

Single Line Stories

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FEBRUARY 1

RHO_{CHI} post

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A STUDENT-OPERATED NEWSLETTER BY THE
ST. JOHN'S UNIVERSITY COLLEGE OF PHARMACY AND HEALTH SCIENCES'
RHO CHI BETA DELTA CHAPTER

EMERGING PATHWAYS FOR TREATING HEPATITIS C VIRUS

BY: MARIA SORBERA, PHARMD CANDIDATE C/O 2013, AMSCOP, LIU

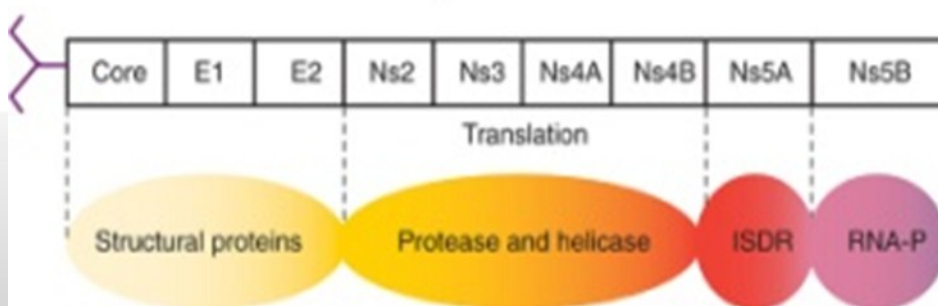
Hepatitis C is the leading cause of chronic liver disease and cirrhosis, presenting a global health challenge. Approximately 170 million people worldwide, 3% of the population, are infected with the Hepatitis C Virus (HCV), roughly 3.2 million of whom reside in the United States. The virus can present as an acute or chronic infection. Acute infections occur within six months of exposure, and an estimated 75–85% of patients will eventually develop a chronic infection. HCV can also be asymptomatic, with many patients being unaware that they are infected, allowing the infection to progress potentially causing liver disease, cirrhosis, and hepatocellular carcinoma. Although it is not known who will develop these complications, each patient's risk factors need to be assessed. Standard therapy consists of interferon (IFN) and ribavirin (RBV) for 24-48 weeks; however, not every patient is a candidate for or can tolerate treatment.

HCV is an RNA virus consisting of six genotypes, which replicate within the hepatocytes. Genotype 1, the most common in the US, is the most challenging to treat. Individuals infected with genotypes 2 and 3 are more

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Hepatitis C Genome



Source: O'Shea RS. Publications: Disease Management Project. Cleveland Clinic, Centers for Continuing Education. August 1st, 2010.

likely to respond to therapy than those infected with genotype 1. The primary goal of therapy is to eradicate the infection. Secondary goals include decreasing inflammation, reducing the risk of cancer, and slowing the progression to liver disease. Disease eradication is determined by achieving a sustained viral response (SVR), defined as the absence of HCV RNA six months after the completion of treatment. There are predictors to estimate who will achieve an SVR such as being negative for HCV RNA at 12 weeks of therapy. This is referred to as a complete early virologic response (EVR). A 2 log (10) or greater reduction in HCV RNA at 12 weeks of treatment defines a partial EVR. Patients who do not achieve an EVR have less than a 2% chance of reaching a SVR. Also, patients who have undetectable HCV RNA at week 4 of therapy, known as a rapid virologic response (RVR), have greater than a 90% chance of achieving a SVR. From the development of IFN to the current advances of direct acting antivirals (DAAs), improving SVR rates has been the primary efficacy measurement of therapy.

During the 1980s, it was observed that IFN improves liver enzymes. Soon RBV, which inhibits RNA viral replication, was added to interferon therapy to improve SVR. Subsequently, the pegylated formulation of interferon (PEG-IFN), was manufactured. Chronically infected patients achieve a SVR 54-56% of the time when treated with PEG-IFN/RBV. IFN is only available in an injectable form, has an extensive side effect profile, and has incidences of relapses—many challenges to patient compliance. Side effects include, but are not limited to, nausea, flu-like symptoms, hematological effects, ophthalmologic disorders, respiratory symptoms, and thyroid dysfunction. For many reasons, it is difficult for patients to complete the full 24-48 weeks of therapy presenting the need for newer treatment regimens that can be taken orally, with less toxicity and lower relapse rates.

Advancements in treating hepatitis C do not end with INF and RBV. Developments are underway that present major changes to HCV treatment. Two Direct Acting Antivirals (DAA), telaprevir and boceprevir, are NS3/4A serine protease inhibitors, recently approved by the FDA to be used with PEG-IFN and RBV. According to the American Association for the Study of Liver Disease (AASLD), these two agents should only be considered as an adjunctive

therapy if a patient is infected with genotype 1. Gilead Sciences' GS-7977, GS-5885 and GS-938, are currently undergoing Phase II and III clinical trials for interferon-free HCV regimens. Meanwhile, in November 2012, Abbott announced that the results from their Phase 2b Interferon-free Hepatitis C trial studying a triple-DAA regimen (ABT-450, ABT-267, ABT-333) plus ribavirin will be presented at the Annual Meeting of the AASLD in Boston. GS-7977, GS 5885, GS-938, ABT450/ritonavir, ABT-267, and ABT-333 are all promising investigational DAAs.

“The primary goal of therapy is to eradicate the infection. Secondary goals include decreasing inflammation, reducing the risk of cancer, and slowing the progression to liver disease.”

Sofosbuvir (GS-7977), previously PSI-7977, was discovered by Pharmasset, which has become a subsidiary of Gilead Sciences. The prodrug, GS-7977, is a nucleotide analogue NS5B-polymerase inhibitor. The figure in the previous page depicts the HCV genome showing the structural and non-structural (NS) proteins. NS5B protein is an RNA-dependent RNA polymerase.

After HCV enters the hepatocyte and its genome is translated, the virus can then encode proteases. Following the NS protein formation of an RNA Replication Complex comprising viral proteins, replicating RNA, and altered cell membranes, RNA is replicated by RNA polymerase NS5B. The RNA polymerase first makes a negative strand of RNA serving as a template for the production of a positive strand. Inhibiting NS5B prevents the initiation of RNA replication, making this a targeted mechanism for drug discovery. From the Phase 2 trials, ELECTRON and QUANTUM, GS-7977 combined with RBV displays potential in increasing SVR rates and decreasing relapse rates. Currently undergoing the phase III clinical trial, FISSION, GS 7977 seems promising.

GS-5885 is an NS5A inhibitor. Like NS5B, NS5A is a nonstructural protein component of the RNA Replication Complex that aids RNA replication. NS5A can also mount a host-cell interferon response, making it an increasingly popular focus of

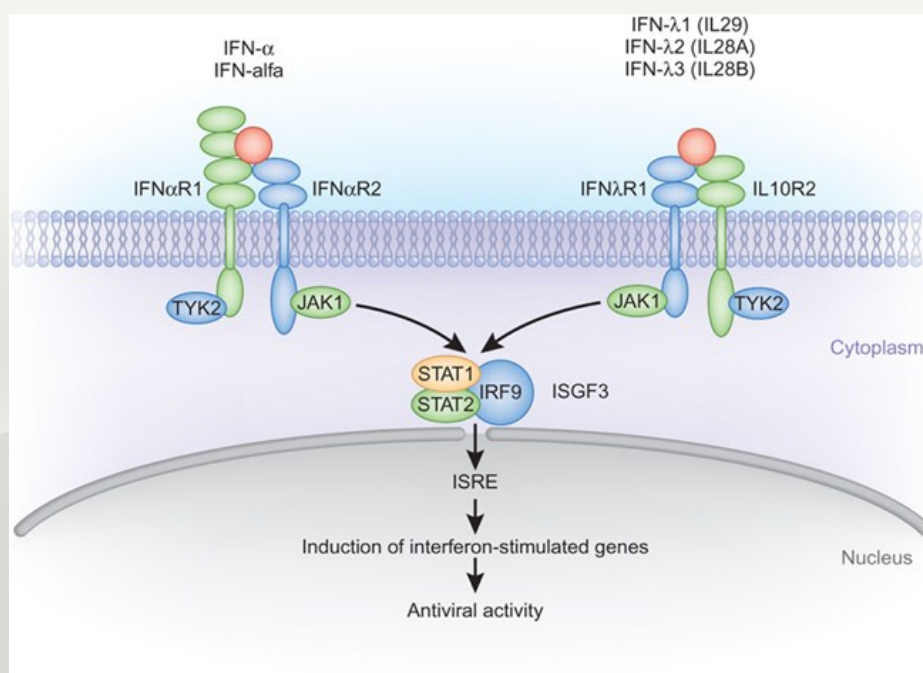
pharmacotherapy. The interferon sensitivity determining region (ISDR) of NS5A appears to determine the sensitivity of the virus to interferon. Mutations in this region may correlate with low response rates to interferon therapy. GS-5885/GS-7977 plus RBV are in phase III of clinical trials in the hopes of potentially changing the main stay of HCV treatment.

