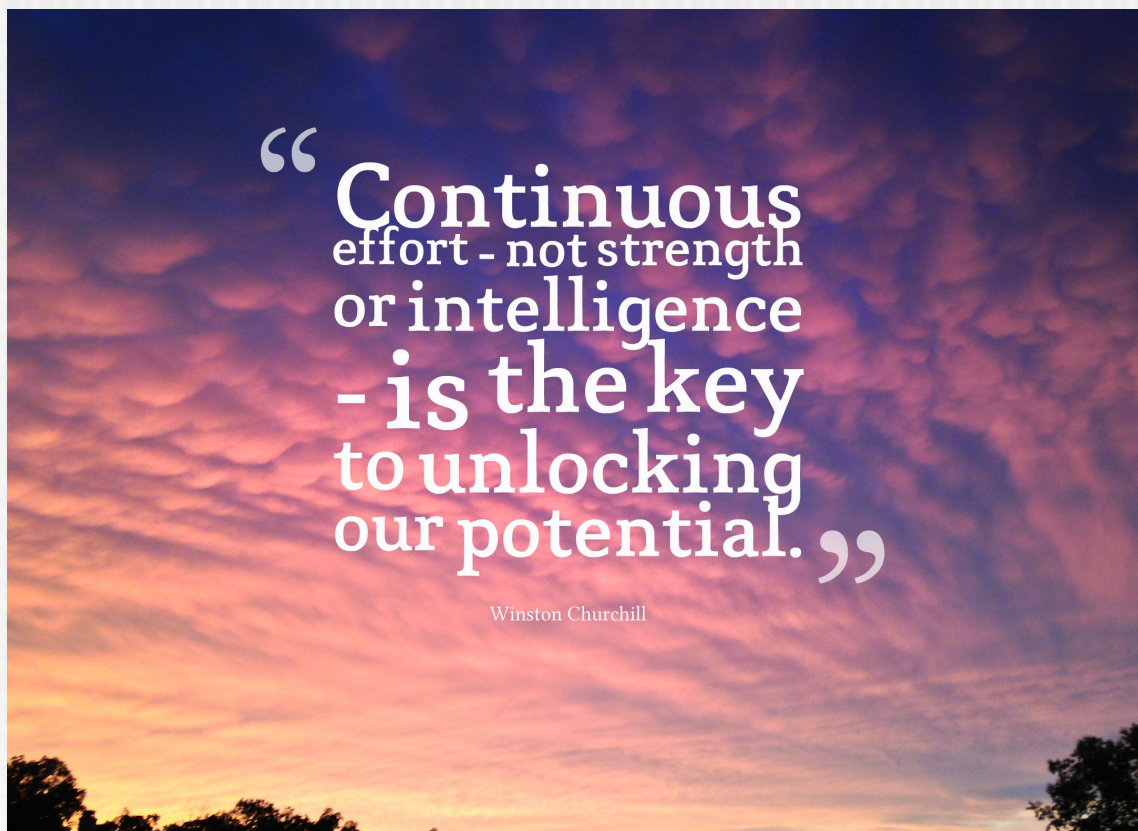
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QUOTE OF THE MONTH

By: Nicollette Pacheco, Staff Editor [Graphics-focused]



Cytisine: Another Option for Smoking Cessation

By: Andrew Leong, Staff Writer

Quitting smoking greatly reduces the risk of many diseases such as lung cancer, coronary heart disease, and stroke, all of which increase morbidity and mortality in patients. Currently in North America, there are three main pharmacological therapies used in the management of smoking cessation. The most recognizable one, nicotine replacement therapy (NRT), can come as a patch, gum, or lozenge. Antidepressants, such as bupropion and nortriptyline, also have some use as smoking cessation therapies. Finally, varenicline is a nicotinic receptor partial agonist and works by binding to the receptor more weakly than nicotine, therefore reducing cravings and withdrawal symptoms.¹

Cytisine is another nicotinic receptor partial agonist that has been used since the 1960s in Eastern Europe. Four systematic reviews were conducted and they all found that cytisine was superior to placebo for short-term and long-term abstinence. Cytisine was also shown to have no significant increase in adverse effects when compared to placebo although gastrointestinal symptoms were more common.²

In a recent parallel-group, open label, randomized, controlled, noninferiority trial, it was hypothesized that 25 days of cytisine (the manufacturer's recommendation³) plus low-intensity behavioral support would be at least as effective as 8 weeks of NRT plus low-intensity behavioral support for smoking cessation.⁴ Conducted in New Zealand, it is the first study that has compared these two treatment modalities.

