

RHO_{PX}CHI POST

A student-operated newsletter by the St. John's University Beta Delta chapter

SINGLE-LINE STORIES

- Inauguration issue continues to receive outstanding reviews from students and faculty
- Mock Residency Interviews event brought together a large crowd of students
- Two students (in their fifth and sixth years) join the editorial team to further the publication's success
- Block elective choices for 6th year student pharmacists are due Nov. 10th
- Editor-in-Chief to present 'IT vs. Informatics in Pharmacy' on Nov. 14th and 17th in the CVS Lounge during Common Hour
- Compounding wet-lab review classes are in session every Wednesday from 6pm-9pm, until Nov. 16th
- The 'Who Wants to be a PharmD?' game event is scheduled for Nov. 21st during common hour at St. Albert Hall B75
- All faculty members are invited to be 'call a pharmacist' lifelines during the 'Who Wants to be a PharmD?' game event
- Students vs. Faculty Kickball Game is also on Nov. 21st, but at 5pm-7pm in Taffner Field House
- Many event collaborations anticipated with Phi Lambda Sigma, Lambda Kappa Sigma, and Phi Delta Chi
- Next Rho Chi Post issue (in Dec.) will be dedicated to the original Rho Chi publication from the 1960's

BRIEF COMMENTARY



We've made it! The Rho Chi Post newsletter publication is now an official electronic and print medium for journalism by the Rho Chi Pharmacy Honor Society at St. John's University. I would like to extend my gratitude to all of our supporters for providing us the continuous inspirations to write, edit, and publish unique content.

Student pharmacists, faculty members, and the deans: we must maintain this close communication to further our exemplified success.

I encourage all readers to submit any type of creative work that comes to mind: news articles, clinical pearls and updates, interviews, poetry, hand-drawn or digital art, photography, or other material. Additionally, we are always looking for student and faculty editors to lead and assist in future publications. Since only seven months remain before the PharmD class of 2012 graduates, I am also quite eager to mentor the next Rho Chi Post Editor-in-Chief; so, get in touch if interested!

If you have any other questions, concerns, constructive criticisms, innovative ideas, or other types of commentary, please feel free to email me at: mohammad.rattu06@stjohns.edu.

Thank you for reading!

Sincerely,

Mohammad A. Rattu
Editor-in-Chief

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FACULTY SPOTLIGHT: DR. ABU SERAJUDDIN BY: EBEE P. SOMAN



Dr. Abu Serajuddin is a true inspiration for student pharmacists who wish to enter the pharmaceutical industry setting. He attained his Bachelors of Pharmacy with honors at Dhaka University in Bangladesh and majored in Pharmaceutics to get his Master of Sciences degree at Columbia University in New York. He obtained his PhD in Industrial Pharmacy at our very own St. John's University in 1982. Dr. Serajuddin then went on to work at Revlon Health Care, which became Sanofi-Aventis through mergers and acquisitions. He later joined Bristol-Myers Squibb for around 9 years and was a three-time recipient of the BMS President's Award. He also received the Productivity for Growth Award in recognition for his work.

Through hard work, he became the Associate Director for early phase drug development. He was responsible for the accelerated development of new drug candidates (non-biologicals) from Drug Candidate selection to Go / No Go decision for Phase III clinical testing. Dr. Serajuddin was also the Chair for Preformulation Focus Group and Pharmaceutics & Drug Delivery Section at the American Association of Pharmaceutical Scientists (AAPS). In April 1999, he became Executive Director and U.S. Head of Pharmaceutical product development at Novartis.

In 2003, Dr. Serajuddin joined the Long Island University (LIU) as an Adjunct Professor and taught classes in Integrated Drug Product Development Process. In August of 2003, while still at LIU, Dr. Serajuddin became the Executive Director and Global Head of Science and Technology Forum at Novartis. He joined St. John's University (STJ) as the professor of Industrial Pharmacy in 2008, teaching various courses such as Pharmaceutics I & II, Pharmaceutical Materials, and Industrial Pharmacy. While teaching at STJ, Dr. Serajuddin received AAPS Research Achievement Award in Formulation Design and Development, one of the highest awards given by the American Association of Pharmaceutical Scientists (AAPS).

Some of our well-known Teaching Fellows (Anuprabha Meena, Amol Batra, and Simerdeep Singh Gupta) work in Dr. Serajuddin's laboratory. The lab facilitates research that improves drug bioavailability via drug formulation techniques. These include enhancing the rate of solubility of poorly water-soluble drugs, stabilization of the amorphous drug structure, examination of the salt forms, and the development of novel dosage forms.

This month, I had an opportunity to speak to Dr. Serajuddin and explore some of his accomplishments. His words will hopefully inspire the future generation of pharmacists interested in the pharmaceutical industry.

Q: You attended the University of Pisa in Italy; how was your experience there?

A: I was the Winner of an International Merit Scholarship from the Government of Italy which enabled me to attend University of Pisa in Pisa, Italy. I applied for the scholarship when I was doing Bachelor of Pharmacy in East Pakistan (now Bangladesh). It was a two year scholarship, but I had such an interesting time there. At that time, when you finished your bachelor's degree, your title was "Doctor." Any further education beyond the four years was considered a "specialist" in Italy, but this system was not recognized in the rest of the world. This prompted me to apply for a school in the United States, and I was able to get into Columbia University.

Q: What was one big project you worked on during your time in the Industry?

A: I helped initiate the formulation of the drug known as Gleevec (imatinib). They discovered the compound, and it was given over to my development department. The company had two development sites: one in Switzerland and one in the United States. The project was assigned to me, and I developed the first formulation that worked miracles during the clinical testing. Quickly, the news of the drug spread, and patients with leukemia were pressuring the company for the release of the drug. It takes over a week for raw materials to be processed and transported from Switzerland to the United States for development, but since there was so much public interest in the drug, the company decided to expedite the drug development process. Thus, the project was transferred to Switzerland to reduce the development time. I also worked on Diovan (valsartan) and numerous other projects during my time in the industry.

Q: Do you see any concerning trends in the Pharmaceutical Industry?

A: One alarming trend in the United States is how so many pharmaceutical companies are closing or going out of business. This begs the question: why are they being forced to close? Companies that were big names, like Upjohn (which had over 34 patented drugs on the market), Burroughs-Wellcome, Schering-Plough, and many others, do not exist today. They simply went out of business or were forced to merge with large companies like Pfizer or GlaxoSmithKline. This is alarming because we have fewer players in the pharmaceutical market, which may be indicative of increased competition from generic companies and the difficulty that companies have in being economically sustainable.

Q: Do you see generic companies as problems or solutions to drug development and innovation?

A: Well as I mentioned earlier, the pharmaceutical companies are having a difficult time already recouping the costs of research, which makes it harder for them to be economically sustainable. This may be a reason why many drug companies went out of business in the United States. I actually wrote a published article discussing this same issue in great detail. Drug companies have 20 year patent life, but 10 to 15 years of that time is spent researching and developing a drug that may not be clinically viable. Thus, the time and money placed into the development may be wasted. Even after companies finish making a product, they only have 5 to 10 years to market the product before the patent expires. When the patent does expire, pharmacists generally dispense the generics due to the law or due to the cost effectiveness; so, the companies are forced to calculate the price to recoup their research costs within the limited amount of time left before the patent expires. This is the reason why brand name drugs tend to be expensive and once a generic is available, the brand product is rarely sold. So, the company with the brand name product is slowly forced out of the market, and may even go out of business, as seen with Upjohn. This phenomenon is also driving U.S. Pharmaceutical research and innovation down, especially as companies find it easier to simply modify an existing drug to continue to keep it a brand name drug (rather than to research and develop a new product).

Q: How would you suggest we fix this problem? Should we modify patent expirations?

A: Changing patent length, on a broad basis, is not a feasible option for this problem. For example, Intel chips have patent, but when it expires, there is no "generic" Intel chip for that chip maker to compete with. So, changing the patent length is meaningless for that industry. Unlike other industries, in the pharmaceutical industry, the patent length can have a huge impact on drug development and drug market share. The government has to specifically address this problem and create new legislation targeting this sector of industry (instead of trying to institute a broad general law that may not be viable for the pharmaceutical industry). Another solution is that when a patent expires and a generic drug is marketed, the generic companies should pay a small royalty fee towards the brand name manufacturer. But, then, what would be a fair royalty fee? Would it be enough? Is this a sustainable practice?

“...changing patent length ... is not a feasible option for this problem...”

Q: Wouldn't a royalty fee raise prices?

A: Yes, it may raise the prices slightly, but it is not significant. For example, captopril tablets used to sell for two dollars, but now it sells for ten cents. If you were to put a ten percent royalty fee then 10% of ten cents is one cent. So, the overall raise in price would be 1 cent, and the price would become 11 cents. This is

the price before the retail pharmacy markup, and it may provide a way for brand name companies to be more sustainable. Unfortunately, this is a very complicated issue with no clear answers.

Q: Do you have any predictions about the future of the pharmaceutical industry?

A: Currently a majority, around 70%, of the prescriptions dispensed are generics. In the future, we will not have too many patented products. At one time, we used to have over 20 new drug products coming to the market, but that rate has dropped sharply to about 10-15 products. This indicates a decrease in innovation; and around 80-90% of the drugs on the market will be available generically. Generic companies will dominate the market and compete with each other, while big companies will slowly disappear.