The prodrug, GS-352938, is metabolized to GS-352666 (PSI-352666), which is an inhibitor of NS5B RNA-dependent RNA polymerase similar to GS-7977. The question arises : why would Gilead conduct a trial using GS-7977 + GS-352938 + RBV, if both the polymerase inhibitors are nucleotide analogs that share the same mechanism of action? Can't this potentially result in resistance? Pharmasset designed these two agents to work synergistically, with GS-7977 being a pyrimidine analog and GS-352938 a purine analog. According to the December issue of the Journal of Virology, no cross-resistance was found between GS-352938 and other HCV-polymerase inhibitors including GS-7977. Gilead is in the midst of the first interferon-free HCV treatment regimen, with various new drugs; however, Abbott, is also on their way after promising results with ABT-450, ABT-267, and ABT-333 in the Phase 2 AVIATOR study.

Like telaprevir and boceprevir, ABT-450 is a

protease inhibitor that exhibits its effects on the HCV protein NS3/4A. Similar to HIV therapy, optimum drug levels of ABT-450 are maintained by combining the medication with ritonavir, which is used as a pharmacokinetic boost. HCV is translated into a polyprotein once it enters the host cell. The polyprotein is converted into structural proteins and NS proteins. Structural proteins, such as E1, E2, and P7, are involved in the virus' ability to affect other cells, while NS proteins, such as NS3, NS4A, NS4B and NS5B aid the replication of the HCV. NS4A is a cofactor protein that is needed for NS3 to properly carry out protease and helicase activity. When the protein NS3/4A is inhibited, the virus cannot replicate.

Similar to GS-5885, ABT-267 is also an NS5A inhibitor. Both NS5A and NS5B interact and act as targets for DAA development. Along with DNA replication, NS5A also stimulates NS5B, which, as stated before, contains RNA-dependent RNA polymerase. By inhibiting NS5A, HCV replication is suppressed, and stimulatory effects on NS5B are arrested, possibly decreasing polymerase activity. Another Abbott investigational drug is ABT-333, a non-nucleoside HCV NS5B polymerase inhibitor. This drug also inhibits RNA replication by blocking the enzyme that synthesizes RNA from an RNA tem-



Source: Thomas R O'Brien. (2009). Interferon-alfa, interferon- λ and hepatitis C. *Nature Genetics*. doi:10.1038/ng.453

plate. The interferon-free regimen of ABT-450/r + ABT-267 + ABT-333 has produced promising results in the Aviator trial. With or without RBV, the regimen resulted in high SVR 12 weeks post-treatment in all arms. This study included non-cirrhotic patients who were treatment-naïve as well as null responders who have failed PEG-IFN/RBV therapy. Of note, there was an SVR of 93.3% 12 weeks post treatment in null responders taking the triple-DAA regimen + RBV. This is important because there are few treatment options once patients fail the standard PEG-IFN + RBV therapy. Although there has been great emphasis on interferon-free regimens, a new interferon therapy is in phase 2 and 3 clinical trials.

Pegylated Interferon-Lambda (PEG-IFN-Lambda), being developed by Bristol-Myers Squibb, is in the pipeline for becoming a “first-in-class” interferon. When HCV enters the body, interferon lambda proteins are generated by the immune response. The mechanisms by which IFN-Lambda proteins are released differ from IFN-alpha in that different re-

ceptors are utilized; however, both IFNs prevent the assembly of viral capsids. As the result is the same, the two pathways do have common ground and converge at some point. The figure below shows that although different receptors are bound to initially, there is a common pathway that activates the interferon-stimulating response element (ISRE), and then subsequently, the interferon-stimulating gene factors (ISGF).

IFN is usually a side-effect limiting therapy, in which many patients simply cannot tolerate the medication. Binding mainly to epithelial cells, IFN-lambda is a more specific IFN therapy. IFN-alpha receptors are present on numerous cells including leukocytes. The receptors of IFN-lambda create a much more tolerable and safe treatment. The efficacy and safety of PEG IFN-lambda plus RBV in comparison to PEG IFN-alpha plus RBV is being evaluated; however, the duration of therapy is the same, unlike the DAAs. With time, this newer agent

Agent	Mechanism of Action	Advantages	Study*
GS-7977	NS5B polymerase inhibitor	-Shorter duration of therapy -Improved tolerability -Higher SVR	"Safety Study of Regimens of PSI-352938, PSI-7977, and Ribavirin in Patients With Chronic Hepatitis C Infection (QUANTUM)" "GS-7977 + Ribavirin in HCV Genotype 1 Null Responders: Results from the ELEC-TRON Trial" "Phase 3 Study of PSI-7977 and Ribavirin (FISSION)"
GS-5885	NS5A inhibitor		"GS 5885 Administered Concomitantly With GS-9451, Tego buvir and Ribavirin (RBV) in Chronic Genotype 1 Hepatitis C Virus (HCV) Infection"
GS-352938	NS5B polymerase inhibitor		"Safety Study of Regimens of PSI-352938, PSI-7977, and Ribavirin in Patients With Chronic Hepatitis C Infection (QUANTUM)"
ABT-450	Protease inhibitor		
ABT-267	NS5A inhibitor		Study M11-652 (AVIATOR)
ABT-333	NS5B polymerase inhibitor		
PEG-IFN lambda	Type III IFN that modulates the innate and adaptive immune systems	Decreased side effect profile -Improved tolerability	"Efficacy and Safety Study of PEG-rIL-29 Plus Ribavirin to Treat Chronic Hepatitis C Virus Infection (EMERGE)" Safety and Efficacy Study of "Pegylated Interferon Lambda With and Without Daclatasvir, Compared to Pegylated Interferon Alfa, Plus Ribavirin in Subjects With Hepatitis C Genotype 2 and 3"

*Studies listed are what were used as references for the article. There are more completed and ongoing trials

can become an alternative to or even replace standard interferon therapy.

With the development of new direct-acting antivirals and PEG IFN-lambda, treatment of the Hepatitis C Virus is undergoing a groundbreaking transformation that can increase compliance, increase SVR rates, and reduce relapse rates. Two main contributors to this transformation are the pharmaceutical companies, Gilead Sciences and Abbott, which appear to be racing toward the first interferon-free HCV treatment. HCV is a growing health concern in which current therapies produce a SVR only 54-56% of the time. Furthermore, there is a risk for relapse in which treatment options become fewer and treatments less effective. The new therapies present great potential in treating HCV for naïve and null responders, possibly making the mainstay of treatment of PEG-IFN plus RBV a thing of the past. It is safe to say that a new page has been turned for the treatment of HCV.

Acknowledgements: Special thanks to Ivy Cohen, the Assistant Director of Pharmacy and Clinical Trial Coordinator, and to the Investigational Pharmacists, Giuseppe Difiore and Alla Khodzhayeva, at the Mt. Sinai Medical Center for their input and help with this article.

