Dear Members of the BCCC-CURE Community,

Welcome to the second edition of our Brooklyn College Cancer Center (BCCC-CURE) newsletter. This issue reflects the accomplishments of our BCCC-CURE faculty, staff, and student members throughout the first half of 2023. We are proud to share updates on the exciting new projects and innovative research from our researchers and other members.

We would also like to express our thanks to the American Cancer Society, the Gray Foundation, and our donors, partners, and friends for the continued support to the BCCC-CURE.

We hope you enjoy reading this issue of the BCCC-CURE Newsletter. If you have any feedback or comments to make please do not hesitate to contact our team at: BCCC-CURE@brooklyn.cuny.edu

Through the recent funding secured by Brooklyn College Cancer Center in the fall of 2022, we are pleased to award subawards from the American Cancer Society Diversity in Cancer Research Institutional Development Grant (DICRIDG) and the Gray Foundation Operations Support Grant.

**ACS DICRIDG Pilot Grants (2023). $40,000 per grant**

**Devorah Kletenik, Assistant Professor, Computer & Information Science Department**

Investigating Accessible Software Design for Cancer Survivors with Impairments

Approximately 40% of cancer survivors experience long-term physical and functional difficulties as a consequence of cancer and its treatment, which can lead to significant disability. The impact of these disabilities can be extensive and widespread, affecting many aspects of daily living and leading to significant loss of quality of life. One specific impact of disabilities is software use; software that is not designed accessibly can be difficult or impossible for people with disabilities to use. However, while there is a focus on software accessibility in general, and a specific focus on software accessibility for elderly people, there is no attention given specifically to cancer survivors with disabilities.

In our work, we will consider best approaches in software design for cancer survivors with disabilities so that we can ascertain how to best design websites and mobile applications that can be easily used by cancer survivors despite the impairments they face as a result of cancer and its treatment. People with disabilities are an unrecognized health disparities population; this is true especially of cancer patients. Thus, rigorous research with people at the intersection of cancer and disability will expand the Brooklyn College Cancer Center (BCCC-CURE)’s impact on underserved communities.
Colchicine is a natural product ‘ancient medicine’, with its use for inflammation – by way of the meadow saffron - dating back to at least ancient Egypt. It is also highly relevant to the modern-day field of oncology due to its status as the first tubulin-disrupting agent ever discovered. Tubulin-targeting molecules are some of the most important anti-cancer drugs in use today, but the current arsenal have some shortcomings, including resistance development and often severe side-effects. Colchicine’s binding site is unique from those currently in clinical use for cancer treatment, and thus there is significant interest in developing molecules that bind to this site, as these would complement existing drugs. Colchicine is generally considered too toxic for use as an anticancer drug, and thus there is considerable interest in analogs of colchicine with improved profiles. However, these have been almost uniformly accessed through modifying the natural product source, which significantly limits these efforts. Funding from the American Cancer Society by way of the BC Cancer Center will help advance a new synthetic strategy that will facilitate the de novo construction of novel colchicine analogs, and enable long-term studies aimed at elucidating the dynamics of the pharmacoactive AC ring and its influence on tubulin binding and selectivity. This is an important step towards a clinically viable colchicine binding-site targeting anti-cancer drug.

*Gray Foundation-BCCC-CURE Seed BRCA-Related Cancers Research Grants (2023). $5,000 - $12,000 per grant*

**Ryan Murelli**, Professor, Chemistry Department

New Synthetic Strategies and Preliminary Anti-Cancer Studies of Novel Colchicine AC Ring Analogs

The spatial and temporal context of a neighborhood strongly influence the health of the population. Neighborhood characteristics such as the population composition, structure of the built environment, and environmental exposures are all factors that can impact cancer outcomes, and these characteristics vary across time and geographic location. In Brooklyn, breast and ovarian cancers represent nearly one-third (32%) of all cancers diagnosed among women, with over 36,000 diagnoses between 2001 and 2020. To understand how the unique geographic, environmental, and sociodemographic characteristics of Brooklyn influence these cancer outcomes, this study aims to utilize GIS methods to analyze the time and location dependent trends in breast and ovarian cancer diagnosis on the neighborhood level. Furthering the mission of the Gray Foundation, the insights and perspective gained can help to determine if there are areas in Brooklyn that need more significant intervention such as targeted education initiatives, more access to screening and care, or if there is a need to raise awareness about external environmental factors (e.g., toxic exposure) that may contribute to higher incidence and worsened outcomes.

