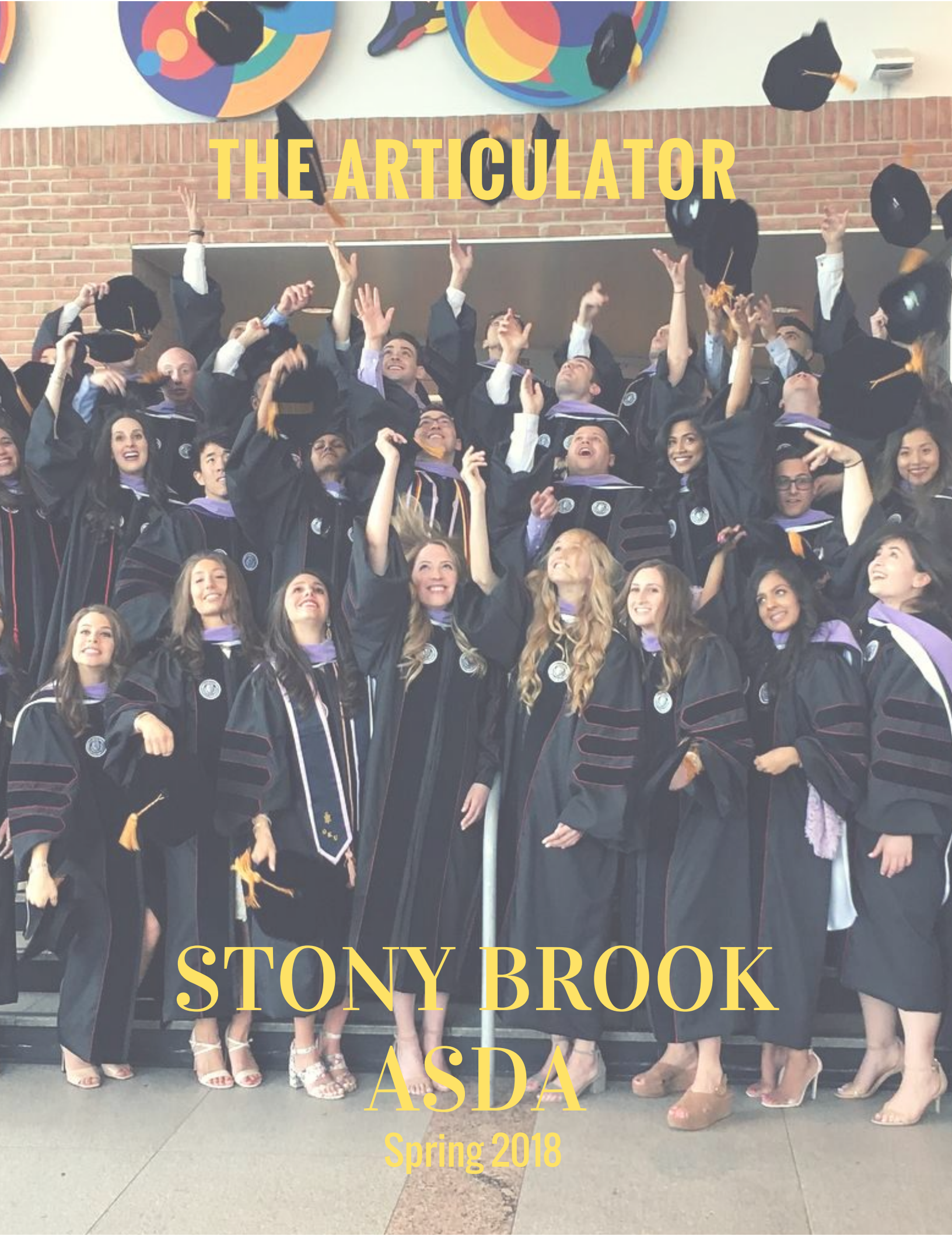

THE ARTICULATOR

STONY BROOK ASDA

Spring 2018

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SDM STUDENTS BRING BRIGHT SMILES TO RIVERHEAD

On Saturday, February 3rd, the Suffolk County Dental Society hosted its annual Give Kids a Smile event at the Long Island Aquarium in Riverhead, NY. Despite the 15 degree weather, over 320 children and their families lined up to receive free dental screenings, cleanings, oral health instruction, and fluoride treatments performed by 35 second and third-year students. Dental students worked alongside pediatric and general dentists, dental residents from St. Charles Hospital, dental assistants, and dental hygienists. The program ran from 10 AM to 4:30 PM and was co-sponsored by the American Dental Association, which donated mobile dental units, food, and toothbrushes and toothpastes for the event.

Dr. Dimitrios Kilimitzoglou and Dr. Jeffrey Seiver represented the Stony Brook School of Dental Medicine and were among the over two dozen Suffolk County dentists who directed and helped with patient care. The Suffolk County Dental Society has been conducting GKAS programs since 2010 as part of Long Island Head Start, a federal program that provides low-income children and their families access to education and health care. Dr. Kilimitzoglou, president of the Suffolk County Dental Society, described the day as "organized chaos that runs like a swiss watch." He praises the growth of the program over the years and students' eagerness to get involved. "Our long-term goal is to increase access to care in areas of high need," he says.

> "We need to raise awareness about GKAS and bring our resources to these communities. In New York, no child will get left behind."

For some dental students at the event, it was their first time caring for pediatric patients. "It was amazing to see so many providers and students volunteer their time at this event,"

says second year dental student Junaid Rajani. “It was a unique experience to be able to work and learn with one another. I look forward to participating again next year.”

The first GKAS event was held in 2002 in St. Louis, Minnesota by Drs. Jeffrey Dalin and B. Ray Storm. With only 15 dental chairs, they were able to deliver free dental care to 345 children. The American Dental Association Foundation was impressed by this endeavor and recognized the tremendous need for oral health care that exists in communities all over the country. In 2003, the ADA Foundation turned the Minnesota-based program into a national event that has since served over 5.5 million children in underserved areas.