“The new therapies present great potential in treating HCV for naïve and null responders, possibly making the mainstay of treatment of PEG-IFN plus RBV a thing of the past”

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FRATERNITY & SORORITY SPRING 2013 RECRUITMENT



**INTERFRATERNITY COUNCIL
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FRIDAY, FEB 1ST

**PANHELLENIC
FORMAL RECRUITMENT**
FRIDAY - SUNDAY, FEB 8TH, 9TH, & 10TH
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*REGISTRATION FOR ABOVE EVENTS IS REQUIRED.

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HOW TO JOIN!

COLLEGE OF PHARMACY AND HEALTH SCIENCES COLLABORATES WITH UNION SQUARE ACADEMY

BY: TASNIMA NABI, ASSOCIATE STUDENT EDITOR

St. John's University College of Pharmacy and Health Sciences has collaborated with the Union Square Academy of Health Sciences (U. S. A.) to prepare high school students for the pharmacy profession. This partnership is one of the many projects of the "Urban Pharmaceutical Care, Research and Education Institute," led by Dr. Conry, which helps educate and prepare high school students interested in pharmacy-related careers.

The Union Square Academy of Health Sciences was launched in September 2012 to provide career and technical education along with practical experience to high school students before choosing to pursue dental or pharmacy school. Associate professors Sharon See, Pharm.D., BCPS; Regina Ginzburg '99P, '01 Pharm.D.; and John Conry '96P, '98 Pharm.D., from the Clinical Pharmacy Practice Department at St. John's University, helped Bernardo Ascona, prin-

cipal of the Union Square Academy, develop a pharmacy-based curriculum. Students familiarize with the profession by touring pharmacies, shadowing faculty, and meeting with Pharm.D. student mentors.

Dr. Zito, Acting Dean of the College of Pharmacy and Health Sciences, explains that the collaboration allows for St. John's University and the Union Square Academy to foster the shared mission of educating and providing opportunity to diverse communities.

Visit the following website for more information: http://www.stjohns.edu/academics/undergraduate/pharmacy/about/pharmacy_launches.stj and <http://unionsquareacademy.org/>

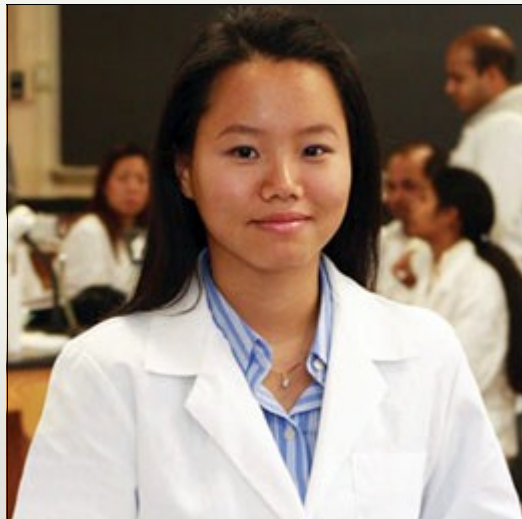
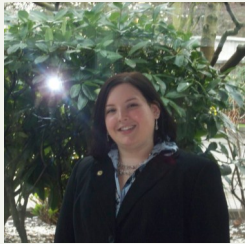


Photo Credits: St. John's University Press Release and Union Square Academy for Health Sciences Webpage

MAKE A RESOLUTION TO GET INVOLVED IN 2013!

BY: JENA MARION, PHARM D CANDIDATE C/O 2013



It was a few weeks into the spring semester of my freshman year at St. John's University when I earned my wings. I was on a plane trip, flying cross-country to San Diego with friends that I had only known for a few months, on my way to my first (of many!) pharmacy conference. It had been over a decade since I was on an airplane, and the flight attendant presented me with a small pair of plastic wings as I disembarked. But, despite packing a very full suitcase, my wings weren't the only thing I brought back to NYC.

As the only freshman in attendance that year, I learned a lot from the older student pharmacists that came along with us. I spoke to sixth-year students as they took their NAPLEX review course and got ready to transition into becoming New Practitioners; to fifth-year students who were on rotations and considering the many options that lay ahead of them following graduation; to third- and fourth-year students who were balancing leadership positions and professional involvement along with challenging coursework; and even professors and administrators, who shared their experiences both as students and pharmacists.

Professional meetings have different types of sessions running all day long, and I was amazed at the opportunities for networking and exchanging ideas at the student programming sessions. I couldn't believe the different ways that student pharmacists were reaching out to their patients, educating them and helping to manage various disease states. But even more awe-inspiring was the APhA-ASP Open Hearing on Proposed Resolutions and New Business. I sat among 3,000 student pharmacists from across the country as we debated policies that would shape the future of our own profession. That year, the collective voice of student pharmacists in the US passed policies on topics ranging from patient health literacy to pharmacy education and post-graduate training to international medical aid.

But, as anyone who has attended a pharmacy conference before can attest to, the long weekend wasn't all work and no play. During our free time from sessions, we squeezed in sightseeing and eating out at the restaurants in the city. I learned more about the people that attended the conference with me as we talked about their motivation for attending pharmacy school and their career aspirations following graduation. And I began to realize just how much I had ahead of me - academically, professionally, and personally.

Since APhA2008 in San Diego, I have had the incredible opportunity to attend 13 professional meetings and conferences as a student pharmacist, and am already excited about spending the first weekend of March 2013 in Los Angeles, CA! Those students that have attended conferences through the years became both my friends and mentors, and have helped and supported me as I became more involved across several organizations on campus. I talk with many students as we reflect on conventions, and the phrase I hear most often is, "I had so much fun, I only wish I had gotten involved sooner."

It is never too early to get involved in pharmacy and to embrace our profession. If the West Coast is a little out of your reach, consider one of the many ways to get involved on our own campus this semester. Teach patients about diabetes or share tips for living heart-healthy at an APhA-ASP Patient Care Project, advocate for the rights of pharmacists at Pharmacy Legislative Day in Albany, or run for a leadership position in a professional organization next year. Each of these opportunities to get involved will teach and inspire you, so you can go out and do the same to your fellow students, family, friends, and patients.

Best of luck in the Spring 2013 semester!

ST. JOHN'S UNIVERSITY
COLLEGE OF PHARMACY AND HEALTH SCIENCES



PHARM D CLASS OF 2013

GRADUATION COMMITTEE MEETING

FOR INFORMATION ABOUT UPCOMING
MEETINGS, TIMES, AND LOCATION:

CONTACT: LUNBAO [JERRY] HUANG
LUNBAU.HUANG07@STJOHNS.EDU

MATCHING CHALLENGE: LOOK-ALIKES, SOUND-ALIKES

BY: ADDOLORATA CICCONE, CO-COPY EDITOR

The following medications are easily confused. Try to match each one with its corresponding fun fact.

If you need help, please view the answers on [page 23](#).