**Sheena Philogene**, Assistant Professor, Library

Time Series Analysis of Incidence and Geographic Distribution of Breast and Ovarian Cancer Incidence in Brooklyn, NY
The tumor suppressor protein BRCA1 is often mutated in patients developing aggressive triple negative breast cancer (TNBC). The loss of tumor suppressor BRCA1 results in profound chromosomal instability. BRCA1 with its obligate molecular partner BARD1, facilitates an E3 ubiquitin (Ub) ligase activity that is essential for DNA double strand breaks (DSB), transcriptional and cell cycle regulation. The domain requiring for BRCA1 Ub-ligase activity when mutated, is implicated in developing chemotherapy-resistance. Nucleolin (NCL), the stress-responsive RNA-binding protein (RBP), collaborates with BRCA1 at the sites of DSB to constitute complex cellular DNA damage response (DDR). In this seed proposal, we focus on how BRCA1-mediated regulation of NCL-mRNA interactions and hence the cellular transcriptome, have functional implications in stress conditions and cancer (Aim1). We will investigate how the depletion of NCL or its target mRNAs such as anti-apoptotic gene BCL2 negatively impact cell viability in different breast cancer and TNBC cell types (Aim 2). The study revelations will offer new approaches to target BRCA1-mediated ubiquitination pathway and to control gene regulation by RBP, to improve breast cancer outcomes and therapies.

Anjana Saxena, Professor, Biology Department

BRCA1/BARD1-Regulated and RNA-Binding Protein (RBP)-Targeted Therapeutic Approach in Breast Carcinoma

Untangling the Interconnected Roles of Nucleolin and BRCA1 in Breast Cancer: A BRCA1-C-Terminal (BRCT1) Point of View

Women with mutations in BRCA1 are at higher risks in developing breast cancer. BRCA1 protein participates in cellular ability to sense and repair DNA damage, that are essential phenomena to maintain the stability of genomes across cell divisions, and dysregulation of which are an established hallmark of tumorigenesis. Nucleolin, a major stress-responsive RNA binding protein, also plays key roles in DNA repair pathways and colocalizes with BRCA1 in breast cancer. However, how NCL collaborates with BRCA1 to orchestrate the complex mechanism of DNA repair under stress conditions remains unknown. Our long-term goal is to map and generate a comprehensive interactome to understand how NCL, and other DNA repair proteins collaborate with BRCA1 to orchestrate the complex mechanism of DNA repair during the cell cycle, under stress conditions. In this study we will characterize the interactions of NCL and BRCT domains of BRCA1, TP53, NBN, and MDC. This will lay the groundwork to allow us to identify key binding pockets that can be targeted in BRCA1 driven breast carcinoma in line with the mission of the Gray Foundation to accelerate research on BRCA-related cancers.

Shaneen Singh, Associate Professor, Biology Department
Congratulations to our BCCC-CURE PIs on their additional success in securing grant funds

FEDERAL GRANTS

Professor Cheryl Carmichael
"Non-Academic Research Internships for Graduate Students (INTERN): Science Communication Training"
National Science Foundation

Professor Margrethe Horlyck-Romanovsky
"New York City Ghanaian Immigrant Mental Health and Well-Being Project"
National Institutes of Health

Professor Mariana Torrente
"U-RISE at Brooklyn College"
National Institutes of Health

INTERNAL and OTHER GRANTS

Professor Devorah Kletenik
"Designing for Accessibility: Using Experiential Learning Opportunities to Teach About Inclusive Design."
CUNY NYC Tech Talent Pipeline