Participants were at least 18 years of age, daily smokers, and motivated to quit. Exclusion criteria were chosen on the basis of varenicline-related concerns such as self-reported pheochromocytoma, a blood pressure above 150/100 mmHg, or pregnancy. Participants were also excluded if they were already taking cessation medication or if they were

already in another cessation program or study. The primary endpoint of the study was self-reported continuous abstinence from smoking for one month after quit date. After all criteria were met, 655 participants were chosen for each study arm.⁴

The study found that cytisine was non-inferior to nicotine-replacement therapy: 1 month continuous abstinence rates were significantly higher in the cytisine group than in the NRT group (40% vs. 31%, $p < 0.001$). Additionally, at each of the point-prevalence abstinence times (1 week, 1 month, 2 months, and 6 months), cytisine was statistically significantly superior to NRT. At 1 week, 41% of the cytisine participants had abstained versus the 30% of the NRT participants ($p < 0.001$). At 1 month, 42% had abstained versus 33% ($p < 0.001$). At 2 months, 38% had abstained versus 32% ($p = 0.020$). At 6 months however, results were not statistically significant (31% vs. 30%, $p = 0.549$).⁴

Approximately 53% of participants were adherent to the guidelines for cytisine treatment (they had taken at least 80 tablets), whereas 67% in the NRT group were adherent with treatment guidelines (they had used NRT at both 1 week and 1 month). While this could mean any number of things, the most probable reason is the adverse event profile. As expected of a varenicline analogue, 31% of participants in the cytisine group had experienced some type of adverse effect compared to 20% in the NRT group. The most common of these adverse effects were nausea and vomiting (5% vs. < 1%) and sleep disorders (4% vs. < 1%).⁴

Because the study was not completely blinded, there is potential bias. The study authors concluded that "... researchers were aware of treatment allocation, [and] there may have been a reporting bias in favor of cytisine." Another possible bias was the fact that participants in the cytisine group received a 25-day course of tablets by courier while partici-

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pants in the NRT group received vouchers from Quitline that were redeemable from community pharmacies for various NRTs. Couriers could have been given to both groups to eliminate any skew in results. In addition, according to the World Health Organization (WHO), “an ex-smoker is considered a subject who has been abstinent for a period of at least 1 year.”⁴ This is in contrast to the 1-month abstinence primary endpoint of the trial. Thus, the trial may not be reflective of real-world patient populations.

With this trial, there may be increased interest in bringing cytisine to market beyond Eastern Europe. Practically speaking, cytisine is a lower cost cessation option compared to current therapies; a full regimen costs \$20-\$35, compared to \$70 for NRT (although prices can often be higher depending on severity of addiction), \$116 for bupropion, and \$277 for varenicline.^{1,6,7} Due to the seemingly significant cost differences, the study authors conclude that a head-to-head, non-inferiority trial between cytisine and varenicline is justified. Cytisine seems to be another viable, first-line therapy for smoking cessation, and may be a better alternative to current smoking cessation therapies.