By Parandis Nejati
Editor in Chief, Class of 2020

NEW YORK STATE LOBBY DAY 2018

By Joseph A. Manzella Jr,
President-Elect, Class of 2021

In the midst of February, dental students from the five New York dental schools headed up to Albany to participate in the New York State Lobby Day. This is a collaborative effort between the New York State Dental Association and the American Student Dental Association to bring dentists and dental students together for a day of idea sharing, networking, and advocating. We were able to speak with the senators and assembly persons on Capitol Hill to address the pressing issues of our career, school life, and the rights of our patients. The lawmakers were enthusiastic to learn about the burden of student debt, its effect on our ability to practice in New York after graduation, and how they could help by supporting the National Health Service Corps' loan repayment and forgiveness programs.

We had the opportunity, dentists and dental students alike, to advocate for changing confusing language used in the definition of dentistry in the state of New York, also known as the scope of practice. We advocated for removing superfluous language that indirectly made the scope of practice geared toward dentists treating just the dentition, instead of the entire oral-maxillofacial area. As dentists, we are doctors of the oral cavity and its surrounding parts, and are intimately aware of the connection between oral and systemic health. This definition change will allow us to continue treating each patient as a whole, and have the ability to provide screenings and other life-saving procedures related to public health dentistry.

We also communicated the importance of continuing Medicaid funding for dental procedures, though there were no plans for that to change. In our discussions on the ever-growing importance of public health, we emphasized our priority to help those most in need of our services, and that charity and volunteer work can only do so much towards meeting this goal. The best way that we can assure that the individuals most in need of our services are receiving them is by advocating for continued support and funding for Medicaid dental coverage.

Overall, the experience of going to Albany and meeting with dentists, NYSDA and American Dental Political Action Committee (ADPAC) lobbyists, other dental students, and lawmakers on Capitol Hill was a truly gratifying experience. For all of us who are ASDA members, this was an amazing opportunity to see where some of the dues we pay goes toward and how our membership helps advocate for our best interests as dental students. The people at ADPAC have the power to make our voices heard and our issues acknowledged by our elected officials. Not too many other professions have quite the representation for their students as we do, and seeing the respect our elected officials had for students was itself worth the trip. It is our obligation to stand up for ourselves and our profession to ensure that we can practice, prosper, and provide the best that we can as future dentists.

CLUB SPOTLIGHT: AESTHETICS SOCIETY

The Stony Brook Aesthetics Society is a relatively new club at the School of Dental Medicine that was established by current fourth year students Lucas Shapiro and Omar Nijem when they were in their second year. Its mission is to teach and provide pertinent information to pre-doctoral students about aesthetic dentistry. Recognizing that aesthetics is a huge part of dentistry and a top priority for patients, our goal for this club is to give students exposure to concepts of aesthetic dentistry that go beyond what is learned at school. The primary method by which this is accomplished is by having "Dinner & Learns." These are lectures that are given by guest dentists about interesting cases, topics, clinical tips, and student advice, with food being provided. So far this year, we have had amazing lectures by our very own Dr. Kenneth Kurtz on oral maxillofacial prosthodontics, by Dr. Inna Gellerman on orthodontics and Invisalign, and by Dr. Miguel Ortiz on impression taking and the back-to-back double cord technique for gingival retraction. We have also had a representative from Ultradent come in to talk about her Opalescence whitening products and distribute samples to students!

The Aesthetics Society has many exciting ideas planned for the future. Treatment planning workshops, dental photography lessons, and student case presentations are just some of the events we hope to hold. No matter what specialty of dentistry one pursues, the information learned through this club will be extremely valuable. We hope to see you all at one of our future meetings!

President: Brandon Gruffi (D3)
Vice Presidents: Robyna Mamoor (D2) and Trina Villanueva (D2)
Public Relations: Lauren Heisinger (D3) and Aviva Izmailov (D2)
D4 Representative: Lucas Shapiro
D2 Representative: Brianna Hines Faculty
Advisors: Dr. Amarillas and Dr. Kilimitzoglou

By Robyna Mamoor
Class of 2020

COULD THIS MIRACLE DRUG MAKE FILLINGS A THING OF THE PAST?

By Steven Sau - Class of 2020

There may come a day soon when traditional dental fillings are no longer needed. A new drug under development may have found a way to restore cavities without the need for composite or amalgam. In 2017, researchers at the Dental Institute at King's College in London discovered that tideglusib, a drug being studied for treatment of Alzheimer's disease, could have an alternative use in promoting natural tooth repair using the body's own dental stem cells to regenerate dentin.

Tideglusib is a GSK-3 inhibitor involved in the Wnt/β-catenin signaling pathway. Typically, this pathway functions in early response to tissue damage. In situations where dental pulp tissue is exposed, the body uses this pathway to activate a repair process in which a thin layer of tertiary or reparative dentin is produced to cover the pulp and protect it from infection. This process is not, however, able to regenerate or repair dentin removed during tooth preparation. Hence, dentists have relied on synthetic fillings to seal these large cavities. Now, however, researchers speculate that the addition of a Wnt signaling agonist such as tideglusib may stimulate this repair mechanism beyond its natural capacity.

In clinical trials on mice, researchers placed biodegradable sponges soaked in tideglusib into large cavitated lesions. They found that the sponges triggered increased stem cell differentiation into the odontoblast-like cells which produce tertiary dentin. Within six weeks, the sponges disintegrated and were replaced with newly formed dentin, leaving behind a fully restored tooth structure. Although only tested on mouse teeth, tideglusib is already in phase II clinical trials for Alzheimer's disease
treatment, meaning much of the drug's safety considerations have by this time been addressed. Researchers believe that this groundwork presents the opportunity to quickly progress this novel treatment into practice.

However, don't celebrate too soon. The doses used in mouse subjects were effectively a thousand times higher than those used in human clinical trials. Regenerated dentin also lacks the highly organized dentinal tubule structure of primary dentin. The mechanical strength and sensory innervation of regenerated dentin remains to be investigated. Although dentin
regenerating drugs present an interesting prospect for the future of dentistry, I wouldn't toss away that composite gun...yet.