"Play Ball: Understanding Neurodiversity and Accessibility"
SIGCSE Special Projects

"Developing Neurodiversity Simulation Games for Accessibility Instruction"
PSC CUNY Cycle 54

Professor Mariana Torrente
Validating H3S10ph Dysregulation in ALS
PSC CUNY Cycle 54

The BCCC-CURE (via the Gray Foundation) has created an initiative to support doctoral-student led undergraduate summer opportunities in different areas of research, with one undergraduate researcher mentored by one doctoral student. Through this tiered mentorship structure, the mentoring initiative prepares undergraduates to conduct independent research in a collaborative environment, while training the Doctoral Researchers to become successful mentors. We are happy to announce the first cohort of BCCC-CURE Summer Doctoral Student Mentors

Philip Asamani
CUNY Biochemistry PhD Program; BC Chemistry Department

Danielle Hazeltine
CUNY Psychology PhD Program; BC Psychology Department

Javier Lopez Hernandez
CUNY Biochemistry PhD Program; BC Chemistry Department
We congratulate our six Summer 2023 Undergraduate Research Interns, as they participate in 8-weeks of state-of-the-art cancer research and professional development activities with a BCCC-CURE member at Brooklyn College. These students will also earn a stipend supported by the Gray Foundation.

(L to R) Yelyzaveta Kurchak, Jason Rivera, Nitu Farhin, Sophia Kebadze, Shevar Richards, & David Aini (not pictured)

Congratulations to the four recipients of the Gray Foundation-BCCC-CURE Travel Grant funds to support research presentations in the Summer and Fall of 2023.

(L to R) Ismail Kadam, Igor Semchenkov Pastukhov, Eli Orugbani, & Kaitlyn Chan (not pictured)

Thank you to our three BCCC-CURE interns of 2022 and 2023, and Congratulations on graduating from Brooklyn College, Class of 2023!

(L to R) Xin Yi Li, Sheneene Robinson, Ana Bartolomé, Jessica Morales, Sheena Philogene
Congratulations to our recent BCCC-CURE doctoral graduates!

Samantha Cobos (advisor: Prof. Mariana Torrente)
Nazia Nayeem (advisor: Prof. Maria Contel)
Oliver Turque (advisor: Prof. Alexander Greer)

2023 DOCTORAL GRADUATES

In the first six months of 2023, our researchers published 24 cancer and health related articles and book chapters in over 20 books and journals.

**ACS Biomaterials Science & Engineering**

**Bone Reports**
Yildirim, G., Budell, W. C., Berezovska, O., Yagerman, S., Maliath, S. S., Mastrokostas, P., ... & Dowd, T. L. Lead induced differences in bone properties in osteocalcin+/+ and−/− female mice.

**Cancers**
Lei, B., Jiang, X., & Saxena, A. TCGA Expression Analyses of 10 Carcinoma Types Reveal Clinically Significant Racial Differences.

**Cancer Research**

Huang, A., Saxena, A., & Patel, M. Role of FadA secreting Fusobacterium nucleatum in initiation and progression of colorectal cancer.

**Chemical Biology & Drug Design**
Lotfaliansaremi, S., Cornwell, S., Casillas, C., Sabio, M., Tolias, P., Windsor, W., & Paliwal, S. Design and biological characterization of a series of dual mechanism ERK1/2 inhibitors with a Triazolopyridinone core.

**Journal of Developmental Biology**
Schwarzstein, M., Alam, F., Toure, M., & Yanowitz, J. L. An Emerging Animal Model for Querying the Role of Whole Genome Duplication in Development, Evolution, and Disease.

**Journal of Fungi**
Lipke, P. N., & Ragonis-Bachar, P. Sticking to the Subject: Multifunctionality in Microbial Adhesins.

**Journal of Postsecondary Education & Disability**
Adler, R. F., & Kletenik, D. Accessibility for All: Introducing IT Accessibility in Postsecondary Computer Science Programs for K-12 Teachers.