Q: What made you leave the industry after an almost-30-year career?

A: My whole life, I was thinking that I needed to do more research and join the academia. However, this was not possible because job openings for a faculty position are rare. Although it was hard to make the transition, it was always my dream to teach. In 2008, an opportunity arrived from St. John's University. For a long time, I drove almost 45 miles to my work in New Jersey, and, here, I was being offered a job at a prestigious university literally 3 miles from my house. This was an opportunity of convenience and a fulfillment of my lifelong dream; these factors helped me make the decision.

Q: What advice or recommendations would you give to Pharmacy students interested in the pharmaceutical industry? What opportunities are available for pharmacists?

A: The industry has many opportunities. At one time, most of the scientists in product development were pharmacists. However, over the last two decades, our pharmacy education focus has shifted from the basic sciences to the clinical aspect. This is a driving factor in the reduction of the number of pharmacists in the industry. For product development, a pharmacist needs a strong foundation in pharmaceuticals and mathematical calculations, but the main problem is the starting salary. Many pharmacy students do not want to go into product development because of the initial low salary rates. The salary varies, but it is around \$70,000 for starting positions.

There is actually a great opportunity for pharmacists in clinical research, though. The clinical research is conducted mainly in hospitals all over the world; so, the pharmacists are in a great position to be successful in this area of work. With our education, we have well-rounded clinical knowledge that is essential for research. The pharmacists here will generally be involved with designing project protocols and monitoring ongoing studies. They are the onsite project managers of sorts and also visit clinics to carry out projects. You generally work together in a team of two to three pharmacists and one to two doctors.

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There is also the marketing division. Pharmacists are involved with verifying and approving drug information, checking the reliabilities of statements, and providing research data for product promotions. You also have administrative opportunities open in companies for pharmacists. These are just a few opportunities in the industry, but they all provide an avenue for success. Your success depends on how well you network with fellow professionals and researchers, and there is no limitation on how well you can do in this setting.

“...your success depends on how well you network...”

Q: Would you recommend a fellowship for pharmacy students interesting in joining the industry?

A: Absolutely! Doing a fellowship is a great opportunity for students to begin networking with fellow professionals early on. One program I recommend is administered by Rutgers University, known as the Rutgers Pharmaceutical Industry Fellowship Program. You also gain experience in the division you want and get to see if clinical research, marketing, or product development is right for you. Another avenue for networking is the St. John's Alumni office. You can find already-established alumni to mentor you and possibly gain an opportunity for research, fellowship, and internships.

Q: How are you working to expand the industrial pharmacy program at St. John's University?

A: On campus, we have a graduate research program for industrial pharmacy already. We needed a new state-of-the-art facility to do research and work in collaboration with pharmaceutical companies for product development. It was actually Dean Man-

gione's idea for this new facility - he and I raised over half a million dollars from St. John's alumni and pharmaceutical companies for the remodeling of an existing laboratory into a full pharmaceutical processing pilot plant. The construction of the facility completed in January 2011. Currently, we are working on raising funds to purchase the necessary equipment for the plant. Once completed, the new facility can host training programs for new scientists at industrial companies, as well as develop and research new drug formulations, while in compliance with existing standards and regulations. Through this new facility, we can also train our St. John's University students in necessary skills and experiences needed to be readily-appointed to lead research positions in the industry. We can also run programs for retraining and skill development, along with courses for industrial professionals on campus. I thank Dean Mangione for being very supportive of this idea and for working on this project.

You can find Dr. Abu Serajuddin in St. Albert Hall, Room G012. He is currently working on the problem of sustainability in the pharmaceutical industry with Michelle Pernice, PharmD Candidate c/o 2012. Dr. Serajuddin is also a 1975 Rho Chi member from Columbia University College of Pharmacy. He has 11 students working in his lab currently and would love to have a Pharmacy student participate in his research.



You can reach him by calling his office phone (718-990-7822) or sending an email to: serajuda@stjohns.edu.



EVENT SPOTLIGHT: MOCK RESIDENCY INTERVIEWS BY: NEAL SHAH

As the year comes to a close, many pharmacy students are turning their sights onto the process of residency interviews. Residencies provide a competitive edge and an educational fulfillment to future pharmacists who wish to engage in clinical practice. On October 26th, Rho Chi held its first Mock Residency Interviews, open to all pharmacy students. In total, 56 students were divided into eight “rounds,” and they were interviewed individually by a Clinical Pharmacy Practice pharmacist for roughly ten minutes. The interviewers included Dr. Ezzo, Dr. Hughes, Dr. Jodlowski (in lieu of Dr. Conry), Dr. Kanmaz, Dr. Maidhof, Dr. Patel, and Dr. Shafeeq (in lieu of Dr. Arya). Each interviewer has many years of experience in the clinical setting, and provided excellent feedback to students to improve their interviews.

The interviews resembled typical employment interviews - once the pharmacy student introduced his or herself and presented the curriculum vitae (CV), the pharmacist would look over the document and ask questions. These questions varied from “why are you pursuing a residency?” to “what role does the staff pharmacist play in patient care?” It was interesting to note that not all questions dealt with the workplace or items listed on the CV. Dr. Jodlowski mentioned in the post-interview comments that he was asked, “what three items would you bring to a deserted island?” during his residency interview. Hence, students should prepare for some out-of-the-ordinary questions. Dr. Patel reminded students that “fluff” or add extraneous detail on a CV may be put into a detrimental situation - anything mentioned on the CV may be questioned. She recommended a two-to-three line description on paper and a short explanatory summary for listed items.

A brief perusal of an institution’s residency program may allow you to better answer why you chose that institution and to see if that institution would make a good fit with your own goals. Mission statements and program outlines are commonly posted on websites. Answering questions with mentions of these elements is beneficial and shows that you are prepared for employment with the institution. Follow-up questions at the end of the interview are also encouraged and again reflect interest in the program. A great question to ask is for a small description of day-to-day activities of all pharmacy staff members. This may allow the interviewer to focus on areas vital to daily operations.

It goes without saying that professionalism during an interview must be upheld. However, many interviewers stated that students seemed monotonous and wished that the interview was more like a conversation. In your answers, employers want to see your professional behavior and your “human side.” Light-hearted humor may work for some interviewers, but it should be used with discretion as it may portray you as an unsuitable candidate for the work

environment. How you interact with the person also reflects how you will carry yourself with other healthcare professionals.

Another important point Dr. Patel mentioned is to never call community pharmacies “retail” pharmacies, and never bash community pharmacy, as it represents the “bread and butter” of our profession. Language is extremely important and as all the interviewers said, using “like” or “um” excessively is unprofessional and gives a sense of unpreparedness. Above all else, remember that you are selling yourself in a short period of time; so, the first impression is the most important.

“...you are selling yourself in a short period of time...”

Other advice given by the interviewers is listed below:

1. Shortly before the interview, take a deep breath, relax, and smile. Your thoughts and answers will be better portrayed if you are calm.
2. Have time management skills: be able to explain situations where you demonstrated heavy workload and resolution by balancing priorities adequately.
3. Make appropriate eye contact and use professional language. Avoid excessive casual fillers such as “like” or “um.” Allow a second to collect your thoughts and succinctly relay them.
4. Research the residency program: inform the interviewer why you are interested in their specific rotation compared to other rotations. Let them know you fit what they are looking for.
5. If asked about your weaknesses, state ones that are easily turned into positives. Always add what you have done to improve on them. For example, if you had to work to support yourself during school, you can add that you learned how to efficiently balance studying, rotations, projects, and work.
6. At the end of the interview, ask questions about the residency program. Asking what daily activities residents and staff pharmacists do will also influence your decision on pursuing a residency at that location.

During an interview, our resume or CV defines who we are. Of course, not everything we have ever done goes on a CV; so, it is beneficial to know what activities to include and how to phrase them.

On November 17th at 6 PM in the Drug Information Laboratory, Dr. Patel is holding a CV workshop for 6th year students, and there are only 30 spots available for this event. So, RSVP today by emailing patelp2@stjohns.edu!

Rho Chi

Beta Delta Chapter

Pharmacy Honor Society



NOVEMBER 21ST

COMMON HOUR

(1:40 PM - 3:00 PM)

ST. ALBERT HALL B-75

REFRESHMENTS WILL BE SERVED

EVENT SPOTLIGHT: RESIDENCY AND FELLOWSHIP SHOWCASE BY: MAHDIEH DANESH YAZDI

On October 21st, St. John's University hosted the annual pharmacy residency and fellowship showcase, where representatives from various institutions provided information about their post-graduate programs. A total of 36 programs from the New York / metropolitan area, New Jersey, Massachusetts, and Connecticut were in attendance. Many of these were represented by our own faculty and alumni.

Student pharmacists had the opportunity to speak with residents, fellows, preceptors, managers, and directors. They asked the presenters about future careers in hospitals, community pharmacies, and the pharmaceutical industry. Preceptors were content with the attendance and the questions they received. Representatives from the Massachusetts College of Pharmacy and Health Sciences (MCPHS) were impressed with the personal interactions and encouraged more underclassmen to come to these events.