For more information, read the full article published in Scientific Reports.
https://www.nature.com/articles/srep39654

THE "THEN AND NOW" OF DENTAL AESTHETICS

Aesthetics, especially the appearance of our smiles, is a top priority for many of us. The demand for beautiful smiles has increased over the past decades and is expected to continue. Increased awareness of dental appearance is in large part because of the media's influence, which portrays television and film stars with beautiful, bright smiles. This leads many to believe that the "Hollywood smile" is the healthiest and most ideal smile, with white, perfectly aligned teeth now becoming a staple in American culture. We obsess over dental perfection and strive to achieve it by means of orthodontics, prosthodontics, and whitening treatments, among other procedures. Many dentists brand themselves as "cosmetic dentists" to address the increased demand for an aesthetic smile. The American Academy of Cosmetic Dentistry claims that aesthetic dentistry must complement the overall general and oral health of the patient. Cosmetic dentistry refers to any dental work that improves the appearance of teeth, gums, and occlusion, despite functionality. However, the importance of functionality in smile design must not be overlooked. A functional smile or occlusion is one that allows for proper mastication, speech, and deglutition. It can be argued that a functional smile is more important than an aesthetic smile, yet many patients predominantly seek to attain the latter.

First, it is important to discern the difference between normal occlusion and and ideal occlusion. The concept of normal occlusion focuses on the absence of disease and an adaptive physiologic range. A normal occlusion does not necessarily have to be aesthetic; rather, it emphasizes functionality. An ideal occlusion, meets anatomic, physiological, as well as aesthetic standards. Americans value a beautiful smile not only for its physical and functional aspects--so they can eat and speak properly--but also for psychological and social reasons. A nice smile is a boost to one's self esteem and confidence. A 2007 survey conducted by Kelton Research found that two-fifths of Americans would rule out a second date with some who has misaligned teeth, and that those with straight teeth are 38% more likely to be perceived as smart.

Just what constitutes a beautiful smile? Perceptions of dental beauty vary across cultures. While Americans value straight, white teeth, other cultures have different standards of smile attractiveness. For example, Japanese women seek out cosmetic dentists to modify their teeth in a way to make them appear crooked. This is referred to as yaeba , meaning "double-tooth". Fang shaped veneers are placed on the maxillary canines and positioned more apically, creating a youthful appearance. The British also hold similar standards about dental aesthetics and value more natural smiles, including misaligned teeth.

Of course, these aesthetic standards have evolved and upgraded from past traditions. Until the end of the 19th century, a practice called Ohaguro was popular in Japan. Ohaguro is the practice of blackening one's teeth and was regarded as a sign of beauty in ancient Japanese culture. Other ancient cultures, such as those of sub-Saharan Africa, would practice tooth mutilation. These mutilations were observed in African slaves transported to the New World and included painful procedures such as sharpening, filling and pointing the teeth. The Ancient Egyptians had more of a cosmetic flare to their dental aesthetics. They used gold to make dental crowns and bridges and brushed their teeth with a mixture of pumice stone and vinegar to remove stains. On the other hand, the Ancient Romans brushed their teeth with their own urine, an unusual start to the practice of teeth whitening.

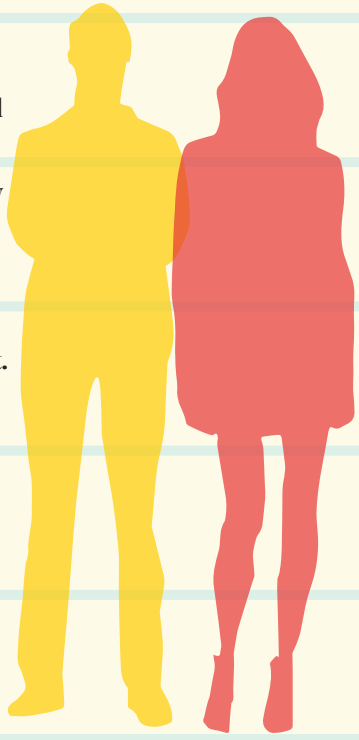
During the Medieval Times, barbers were responsible for dentistry and the use of bone and ivory was rediscovered as a method to make dentures. It was not until the 1700s when prosthetic and cosmetic dentistry began to dramatically improve. In the 1800s, the use of porcelain teeth became popular and dentists used molds with plaster to ensure better denture fit. The 1900s introduced the use of plastics and acrylics for dental materials. The 20th century marked the era in which cosmetic dentistry officially began. Today in the 21st century, we as dentists are focused on delivering functional, aesthetic, and natural looking smiles to our patients. A balance between beauty and function dictates the current standard of care and will pave the way for the future of cosmetic dentistry.

By Kristen Forlano
Philanthropy Chair, Class of 2020

Advice Panel on Surviving Dental School

Advice from D2
Brianna Hines

Coming into dental school, the biggest challenge for me was being surrounded by so many intelligent people to whom I was constantly comparing myself. It is a shock to go from being one of the top students in college to now being surrounded by the brightest minds, and feeling like you are no longer at the top. The most important advice that I would give an incoming or current first-year student is to remember why you were accepted into dental school and the work it took to get here. Believe wholeheartedly that you deserve to be here! You may need to change your study habits or work harder than you did before, and that is completely okay. Always keep in mind what works for you and what has worked for you to get you to this pivotal moment. When you start comparing yourself to your classmates and trying to do everything that they do, you will find yourself overwhelmed, helpless, and doubtful of your abilities. At the end of the day, each of us has earned our spots in a prestigious institution. All anyone can ask of you is to try your best and to get the most out of every learning experience. Eventually, everything will click for you and I promise that there is a light at the end of the dark tunnel that is first year! The way to succeed in dental school is to have dedication, discipline, passion, and perseverance. Keep your head up and work hard not to become a dentist, but to become the best dentist you can be.