- | | |
|---|--------------------|
| 1. This inotrope stimulates beta-1 adrenergic receptors to increase cardiac output. It may have low utility in patients at high risk for myocardial ischemia. Adverse effects include hypotension and tachyarrhythmias. | A. Dactinomycin |
| 2. This inotrope is the immediate precursor to norepinephrine in the synthetic catecholamine pathway. It stimulates alpha and beta-1 adrenergic and dopaminergic receptors to create both positive inotropic and chronotropic effects, and at high doses, pressor effects. Contraindications include sensitivity to sulfites, pheochromocytoma, and ventricular fibrillation. | B. Daptomycin |
| 3. This group IA antiarrhythmic has no effect on alpha or beta-adrenergic receptors. It increases the duration of the action potential of cardiac cells. This drug may cause anticholinergic effects, orthostatic hypotension, dysrhythmia, and unusual changes in behavior. | C. Daunorubicin |
| 4. This antihistamine is indicated for allergic rhinitis, anaphylaxis, motion sickness, and insomnia. While its effects are generally sedating, young children may experience paradoxical excitation. | D. Desipramine |
| 5. This antihistamine is indicated for motion sickness. Side effects include sedation, nausea, vomiting, and xerostomia. Patients should be counseled on maintaining adequate hydration while taking this medication. | E. Dimenhydrinate |
| 6. This bacteriocidal antibiotic disrupts DNA, RNA, and protein synthesis by depolarizing bacteria membrane potential. It is available only in intravenous dosage form and is compatible with normal saline and lactated ringers, but incompatible with dextrose solutions. | F. Diphenhydramine |
| 7. This bacteriostatic antibiotic is not used as an antimicrobial but rather as an antineoplastic. It is highly toxic and must be handled and administered carefully. Like many antineoplastics, it causes drug-induced immunosuppression, thus patients should avoid vaccines and exposure to chickenpox or herpes zoster during therapy. | G. Disopyramide |
| 8. This non cycle specific anthracycline antineoplastic is indicated for ALL and AGL. It has two mechanisms of action, maintaining the stability of DNA-topoisomerase II complex and blocking polymerase activity. Side effects include cardiotoxicity, myelosuppression, and red urine discoloration. | H. Dobutamine |
| 9. This non cycle specific anthracycline antineoplastic has the same mechanisms of action and side effects as the agent described above. It has a wider spectrum of use, indications including ALL, Hodgkin's disease, Wilm's tumor, neuroblastoma, and ovarian cancer. | I. Dopamine |
| 10. This non cycle specific anthracycline is a synthetic antineoplastic agent. It is indicated for use in CML as a second-line agent after imatinib has failed. Side effects include myelosuppression and less cardiotoxicity than the two antineoplastic agents described above. | J. Doxorubicin |
| 11. This tricyclic antidepressant is indicated for the treatment of depression. Although the exact mechanism of action is unknown, it may block the reuptake of norepinephrine and serotonin. Patients should be made aware that symptoms may not improve for a few weeks and that side effects include sun-sensitivity, anticholinergic effects, unusual changes in behavior, and decreased seizure threshold. | K. Idarubicin |

WORD SEARCH PUZZLE

BY: MARIE HUANG, ASSOCIATE STUDENT EDITOR

R	O	C	O	E	F	E	A	A	E	M	R	C
F	E	O	E	N	Y	N	N	R	P	U	F	E
N	C	C	R	F	A	O	E	P	E	I	C	F
F	A	R	E	E	R	Z	E	N	A	N	O	U
E	N	R	E	F	F	A	A	M	D	O	R	R
I	R	E	P	I	M	R	D	A	E	L	C	E
I	C	E	F	O	V	E	C	I	N	A	E	T
U	E	I	Q	E	Z	P	T	E	N	F	C	A
N	I	C	Y	L	G	O	L	A	F	E	C	N
T	O	N	I	O	C	F	F	R	Z	C	Z	L
N	T	E	M	A	T	E	F	E	C	O	I	A
A	C	T	O	C	T	C	E	R	C	E	L	F
Y	M	E	C	E	F	Q	U	I	N	O	M	E

FIND THE FOLLOWING WORDS:

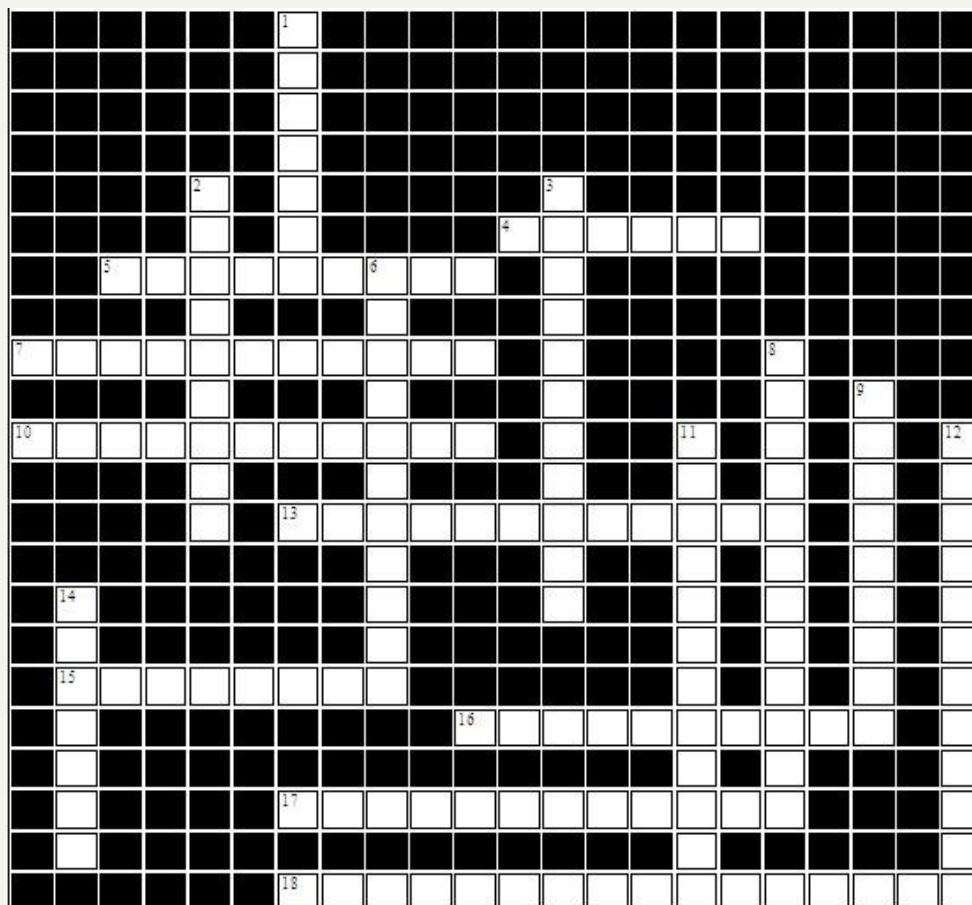
CEFALOGLYCIN
CEFMETAZOLE
CEFRADINE
CEFOVECIN
CEFOPERAZONE
CEFURETAN
CEFALONIUM
CEFOZOPRAN
CEFETAMET
CEFQUINOME

TRIVIA: Which of these uncommon cephalosporins do not exist?

View the answer on [page 23](#)

CROSSWORD PUZZLE

BY: MAHDIEH DANESH YAZDI, ASSOCIATE STUDENT EDITOR



Across

Down

- | | |
|---|---|
| 4. New second generation antipsychotic known for fewer metabolic side effects such as weight gain | 1. Symbyax® = this drug + Fluoxetine |
| 5. First drug developed with antipsychotic properties | 2. Butyrophenone available only in intramuscular and intravenous dosage forms |
| 7. Johnson & Johnson faced huge fines for downplaying the side effects of this drug in 2012 | 3. Most commonly used butyrophenone antipsychotic |
| 10. Only typical thioxanthene approved for antipsychotic use in the United States | 6. Fanapt® |
| 13. Although predominantly withdrawn in 2005, generics of this typical antipsychotic are still made; You may have heard the name of this drug as a potential drug interaction in many commercials | 8. First-generation antihistamine previously used for its antipsychotic properties |
| 15. Orap® | 9. First second-generation antipsychotic; requires complete blood count prior to dispensing |
| 16. Atypical antipsychotic also available as an extended release formulation | 11. Atypical antipsychotic approved for the treatment of major depressive disorder in 2007 |
| 17. Atypical antipsychotic which is the active metabolite of risperidone | 12. This typical antipsychotic is available as a decanoate, enanthate, and hydrochloride salt |
| 18. Phenothiazine, typical antipsychotic, now used primarily for its anti-emetic properties | 14. Asenapine |

CALCIUM INTAKE AND RISK OF MYOCARDIAL INFARCTION

BY: LILA AHMED, PHARM D CANDIDATE C/O 2013

In the past, numerous research efforts have attempted to prove the benefits and risks of calcium and multivitamin supplements with little success. Most of the studies performed were inconclusive and did not provide us with significant data; while some studies have found that calcium is beneficial for high blood pressure and heart diseases, others did not.¹ However, a recent correlation between calcium intake and the risk of myocardial infarction and stroke presents an interesting topic worth further exploration.