Overall, student pharmacists seemed pleased with the showcase. PharmD candidates c/o 2012, Andrew Li and James

Zheng, thought that the event was very well organized, especially because the presenters were alphabetized and prepared with material to provide potential applicants. They also liked that current residents and fellows were present to discuss their experiences. When asked about what they would like to see improved, they suggested more programs, preceptors, and representatives for next year.

I would definitely encourage all student pharmacists to attend next year's residency and fellowship showcase. Of course, if you attended this year's event and wish to submit commentary regarding your experience, please feel free to contact us at rhochis@gmail.com.

For more information about residencies and fellowships, you can visit websites for ASHP (<http://ashp.org>) and ACCP (<http://accp.com>). Explore their directories for introductory details about program requirements, locations, stipends, and offered electives.



Do you have any event photos?
Send them to us at rhochis@gmail.com!

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IT'S TIME TO GET INVOLVED! BY: KHILNA PATEL (PHARM.D. CANDIDATE C/O 2012)



Top academic achievement is a plus but is not the only thing to strive for - college is about developing one's self as a whole. There are many opportunities to get involved. Don't be afraid to try everything that may interest you because it will only bring you closer to achieving your goal!

I will try to outline some of the key organizations at St. John's University in this article, but for you to really find out what our college has to offer, you need to get out there and get involved!

The American Pharmacists Association - Academy of Student Pharmacists (APhA-ASP) accepts students from each year of pharmacy. Not only will you be exposed to the numerous collaborative events that will open your eyes to the pharmacy world, but members will also receive many of the benefits that are available to APhA pharmacists. APhA-ASP hosts several events throughout the year that focus on student development and outreach such as the Pharmacist Roundtable, Lunch and Learn Series, and many pharmacy-related socials. There are also projects that help to increase awareness: Operation Diabetes, Heartburn Awareness, and Operation Immunization. More information about our APhA-ASP chapter is available at <http://aphastjohns.org>, but to become a registered student member, you must register at <http://pharmacist.com>!

Rho Chi (P_X) is a pharmacy honor society that inducts students at the end of the first semester of fourth year. Our Beta Delta chapter has strived successfully to be the collective voice of pharmacy students, to provide opportunities for professional growth, and to envision and actively promote the future of the profession. We promote leadership and fellowship in pharmacy through a combination of professional, philanthropic, and social events. Some of our traditional events include the Cardio Session, Coffeehouse Chats, and the "Who Wants to be a PharmD?" game show event. Visit our website at: <http://rhochistj.org> to learn more!

The Pharmacy Leadership Society or Phi Lambda Sigma (PLS, $\Phi\Lambda\Sigma$) is about developing leadership qualities. Applications for PLS are sent via email at the end of the third year of pharmacy. Their annual Healthy Halloween event, sponsored by Walgreens pharmacy, allows members to interact with elementary school children and teach them the importance of healthy choices during the holiday. PLS has

also hosted events such as 'Tell Two: Part Two,' Cultural Competence Workshop, and Leadership Roundtable. More information about our university's chapter is available at <http://plsstj.org>.

Omicron Delta Kappa (ODK, $O\Delta K$) is the national leadership honor society that recognizes achievement in five areas: scholarship, athletics, community service, journalism, and creative and performing arts. Applications for membership into Omicron Delta Kappa Honor Society are available at the beginning of the spring semester and the induction ceremony is held in April during the Leadership Awards Dinner. More information is available at <http://odk.org>.

Another great way to get involved and meet new people is by joining a pharmacy sorority (Lambda Kappa Sigma [LKS, $\Lambda K\Sigma$]) or fraternity (Phi Delta Chi [PDC, $\Phi\Delta X$]). Both groups continuously collaborate with many of the above-mentioned organizations to host various events. In addition, many faculty members are LKS and PDC alumni!

A unique aspect of St. John's University is its Vincentian heritage - we place great emphasis on community service by motivating students to volunteer, mentor, and engage in academic service learning. Pharmacy organizations continue to participate in Relay for Life, the Breast Cancer Walk, University Service Day, Walk for the Homeless, Hands on New York, HOPE 2012, and Walk MS.

Each year, all the pharmacy organizations gather on Pharmacy Organization Day. This event allows many different organizations to speak to younger students about how they can get more involved on campus. It is also an opportunity for younger students to mingle with upperclassmen and gain future expectations. Each organization introduces their executive board, as well as makes a short speech regarding the requirements to be in the organization and their goals for the semester. This is an excellent place to begin when searching for organizations.

"... don't limit yourself ..."

All in all, In fact, be more concerned about the potential opportunities you might be missing out on when you *don't* try something. The only way to achieve your purpose is to perform small actions everyday, which will accumulate to greater success in the end.

If you have any questions about this article, you can reach Khilna at khilna.patel06@stjohns.edu.

OUR 'LIVE FROM NY' EXPERIENCE BY: SHIVANI KAPADIA & NANCY SIMON (PHARM.D. CANDIDATES C/O 2016)



For us, 'Live from NY' was a very memorable event. It was collaboratively-hosted by the American Pharmacists Association chapters across the east coast on the morning of October 5th to celebrate the start of American Pharmacists Month.

During this event, students arrived in New York City to convey the importance of the profession of pharmacy, especially since October was American Pharmacists Month. Rutgers, Long Island University (LIU), Massachusetts College of Pharmacy and Health Sciences (MCPHS), Albany College of Pharmacy and Health Sciences (ACPHS), University of the Sciences in Philadelphia (USP), and our very St. John's University (STJ) chapter raised awareness and proudly represented student pharmacists. It was an experience that we will never forget because it was an awesome opportunity to promote our profession and meet other student pharmacists. Most importantly, we wanted to emphasize our message: "Know your Medicine, Know your Pharmacist."

At the beginning of the day, we met with APhA-ASP members and prepared to embark on our first experience of the Live from NY annual event. With our professional attire, we headed to the Today show, and mingled with diverse, motivated student pharmacists. We witnessed some of the 'behind-the-scenes' operations, as well as had the opportunity see the news team in action, shake Al Roker's hand, and spot a glimpse of Kourtney Kardashian.

"...it was an experience that we will never forget..."

When we were introduced as student pharmacists, we were very proud to cheer for the health profession that we will one day be fortunate enough to embody. Being part of APhA-ASP and attending this event exposed us to a different type of learning experience: outside the classroom. Although we are still undergraduate students, we both agree that it was a great idea to start getting involved in our pre-professional year. This was our first APhA-ASP event, and it definitely will not be our last.

Do you have something to say?
Write to our editors at rhochis@gmail.com and we will feature your response in our next edition!

LETTER TO THE EDITOR: RESPONSE TO BILL 5502 BY: POOJA PATEL (PHARM.D. CANDIDATE C/O 2013)

In response to the article on the controversy surrounding Bill 5502, a few things must be mentioned. Bill 5502 forbids insurance companies from requiring patients to use mail-order pharmacies for their medications if they want to avoid extra fees. The argument mentioned by Ms. Danesh-Yazdi (that this would take away business from mail-order pharmacies and cause an increase in cost to the patient) might not necessarily be true. Bill 5502 is not requiring patients to fill their medications at community pharmacies versus mail-order; it is simply giving them an option. The bill prevents insurance companies from charging extra fees for using a community pharmacy over mail-order pharmacy only if the prices are "comparable."

In essence, it is my belief that although there might be a shift in business from mail-order to community, it will not decrease competition or raise prices significantly. Community pharmacies will still have to maintain low prices to remain "comparable" to the prices charged by mail-order

pharmacies. Patients will have an opportunity to choose the method that is most convenient to them rather than worry about insurance coverage. Regardless, the mail-order method might still be the most feasible for patients who are currently using it. It allows patients to continue visiting a community pharmacy and also enable greater access to pharmacist-provided counseling.

It is unreasonable to think that there will be no negative impacts from this bill's passing - there will indeed be a decrease in mail-order pharmacy business. Some may not meet their quotas and will subsequently raise their prices, but this will not drive up price nor shut down all mail-order. The benefits that the patient will gain, namely convenience and face-to-face counseling, will far outweigh the increase in cost to the patient that we may see. Bill 5502, in the long run, will not only increase competition between community pharmacies and mail-order pharmacies, but also benefit the patient.

THE FUTURE OF PHARMACIST PRACTICE BY: DR. BERNARD SOROFMAN



Foreword: Dr. Bernard Sorofman is a pharmacy professor and Chair of Pharmacy Practice and Science, as well as the Executive Associate Dean at the College of Pharmacy for the University of Iowa. One of our student editors, Ebey P. Soman, had the privilege to attend and meet Dr. Sorofman at a “Lunch with a Leader” seminar hosted by Dean Mangione. Recently, the question of the direction our profession is heading towards has become a paramount focus of my interest. Thus, we asked Dr. Bernard Sorofman to be our guest author to provide his insight and vision as to what future we, as professionals, should strive towards.

The Rho Chi Post editors would like to take this opportunity to personally thank him for his insight.

I have been asked in the past, and now for this essay, what I see as the critical issues for pharmacists. Here is a case that illustrates for me my future for pharmacist practice.