Advice from D4
Sonia Motwani

Take a chill pill and relax. You are about to cross the finish line; it is almost fourth year! While the thought of graduation is right around the corner, there is a lot to accomplish before you can officially call yourself an esteemed Stony Brook dental alumnus. The beginning of fourth year tends to be the most stressful because of applications, but it gets better as times goes by. The recurrent theme throughout fourth year is organization. Keep track of deadlines and research common interview questions geared towards your specialty—a common question asked is “tell me about yourself.” Planning to take the CDCA? Don’t stress it! You’ve come a long way since you first picked up a handpiece. For the manikin portion, practice makes perfect. Try to have your class arrange a schedule to allow for maximum practice time in the SIM Lab as soon as possible. Make sure you read and re-read the manual to feel more confident on test day. For the clinical portion, I highly recommend having an assistant! If you have a buddy in the dental school or are looking to hire a professional assistant, make sure to ask them sooner rather than later! The key to a timely graduation date is, as I mentioned before, organization! Keep track of your planned requirements and tackle the longer treatments first, like those involving fixed and removable prosthodontics, so there is less of a scramble at the end. Best of luck to all rising fourth years. You’re only a few months away from officially becoming a D.D.S!

PROGRESS IS NOT FOR THE IMPATIENT NOR FAINT OF HEART

Look up, visualize your path, reach your arm out toward the climbing hold and grip. Planning your path and securing the first grab are important first steps when approaching a rock climb. These steps orient you in the right direction, dictating the positions your other hand and feet need to be to proceed up the necessary path. Ascending the first few novice routes become a physical and psychological exercise of vertical Twister as I repeat gripping and pulling sequences up the climbing wall.

As I progressed through climbs of increasing difficulty, it became clear that my attempts to climb by grabbing a hold and performing a pull up was not enough. Climbing holds became sparser, and with little to no surface area to grab onto. "Keep your body close to the wall!" shouted my friend as he encouraged me from what seemed like 10 stories below. "Use your legs to push yourself up! Pull ups won't get you there!" Often I found myself hopelessly stuck, the sinews of my muscles painfully contorted until I let go, reevaluated the route, assessed the different options I had of approaching the climb and attempted it anew.

I participated in a lot of rock climbing this past summer between my first and second years of dental school. With each trip to the climbing gym came a greater appreciation for the similarities I saw between the challenges thrown at you in rock climbing and in dentistry. The parallels were uncanny. Struggling in the middle of a climbing route was expected. Climbing routes are nonlinear and throw multiple unexpected challenges at you. This includes a variety of stimuli that you have to internally rank in order of importance and helpfulness towards your ability to scale the course, ranging from an unmarked ledge that you can use to your advantage or a distractor that takes attention away from other useful landmarks. Every course presents a different test, challenging you to reach into your accumulated arsenal of learned techniques to come up with an appropriate plan of attack. Channeling your focus and willpower into understanding the specific obstacle at hand and systematically considering the options you have at your disposal allows you to make the necessary breakthroughs to get you to the top.

As dental students, we are constantly subject to an influx of information in the classroom setting. The challenge continues when we start clinic where we are bombarded with stimuli in the form of clinical findings, radiographic findings, contributory medical history and intraoral exams. Here, being able to filter and prioritize the most salient findings is key. Having just started clinic as second year students, my classmates and I find ourselves in the pandemonium of clinic having to also immediately integrate classroom concepts from periodontics, surgery, pathology, physiology and pharmacology. Dentistry no longer is something lectured through PowerPoints but becomes the amalgamation of your diagnostic knowledge, ability to form treatment plans and ability perform technique-sensitive procedures. Each patient interaction presents a completely different set of challenges whose success requires vigilance in recognizing clinical symptoms and reliance on your knowledge of dentistry to systemically formulate the best solution.

Organized dentistry is similarly most successful when it is able to respond systematically to the challenges it is presented. By being attentive to contemporary issues relevant to dental students, ASDA and the ADA can address them through concerted and systematic advocacy efforts. James Wanamaker, a 2016 DDS Candidate at the SUNY Buffalo School of Dental Medicine and current chair of ASDA's national council of advocacy, describes policy as something that "constantly evolves to meet the needs of ASDA and ADA members based on the current climate." Long-standing ASDA policies including those addressing licensure and dental auxiliaries do not stay stagnant over years. Instead they continue to build upon past learnings and undergo revisions as circumstances surrounding those issues evolve.

In September 2015, the ADA itself achieved a milestone by revealing an exclusive student loan refinancing offer to be made available to qualifying ADA members, particularly to new dental school graduates who in 2014 carry on average $247,227 in student loan debt. A constant throughout this process was regular dialogue between members of the ADA (including Dr. Jeffrey Cole, ADA District 4 Trustee) and dental students over years to keep the ADA abreast of the degree to which debt handcuffs students, informing the most accessible solution that satisfies all parties involved.

Progress whether at the climbing gym, as a clinician or on the organizational level is impossible without being able to draw from past learnings and without having the attentiveness and readiness to face whatever challenges arrive. I consider myself lucky to get a healthy dose of this message every time I strap on my harness at the gym, don my loupes in clinic, or sit across the table from fellow ASDA leaders at local and national conferences. I urge fellow students everywhere to continue being vigilant in their day-to-day experiences, and to never be satisfied with the status quo. The livelihood of your patients and of your field depends on it.

This article originally appeared in the December 2015 issue of ASDA News and is reprinted with permission from the American Student Dental Association. To read more dental student news, visit ASDAnet.org.

By Sean Lee
National Contributing Editor
Class of 2018

Club Spotlight: Pediatrics Society

The Pediatrics Society is known for its philanthropic work in the school and local community. During the school year, its members host bake sales to raise money for various charitable organizations. One of these organizations is The Smile Rescue Fund, which provides medical care and education to children with severe craniofacial deformities. Members also take part in a volunteer program called the Stony Brook Children's Healthy Smile Project. The mission of this project is to provide dental education and oral hygiene instruction to children living in homeless shelters in Long Island as well as at the Stony Brook Children's Hospital. Students are able to educate young children with the use of stuffed animal dinosaurs and giant toothbrushes, utilizing the tell-show-do method to demonstrate proper brushing technique. In addition, students teach healthy dietary habits by presenting children with plastic food items and asking them to pick out the healthy ones from the unhealthy ones. Children are also taught what makes foods healthy or unhealthy and how each food item impacts their oral health. These outreach events emphasize the importance of proper oral hygiene technique and frequency, the factors that cause caries--also known as “sugar bugs”--and nutrition that promotes optimal oral and systemic health. If there is time left after the educational portion, students are able to play board games or cards with the children. At the end, the children are given goody bags filled with toothbrushes, toothpaste, floss, and toys and leave the program with positive feelings about going to the dentist!

