BGSA NEWSLETTER

JANUARY 2021

UPCOMING EVENTS

- Jan 20.....Whine Wednesday
- Jan 26.....Social Justice Journal Club
- TBD.....What I Wish I Knew When I Started Grad School Panel
- TBD.....Paint and Sip Event

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LETTER FROM THE EDITOR

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Dear School of Medicine,

Welcome back to a fresh new year at Pitt! Last year was undoubtedly a challenging year where we as a student body continued our studies even in the face of a pandemic. COVID-19 has not only caused immense suffering and loss but also underscored the health inequities and injustice that Black, Indigenous, and people of color continually face in this country. Through the hard work of the D&I committee as well as our monthly Whine Wednesday discussions, us students have spoken out about the struggles that we have met regarding systemic racism, insufficient mentoring, and mental health among other topics. We brought forward a list of actionable items we believed the SOM could address and are working diligently with them to make these changes.

This edition of the newsletter spotlights two incredible women: Ayana Ruffin, a graduate student in the Program in Microbiology and Immunology, and Song-My Hoang, a recent graduate of the Molecular Pharmacology program. Ayana describes her exciting research on tumor infiltrating B cells and is working towards improving cancer therapies. Our Alumni spotlight, Song-My, gives a number of useful tips on how to go about finding a job in the midst of a pandemic as well as how she made her transition to industry.

We also feature a timely and poignant op-ed written by student Amanda Kowalczyk who won the "Most Well-Rounded Student" award at last year's BGSA symposium. Amanda details her all too familiar struggles with too high of expectations, sexual harassment, and disregard of mental health that are widespread in graduate school and academia in general. Even while she was being lauded as someone to look up to and her accomplishments something to strive towards, she still felt as though she wasn't doing enough. Almost every graduate student will face these challenges during the course of their studies. This pervasive notion of "just work through it" was brought to the forefront during the pandemic that both restricted our time as well as took a toll on our mental health. To work towards changing this burn out culture, BGSA will be hosting a Whine Wednesday this month to specifically talk about mental health and self-care resources currently available to SOM graduate students as well as to discuss actionable changes that can be implemented in UPSOM. We as the BGSA are committed to creating an environment within SOM that reflects the needs of our graduate student body.

Take care of yourselves,
Michelle Lynskey

TRAVEL AWARDS

UNFORTUNATELY, DUE TO TRAVEL RESTRICTIONS THERE HAVE BEEN NO TRAVEL GRANTS AWARDED FOR THE MONTHS OF NOVEMBER AND DECEMBER. AS SOON AS UNIVERSITY TRAVEL IS PERMITTED THE BGSA TRAVEL GRANT AWARDS WILL RESUME.

DIVERSITY AND INCLUSION COMMITTEE

ANU BALOGUN

The diversity and inclusion committee remains steadfast in our quest to not only strengthen but also increase diversity and inclusion here at the University of Pittsburgh School of Medicine. Co-chairs Sidney and Anu recently attended the Annual Biomedical Research Conference for Minority Students (ABRCMS) and the 2020 SACNAS National Diversity in STEM Virtual Conferences. We represented the SOM's graduate student body, alongside Drs. John Horn and Robert Binder. We spoke to prospective applicants and dispelled misconceived notions about the SOM, a graduate career as a minority student, and Pittsburgh's conduciveness as a city for minorities. We are happy to report that several prospective students now look forward to applying and interviewing at the University of Pittsburgh. In other news, co-chairs Sidney and Anu have consistently met with Paula Davis over the past several months. Miss Davis is the Associate Vice Chancellor for Diversity, Equity, and Inclusion, Health Sciences. Together, we have discussed and aim to improve the overall graduate student life in the SOM. Our two most pressing goals include:

- Working to create coordinated recruitment calendars across all the SOM's programs. We aim to encourage programs to have the Office of Health Sciences Diversity (OHSD) speak during their recruitment days. Based on our personal experiences, Pitt was the only University that failed to address diversity during recruitment. This is also something that many students have and continue to comment on during visits. Having the OHSD speak about the different University initiatives remains a great way to show that diversity is a priority at the institutional level, which will carry a lot of weight with applicants.

- Alongside Miss Davis, we have also been working to include the graduate students in the SOM's annual Toast to Diversity & Call to Action event, a feat we hope shifts the balance towards fostering a more inclusive community across graduate and medical student bodies in the SOM.

JANUARY 2021 RAFFLE

IN THIS ISSUE OF THE NEWSLETTER, THE BGSA IS RAFFLING OFF A $15 GIFT CARD TO A LOCAL PITTSBURGH BUSINESS OF YOUR CHOICE!