A 70 year old woman of non-descript ethnic and religious background entered the pharmacy where one of my pharmacist colleagues practices. She was known to my colleague as one of their patients with whom he had worked for many years. The purpose of the visit was a complete medication review. She reported allergies to medicine and four different diagnoses that resulted in a current medication list of 11 different drugs. Important to this discussion was that she had a recent history of ‘3-4 blood clots.’ The pharmacist had access to her laboratory values and noted that they (INR, specifically) were low, especially low for a person with recent clotting. He determined via the interview that she was not taking her warfarin. Here is where he focused.

The patient, Ms. BA, was not taking her warfarin. The reason was unusual. From the report: “She stated an aversion to medications that are the color blue. She reports not taking her potassium chloride because it is blue and it made her vomit.” The pharmacist determined that Ms. BA had been dispensed 4 mg generic warfarin tablets that were blue. The solution was obvious: find another generic manufacturer who did not have blue colored pills in the prescribed strength or

alter the milligram strengths to fit the need. The situation was easily resolved and follow-up was planned for a week from the event in order to monitor the INR. Although thinking it strange, the pharmacist did not bring up the issue as an inappropriate concern. He took it seriously. After all, it was leading to non-adherence of a critical medication.

This case, unusual as it may appear to be, is a great example of what I see as the future for all pharmacist practices. The first is medication safety. Warfarin is a medication that should be managed carefully. The safety of a patient’s health hinges on the monitoring and control of therapeutic levels. Such a medication, should it be misused or not used, can lead to adverse medical events. It is the pharmacist’s role to assure safe medication practices. Second is the pharmacist’s role and responsibility to assure that their patient gets the best outcome possible for their condition. Ms. BA needed the therapy to prevent adverse medical outcomes from blood clots. The pharmacist would find a way for her to have medicine she could take and established a monitoring plan to assure proper outcomes. Finally, the pharmacist assured that the patient had access to medication that she could and would use. The blue pill aversion was real and blue tablets were avoided. Whether you think it foolish or not, she would not take the blue medicine and it was a barrier to access to therapy. A solution was found.

“...it is the pharmacist’s role to assure safe medication practices...”

I don’t know the results of the follow-up by my colleague. I do know that he would follow up with her as it is his style of practice – assure appropriate access to pharmacotherapy for all his patients, create situations where medication safety is paramount, and assume responsibility for optimal outcomes by monitoring. There are pharmacists who practice like my colleague, but way too few. My future for pharmacist practice is when this is the norm. The blue pill situation is not the unusual part of the case here; it is the comprehensive way in which a pharmacist performed their role. I know many student pharmacists, and have seen many new practitioners enter practice. They give me confidence that the next generation of pharmacists, those now entering practice, will succeed in creating my vision.

What’s your vision of pharmacist practice?

Write to our editors at rhochis@gmail.com and we will feature your response in our next edition!



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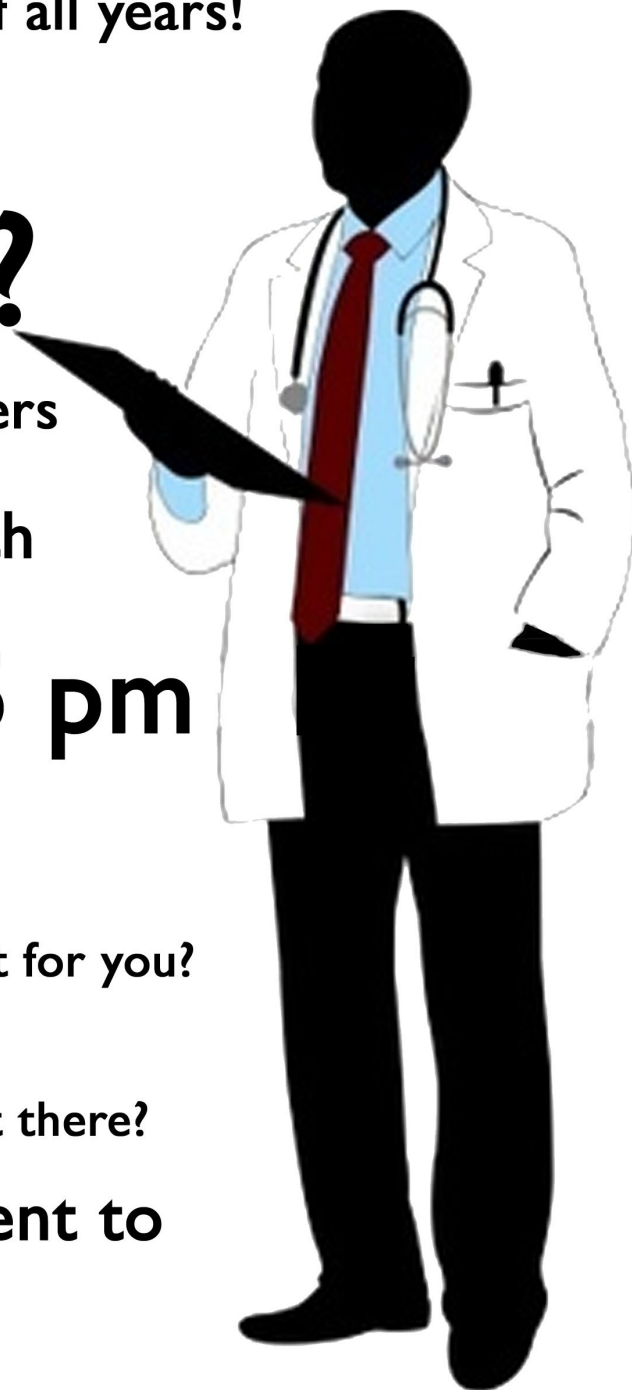
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How would you know?

What should I be doing to get there?

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RHO CHI POST (RHOCHISTJ.ORG)

LETTER TO THE EDITOR: AN ANSWER TO THE RISING DRUG COSTS IN 3RD WORLD NATIONS BY DR. OLGA HILAS



Foreword: Dr. Olga Hilas is an Associate Clinical Professor at Saint John's University and a Clinical Pharmacy Manager in internal medicine and geriatrics at Weill Cornell Medical Center. Dr. Hilas agreed to provide feedback to in response to Ebey's article entitled, "Big Pharma vs. Developing Countries: Debating Generic Drugs and Intellectual Property Rights" (from

Rho Chi Post Volume 1, Issue 1). We asked the readers to provide feedback on "how can we encourage R&D and allow drug manufacturers to recoup the costs, while providing low-cost, effective, and accessible medications to the third world nations?"

We sincerely thank Dr. Hilas for her contribution and thank Dr. Cassagnol for connecting us to Dr. Hilas. We look forward to hearing more from our readers.

There is no doubt that public health has greatly improved as a result of pharmaceutical company research and development. However, the desire for economic growth sometimes seems to overshadow the basic focus of improved health and prolonged life for all. For this reason, pharmaceutical companies are often perceived as capitalistic enterprises rather than humanitarian.

It is understandable that pharmaceutical companies sell their products at higher costs, while still under patent, for cumulative research and development costs. Their concern for

the lack of international drug regulations and TRIPS enforcement is also reasonable based on the terms agreed upon years ago; yet, what are developing and poor nations suppose to do when infringement of certain rules and regulations means life or death to the majority of their citizens?

The answer to this issue is not a simple one nor will we be able to find a perfect solution; however, a compromise with a focus on global health and humanitarian obligations is possible and should be reached between the pharmaceutical companies and WTO.