By Brianna Hines
Class of 2020

THE ARRIVAL OF PERSONALIZED DENTISTRY

By Linda Zheng
Legislative Liaison-Elect
Class of 2020

Precision Medicine or Personalized Medicine (PM), according to the National Council of Research, utilizes advancing scientific technology to gain a better understanding of individuals' susceptibility to disease, disease prognosis, and response to treatment. Understanding a person's unique biological profile allows targeted therapeutic solutions to be delivered, avoiding standard treatments for individuals who are not likely to benefit from them. Personalized Dentistry (PD) similarly aims to paint a holistic picture of an individual's oral health profile.

What constitutes PD? For example, increased C. rectus and P. gingivalis IgG titers strongly correspond to periodontal disease, according to a 2013 study by Loos and Papantonopoulos, and may be used as a diagnostic indicator. According to a 2013 study published in the Journal of the California Dental Association, individuals' whose saliva tests positive for proline-rich proteins and alpha-defensins such as HNP1-3 have elevated caries risk. In another example, defects in the ectodysplasin A gene cause hypohidrotic ectodermal dysplasia, an X-linked genetic disease. When detected early, ectodermal dysplasia in dogs can be treated with a recombinant protein to promote development of normal adult dentition, according to a 2007 study published in the American Journal of Human Genetics.

Ultimately, understanding patients' unique genetic markers will improve diagnosis, treatment planning, and treatment outcomes.

Personalized medicine and dentistry is revolutionizing, and it starts with students' exposure to its concepts during their pre- and postdoctoral education. I am part of an exciting research team with Dr. Steven London, Dr. Lucille London, and Dr. Barry Rifkin here at the Stony Brook SDM, as well as Dr. Andrew Spielman at New York University College of Dentistry. Our team distributed web-based surveys in 2014 and 2017 to assess the adaption of PD in North American dental schools.

Currently, only two schools in North America have an elective course dedicated to PD. We have found that opinions are divided about integrating PD into a dental school curriculum. In both 2014 and 2017, the majority of dental schools agreed that PD is important and should be taught in the curriculum, but most have limited plans to teach PD as a separate course in the near future. Supporters of PD implementation emphasize the need to train students to adapt to technological advances that will arrive long after their graduation from dental school. They also cite dental schools' obligation by Commission on Dental Accreditation (CODA) standards to implement emerging biomedical science knowledge into the curriculum. One argument against PD integration is that PD is not the standard of care and that there is insufficient evidence to support its large scale implementation. Also of concern is the practicality and reliability of genomic tests in oral healthcare. Although change is slow to come, support for PD is gaining traction; even in schools that do not have a separate PD course, it is often taught as part of other courses.

In our discussion of PD, it is important to mention the clinical applications that have risen from it and are in use currently. Saliva Check Buffer, Saliva Check SM (S. Mutans), CariScreen testing meter, and Oral DNA genetics test were all identified in our survey to be the most popular clinical products used in dental schools. The first three of these products assess patients' caries risk, while the fourth detects genetic markers implicated in inflammatory diseases and oral cancer. By utilizing these tools in practice, we can raise awareness of PD's contributions to oral health and gain support for PD initiatives. It is up to all of us to take advantage of this exciting development and use it to propel dentistry into the future.

COFFEE, CARIES, AND CANCER

By Sara Katz
Health and Wellness Officer
Class of 2020

Whether it be instant, slow drip, or from a nearby starbucks, coffee is part of a dental student's essentials. Coffee provides an energy boost to keep us going and focused throughout the day. But what exactly is in our cup and how does it impact our health? Obviously there is caffeine, a central nervous system stimulant, which gives us that kick to start the day. It is this focused energy that makes coffee the most widely consumed legal psychoactive drug. While a cup of regular coffee contains around 100 milligrams of caffeine, decaffeinated coffee is not completely caffeine free, containing 2 to 18 milligrams according to a 2013 study published in Antioxidants . However, these numbers are a guide rather than a rule. The amount of caffeine varies by the type of coffee bean, roast, preparation method, and serving size. The beneficial effects of coffee are not, however, limited to a caffeinated surge; there are other properties attributed to this bean that impact oral health.

The oral cavity is subject to a variety of dietary and environmental agents that can cause oxidative stress. Antioxidants protect our health by neutralizing these compounds. Green coffee beans contain polyphenolic antioxidants, but the roasting level and method, addition of milk and sugar, and even the water to coffee ratio can impact the quantity of antioxidants that ends up in coffee. For example, a 2012 study published in Food Chemistry showed that instant coffee may contain higher amounts of antioxidants as compared to roasted. With regard to various roasting levels, multiple studies have shown that a light to medium roast preserved phytochemical compounds better than a dark roast.

There are three notable antioxidants found in coffee: chlorogenic acid, melanoidin, and ferulic acid. Chlorogenic acid is the main antioxidant in green coffee beans, but during the roasting process it slowly decomposes to half of its original amount. Melanoidin acts as an anti-free radical, anti-microbial, anti-inflammatory, and even an anti-cariogenic. This chemical is a product of the Maillard reaction, which is responsible for the browned, complex flavors that make coffee taste dark and rich. The Maillard reaction actually consists of several smaller chemical reactions of proteins and sugars upon exposure to heat and moisture. This process forms a complex array of flavors, aromas, and the dark color, all of which are due to the presence of melanoidin. While chlorogenic acid decreases during the roasting process, melanoidins increase. The third antioxidant, ferulic acid, is a phenolic phytochemical found in seeds and leaves. Ferulic acid has a variety of anti-inflammatory, anti-microbial, anti-allergenic and anti-cariogenic effects. Overall, the antioxidant properties of coffee are comparable to those of tea, cocoa, and red wine.