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2. Hajek P, McRobbie H, Myers K. Efficacy of cytisine in helping smokers quit: systematic review and meta-analysis. *Thorax*. 2013;68:1037-1042.
3. Biogenic Stimulants. Tabex. Tabex Web site. <https://www.tabex.net>. Accessed March 8, 2015.
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New Treatment Option for Diabetic Retinopathy

By: Sylva Ohanian, Staff Writer

The FDA recently approved aflibercept (Eylea®) injection for the treatment of diabetic retinopathy (DR) in patients with diabetic macular edema (DME).¹

Diabetic retinopathy is the most common diabetic eye disease and is a leading cause of blindness in American adults. It is generally characterized by changes occurring in the blood vessels of the retina. In some instances of DR, diabetic macular edema ensues, which is when blood vessels swell up and leak fluid, and new blood vessels may grow on the surface of the retina. Vision loss may occur in some patients as a result of DR, especially if left untreated.^{1,2} Aflibercept works by acting as a soluble decoy receptor that binds vascular endothelial growth factor-A (VEGF-A) and placental growth factor

(PLGF), thereby inhibiting effects of vascular permeability and neovascularization.³

The FDA granted aflibercept breakthrough therapy designation for the treatment of DR in patients with DME. Breakthrough therapy designation is assigned if preliminary clinical evidence indicates that a drug displays considerable improvement over current therapies for patients with a serious or life-threatening condition. Once designated, the drug undergoes expedited development and review by the agency. Requests for breakthrough therapy are assessed and approved or rejected within 60 days of receipt.⁴

Preliminary evidence for aflibercept included two clinical studies where 679 participants were randomly assigned to receive aflibercept injections or

macular laser photocoagulation, a laser-based procedure that burns areas of the retina. Compared to patients who did not receive aflibercept, patients receiving aflibercept at week 100 showed significant improvement in the severity of the disease.¹

The recommended dose for DR with DME is 2 mg (0.05 mL or 50 microliters) administered by intravitreal injection every month for the first five injections, followed by 2 mg (0.05 mL) once every 2 months. The manufacturer notes, "Although Eylea® may be dosed as frequently as 2 mg every 4 weeks (monthly), additional efficacy was not demonstrated when Eylea® was dosed every 4 weeks compared to every 8 weeks."³

Common side effects associated with the use of this product include conjunctival hemorrhage, eye pain, cataracts, vitreous floaters, vitreous detachment, and increased intraocular pressure.³ Serious side effects include endophthalmitis and retinal detachments.¹

The recent approval of aflibercept for the treatment of DR with DME will allow doctors and patients to make appropriate and informed treatment decisions for diabetic retinopathy.

SOURCES:

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Aripiprazole (Abilify®) Approved

By: Sang Hyo Kim, Section Editor

On April 28, 2015, the U.S. Food and Drug Administration approved aripiprazole, the generic of Abilify®.¹ Aripiprazole tablets are used to treat patients with schizophrenia and bipolar disorder.¹ Although Otsuka Pharmaceuticals, the manufacturer of Abilify®, tried to block generic competition by requesting a temporary restraining order on one of three patents beyond the April 20th expiration deadline, the U.S. District Court for the District of New Jersey denied the request.² Now, pharmaceutical companies can launch the affordable generic for patients.

Aripiprazole is available as a tablet, oral solution, orally disintegrating tablet, and injection.⁴ The injection comes in prefilled syringes and vials for reconstitution and must be injected via intramuscular route only.⁴ The prescribed dose varies, depending on various factors such as patient age and symptoms. Aripiprazole is usually taken by mouth once a day with or without food; the drug can control the symptoms of schizophrenia and bipolar disorder, but will not cure it.³ There is no dosage adjustment necessary for renal and hepatic impairment, but the drug requires dosage adjustment with concurrent CYP450

inducer or inhibitor therapy, or based on individual CYP2D6 metabolizer status.⁴

Some common side effects of aripiprazole include headache, nervousness, weight gain, dizziness, and diarrhea.⁵ Serious side effects include seizures, chest pain, high fever, or changes in vision, which should immediately be reported to the prescriber.⁵ Aripiprazole is a Category C drug on the pregnancy safety rating scale, which means that although there is limited human data to show possible risk on the fetus, there have been animal studies to show developmental toxicity and teratogenicity. Continuing therapy during pregnancy is a patient-provider specific decision; however, administration during the first trimester must be avoided.⁶

Aripiprazole is not used to treat patients with dementia-related psychosis and contains a boxed warning indicating an increased risk of death in elderly patients with dementia-related psychosis.¹ The warning also includes an increase in suicidal thoughts and behaviors in children, adolescents, and young adults taking antidepressants.¹ When dispensing aripiprazole, the pharmacist must include a medication guide that explains to the patient the potential risks and factors associated with the drug.