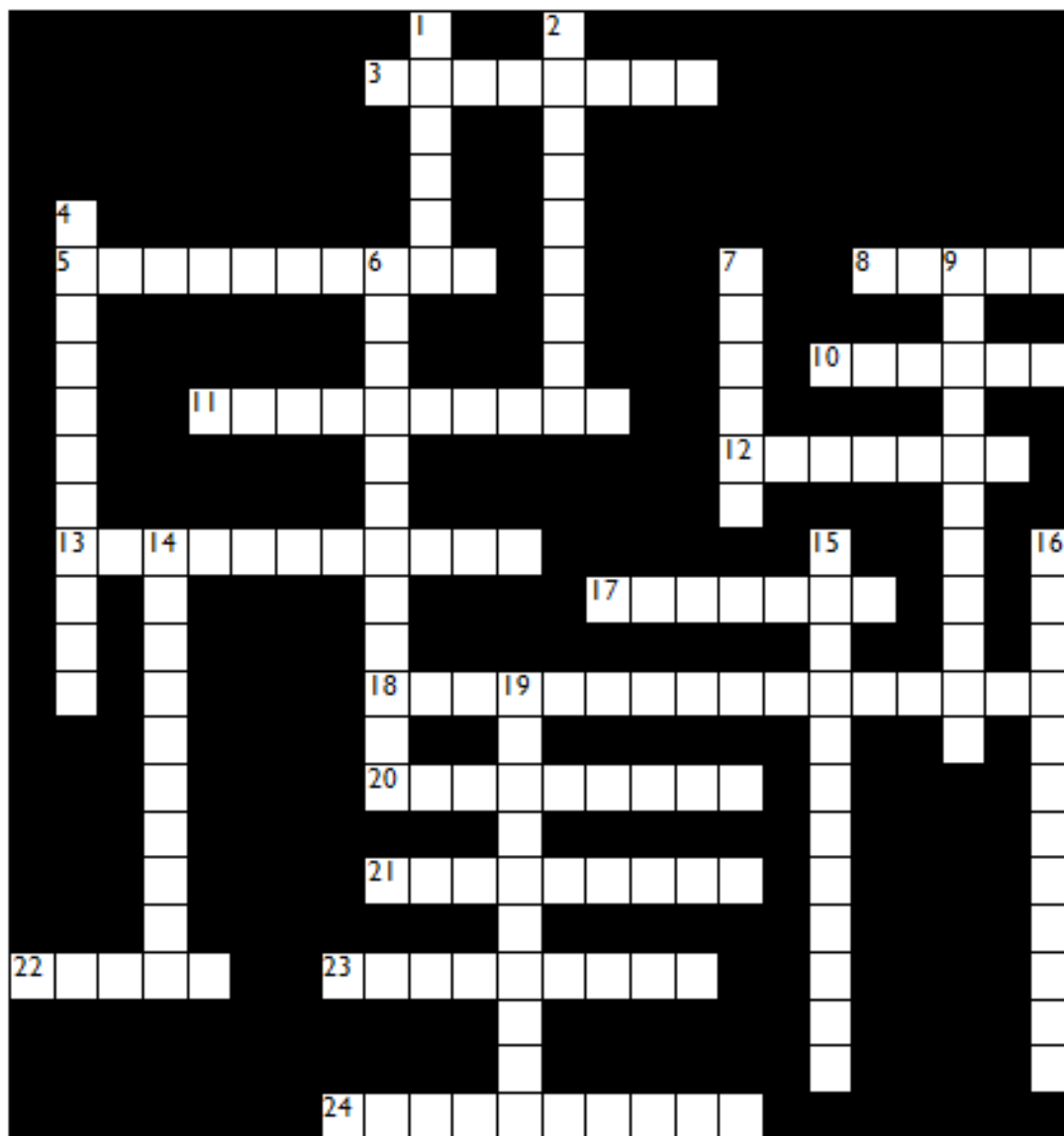
...the answer to this issue is not a simple one...

Currently, there is an initiative underway that may be promising for ill people in impoverished countries. Certain pharmaceutical companies are planning on developing 'branded generics' in these nations in order to prevent some of the income loss due to generic product manufacturer while the drug is still under patent. This solution can potentially provide more jobs, better access, fair pricing (for third world countries) and increased economic stability for all involved. Hopefully, the driving force behind this campaign will be public health and not private wealth.

If you are interested in this and other issues, you can go to: www.globalissues.org. This website has a number of similar articles and great references for you to become more informed about public health topics around the world.



PUZZLE: CROSSWORD BY: MAHDIEH DANESH YAZDI



Across

3. Most potent narcotic analgesic
5. Topoisomerase I inhibitor which often causes diarrhea
8. Drug regimen often used for intermediate grade NHL
10. Used to treat anorexia or cachexia
11. Rescue agent for cisplatin
12. Thymidylate synthase inhibitor
13. Drug withdrawn due to teratogenicity in 1961 in Europe
17. Oral antiseptic which may be used to prevent mucositis
18. Neosar
20. ChloroethylCyclohexylNitrosoUrea
21. Represented by "B" in the ABVD regimen
22. 2-MercaptoEthane Sulfonate Sodium
23. Long acting oxycodone
24. Given to prevent conjunctivitis in patients on cytarabine

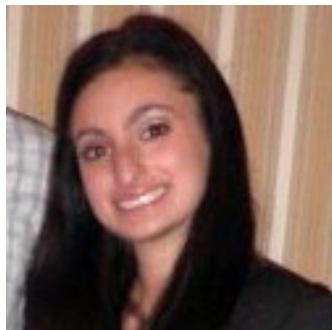
Down

1. Prodrug of 5-fluorouracil
2. SERM used in the treatment of breast cancer
4. Oncovin
6. Nitrogen mustard used in CLL
7. Metoclopramide
9. Represented by "OX" in the FOLFOX regimen
14. Represented by "A" in the CAV regimen
15. Pteridine drug which works by inhibiting DHFR
16. Nitrosourea derived from Streptomyces achromogenes
19. Used as a rescue agent for methotrexate

Stumped? The solution is available on [page 18](#).

RHO CHI POST (RHOCHISTJ.ORG)

STUDENT PHARMACIST STAR OF THE MONTH: JACLYN SCOTT BY: MARIE HUANG



Every month, Rho Chi Post has the wonderful opportunity to sit down with an inspiring leader among the student pharmacists here at St. John's – someone who is not afraid to stand apart from the crowd and can be the change he or she wants to see in the world.

This November, Jaclyn Scott, a 5th year PharmD candidate and Vice President of Phi Lambda Sigma, talks about leadership and provides some sound advice to students of all years.

Q: I understand that you're involved in APhA-ASP, Rho Chi, and Phi Lambda Sigma on campus! Tell me a bit about how you started off. What influenced you to make these choices?

A: Well, I first got involved with Student Government as a sophomore representative. I loved having that connection to the other students on campus; so, from that experience, I decided to become involved with pharmacy organizations. Phi Lambda Sigma, Rho Chi, and APhA-ASP, especially, are great ways to enhance what we are learning in the classroom. They also facilitate interactions with pharmacists and other professionals. I feel that being a pharmacist is more than just knowing a lot about drugs; it's about being a leader in the profession. Developing leadership skills as a student pharmacist is very important for our future career!

“...being a pharmacist is more than just knowing a lot about drugs; it's about being a leader...”

Q: It seems you started became involved at the perfect time! I've spoken to a lot of freshmen and sophomores who think it's too early or that they don't really have a place in these professional pharmacy organizations. What is a great way to step out of this notion? Is there any way they can become involved as pre-professional student pharmacists?

A: I think the sooner they get involved, the better! Start building resumes now! I would definitely advise first and second years to get involved with APhA-ASP. There is a lot for pre-professionals to do there, and becoming involved now will provide them opportunities to be considered for Phi Lambda Sigma and other pharmacy organizations later on. Since the class workload is lighter for pre-professionals, I encourage them to get involved with any cultural,

political, religious, or athletic organizations that interest them.

Q: Certainly, pre-professional years are the best years to join a non-pharmacy-related organization. Having another passion or extracurricular activity to place onto your resume or CV shows potential employers that one is a well-rounded person. What kind of jobs did you take on as sophomore representative? And have you been active in anything off-campus?

*A: As a representative, I was able to get involved with the administration and faculty to assist in decision making. I would address student pharmacists' concerns to the floor of student government. The pharmacy representatives and I usually fought for specific issues, like to receive more printing money and to get back finals week. Off-campus, I'm part of a breast cancer fundraising team... when I'm not studying. *laughs**

Q: Sounds like as students or as pharmacists, there is always room for advocacy! You mentioned leadership playing a vital role in our profession. Do you have anything to say to all the fifth and sixth year students?

A: As a fifth year student pharmacist, I would say that one important thing I have learned is that grades in the classroom can only get you so far. Of course, studying is important because that is how we gain our clinical knowledge, but I believe that becoming well-rounded will truly make us professionals. As student pharmacists about to enter the career world, we should never forget that.

Q: Lastly, if you could offer one piece of advice to other student pharmacists, what would it be?

A: One piece of advice I have to offer is to develop good time management skills! It is so important to not take on too much at once. Having the right balance of study time and being active in organizations will be very beneficial during your journey as a student pharmacist.

Additional questions for Ms. Scott can be directed to:
jaclyn.scott07@stjohns.edu

Know an influential colleague with extraordinary accomplishments?

Tell us at rhochis@gmail.com!

SPONGEBOB SQUAREPANTS... HARMFUL? BY: EBEE P. SOMAN

Current research demonstrates a strong correlation between the length of time a child watches television and decreased long-term attention deficiency disorders. A new study by Lillard and Peterson at the Department of Psychology at the University of Virginia suggests that the popular children's television show, *SpongeBob SquarePants*, might be harmful.

The goal of this study was to see if a fast-paced TV show could influence young children's (preschool age) short-term executive function. Executive function defines a set of mental processes that help people perform activities, have normal social inhibitions, the ability to pay attention, to recall memories accurately, to manage their time, and to complete tasks given to them successfully. Since executive function encompasses so many mental processes, it is often used as a marker for children's cognitive and social functions, as well as a predictor of how well they will succeed in school.

The children in the study were mostly Caucasians from middle to upper middle class socio-economic backgrounds. A total of 60 four-year-old children were randomly assigned to watch the TV show, draw, or watch an educational cartoon (on PBS) for 9 minutes. Then, the children were given tasks that utilize their memory recall and other executive functions. These tasks were the Tower of Hanoi task, the Head-Toes-Knees-Shoulders (HTKS) task, delay-of-gratification task, and the backward digit span subtest of the working memory capacity test. These tested how well the children followed instructions to complete tasks, cognitive recall of a specific task, the

ability to wait patiently to complete a task to be rewarded, and memory recall task, respectively.