Another notable chemical found in coffee is trigonelline. It is an alkaloid that not only provides the sweet, earthy taste found in coffee, but is also anti-cariogenic. Trigonelline has been found to prevent Streptococcus mutans from attaching to the tooth surface. A 2002 study published in the Journal of Agricultural and Food Chemistry tested the anti-adhesive effects of green and roasted coffee on S. mutans and saliva-coated hydroxyapatite beads. All coffee solutions, whether roasted or green, showed high anti-adhesive properties. The study showed that both naturally occurring and roasted coffee adsorbs to the tooth surface and prevents receptors from interacting with bacteria.

Although numerous health benefits are associated with drinking coffee, it has also been associated with halitosis and stained teeth. The acids, tannins, and chromogens found in coffee and tea allow stains to stick to enamel and cause yellow staining. Interestingly, the higher tannin count in tea contributes to the higher staining capacity as compared to coffee. On average, people drink about two to three cups of coffee spread throughout the day. Frequent consumption of caffeine can cause dehydration and dry mouth, which increases caries risk. Coffee is also acidic, with a pH of around 5 when milk is not added. This is below the critical pH of enamel and when combined with low salivary flow, may lead to erosion. We can prevent against the cariogenic effects of coffee by adding milk, frequently drinking water, or chewing sugar-free gum throughout the day.

Some harm that may be associated with coffee is the presence of acrylamide, a known carcinogen. Acrylamide is found in a variety of foods and develops when carbohydrates are cooked at high temperatures. The roasting process also causes acrylamide to develop in coffee. However, the quantities found in food are usually negligible. A recent California lawsuit resulted in a controversial warning related to the presence of acrylamide in coffee, although this decision has not been finalized. Several studies have contrarily linked coffee to anti-cancer activities. A 2018 study published in the Journal of Food Science compared the growth inhibition of SCC-25, an oral cancer cell line, between green, cinnamon/blonde, medium, and dark roast coffee. The results showed that the cinnamon coffee extract had the highest bioactive phytochemical content, indicating that the consumption of lighter roast coffee may potentially prevent certain cancers.

There are many health benefits and potential risks associated with coffee. To offset the potential harm and maximize its benefits, we can drink light or medium roast, add less sugar, and add milk to reduce the acidity. So go ahead and reach for that morning cup of joe!

WHY THE PUBLIC NEEDS STATE AND FEDERALLY SPONSORED DENTAL LOAN REPAYMENT PROGRAMS

By Erin Down
Vice President – Class of 2020

No one knows student debt quite as well as dental students. **Dental school is the most expensive professional school, with the average student debt at graduation amounting to $287,331 in 2017.** This figure surprises most people, but it is usually followed by a reassurance that dentists make more than enough money to pay back their loans. While this may be true for some, it is not the case for everyone. The increase in the cost of dental education in the past decade has been unprecedented. The resulting debt burden contributes to students' financial uncertainty and pressures them to specialize in the interest of being able to pay back their loans.

So why on earth would a graduating dental student pursue public health? It would be financially infeasible to pay off loans solely with salary earned from employment in a federally funded clinic. This is no secret, which is why loan forgiveness programs exist to encourage students to pursue careers in primary care and public health, particularly in underserved areas. However, with pressure on politicians to lower taxes and manage the massive national deficit, cutting funding for loan repayment programs may seem like an easy way to decrease spending.

At the level of the federal government, there are two departments that offer opportunities for aid with loan repayment: the Department of Education and the Department of Health and Human Services. The Department of Education offers the Public Service Loan Forgiveness (PSLF) program. PSLF requires 120 qualifying monthly payments to be made to a qualifying employer, which is equivalent to 10 years to service. After this time, any remaining loans are forgiven. The program has been accused of being flawed and confusing, making it difficult to utilize. The riskiest factor of the PSLF, however, is that its funding is based on the national budget and voting in Congress; there is no guarantee that it will still exist by the time an employee reaches the end of the required service period. Recently proposed budgets from the current administration included cutting funding for this program. Many were pleasantly surprised when $350 million were included in Congress's spending bill to fund the program through September 2018. It is difficult, however, to say how far this funding will go, and the program may be subject to further modifications in the years to come.

Within the Department of Health and Human Services is the Health Resource and Services Administration (HRSA), an agency committed to ensuring equity and access to health care. Aside from signing on with the armed and uniformed forces, HRSA, through the National Health Service Corps Loan Repayment Program (NHSC LRP), offers the only loan forgiveness aid available for dentists. Applicants of this program must be committed to providing primary care to low income patients in approved Health Professional Shortage Areas (HPSAs) with a minimum two year commitment. Once deemed eligible and qualified, priority is given to applicants who come from disadvantaged backgrounds and demonstrate a long-term commitment to providing care in an underserved area. If you are lucky enough to make it through all of the application review stages, are accepted into the program, and find a full-time job at a NHSC-approved site with an HPSA score of 14 or higher, you will be rewarded $50,000 in your first two years of service. After the two years, participants can re-apply annually to receive $20,000/year for their third and fourth year, then $10,000/year for the fifth year and beyond. Applicants also have the option of applying to the NHSC Student to Service Loan Repayment Program in their fourth year of dental school. This program rewards the winning applicants with $120,000 in return for a commitment to provide primary care in approved locations for three years after school.

An aspect of NHSC that encourages state-level loan assistance programs is the State Loan Repayment Program (SLRP), which requires a dollar-for-dollar match from the state toward SLRP award contracts. In New York State, the only state-funded loan repayment program for dentists is the Primary Care Service Corps (PCSC). Before its discontinuation in 2015, the program awarded up to $30,000/year for up to five years, resulting in a maximum sum of $150,000. The PCSC's funding utilized the NHSC SLRP, with half of the money supplied by the state and matched by the federal government. Unfortunately, funding for this program has not been renewed since it was discontinued.