RAFFLE: HTTPS://FORMS.GLE/GSHN5GNBMQDUGKCDA

AN OPEN LETTER ON WELL-ROUNDEDNESS

AMANDA KOWALCZYK

***Warning**: this op-ed discusses topics such as sexual harassment, depression, domestic violence, and identity-based discrimination.*

Every PhD student has a voice in their head that says, "You're not doing enough." It's an endless mantra that drives us to work nights and weekends. It's a sentiment vocalized by mentors and thesis committees. It's a notion embodied by people like me who do more and publish more - why can't you be that productive? What's stopping you?

For me, that voice is a constant scream. It chases me in my waking hours, when I work, when I eat, when I take an hour off to socialize with friends. It follows me in my sleep, where I dream of running all night long and wake up exhausted.

And so I do everything. I do my research, not just my thesis work, but every side project I can find. I do outreach, and not just participating in existing outreach projects, but I invent my own. I write. I teach. I publish. I apply for grants and internships and I don't get them because I'm still not doing enough, and the voice in my head says, "I told you so," and so I do more.

Two years ago, I got a concussion and was advised to take two months off from my research. Instead, I took a week off before jumping back in because "that's what we do here". When I got severely depressed, a common side effect of untreated concussions, I was too emotional. "You should be more like the boys. They don't get upset".

Three years ago, I rebuffed the advances of another graduate student and he screamed at me that I was "just a stupid girl. A stupid, stupid girl". If I had done more, if I had been enough, would things have been different? Would I have been allowed to take that time off, to feel emotions, to be seen as a scientist and not just a stupid, stupid girl?

Since I've been officially proclaimed a "well-rounded" person, you may want to know how I do it and how you can be more like me. My advice is simple: go back in time and tell your parents to make their love conditional on your success. Tell your father to scream at you that you're worthless every day. Tell your mother to blame you when he hits you and yells at you - after all, he wouldn't do those things if you were good enough. Start the mantra early. "You're not good enough. You're not doing enough. The person who you are is not enough." By the time you get to graduate school, you'll be ready for sleepless nights spent working and weekends wasted in a lab or in front of a computer. You'll feel at home in the endless work and the endless criticism. Your program's willful ignorance of the discrimination it harbors will be a familiar blanket. Your perfect concoction of anxiety and OCD with a healthy dose of a crappy childhood will result in celebrated productivity.

Or you can decide that you don't have to do it all. You can decide that you're good enough. You can treat graduate school like the job that it is, and not a cult-like lifestyle. You can take back those nights and weekends that, quite frankly, you're not getting paid enough to work. You can do the crazy things that people are supposed to do in their 20's and figure out how to find happiness in this messed up world. You can tell that little voice in your head to shut up. You don't have to be like me.

The next BGSA Whine Wednesday will be using this essay as a prompt to discuss these issues, what resources are currently available, and what we should work to change in the UPSOM.

STUDENT SPOTLIGHT

AYANA RUFFIN

Cancer therapies that harness the immune system's ability to detect and destroy cancer cells has revolutionized the way we treat cancer patients. Despite the success of these T cell focused 'immunotherapies', 80% of cancer patients do not produce a durable response and thus receive little to no benefit from these cancer treatments. This highlights the need to discover new immunotherapeutic targets to increase the number of patients who can benefit from this type of cancer treatment. B cells have been overlooked as a potential target for cancer immunotherapy despite being the second most abundant infiltrating immune cell in many human cancers and being associated with better survival in patients. Early studies in mouse models of human cancer left researchers with the impression that B cells work in opposition to T cells and promote tumor progression. However, in many human tumors, B cells are often found in close proximity to T cells in immune cell aggregates called tertiary lymphoid structures (TLS) which are absent in transplantable tumor mouse models. TLS have been shown to be important for anti-tumor responses in patients, correlate with favorable outcomes and predict whether patients will respond to current immunotherapies. In the lab of Dr. Tullia C. Bruno, we are actively investigating the role of B cells and TLS in a variety of human solid tumors using ex vivo patient samples.

My dissertation project is focused on B cells in head and neck squamous cell carcinoma (HNSCC). HNSCC is an ideal tumor type to study B cell function in the tumor microenvironment (TME) because B cells are significantly increased in HNSCC caused by human papilloma virus infection (HPV+) compared to HNSCC caused by carcinogen exposure (HPV-). This allows us to assess how different cancer drivers affect the phenotype and function of B cells. B cells are a quite heterogeneous population and different types of B cells perform different functions during the immune response to infection and in autoimmune diseases.