The results were quite interesting. The children who watched the TV show performed significantly worse in the tasks they were assigned, while the children in the other groups who drew or watched an educational cartoon performed better. One of the limitations of the study was that they could not identify the exact factor that caused the decrease in executive function. Also, only a 9-minute clip of the television show was used. Generally, TV shows are longer, which may imply more detrimental effects on children.

The study concluded that children who watch fast-paced TV shows, like *SpongeBob SquarePants*, could have impaired executive functions compared to other children their age who may engage in other activities. All the children in the study had relatively similar executive functions during the start of the study, but the experimental group exhibited decreased function. The study maintains that this impairment may be temporary; however, more studies may be needed to evaluate the extent of the impact.

Primary Source:

Lillard AS, Peterson J. The Immediate Impact of Different Types of Television on Young Children's Executive Function. *Pediatrics*. 2011 Oct;128(4):644-9.

What are your thoughts on this matter?

Write to our editors at rhochis@gmail.com!

PUZZLE: WORD SEARCH BY: MARIE HUANG

Goal: find the following words!

	M	E	N	E	P	I	R	O	D	L
	L	R	T	K	R	O	N	E	O	M
ACYCLOVIR	R	I	E	F	E	N	I	V	T	I
LINEZOLID	I	L	N	K	L	A	X	Z	S	N
VANCOMYCIN	V	I	O	E	O	M	Y	A	I	I
AMIKACIN	O	Y	F	F	Z	I	M	C	R	C
ECONAZOLE	L	Z	O	R	O	O	Y	T	U	A
MARAVIROC	C	Z	V	A	N	M	L	N	K	K
CEFEPIME	Y	V	I	M	O	X	O	I	A	I
DORIPENEM	C	H	R	C	C	I	P	V	D	M
TENOFOVIR	A	P	N	T	E	N	X	W	E	A
POLYMYXIN	L	A	C	E	F	E	P	I	M	E
	V	C	O	R	I	V	A	R	A	M

Notice a theme?

PHARMACOGENETIC APPLICATIONS IN CLINICAL PRACTICE BY: NEAL SHAH

The focus of pharmacy is rapidly shifting from simple filling and dispensing of prescriptions to preventative medicine and efficient clinical practice. The field of genetics has been incorporated in many defining therapies and will continue to shape how we treat our patients. Examples discussed here are the roles of human leukocyte antigen presence in fatal rashes, correct therapeutic management of HIV, and CYP2C9 polymorphisms in specific populations.

HIV enters our CD4⁺ cells via two receptors: CCR5 and CXCR4. Generally, HIV uses CCR5 more during the initial years of the infection, however, as therapy is administered, a shift to using CXCR4 occurs.¹ This means that therapy should be tailored to inhibit these receptors, since using a CCR5-specific inhibitor in the presence of dual/mixed CCR5/CXCR4 or CXCR4-only strains would be futile. One such antiviral drug for HIV targets the virus that specifically uses the CCR5 receptor to enter CD4⁺ cells: maraviroc. Maraviroc (Selzentry®, ViiV) is approved solely for use in CCR5-trophic HIV strains that are resistant to other drugs.² A study by Symons *et al.* earlier this year confirmed that in the presence of dual/mixed CCR5/CXCR4, maraviroc successfully inhibited growth of CCR5-dependent HIV, but was not able to decrease CXCR4 growth.³ However, maraviroc remains controversial in clinical use because of conflicting reports of overall efficacy from studies. There is an ongoing trial to combine maraviroc and an integrase inhibitor, raltegravir, in treatment-naïve patients.⁴ Interestingly, maraviroc also has been shown to be effective in novel situations such as organ transplantation,⁵ and the CCR5 receptor has also been shown to reduce cardiovascular risks and decrease atherogenicity.⁶

Another HIV medication that has genetic sensitivities is a nucleoside reverse transcriptase inhibitor (NRTI) called abacavir (Ziagen®, GlaxoSmithKline; abbreviated as ABC). Although efficacious in lowering viral load, due to a potentially fatal hypersensitivity reaction characterized by a rash, patients must be screened for a specific human leukocyte antigen (**HLA-B*5701**) prior to initiating abacavir therapies.⁷ This well-documented reaction gained a Black Box Warning onto the package insert of abacavir and many rapid tests that detect the **HLA-B*5701** allele. A paper earlier this year published positive results of using simple and effective polymerase chain reaction (PCR) via a blood sample.⁸ Last month, another paper determined that 100% reproducibility of the PCR results were attained by using non-invasive buccal or salivary swabs.⁹

Abacavir is not the only drug to show hypersensitivity based on human leukocyte antigens. Carbamazepine (Tegretol®, Novartis; abbreviated as CBZ) is an anti-epileptic drug (AED) that, like other AEDs, has various therapeutic purposes. Carbamazepine has been linked to lethal skin reactions known as Stevens-Johnson Syndrome (SJS) and Toxic Epider-

mal Necrolysis (TEN).^{10,11} These reactions to carbamazepine originate from the expression of the **HLA-B*1503** allele. This allele is expressed more in Asian patients, whereas Caucasian and African patients are considered low-risk. Interestingly, within the Asian population, Japanese and Koreans show lower risks compared to South Asian Indians, Chinese, Indonesian, and Taiwanese populations.¹²⁻¹⁵ Japanese patients with the **HLA-B*1511** allele expression are at greater risk for the cutaneous reactions.^{16,17} Another interesting note is that if a patient tests positive for this allele, both carbamazepine and phenytoin (Dilantin®, Pfizer) should be avoided, as potential cross-reactivity exists.^{18,19} This is most likely due to the structural similarities of phenytoin and carbamazepine.²⁰ Since AEDs (and especially carbamazepine and phenytoin) are more commonly used and dispensed compared to antiretroviral drugs, allele testing for at-risk patient groups is encouraged.

The cytochrome P450 (CYP450) enzyme system is one of the most important routes of metabolism of exogenous substances. Polymorphisms of CYP450 subsets can cause increased toxic metabolites, decreased drug efficacy, or overdose-like effects from medications. Additionally, CYP450 interactions are the most common sources of drug interactions in clinical practice; and managing therapies, while balancing these interactions, is of utmost importance. For instance, increased CYP2E1 will cause acetaminophen (Tylenol®, McNeil) to be metabolized to hepatotoxic intermediates.^{21,22} Decreased drug efficacy is commonly seen when CYP450 is used to activate prodrugs in patients with insufficient enzymes; such an example is discussed below. Overdose-like effects occur when active molecules cannot be metabolized to inactive metabolites, and therefore exert effects for a longer time, necessitating a decreased dose or prolonged dosing interval.

“... polymorphisms ... can cause increased toxic metabolites, decreased drug efficacy, or overdose-like effects...”

CYP450 polymorphisms are also divided racially: deficiencies in CYP2C9 are common in Asian patients^{23,24}, which can cause an overdose-like effect of drugs such as warfarin (Coumadin®, Bristol-Myers Squibb), which can lead to bleeding. On the other hand, some drugs use CYP2C9 to convert from a prodrug form to active substances. A specific pharmacogenetic example that inspired this article were reports that Asian patients with deficient levels of CYP2C9 had subtherapeutic efficacy from clopidogrel (Plavix®, Bristol-Myers Squibb).²⁵⁻²⁷ Clopidogrel is administered orally as a prodrug that requires CYP2C9—among other CYP450 en-

zymes—to exert its actions.²⁸ This can potentially be fatal since clopidogrel acts as an inhibitor of platelet aggregation used to prevent clotting, and if the drug is not activated, clots may develop even while on therapy. These reports were effective enough to require a Black Box Warning update of clopidogrel by the FDA in 2010.²⁹

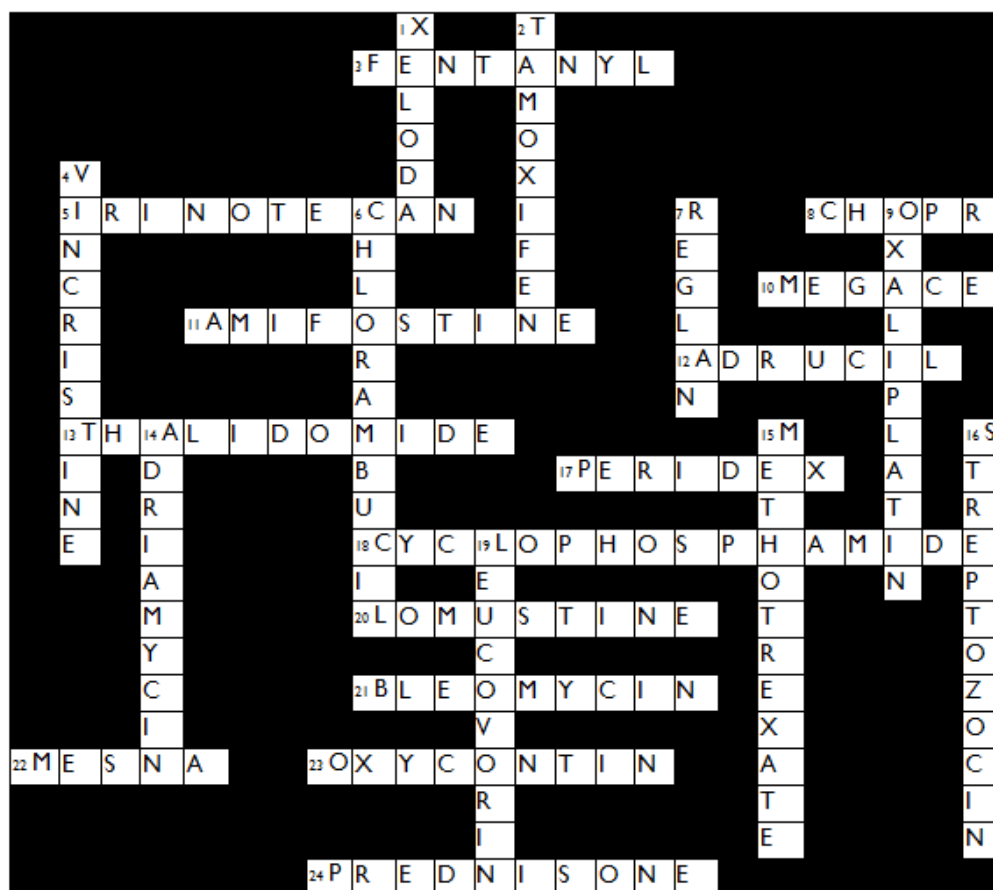
Genetics may also determine pharmaceutical therapy as a whole. Chemotherapy agents such as imatinib (Gleevec®, Novartis), nilotinib (Tasigna®, Novartis), and dasatinib (Sprycel®, Bristol-Myers Squibb) are specifically indicated when the patient is Philadelphia chromosome positive in chronic myelogenous leukemia (CML).³⁰⁻³²