As we can see, few significant and reliable dental loan repayment programs exist on the state and federal levels. Where does this leave dental students, many of whom graduate with over $300,000 in student debt? Can they even think about purchasing a practice, house, and starting a family in addition to paying back loans? More importantly, where does this leave low-income Americans? Young dentists are unlikely to pursue public health when they have student debt and inadequate loan repayment opportunities. Without dentists available to provide care for the underserved, oral health and quality of life suffer, and often patients end up in the emergency room for easily treatable dental conditions. The solution is increased funding on both the state and federal levels for loan repayment programs. We can help make this a reality by reaching out to our governors, representatives, and senators and asking them to support the SLRP and NHSC programs. ASDA and the ADA lobby at both state and national levels annually and are the primary channels through which we can communicate our concerns with legislators. By forming a united front with fellow students and dentists, we can strengthen loan repayment programs and bring care to the millions of Americans who need it.

FOUR OR SIX?

By Daniel Bastardi
Treasurer, Class of 2020

This application cycle, six members of the Stony Brook Dental Medicine class of 2018 applied for specialty training programs in oral and maxillofacial surgery. Come July, all six of these individuals will begin their surgical education at programs from coast to coast.

Although foundational surgical education is similar across the board, experience and exposure vary greatly amongst programs. This is because of a variety of factors, such as location, population, and affiliations. Timing also differs, ranging from four years to six years depending on whether or not it is integrated with a medical school curriculum. For some, this option is left entirely for the individual to decide. In other programs, passage of the medical boards and coursework is conditional to program continuation. Regardless of program type, knowledge-based didactic competencies are used. The Oral and Maxillofacial Surgery Training Examination (OMSITE) is a 10 subject, 250 question, computer-based examination to measure the foundational understanding of residents throughout their training. The six students were asked about their program structure and why they chose to apply.

Six-year programs differed greatly from one program to the next. For example, one student is required to pass Step 1 of the medical boards at the end of his first year, complete medical rotations during his second and third years, and take Step 2 and 3 of the USMLE. In this program, there are no didactic coursework requirements. Another student will spend first year with the OMS department at the program's home site, taking Step 1 before second year and the start of medical school. In second year, he will spend eighteen months at a distant affiliated medical school, where he is similarly expected to complete rotations and remaining board requirements.

Of the six acceptees, one student will be pursuing a four-year program. Like six-year programs, four-year programs also differ greatly in terms of structure. The year-round residency program is 48 months long, and is divided into 30 months of oral and maxillofacial surgery, four months of medicine, four months of general surgery, four months of surgical specialties (ENT, neurosurgery, ophthalmology), two months of plastic surgery, and one month of oral pathology. Senior residents spend four months as chief where trauma and pathology cases are prevalent, four months at another site with orthognathic and reconstructive surgery cases, and four months of implant cases at the dental school.

Others have an option to pursue a medical degree following completion of their fourth year and surgical training. In this program, more time, experience, and educational appreciation are gained in the field prior to committing to one path. However, only two students in program history have opted to pursue the medical degree after four demanding years in training. This also speaks to the level of confidence residents have in their surgical training and education during their four years.

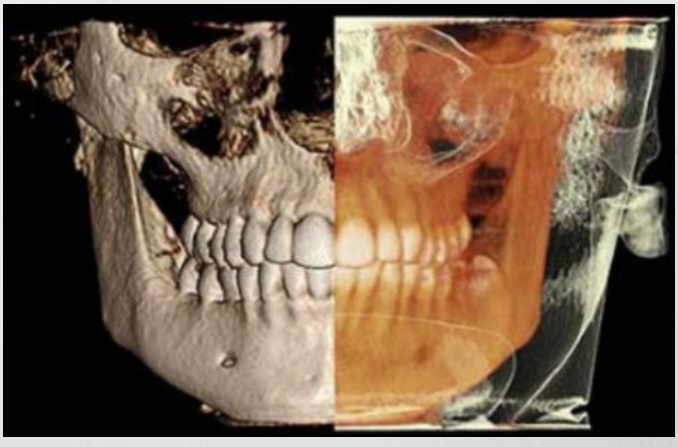
While some students exclusively applied to one program type, many applied to both. As one student said, "Each program is different with its own strengths. Take the time to extern, shadow, and network with residents to decide what type of program you want to pursue. Whether you decide to do a four or a six, we're all held to the same standard of patient care."

ADVANCED IMAGING IN DENTISTRY

From film to digital radiography, there have been countless advances in dentistry that have provided better means of capturing images of teeth and supporting structures. However, collapsing a three-dimensional structure onto a two-dimensional image has created limitations in diagnosis and treatment planning due to geometric distortions, superimposition, and loss of spatial information. Therefore, the ability to capture anatomy through cone beam computed tomography (CBCT) has been a growing trend in dentistry. In CBCT, the x-ray source and film are held on opposite sides of the C-arm or gantry, and rotate 360 degrees around the patient in unison. This allows the machine to capture 2D images from multiple angles in high resolution to reconstruct a 3D image.

The World Journal of Radiology has noted the importance of CBCT and its diverse applications in dentistry thanks to its high spatial resolution of bone and teeth. In addition, CBCT provides an accurate depiction of maxillofacial structures for better detection of cysts, tumors, infections, and injuries. CBCT can be used in many fields in dentistry, including oral and maxillofacial surgery, endodontics, implantology, and orthodontics, ultimately providing a more efficient and accurate diagnostic and treatment planning tool. For example, implant treatment has been long sought out by patients due to its longevity and high success rate. With the use of CBCT in implantology, the quality and quantity of bone available for implant placement can be determined more accurately.

CBCT is used in orthodontics to determine facial growth, tooth eruption, and angulation. It also aids in determining the progress and success of alveolar bone grafts for cleft lip and palate patients by measuring the buccal-palatal width of the bone from the 3D image. CBCT has also played a vital diagnostic tool for orthognathic treatment planning by providing a detailed visualization of the occlusal relationship to the skull, which cannot be seen in film-based or digital radiography. Although CBCT is not advised to be used regularly on patients due to its relatively high radiation exposure, it is an invaluable instrument for delivering quality dentistry.