This European study published in *Heart* in May 2012 was led by epidemiologist Sabine Rohrmann at the University of Zurich. It involved 24,000 participants in a German arm of the European Prospective Investigation into Cancer and Nutrition (EPIC). All participants were between the ages of 35 and 64 when they enrolled in the study between 1994 and 1998.² Normal diets were assessed for the preceding 12 months and participants were quizzed about regular vitamin and mineral supplementation. Patients that had a previous myocardial infarction (MI), stroke, or transient ischemic attack (TIA) were excluded from the study. The large cohort of men and women was followed for 11 years.²

This study showed that patients who took calcium supplements, either as calcium or as part of a multivitamin, had an 86 % higher risk of MI than those who used no supplements at all.¹ The researchers found no link between total dietary calcium and stroke or heart disease deaths. However, they did find that a higher intake of dietary calcium reduced the risk of heart attack. For example, one of the groups with the higher intake of dietary calcium showed a 31% lower risk of heart attack than those who had the least calcium in their diet.²

The mechanism by which calcium supplementation increases the risk of heart attacks is unknown. However, calcium supplements cause an acute spike in serum calcium levels, which dietary calcium from foods does not.² It is hypothesized that too much calcium in the blood can cause vascular calcification

which may be adversely affecting blood coagulability.³

Calcium supplements have always been accepted by the public and even by physicians as the safe and natural way to prevent osteoporosis especially in elderly women. These findings challenge that viewpoint. More physicians now encourage eating your calcium from foods, instead of utilizing supplementations. The Institute of Medicine suggests that women ages 19-50 and men ages 19-70 should get 1,000 milligrams of calcium daily, whereas women ages 51 and older and men over 70 should get 1,200 milligrams of calcium daily.³ Most people typically have a baseline calcium level of about 300 milligrams without any supplementation. A cup of milk or yogurt contains about 300 milligrams of calcium.³ Therefore, to determine the amount of supplementation necessary (if any), one can subtract the total amount of calcium from your diet from your total recommended daily allowance based on your age and gender. Each patient's calcium intake should be individualized based on his or her diet. Increase in dietary intake of calcium should always be recommended before supplementation, although supplements can be recommended to make up the dietary shortfall.

This study was not conducted to abandon all supplements in general, but rather to be aware of how much calcium a person is taking in.. This is a huge opportunity for pharmacists to counsel their patients not only on calcium supplementation, but supplements in general. Many older patients take calcium supplements and a multivitamin in addition to dietary calcium. Without the help of a pharmacist, they could be overdosing unknowingly. Thus, assessing their dietary intake before recommending a supplement is important. Pharmacists can also let patients know that for those who wish to avoid dairy foods, there are other options rich with calcium. These include collards greens, beans, broccoli, cabbage, figs, almonds and fortified foods like cereal, certain fruit juices, and breakfast bars.³ Lastly,

pharmacists should inform their patients on how to split the calcium supplement dose in order to minimize spikes in serum levels, as these spikes are likely to be a cause of the increase heart attack rates.

In conclusion, this new study has finally shed some light on the question of calcium and cardiovascular risks. Both pharmacists and physicians should be more cautious in recommending calcium supplementation to their patients. Time should be taken to make sure patients are not unnecessary consuming supplements, and patients should be counseled on the benefits of dietary calcium.

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LIRAGLUTIDE (VICTOZA®) FOR TYPE 2 DIABETES MELLITUS

BY: MIRIAM MALTZ, PHARM D CANDIDATE C/O 2013, AMSCOP, LONG ISLAND UNIVERSITY

Type 2 diabetes mellitus (T2DM) is a metabolic disorder characterized by hyperglycemia that is pursuant to insulin resistance, defects in insulin secretion, or both¹. Chronic hyperglycemia is associated with detrimental effects on various organ systems that can increase mortality and impact the patient's quality of life; it is therefore crucial to manage these patients appropriately by delaying disease progression and the associated complications of T2DM. Various pharmacotherapeutic options and treatment algorithms are available for the management of T2DM, but each patient needs to receive a regimen that is tailored to their specific glucose goals by examining glucose trends, behavior, risk factors, and much more. A glucose lowering agent that seems promising for the management of T2DM in patients who are obese or at an increased risk of hypoglycemia is liraglutide (Victoza).

Liraglutide is a long acting glucagon-like-peptide-1 (GLP-1) receptor analogue that can be used to improve glycemic control in patients with type 2 diabetes. GLP-1 agonists work at lowering blood glucose by stimulating the release of incretins from the gut. Incretins are hormones that are released from the gut after the ingestion of food; they cause an increase in cAMP and thus a subsequent increase in insulin release from pancreatic beta cells. GLP-1 agonists also contribute to glucose lowering by suppressing glucagon secretion, slowing gastric emptying, and promoting satiety. Conversely, GLP-1 receptor binding is associated with adverse events such as nausea and vomiting which can be avoided if the dose is titrated gradually. The dose of liraglutide is 0.6 mg SC once daily for 1 week which is then increased to 1.2 mg/day. If optimal glucose lowering is not achieved with 1.2 mg/day then the dose can be titrated up to 1.8 mg/day. The 0.6 mg dose does not have glucose lowering effects, rather it is meant to decrease GI symptoms during the initial titration period. The benefits of liraglutide include once daily dosing, weight loss and a low risk of hypoglycemia since liraglutide works on post prandial glucose elevations. Safety concerns include increased risk of pancreatitis and data from studies in rodents found that liraglutide was associated with

an increased risk of thyroid C-cell focal hyperplasia and C-cell tumors.

The safety and efficacy of liraglutide was evaluated by the Liraglutide Effect and Action in Diabetes-3 (LEAD-3-Mono) study² which was a 52 week double-blind, double-dummy, active control trial. According to the results of the study, a greater HbA1c reduction was noted after 52 weeks with liraglutide monotherapy compared to that of glimepiride in patients with T2DM. Glimepiride 8 mg reduced the HbA1c by 0.51% from baseline whereas liraglutide 1.2 mg and 1.8 mg reduced the HbA1c by 0.84% ($P = 0.0014$) and 1.1% ($P < 0.0001$) respectively. Investigators also found that patients receiving liraglutide 1.8 mg lost on average 3.4 kg after 52 weeks ($p < 0.0001$) compared to patients on glimepiride who conversely gained approximately 1.2 kg ($P < 0.0001$). Additionally, according to the results of a 14 week double-blind, randomized, placebo-controlled trial³ liraglutide at doses of 0.65mg, 1.25 mg. and 1.9 mg was found was more effective at lowering the HbA1c compared to placebo with reductions of 1.74%, 1.69%, and 1.27% respectively ($p < 0.0001$). They also found that in all the treatment groups there was a reduction in body weight; however, weight reduction was only statistically significant in the patients receiving 1.9 mg of liraglutide and they lost an average of 3 kg ($P = 0.0390$).

When comparing liraglutide to traditional first line therapy, such as metformin or sulfonylureas, it is advantageous in respect to its effect on weight loss, low hypoglycemia risk, and its ability to be used in patients with renal dysfunction. However, despite liraglutide's beneficial effects, current practice guidelines¹⁻⁴ do not recommend its use as a first line agent for initial management of T2DM. The downside of liraglutide use is its high cost, unknown long term safety, and its formulation as an injection which requires a patient's willingness to self-inject. Clinicians need to assess which patients may benefit from liraglutide monotherapy; major considerations include obese patients and patients who are prone to hypoglycemia and cannot tolerate sulfonylureas.