Overall, this trend of tailoring therapies based on genotyping will not be limited to the abovementioned conditions. Chronic diseases, like Type 1 and Type 2 diabetes mellitus, will eventually become foci for future research. As pharmacogenetic research grows, it will provide us with greater insight into preventative medicine and efficient clinical practice.

Sources:

1. Bleul C, Wu L, Hoxie et al. The HIV coreceptors CXCR4 and CCR5 are differentially expressed and regulated on human T-lymphocytes. *Proc Natl Acad Sci U S A*. 1997 March 4; 94(5): 1925–1930.
2. Selzentry® [package insert]. Pfizer, Inc. New York.
3. Symons J, van Lelyveld SF, Hoepelman A et al. Maraviroc is able to inhibit dual-R5 viruses in a dual/mixed HIV-1-infected patient. *J Antimicrob Chemother*. 2011 Apr;66(4):890-5.
4. U.S. National Institutes of Health. Pilot Study of Maraviroc/ Raltegravir for Naive HIV-1 Patients (NNNB). <http://clinicaltrials.gov/ct2/show/NCT01291459>; accessed October 21, 2011.
5. Gilliam BL, Riedel DJ, Redfield RR. Clinical use of CCR5 inhibitors in HIV and beyond. *J Transl Med*. 2011 Jan 27;9 Suppl 1:S9.
6. Jones KL, Maguire JJ, Davenport AP. Chemokine receptor CCR5: from AIDS to atherosclerosis. *Br J Pharmacol*. 2011 Apr;162(7):1453-69.
7. Chaponda M, Pirmohamed M. Hypersensitivity reactions to HIV therapy. *Br J Clin Pharmacol*. 2011 May;71(5):659-71.
8. Dello Russo C, Lisi L, Lofaro A et al. Novel sensitive, specific and rapid pharmacogenomic test for the prediction of abacavir hypersensitivity reaction: HLA-B*57:01 detection by real-time PCR. *Pharmacogenomics*. 2011 Apr;12(4):567-76.
9. Badulli C, Sbarsi I, Di Giorgio D et al. A new approach to safely type for HLA the HIV infected people eligible to abacavir therapy: saliva or buccal swab as reliable DNA sources. *Clin Chim Acta*. 2011 Oct 9;412(21-22):1995-8.
10. Harr T, French LE. Toxic epidermal necrolysis and Stevens-Johnson syndrome. *Orphanet J Rare Dis*. 2010 Dec 16;5:39.
11. Phillips EJ, Chung WH, Mockenhaupt M et al. Drug hypersensitivity: pharmacogenetics and clinical syndromes. *J Allergy Clin Immunol*. 2011 Mar;127(3 Suppl):S60-6.
12. Locharernkul C, Shotelersuk V, Hirankarn N. Pharmacogenetic screening of carbamazepine-induced severe cutaneous allergic reactions. *J Clin Neurosci*. 2011 Oct;18(10):1289-94.
13. Kulkarnakorn K, Tassaneeyakul W, Tiamkao S et al. HLA-B*1502 Strongly Predicts Carbamazepine-Induced Stevens-Johnson Syndrome and Toxic Epidermal Necrolysis in Thai Patients with Neuropathic Pain. *Pain Pract*. 2011 Jun 16.
14. Zhang Y, Wang J, Zhao LM et al. Strong association between HLA-B*1502 and carbamazepine-induced Stevens-Johnson syndrome and toxic epidermal necrolysis in mainland Han Chinese patients. *Eur J Clin Pharmacol*. 2011 Sep;67(9):885-7.
15. Wang Q, Zhou JQ, Zhou LM et al. Association between HLA-B*1502 allele and carbamazepine-induced severe cutaneous adverse reactions in Han people of southern China mainland. *Seizure*. 2011 Jul;20(6):446-8.
16. Kaniwa N, Saito Y, Aihara M et al. HLA-B*1511 is a risk factor for carbamazepine-induced Stevens-Johnson syndrome and toxic epidermal necrolysis in Japanese patients. *Epilepsia*. 2010 Dec;51(12):2461-5.
17. Aihara M. Pharmacogenetics of cutaneous adverse drug reactions. *J Dermatol*. 2011 Mar;38(3):246-54.
18. Hirsch LJ, Arif H, Nahm EA et al. Cross-sensitivity of skin rashes with antiepileptic drug use. *Neurology*. 2008 Nov 4;71(19):1527-34.
19. Alvestad S, Lydersen S, Brodtkorb E. Cross-reactivity pattern of rash from current aromatic antiepileptic drugs. *Epilepsy Res*. 2008 Aug;80(2-3):194-200.
20. Jones GL, Amato RJ, Wimbish GH et al. Comparison of anti-convulsant potencies of cyheptamide, carbamazepine, and phenytoin. *J Pharm Sci*. 1981 Jun;70(6):618-20.
21. Abdelmegeed MA, Moon KH, Chen C et al. Role of cytochrome P450 2E1 in protein nitration and ubiquitin-mediated degradation during acetaminophen toxicity. *Biochem Pharmacol*. 2010 Jan 1;79(1):57-66.
22. Ueshima Y, Tsutsumi M, Takase S et al. Acetaminophen metabolism in patients with different cytochrome P-4502E1 genotypes. *Alcohol Clin Exp Res*. 1996 Feb;20(1 Suppl):25A-28A.
23. Wiwanitkit V. Pharmacogenomic effect of cytochrome P450 2C9 polymorphisms in different populations. *Clin Appl Thromb Hemost*. 2006 Apr;12(2):219-22.
24. Yuen E, Gueorgieva I, Wise S et al. Ethnic differences in the population pharmacokinetics and pharmacodynamics of warfarin. *J Pharmacokinet Pharmacodyn*. 2010 Feb;37(1):3-24.
25. Oh IY, Park KW, Kang SH et al. Association of cytochrome P450 2C19*2 polymorphism with clopidogrel response variability and cardiovascular events in Koreans treated with drug-eluting stents. *Heart*. 2011 Jun 23.
26. Yamamoto K, Hokimoto S, Chitose T et al. Impact of CYP2C19 polymorphism on residual platelet reactivity in patients with coronary heart disease during antiplatelet therapy. *J Cardiol*. 2011 Mar;57(2):194-201.
27. Sawada T, Shinke T, Shite J et al. Impact of cytochrome P450 2C19*2 polymorphism on intra-stent thrombus after drug-eluting stent implantation in Japanese patients receiving clopidogrel. *Circ J*. 2010 Dec 24;75(1):99-105.
28. Campo G, Miccoli M, Tebaldi M et al. Genetic determinants of on-clopidogrel high platelet reactivity. *Platelets*. 2011;22(6):399-407.
29. U.S. Food and Drug Administration. FDA Drug Safety Communication: Reduced effectiveness of Plavix (clopidogrel) in patients who are poor metabolizers of the drug. <http://www.fda.gov/Drugs/DrugSafety/PostmarketDrugSafetyInformationforPatientsandProviders/ucm203888.htm> accessed October 22, 2011.
30. Gleevec® [package insert]. Novartis Pharmaceuticals Corporation. East Hanover, New Jersey.
31. Tasigna® [package insert]. Novartis Pharmaceuticals Corporation. East Hanover, NJ.
32. Sprycel® [package insert]. Bristol-Myers Squibb. Princeton, New Jersey.

PUZZLE: CROSSWORD (SOLUTION) BY: MAHDIEH DANESH YAZDI



FLUZONE HIGH-DOSE INFLUENZA VACCINE BY: NIKUNJ VYAS (PHARM.D. CANDIDATE C/O 2012)

Seasonal flu vaccines protect us against the three influenza viruses that researchers predict will be the most common viral strains during the flu season. The viruses in the vaccine change each year based on international surveillance and scientists' estimations about the types and strains of viruses that will circulate in a given year. About two weeks after vaccination, the human body produces antibodies that provide protection against the influenza viruses in the vaccine.