SOURCES:

1. FDA approves first generic Abilify® to treat mental illnesses. FDA. Available at: <http://www.fda.gov/NewsEvents/Newsroom/PressAnnouncements/ucm444862.html>. Updated 4/30/2015. Accessed Aug 10th, 2015.
2. Teva Launches Generic Abilify® Tablets in the United States. TEVA Pharmaceutical Industries Ltd. Available at: <http://www.tevapharm.com/news/?itemid=%7B72A03233-DF38-4F01-8A99-649C0ECC8F1C%7D>. Published August 10th, 2015. Accessed June 9th, 2015.
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FDA Approves First Tissue Adhesive for Internal Use

By: Azia Tariq, Section Editor

The U.S. Food and Drug Administration (FDA) has approved TissuGlu®, the first tissue adhesive approved for internal use. William Maisel, M.D., M.P.H., Deputy Director of Science at FDA's Center for Devices and Radiological Health states, "The FDA's approval of the first synthetic adhesive for internal use will help some abdominoplasty patients get back to their daily routine after surgery more quickly than if surgical drains had been inserted."¹

The intended use for TissuGlu®, a lysine-derived, urethane-based (LDU) adhesive, is to connect tissue flaps made during surgery in order to remove excess skin and fat. In addition, it is intended to restore weakened or separated abdominal muscles in procedures such as an abdominoplasty surgery. During such procedures, drops of liquid

adhesive are applied using a hand-held applicator. After applying the drops, the surgeon positions the abdominoplasty flap in place. Water in the patient's tissues starts a chemical reaction that bonds the flaps together. The surgeon then proceeds with standard closure of the skin using sutures. Connecting the tissue flaps with an internal adhesive can help reduce or even eliminate the need for postoperative surgical draining of fluid.¹

Data from a clinical study of 130 participants undergoing elective abdominoplasty suggests that participants who received TissuGlu® without surgical drains were able to return to most daily activities such as showering and climbing stairs, and resume their usual routines sooner than those who had surgical drains. Half of the participants received surgical

drains while the other half received LDU adhesive and no drains. The study results showed that 73% of participants who received the adhesive required no postoperative interventions to drain fluid that had accumulated between the abdominoplasty tissue flaps. Of the 27% of patients who required invasive treatments, 21% received needle aspirations alone and 6% received both needle aspirations and drains for persistent seroma formation. There was no significant difference between the groups in reported levels of pain or discomfort due to surgery.¹

Additional studies determined that usage of TissueGlu® lowered both drainage time and volume. In a prospective, multicenter, randomized trial assessing the use of the lysine-derived urethane adhesive in patients undergoing abdominoplasty, 20 patients were randomized to a control or to a treatment group in which the adhesive was applied to the abdominal wall prior to closure of the abdominoplasty. Control patients underwent an identical procedure but without application of TissueGlu®. Results indicated decreased drain removal time (2.9 ± 1.4 vs. 3.7 ± 1.5 days; $p=0.13$) and lower total drain volume (208.7 ± 138.2 vs. 303.5 ± 240.8 ml; $p=0.14$) in the treatment group.²

In the *Journal of Plastic, Reconstructive, and Aesthetic Surgery*, a canine model of abdominoplasty was used to examine seroma formation and efficacy of the LDU adhesive. More fluid accumulation was observed in the control group than the treatment group (mean, 690 vs. 44; median volume 348.5 vs. 15 ml; $p < 0.01$) ($n = 8$) at Week 3 necropsy. The study demonstrated that the adhesive is capable of preventing seroma formation in the canine abdominoplasty model and that its usage may be clinically beneficial in the prevention of seroma formation in patients undergoing abdominoplasty.³