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QUOTE OF THE MONTH

BY: ALEENA CHERIAN, CO-COPY EDITOR



A LOOK AT PRIMARY MEDICATION NONADHERENCE AND HOW IT CAN BE OVERCOME

BY: ERICA DIMITROPOULOS, ASSISTANT STUDENT EDITOR

Although clinical trials can affirm the efficacy and advantages of all marketed medications, it is obvious that patients cannot benefit from a drug that they choose not to take. Therefore, promoting medication adherence is one of the easiest and most affordable ways to improve treatment outcomes. In order to be successful, adherence regimens necessitate the cooperation and often compromise between healthcare providers and patients. Nonadherence can lead to inadequate control of diseases or conditions, and can create further health problems in the future.¹ Also, payers are concerned that nonadherence ultimately raises medical bills; disease progression and complications yield higher costs of care. It is estimated that nonadherence contributes to 125,000 deaths per year and costs our nation approximately \$290 billion dollars annually.²

There exist two types of medication nonadherence: primary and secondary. Primary nonadherence occurs when a new prescription is never picked up, whereas secondary nonadherence occurs when a medication is not taken as prescribed.³ Primary nonadherence may happen as a result of a patient's negative perception of the medication's necessity and effectiveness, or as a function of the drug's cost. For example, a patient may not believe that they need to take a blood pressure medication because they do not physically feel the effects of high blood pressure. As a result, they may never pick up their prescription from the pharmacy, or they may deny it due their own cost to benefit ratio. Secondary nonadherence may be a result of the aforementioned concerns as well as a consequence of experiencing unwanted side effects of the medication.³

While many studies have been conducted to explain and minimize secondary nonadherence, few have focused on preventing primary nonadherence from occurring. In 2010, one of the first primary nonadherence studies was conducted at Kaiser Permanente in Southern California. This health care facility had the necessary technology and resources to track the medication behaviors of their patients at local health plan pharmacies. The patients were se-

lected to participate in the study because they had neither filled their new HMG-CoA reductase inhibitor ("statin") prescription within one to two weeks, nor had they received a different statin within the last year.³

"Therefore, promoting medication adherence is one of the easiest and most affordable ways to improve treatment outcomes."

In the study, patients were divided into two groups: those that were to receive reminders and adherence promoters (experimental group), and those who would not (control group). There were 2606 participants in the experimental group and 2610 participants in the control group.³ The goal of the intervention was to provide educational information and encouraging prompts to promote medication adherence.³ The intervention first involved telephone calls that asked patients to retrieve a personalized message. The message was 40 seconds long and began by notifying the patients that they had been prescribed a statin drug for their high cholesterol and that there was no record of this prescription being filled at the associated health plan pharmacies. The message continued to explain the importance of the medication, and provided the phone numbers of the pharmacy and prescribing physician if further information was to be sought. If records indicated that the message was never received, two more attempts were made. Then, if another week passed and no response was seen, participants were mailed a letter of the same nature.

The study proved that the proportion of patients who dispensed their statin medication for the first time was 16.3% greater in the experimental group as compared to the control group. Although the intervention was proven effective in all ages, there was slightly greater efficacy in participants aged 50 and older.³ The experimental group also yielded better results in regards to secondary ad-

herence in the following year (measured by the number of dispensations). A detailed cost analysis was not performed, yet the price of the intervention was estimated at merely \$1.70 per person.³ As a result of these findings, Kaiser Permanente in Southern California has recently implemented a new regional outreach program that sends medication reminders to approximately 2,200 members each month.²

From this research, it can be seen that pharmacies that adamantly utilize phone call reminders can greatly reduce primary nonadherence and ultimately avoid adverse health events in the future. Hopefully the evidence that significant results could be obtained by such methods will cause other healthcare facilities to implement similar procedures in the future.

“Drugs Don’t Work in Patients Who Don’t Take Them” – C. Everett Koop, MD

EXTENDING THE STANDING ORDER FOR TDAP

BY: CHRISTINA TARANTOLA, PHARM.D, PGY-1 RESIDENT AT KINGS PHARMACY

The New York State Department of Health issued a health advisory on November 8, 2012 in response to Hurricane Sandy. The document outlined guidelines on recommended immunizations and disaster relief efforts for volunteers and the general public.

Due to an increased risk of exposure to tetanus while cleaning debris from devastated homes, the Tdap (Tetanus, diphtheria, acellular pertussis) vaccine was one of the recommended immunizations. Recognizing the need for increased immunizer response, Governor Cuomo issued a temporary standing order for pharmacists to administer the Tdap vaccine. The standing order was signed on November 20, 2012 and expired on December 25, 2012.

Immunizations play a critical role in preventing infectious disease. However, pharmacists in New

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York were only recently granted immunization privileges in 2008, for influenza and pneumococcal administration. Although vaccination programs have successfully reduced childhood diseases, the same success has not been achieved in adults. According to the Centers for Disease Control, adults account for 95% of vaccine preventable deaths. The 2009 national health interview survey estimates adult vaccination coverage and reported low immunization rates among adults who were indicated to receive tetanus diphtheria acellular pertussis, hepatitis A, hepatitis B, herpes zoster, and human papilloma virus.

Pharmacists have demonstrated positive and significant immunization rates for the Tdap vaccine. For instance, one study completed at a primary care center located in a metropolitan area looked at adults ranging from the ages of 18 to 79 years who came in for medical appointments.¹ Among the

healthcare professionals administering vaccines were physicians, pharmacists, and nurses. They utilized a screening tool to assess the need for patient vaccination using an INA (Immunization Needs Assessment) available from the CDC website. The results of the study provide a benchmark for immunization rates among low-income adults. In this study, pharmacists increased immunization rates on six different vaccines with a statistically significant effect on influenza and Tdap.

The data suggested other healthcare providers may not fully consider or discuss vaccination recommendations with their patients even when provided with an INA. Having a pharmacist dedicated to inform the patient about the INA results and offering administration of needed vaccines proved to be a successful intervention. The role of the pharmacist as an immunizer in this setting appears critical to the success of improving immunization outcomes. The data suggests that using pharmacists as dedicated immunizers plays a critical role in improving vaccination rates, especially in regard to the Tdap vaccine.

Other states allow pharmacists to administer the Tdap vaccine. Vaccination by pharmacists proved to be crucial in the 2010 outbreak of whooping cough that killed 10 babies in California.. Pharmacists and pharmacy students at University of California San Diego offered free vaccines to all household contacts of newborns. In addition, these healthcare providers tried to make the vaccination service easily accessible; there were Saturday and evening hours in a waiting room on the postpartum floor. Eighty four percent of the newborns' family members received Tdap vaccination before the baby was discharged.² Since newborns can't receive the whooping cough vaccine themselves, this is one of the best ways to protect them.

In addition to the Tdap vaccine, pharmacy-based immunization clinics have had an enormous success rate while administering the influenza, pneumococcal, and more recently the shingles vaccine.

During the time from allotted for administering the vaccine, the community pharmacy where I work had received several requests for the Tdap vaccine

to be administered. Many patients who typically visited doctors at NYU and Bellevue hospital expressed that it was very convenient to receive their vaccines at the local pharmacy. Busy parents with children found it especially valuable.

“The data suggests that using pharmacists as dedicated immunizers plays a critical role in improving vaccination rates, especially in regard to the Tdap vaccine.”

Since pharmacies have already established policies and procedures for the Tdap protocol, I would like to see an extension for the standing order. Extending the standing order for the Tdap vaccine would offer an enormous benefit in dissolving barriers for patients to receive vaccinations as well as provide an easy, convenient way to combat preventable illnesses such as whooping cough and tetanus. Not only would this action benefit patients, but it would help pharmacists work collaboratively within the healthcare system and advance the profession. Contact your local senator to request an extension of the Tdap vaccine standing order.

For more information, you may contact Dr. Tarantola at (718) 230-3535 x32.

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RHO CHI BETA DELTA CHAPTER INDUCTION CEREMONY

BY: BETHSY JACOB, PHARMD CANDIDATE C/O 2013

On January 24, 2013, Rho Chi Beta Delta Chapter successfully conducted its annual induction ceremony, welcoming forty-four new members into the chapter. Membership was granted to students who ranked in the top 20% of their class. This year's inductees included 4th and 5th year PharmD students as well as students enrolled in Masters and PhD programs in St. John's College of Pharmacy and Health Sciences. Following tradition, the induction took place at the restaurant Verdi's of Whitestone, where students and faculty socialized while enjoying dinner. The induction ceremony began at 6:30pm, with Rho Chi president Yining Shao welcoming all attendees. Dr. S. William Zito, the Acting Dean of the College of Pharmacy and Health Sciences and Faculty Advisor of Rho Chi Honor Society, was also present, amongst many professors of the college and past Rho Chi E-Board members.