The Centers for Disease Control and Prevention (CDC) recommends that people get their seasonal flu vaccine as soon as the vaccine becomes available in their community, preferably before December. The CDC continues to encourage people to get vaccinated throughout the flu season, which can begin as early as October and end as late as May. Over the course of the flu season, many different influenza strains can circulate at different times and in different regions of the country. But as long as there is a flu season, vaccination can provide the necessary protective benefits. Everyone six months and older should get a flu vaccine each year, starting with this 2011-2012 influenza season.

There are three available flu vaccines: a regular flu vaccine

indicated for ages 6 and older (Fluzone), a high dose flu vaccine approved for ages 65 and older (Fluzone High-Dose), and an intradermal flu vaccine for ages 18 to 64 (Fluzone Intradermal).

Our immune system weakens with age, and we may have an inappropriate immune response following vaccination. Thus, Fluzone High-Dose, manufactured by Sanofi Pasteur Inc., contains four times the amount of antigen (the part of the vaccine that prompts the body to make antibody) contained in a regular flu shot. In the elderly, this additional antigen is intended to produce a stronger immune response and better protection against seasonal flu. Conversely, Fluzone Intradermal requires a much smaller needle than the regular flu shot, as well as fewer antigens (while remaining as effective as the regular flu shot).

Clinical trials compared Fluzone to Fluzone High-Dose among persons aged 65 years or older, and their results indicated that a stronger immune response (higher antibody levels) occurred after vaccination with Fluzone High-Dose. It is unknown if the improved immune response led to greater protection against influenza disease after vaccination.

An ongoing study designed to determine the effectiveness of Fluzone High-Dose in preventing illness from influenza compared to Fluzone is expected to be completed in 2014-2015.

The safety profile of Fluzone High-Dose vaccine is similar to that of regular flu vaccines, although adverse events were reported more frequently after vaccination with Fluzone High-Dose compared to the regular flu vaccine. The most common ones were mild and temporary, including injection site reactions (pain, redness, and swelling), headache, muscle aches, fever, and malaise. On the whole, most people had minimal or no adverse events after receiving the Fluzone High-Dose vaccine. Of course, patients with a severe allergic reaction (e.g. anaphylaxis) to any component of the vaccine, including egg protein, or to a previous dose of any influenza vaccine, should not receive Fluzone, Fluzone High-Dose, or Fluzone Intradermal.

Finally, Fluzone High-Dose is available as a 0.5 mL preservative-free, single dose, prefilled syringe. It needs to be shaken before administration, and exactly 0.5 mL is adminis-

tered into the deltoid muscle of the upper arm. Further administration instructions can be found within the package insert.

Neither CDC nor ACIP expresses a preference of one vaccine over another at this time, but to remain safe this season, it is highly recommended to get the flu shot!

Primary Sources:

Centers for Disease Control and Prevention. Fluzone High-Dose Seasonal Influenza Vaccine. Available at http://www.cdc.gov/flu/protect/vaccine/qa_fluzone.htm. Accessed October 30, 2011.

Greider, K. The New Flu Shot for Older Americans: Answers to Your Questions. AARP Bulletin 10/14/2010. Available at http://www.aarp.org/health/conditions-treatments/info-10-2010/the_new_flu_shot_for_older_americans_answers_to_your_questions_.html. Accessed October 30, 2011.

DOUGLAS V. INDEPENDENT LIVING CENTER OF SOUTHERN CALIFORNIA BY: MAHDIEH DANESH YAZDI

Douglas v. Independent Living Center of Southern California may not sound like the most interesting case, but its outcome has great impact on the lives of millions of people in California and, indeed, the rest of the country. It is one of only one hundred cases that the Supreme Court is hearing in its 2011-2012 session and the first one to be presented in court. *Douglas v. Independent Living Center of Southern California* argues whether Medicaid patients and providers have the right to sue the state if it reduces Medicaid reimbursements. On October 3rd, the case was presented to the court with California's Deputy State Attorney Karin Schwartz (arguing for the state) and Carter Philips of Sidley Austin LLP (arguing for the Medicaid patients and providers).

The case came about when the state of California decided to make "cuts" in its Medicaid reimbursements. Patients and providers (with the support of the American Pharmacists Association) sued the state, fearing cuts to what they already see as dwindling coverage. They sued the state successfully, as the Ninth Circuit Court ruled in their favor. The court ruled that the state had violated the federal statute that required specific "methods" and "procedures" be implemented with regards to Medicaid coverage. Since the cuts made by the state were across the board and due to budget deficits, it was clear that proper "methods" and "procedures" were not followed.

Now, at the Supreme Court, the patients and providers argue that, in compliance with the Supremacy Clause, the state cuts on Medicaid are illegal. The Supremacy Clause is the clause that states that federal law is the "supreme law of the land" and no state law may conflict with federal law. Thus, they are asking for an injunction to stop the "anticipatory" violation of the Supremacy Clause.

However, on the other hand, the state argues that the Medicaid patients and providers were not suing to stop the

violation of the Supremacy Clause; they were simply suing to retrieve the amount lost in coverage by the cuts. In other words, the people suing were not directly being targeted by these cuts. Also, they were not trying to stop the violation of the conflict of state law and federal law, but rather asking for the enforcement of federal law. Such delicate distinctions are of critical importance in matters relating to cases before the Supreme Court. The state argues that such conflicts between state and federal law are not for the judicial system to decide, but are rather an administrative issue, and that ruling in favor of the plaintiffs would result in many more such lawsuits across the nation.

Justices Scalia and Roberts have so far disagreed with the notion that the plaintiffs have the right to sue. The other justices have not directly stated their opinions yet, but if they are persuaded to agree with their colleagues, then the case brought by plaintiffs will have no merit and will be rejected. On the other hand, if they do recognize the plaintiffs' rights to sue and determine there is a violation of the Supremacy Clause that requires the injunction be put in place, the state would have to reconsider the cuts it has made to its Medicaid coverage program. The court will most likely rule on the issue in the spring of 2012.

So, what are your opinions on the issue? How do you think the Supreme Court will rule?

For more information, you can visit:

- <http://www.pharmacist.com/AM/Template.cfm?Template=/CM/ContentDisplay.cfm&ContentID=27019>
- http://www.americanbar.org/publications/preview_home/09-958.html
- <http://www.fed-soc.org/audiolib/scotuscast%2010-11-11%20-%20hills.mp3>

ABOUT US

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.

UPCOMING EVENTS

Nov. 14/17th: 'IT vs. Informatics in Pharmacy' (1:40pm-3pm)
Nov. 17th: 'What is a Residency?' (Sul B14, 1:50pm-3:15pm)
Nov. 20th: [PurpleLight New York City](#) (City Hall, 5pm)
Nov. 21st: Who Wants to be a PharmD? (1:40pm-3pm)
Nov. 21st: Student vs. Faculty Kickball Game (5pm-7pm)
Dec. 1st: PharmFLIX Submission Deadline (11:59pm)
Dec. 2nd: Patient Counseling Competition (TBA)

CURRENT EXECUTIVE BOARD



Pictured above (left to right): Tawfeek, Shannon, Nandini, Mohamed, and Lila at the 2011 Induction Ceremony.

President: Mohamed J. Dungersi
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MEET THE STUDENT EDITORS



My name is Mohammad A. Rattu, and I am a 6th year PharmD candidate at St. John's University. I have had profound experiences with media-related positions in pharmacy organizations at our university, and continue to support the utilization of technology to further our profession. As the first Editor-in-Chief of Rho Chi Post, I hope to instill motivation and leadership in our student body. Feel free to get in touch with me at: mohammad.rattu06@stjohns.edu



My name is Mahdiah Danesh Yazdi, and I am a 5th year PharmD candidate at St. John's University. 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. If you have any questions or concerns, you can reach me at: mahdiah.daneshyazdi07@stjohns.edu



My name is Marie Huang, and I am a 5th year PharmD candidate at St. John's University. 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 student editor and a witness to an evolving profession, I look forward to keeping you updated! Who knows where we will be tomorrow? If you'd like, you can reach me at: mary.huang07@stjohns.edu



My name is Neal Shah, and I am a 5th year PharmD candidate at St. John's University. 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 published articles, please do not hesitate to email me at: neal.shah07@stjohns.edu



My name is Ebey P. Soman, and I am a 5th year PharmD candidate at St. John's University. I enjoy writing very opinionated articles, and am excited to be an editor of Rho Chi Post. I encourage all readers of our newsletter (students, faculty, professionals) to respond with their own literary pieces. I look forward to hearing from you, and welcome your comments and constructive criticisms: ebey.soman07@stjohns.edu



My name is Carina Fung, and I am a 6th year PharmD candidate at St. John's University and Rho Chi's 2010 past Vice-President. Over the course of my academic and professional career, I aspire to discover, learn, hone, and embody the qualities that make up a true and trustworthy health care professional with integrity and further the profession of pharmacy. You can contact me at carina.fung06@stjohns.edu