The use of LDU adhesives was also analyzed in mastectomy patients. In the study, 32 patients received a mastectomy using a gold standard mastectomy technique as well as TissueGlu®. A control group of 173 patients who received a gold standard mastectomy only was evaluated retrospectively. Similar

results were shown regarding drain removal time (17% decrease) and hematoma formation (14% decrease). Though the primary endpoint results showed no significant difference in the development of a postoperative seroma ($p>0.05$), it was found that 7% of the control group patients required revision surgeries or re-hospitalization due to infection, whereas none of the LDU adhesive patients required re-hospitalization. Secondary endpoints revealed that superficial postoperative hematoma was present in 17% of the control group vs. 3% in the treatment group ($p<0.05$). Drain removal times also favored the LDU adhesive group (4.2 vs. 3.5 days, $p<0.05$).⁴

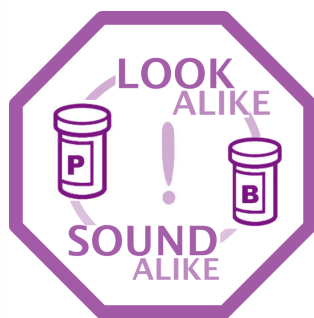
Although still early, the decrease in formation of hematoma, which are reflected by decreasing rates of re-hospitalization and revision surgeries, render LDU adhesive a promising agent in abdominoplasty and reconstructive surgery.

SOURCES:

1. FDA approves first tissue adhesive for internal use. *Fda.gov*. Available at: <http://www.fda.gov/NewsEvents/Newsroom/PressAnnouncements/ucm432906.htm> Published 02/4/2015.
2. Walgenbach KJ, Bannasch H, Kalthoff S, Rubin JP. Randomized, prospective study of TissueGlu® surgical adhesive in the management of wound drainage following abdominoplasty. *Aesthetic Plast Surg*. 2012;36(3):491-6.
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PUZZLES



By: Svetlana Akbasheva,
Section Editor

Many drugs
LOOK – ALIKE
OR
SOUND– ALIKE

causing them to be
easily mixed up in
practice.

Can **YOU** match these
facts with the correct
medication?

Answers
on next page

Matching Column: Monoclonal Antibodies

1. Intravitreal administration for the treatment of age-related macular degeneration and diabetic macular edema
2. Treatment of HER2+ breast cancer
3. Platelet aggregation inhibitor for patients undergoing percutaneous coronary intervention
4. Treatment of metastatic colorectal cancer
5. Used for acute renal transplant rejection prophylaxis
6. Treatment of osteoporosis and hypercalcemia of malignancy
7. Treatment of unresectable or metastatic melanoma
8. Treatment of rheumatoid arthritis and ankylosing spondylitis
9. PCSK9 inhibitor for the treatment of hyperlipidemia
10. IgE inhibitor for severe allergic asthma

- A. Basiliximab
- B. Denosumab
- C. Alirocumab
- D. Ranibizumab
- E. Omalizumab
- F. Panitumumab
- G. Abciximab
- H. Ipilimumab
- I. Adalimumab
- J. Trastuzumab

PUZZLES: ANSWERS

1. D 2. J 3. G 4. F 5. A 6. B 7. H 8. I 9. C 10. E

Lunch with a Leader

College of Pharmacy & Health Sciences

"Entrepreneurial Technology Innovation and the Clinical Pharmacist"

Joanne McNamara, RPh, MBA
Curisal

Joanne McNamara is a highly motivated Health Care professional with extensive experience in a variety of Pharmacy settings: Technology Innovation, Managed Health Care, Consulting business ownership, Long Term Care/Short Term Rehabilitation and Hospital. Curisal is a strategic technology partner and resource provider to health insurers, long-term home care providers, and physicians. Curisal's cloud based integration platform is a completely automated care coordination and care planning system that has incorporated clinical pharmacy services.

Date: Monday, November 23rd

Time: 2:00pm -3:30pm

Place: HERC – St. Augustine Hall B40

For further information and to R.S.V.P., please contact Shaquana Benjamin
(benjamis@stjohns.edu or 718-990-3273)

ALL ARE WELCOME

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