This year, Rho Chi was honored to have Dr. Mansoor Khan as the keynote speaker at induction. Dr. Khan is not only a St. John's University alumni, but also the current Director of the Division of Product Quality Research for the U.S. Food and Drug Administration (FDA). Dr. Khan earned his Ph.D degree in Industrial Pharmacy from St. John's School of Pharmacy in 1992. He has published over 215 peer-reviewed manuscripts, five texts, twenty book chapters, and has made over 150 presentations in various national and international meetings. During his speech, Dr. Khan highlighted several key points to the newly inducted students. He started his presentation by promoting the pursuit of "intellectual excellence and critical inquiry," as stated in the mission of Rho Chi. With pharmacists as influential members of the healthcare industry, it is important that we, as students, maintain these values. Some current challenges that Dr. Khan put into perspective were the

changes in pharmacy education and clinical practice, health care reform and costs, and regulation of compounding pharmaceuticals. Such issues and changes make it critical for pharmacists to be constantly abreast of new reforms and regulations that affect patient services.

Following Dr. Khan's address, the program continued with words from Dr. Zito, who welcomed the new inductees and inspired both current and new members to be actively involved in the Rho Chi organization. New pins were distributed that and served as a reminder to each member of what they promised to uphold— "to adhere to and promote the highest ideals in pharmacy, both scientific and cultural." The new members underwent the traditional ceremony. In addition, the new 2013 E-Board members were sworn in. The newly inducted E-Board members this year included Moisey Rafailov as President, Majd Ahmad as Vice-President, Elissa Tam as Secretary, Anh Nguyen as Treasurer, and Zinnia Yu as Historian. The room was full of applause as 44 new members were welcomed into the society.

The program came to a pleasant conclusion as the 2012 E-Board presented gifts to Dr. Khan, in appreciation of his attendance and presentation, and to Dr. Zito, for his continued support and advice to the Beta Delta Chapter. Several pictures were also taken to commemorate the special night. Overall, the 2013 induction ceremony was a grand success, with participation of many students and faculty members. It was a great start to a new year for Rho Chi Honor Society, and members are encouraged to be informed of and engaged in the events of this upcoming semester.



Dr. Zito's speech titled "Comments from the Acting Dean"



Past president Yining Shao addresses the inductees



Guest speaker Mansoor A. Khan, R.Ph, Ph.D. Director, Division of product quality research CEDR at the FDA



Dr. Zito addressing the new inductees



Current Rho Chi Beta Delta Chapter Vice President Majd Ahmad and fellow inductee Jesson George



PhD students being inducted, they are: Mumtaz Akhtar, Doudou Fan, Sunil Kumar, Tak Lee, and Nelson Truing



Rho Chi Inductees Deep Patel and Sayyem Akbar



Student Inductees Beatrice Popovitz and Ada Seldin



Former Editor-in-Chief of Rho Chi Post Dr. Mohammad A. Rattu and Rho Chi inductee Nataliya Sulyk



Past Rho Chi Beta Delta Chapter Presidents Mohamed Jameel Dungersi and Yining Shao with current President Moisey Rafailov and Dr. Zito, the Acting Dean and advisor of Rho Chi.



Rho Chi inductee Frances Trosa with our very own Staff Editor Erica Dimitropoulos



Inducted PhD students with Dr. Zito, Acting Dean of College of Pharmacy and Health Sciences



Top: The new incoming Rho Chi Executive Board members with the outgoing Executive Board members



Top: Dr. Zito with the members of the past Rho Chi Executive Board.



Left: Faculty members and administrators of St. John's University College of Pharmacy and Health Sciences that attended the induction ceremony

WORD SEARCH TRIVIA SOLUTION

BY: MARIE HUANG, ASSOCIATE STUDENT EDITOR

The Word Search trivia answer is Cefuretan

Go back to Puzzle on [Page 11](#)?

MATCHING CHALLENGE: LOOK-ALIKES, SOUND-ALIKES (ANSWERS)

BY: ADDOLORATA CICCONE, CO-COPY EDITOR

Go back to [Page 10](#)?

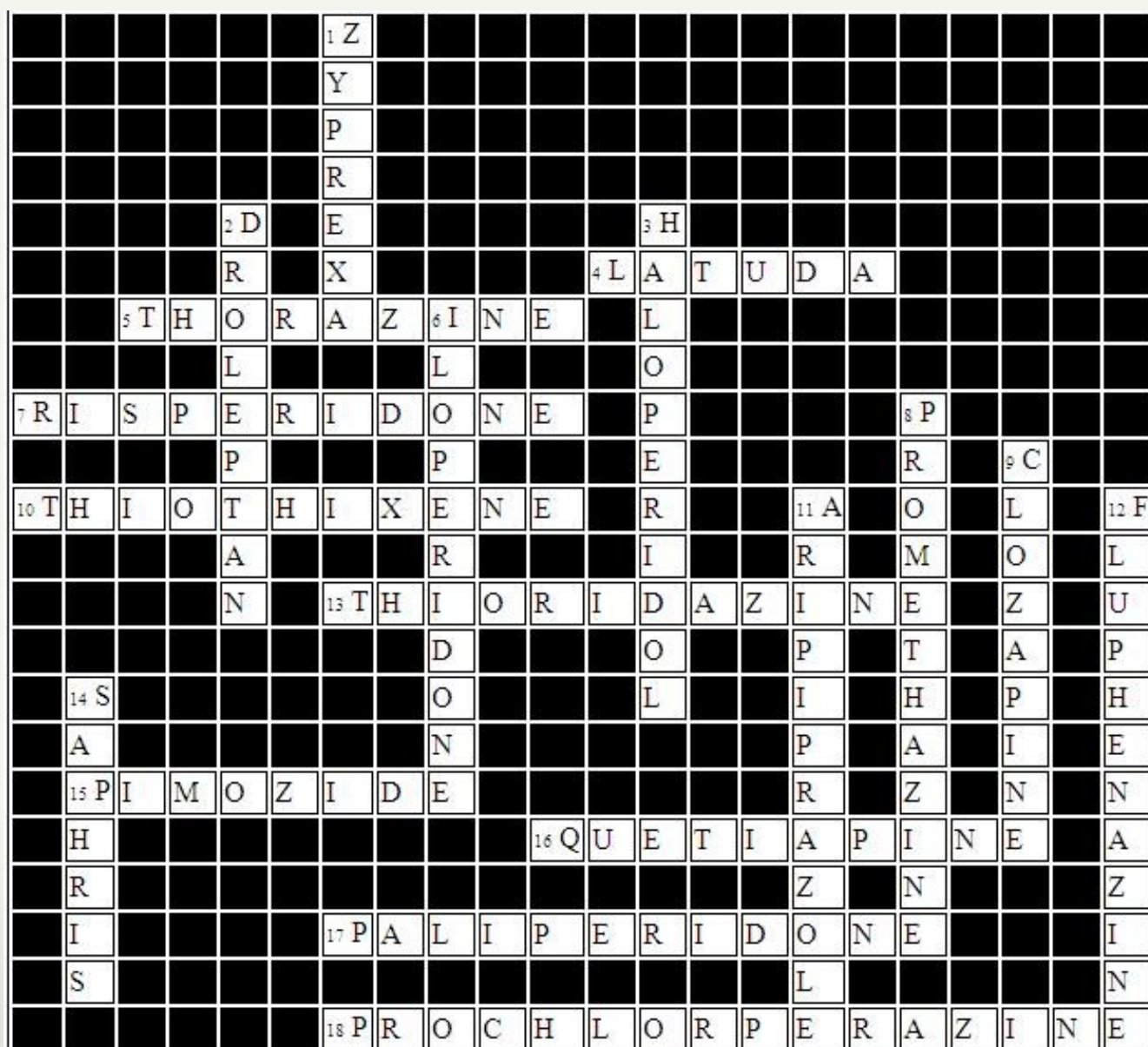
1 = H, 2 = I, 3 = G, 4 = F, 5 = E, 6 = B, 7 = A, 8 = C, 9 = J, 10 = K, 11 = D

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CROSSWORD PUZZLE (SOLUTION)

BY: MAHDIEH DANESH YAZDI, ASSOCIATE STUDENT EDITOR



Go Back to the Puzzle on Page 12?