By Janet Park
Class of 2020

Resident's Corner: Dr. Bobby Lynn

By Mackenzie Schleicher
Class of 2020

The oral surgeon is in the operating room paired with a cardiothoracic surgeon and an otolaryngologist (ENT) attending. The patient's chest is cracked open to reveal a softball-sized thyroid wedged next to the great vessels. The thyroid was blocking the patient's airway, which would soon collapse without immediate surgery. Normally the thyroid is located low in the front of the neck, below the Adam's apple. This patient's thyroid was so big that it extended from the neck down into the mediastinum. The oral surgeon takes his scalpel to make an incision horizontally across the neck and vertically down the chest. Dissection around the recurrent laryngeal nerve, carotid artery, jugular vein and trachea become increasingly important, as the thyroid lies entangled within these structures. Once the incision reaches the clavicle, the oral surgeon positions his fingers behind the sternum to do a sternotomy. After cutting the sternum open with a saw, a crank is used to pump the chest open and take out the rest of the thyroid. The cardiothoracic surgeon places his hand in the pleural cavity and takes the thyroid out from underneath the aorta. The surgical team had saved this patient's life.

At the Long Island Jewish (LIJ)/Stony Brook University Oral Maxillofacial Surgery (OMFS) residency program, taking out a thyroid is something that is done only on ENT rotation, whereas this may be a common day procedure for any oral surgeon attending outside the New York area. ENT is just one of the many fields of medicine in which oral surgery residents must become proficient. Some of the other fields include anesthesia, plastic surgery, medicine, and general surgery. Dr. Robert "Bobby" Lynn, an OMFS surgical resident at LIJ/Stony Brook, speaks about his journey of becoming a specialist in facial reconstruction.

Dr. Bobby Lynn attended North Shore High School in Glen Head, NY. He then attended Boston College for his undergraduate education, followed by a year of general practice residency at Nassau University Medical Center, a non-categorical year at LIJ, and finally a four-year OMFS residency program. "This is not the typical route to becoming an oral surgeon", Dr. Lynn explains. "In an ideal world, dental graduates go right on to a four or six year OMFS program." Instead, Dr. Bobby Lynn decided to go into OMFS after the year of general practice residency. During his general practice residency, he spent time with the oral surgery group working on facial laceration repairs. Dr. Lynn was inspired by the impact that oral surgery can make. He explains that residency is "a lot of work, learning, and reading when you can." Seventeen hour days are not uncommon. Lack of sleep and the physical demand of standing for 12 hours straight is tough. However, when asked if Dr. Lynn ever thought about quitting, he smiles and says, "It's good for me. I love it. And it gets better everyday."

Oral surgery is a complex field because it requires an aptitude in a wide variety of specialties. For example, Dr. Lynn learned how to medically manage patients with hypertension and diabetes. In plastics he learned the art of surgically closing and manipulating soft tissues. In ENT, Dr. Lynn became comfortable working with and navigating around head and neck anatomy. In general surgery, he became acquainted with the management of hemodynamic surgical patients, but explains that there was also a focus on the management of bowel obstructions, which he did not particularly enjoy.

When asked about his most memorable time during rotations Dr. Lynn comments, "Probably when I brought [a patient] back to life with chest compressions while on OMFS rotation at Stony Brook." A middle-aged man was brought to the emergency department. He had been driving a truck when he swerved into a ditch and got pinned against the truck's side by some tools he was carrying. OMFS was called because the patient was bleeding from the head and neck, possibly the facial artery, and his pressure was dropping. Dr. Lynn reached for bridal wire to stabilize the mandible to stop the bleeding. The patient went into asystole. Dr. Lynn began to beat on his chest as the team prepared to open it up to rule out a cardiac tamponade. Chest compressions ceased, and as Dr. Lynn looked at the monitor, he saw that the patient's heart was again beating. Once more, the field of dentistry has offered Dr. Lynn and his team the chance to save a patient's life.

On July 1st 2018, Dr. Lynn will become chief resident along with Dr. Mitchell Steinberg and Dr. Jonathan Peri. Dr. Lynn explains that he is "excited to lead a team again. Everybody is going to function well because we have an intelligent group of people with outstanding work ethic." For those of you who are interested in applying to become an oral surgeon, Dr. Lynn suggests doing research and some shadowing to get into the six-year program. Most importantly, programs look for down to earth, trustworthy people who excel in a team setting." Although some may think that dentistry is limited to just teeth, it can allow you to be part of a team that saves lives, just as it did for Dr. Bobby Lynn.

CLUB CAD: BRIDGING THE GAP BETWEEN ACADEMIA AND CLINICAL DENTISTRY

In April 2017, the American College of Prosthodontists announced that Stony Brook University was one of five schools chosen to pilot their digital dentistry curriculum. The ability to incorporate emerging technologies will allow for easier adaption to the rapidly progressing digital solutions being increasingly utilized in modern dentistry. Michael Winter from the class of 2018 founded the digital dentistry study club, also known as Club CAD, in an effort to familiarize students with this technology and its use in various dental disciplines.

Michael's inspiration to start a digital dentistry club came when he attended a research conference to present his work on 3D-printed surgical stents for implant placement. As he spoke to other students, he realized that their schools were beginning to implement digital dentistry into the curriculum and sought to create a platform to bring that experience to Stony Brook students. After the announcement by the ACP about the SDM's selection as a pilot school, Michael teamed up with Dr. Reiner and Dr. Nasti to start the club. Club CAD now focuses on teaching members about new trends in digital dentistry through guest lectures from dentists and dental companies, as well as hands-on activities.

Under the guidance of Dr. Nasti and Dr. Reiner and with the generous sponsorship of Ivoclar, Planmeca, and Komet, Club CAD has already launched several successful events this year. These included staining and glazing demonstrations from world renowned ceramist Lee Culp, discussions in digital workflow led by SurfCT CEO Paul Vigario, literature reviews, and hands-on demonstrations with intraoral scanning and crown design utilizing CAD/CAM software. The final lecture of the academic year was a look into the private-practice world of digital workflow taught by Dr. Jeffrey Shapiro, who highlighted full mouth rehabilitation cases done with intraoral scanning.

Stay tuned and join us for more exciting events to come!

By Anthony Bogdan
Class of 2020

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