Thus, my first question was to address whether there were different types of tumor infiltrating B cells (TIL-B) in HPV+ and HPV- HNSCC using single cell RNA sequencing (scRNA seq) and flow cytometry and how these potential differences may contribute to outcomes. These analyses revealed that TIL-B with a germinal center (GC) phenotype (CD38+ BCL6+) were significantly increased in HPV+ patients compared to HPV-. GCs are structures that form in lymph nodes during an immune response where mature B cells proliferate, interact with T cells, and mutate their antibody genes to generate the most effective antibody and memory response. These maturation steps occur in organized areas of the GC: dark zone (proliferate and mutate) and light zone (T cell interaction). Our scRNA seq and flow cytometry reveal dark zone and light zone phenotypes for GC TIL-B in HPV+ patients. We uncovered a novel state for GC TIL-B cells and normal GC B cells that we termed "transitional" using bioinformatic analyses and validate this via flow cytometry. We found that GC like structures form intratumorally and peritumorally in HNSCC using multiparameter immunofluorescence and their presence in TLS correlates with better survival. Within these studies, we have also identified key surface proteins that may be important for governing GC-TIL B cell interactions in TLS such as SEMA4a and CD27 which we are actively investigating.

The manuscript pertaining to this part of my dissertation work is in revision at Nature Communications. I received two travel awards to present this work for an oral and poster presentation

at the American Association for Immunologist (AAI) 2020 annual meeting. Additionally, this work was selected for a Young Investigator Award oral and poster presentation at the Society of Immunotherapy of Cancer (SITC) annual meeting this past November.

In addition, tumor infiltrating memory B cells (CD38-IgD-) were significantly increased in both HPV+ and HPV- HNSCC compared to healthy lymphoid tissues and also correlate with favorable outcomes. Within this population, our preliminary data reveal that intratumoral and peripheral classical memory B cells (CD27+ CD21+) respond to antigen stimulation via BCR and produce antibodies in vitro while atypical memory B cells (CD27-CD21-) have lost these key functions. We observe an abnormal expansion of this atypical memory subset in HNSCC tumors and peripheral blood and they share some key features with atypical memory B cells first described in chronic infections like HIV, but also have unique features that appear cancer specific like expression of tumor killing proteins like TRAIL. The second chapter of my thesis is focused on further characterization of memory TIL-B subsets and extending our analysis to other tumor types where significant increase of memory TIL-B cells has been reported, such as melanoma. We believe our findings provide insight into potential avenues for therapeutic B cell targeting strategies such as inducing GC and TLS formation in patients and enhancing or rescuing memory B cell function to improve overall survival.

ALUMNI SPOTLIGHT

SONG-MY HOANG, PhD

I graduated from Pitt in 2019 with a PhD in Molecular Pharmacology. I remember sitting through career seminars during my PhD thinking, "How on earth do I get to where that person is?" Back then, I really felt that I didn't have the exact skillset for any industry job. Fast forward to now, I'm 5 months into my job as a Field Application Scientist (FAS) at LUMICKS, a biotechnology focused on single-molecule and cell analysis. I am responsible for the Z-Movi Avidity Analyzer, which uses acoustic force technology to measure binding avidity between immune and target cancer cells, enabling the identification of the most potent immunotherapeutic effector cells. I travel to leading biotech, pharma, and academic institutions to give demonstrations of our scientific instrument. As the title suggests, I'm essentially a mobile scientist conducting on-site experiments for 1-2 weeks. I engage in scientific discussion and build long-term relationships with our customers to convince them to buy our product. Upon purchase, I provide on-site training as well as remote support. As an FAS, I am exposed to many other roles in the company, including sales, product management, and R&D. It's also incredibly inspiring to be at the forefront of innovative technology that can improve current immunotherapies.

I found my first industry job during the beginning of the pandemic. My advice for landing a job after a PhD is: be open-minded and network effectively. And in a pandemic? You're just going to have to be even more persistent.

Be open-minded: Keep your options open because you never know if what you stumble upon later could be the ideal job for you. For example, my initial job search was for the Medical Science Liaison (MSL) role. As I talked to more MSLs, I realized that a few of them pursued the FAS role prior to their current position. This made me realize that the FAS role encompassed my key needs, as the job required an expertise in a scientific field, combined with customer interactions and business development. Also, don't sell yourself short and pursue a variety of career options. You can always find current skillsets to fit an industry position. I personalized all of my resumes and managed to use the same research and extracurricular activities to match the specific expertise in the job description. For example, I studied telomere biology in the context of cancer, but I was able to reword my research in the context of immuno-oncology for my current job.

Network effectively: You need to be strategic and organized about networking. LinkedIn was my best friend. I cold-messaged people who had similar backgrounds to me (education, hobbies, and location). I even found value in people who connected but didn't respond to me. I was able to use their connections to network even further. I re-engaged with people I had networked with by updating them about my progress. In fact, I still keep in touch with a few people now - This is the level of depth in building a solid relationship during your networking that could give you valuable support in the short-term and long-term. I also reached out to employees at companies I applied to. In fact, I had chatted with 2 FAS at my current company prior to my first interview with HR. Networking is about meeting the right people at the right time. Don't give up if you feel like nobody is helping you directly get your job. You just need that one person to vouch for you!

If you're interested in learning more of Song-My's tips to landing an industry job, check out her blog post for LifeX here.

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