Do you enjoy our puzzles?

Send us a suggestion for a brainteaser at rhochis@gmail.com

We will feature your work in our next issue!

LETTER FROM THE EDITORS: WE NEED YOU!

Dear Reader,

We are always looking to engage with each of you. If you are a talented cartoonist or have a passion for art, feel free to contact one of the editors. It is a great way to express yourself and earn a spotlight for your artistic skills while drawing attention to an aspect of the pharmacy profession.

Can't draw? No problem, take pictures instead! We need photographers who can attend campus events and seminars that are related to healthcare or the pharmacy profession. Please feel free to send us the pictures with one or two paragraphs explaining the event. Perhaps you have a passion for writing; if so, feel free to write to us in response to an article you read. Even if it is just a question or a few comments on an article, email us!

Don't like what you see in the newsletter? Then let us know! Tell us what you would like to see in the newsletter, what topics you are interested in, and/or if you wish to read more about a specific topic. The newsletter is for you; so, your feedback is very important to us.

Do you have some clinical knowledge or experiences to share? Feel free to send us interesting drug information questions you have answered or share what you have learned throughout your rotations.

This is a commitment-free way to stay involved with the pharmacy profession. Contributing to our newsletter does not obligate you to contribute to every issue. We are more than happy to have guest authors and talented students work with us whenever they are available or free to do so. If you have any questions, comments, and/or concerns, please do not hesitate to email us at: rhochis@gmail.com.

With much gratitude,

The RCP Editorial Team

Image Source: easyvectors.com

RHO CHI POST: EDITORIAL TEAM



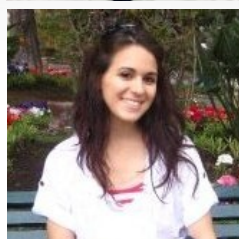
@ Steve P. Soman (6th Year, STJ; Co-Editor-in-Chief)

Previously known as Ebey P. Soman, I really enjoy writing very opinionated articles. I strongly encourage all readers of our newsletter to respond with their own literary pieces. I look forward to hearing from you, and welcome your comments and constructive criticisms!



@ Neal Shah (6th Year, STJ; Co-Editor-in-Chief)

I frequently assist several professors on campus with their research. My goal is to provide my fellow students with research-based information that correlates with clinical pharmacotherapy. If you have any topics of interest or comments on currently-published articles, please do not hesitate to email me!



@ Addolorata Ciccone (6th Year, STJ; Co-Copy Editor [Content-Focused])

I am thrilled to serve as a Co-Copy Editor of Rho Chi Post. Whether you are brand new to the world of pharmacy, a seasoned veteran of this profession, or anywhere in between, I hope you find our work engaging, relatable, and informative. I look forward to reading your comments and feedback.



@ Bharat Kirthivasan (PhD Candidate, STJ; Co-Copy Editor [Content-Focused])

I am a doctoral candidate 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.



@ Katharine Cimmino (4th Year, STJ; Co-Copy Editor [Content-Focused])

I have always been an avid reader and writer. As a co-copy editor 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.



@ Aleena Cherian (5th Year, STJ; Co-Copy Editor [Graphics-Focused])

The Rho Chi Post has been a source of current information and great advice to students and professionals in this evolving profession. After years of experience in media and graphics-related work, it is now my privilege to be a part of this endeavor as a Co-Copy Editor. I hope you learn as much from future editions of the newsletter as I have, and I welcome your feedback!



@ Mohamed J. Dungersi (6th Year, STJ; Senior Staff Editor)

I am enthusiastic about promoting the pharmacy profession, and what better way to do this than by being a part of the Rho Chi Post? Should you have any comments or concerns, feel free to contact me!

RHO CHI POST: EDITORIAL TEAM



@ Marie Huang (6th Year, STJ; Senior Staff Editor)

I am in a continuous process of self-definition, and constantly testing the boundaries of this world. I enjoy channeling my inspiration through words and photographs. As a witness to an evolving profession, I look forward to keeping you updated! Who knows where we will be tomorrow?



@ Mahdiah D. Yazdi (6th Year, STJ; Senior Staff Editor)

I like to stay current with all the changes in our profession, both legal and clinical. I hope to keep you informed with all that I learn. Please enjoy Rho Chi Post, and provide us detailed feedback so that we may improve our newsletter.



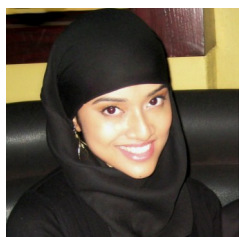
@ Shannon Tellier (6th Year, STJ; Senior Staff Editor)

I believe it is important for students and everyone else in the profession to stay informed about current pharmacy events. Rho Chi Post is a great way to continue learning information about what is happening on our campus and in the nation.



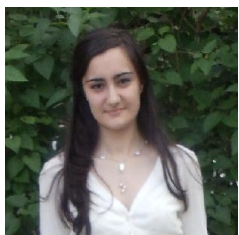
@ Erica Dimitropoulos (4th Year, STJ; Staff Editor)

As pharmacy students, we often fail to keep current with healthcare developments. My aim is to sort through the news and provide quick updates that are important to our profession. Feel free to contact me if there are any topics you would like to see covered in the next issue!



@ Tasnima Nabi (3rd Year, STJ; Staff Editor)

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, and I look forward to bringing pertinent information to the newsletter.



@ Tamara Yunusova (2nd Year, STJ; Staff Editor)

My name is Tamara Yunusova, and I am a 2nd year Pharm D candidate at St. John's University. I enjoy articulating information in a captivating and insightful way. I hope to make this publication more informative, student-friendly, and innovative.



@ you!

We are looking for creative and motivated students to join the editorial team. If you are interested in becoming a full-time student editor, graphics editor or a assistant student editor for the Rho Chi Post, please contact us at rhochis@gmail.com!

RHO CHI

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.

THE RHO CHI POST

MISSION

The Rho Chi Post is a monthly, electronic, student-operated, dean-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

1. To provide the highest quality student-operated newsletter with accurate information
2. To maintain a healthy, respectful, challenging, and rewarding environment for student editors
3. To cultivate sound relationships with other organizations and individuals who are like-minded and involved in like pursuits
4. To have a strong, positive impact on fellow students, faculty, and administrators
5. To contribute ideas and innovations to the Pharmacy profession

CURRENT EXECUTIVE BOARD



Zinnia, Majd, Moisey, Elissa, and Anh at the 2013 Induction Ceremony

President: **Moisey Rafailov**
 Vice President: **Majd Ahmad**
 Secretary: **Elissa Tam**
 Treasurer: **Anh Nguyen**
 Historian: **Zinnia L. Yu**

Faculty Advisor: **S. William Zito, PhD**

UPCOMING EVENTS

Feb 6-8: 2013 National Pharmacy Forum

Hilton La Jolla Torrey Pines, La Jolla, California

Feb 6-10: 2013 NCPA Multiple Locations Pharmacy Conference

Hyatt Regency Aruba Resort, Palm Beach, Aruba

Feb 10: MPhA/MD-ASCP Mid-Year Meeting

The Conference Center at the Maritime Institute,
 Linthicum, Maryland

Feb 13-14: PharmaPack Europe 2013 Exhibit

Grande Halle De La Villette, Paris, France

Feb 18-19: Advances & Progress in Drug Design

The Copthorne Tara Hotel, Kensington, London, UK

Feb 27-28: PHARM Connect Congress 2013

Corinthia Grand Hotel Royal, Budapest, Hungary

Mar 13-15: 18th Congress of The European Association of Hospital Pharmacists (EAHP)

Place de la Porte Maillot côté Palais des Congrès, 75017, Paris

Promote your event through us!

Submit the name, location, date, and time of your venue to our editors at:

rhochis@gmail.com

We welcome all pharmacy-related advertisements