**Molecular Biology of the Cell**
Torrente, M., & Dilek, O. Challenges and opportunities in maintaining research momentum at a primarily undergraduate institution.

**Nutrients**

**Pathogens**
Scientific and Educational Seminars and Symposia

**Feb 3rd, 12:30-1:30PM** Joint Scientific Seminar with the Computer Science Department by PhD Student Naifeng Liu (Advisor: Dr. Devorah Kletenik) - Zoom seminar. “Biomedical Triple Extraction Using NLP”.
Host: Dr. Jennifer Basil

**Feb 10th, 11:00-12:00PM** Joint Scientific Seminar with the Chemistry Department by Dr. Daniele Di Marino (Associate Professor, Polytechnic University of Marche, Department of Life and Environmental
Tackling translational control in cancer: structural and functional characterization of CYFIP1-derived peptidomimetic. Host: Dr. Emilio Gallicchio

**Feb 23rd, 12:30-1:30PM** Joint Scientific Seminar with the Biology Department by Dr. Debyani Chakravarty, (Lead Scientist, OncoKB, Kravis Center for Molecular Oncology and Assistant Attending, Molecular Diagnostic Service, Department of Pathology and Laboratory Medicine). “Clinical Cancer Genomics and Precision Oncology at MSK”. Host: Dr. Maria Contel at the BC Library, Woody Tanger Auditorium 1:30-2:30PM Networking Light Lunch for students and faculty at the Lily Pond Room. Click to register for this event.

**March 3rd, 12:30-1:30PM** Joint Scientific Seminar with the Chemistry Department by Dr. Dan Sackett (Division of Basic and Translational Biophysics Eunice Kennedy Shriver National Institute of Child Health and Human Development, NIH). “Colchicine: A Gift from the Past with Novel Leads for the Future”. Host: Dr. Ryan Murelli

**May 5th, 12:30-1:30PM** Joint seminar with the Chemistry Department by Dr. Annie Castonguay (Armand-Frappier Santé Biotechnologie Research Centre. INRS, Montreal, Canada). “Design of Biologically Active Ruthenium-Based Organometallic Complexes”. Host: Dr. Maria Contel

**May 28th, 2023 10:00-12:00PM** Scientific Seminar/PhD Student Dissertation by Samantha Cobos (PhD. Program in Chemistry, The Graduate Center of the City University of New York). “Disordered Protein Aggregates Are Linked to Changes in the Histone Post-Translational Modification Landscape in Disease and Non-Disease Models”. Research Mentor: Dr. Mariana Torrente.

**May 31st, 2023 11:00-1:00PM** Scientific Seminar/PhD Student Dissertation by Nazia Nayeem (MCD, Program in Biology, The Graduate Center of the City University of New York). “Pre-clinical Evaluation of a Potential Ruthenium-Based Chemotherapeutic Agent for the Treatment of Triple Negative Breast Cancer” Research Mentor: Dr. Maria Contel.

Community Outreach Events

**February 4th, 9:00-4:00PM** Health Fair with Free Mammograms for Latinas (at Mixteca Organization) 11:00-12:00PM Facebook Live Talk on Preventing Men’s Cancers in Latinas 1:00-2:00PM Facebook Live Talk on Preventing Women’s Cancers in Latinas. (@MixtecaOrganization, Inc.)

**March 23rd, 12:00-2:00PM** Health information session for BC staff on Cancer Prevention, Treatment, and Clinical Trials in Brooklyn "Talking about Cancer. These Conversations Save Lives." Luncheon served (at the Maroon & Gold Rooms in SUBO).

**March 30th, 12:30-2:00PM** Hybrid Information Session "Embracing the Power of Youth: Champions Against HPV-associated Cancers." Co-sponsored with the Health and Nutrition Sciences Department. Pizza provided. Hosted by Dr. Margrethe Horlyck-Romanovsky.

**April 1st, 9:00-4:00PM** Health Fair with Free Mammograms for Latinas (at Mixteca Organization) 11:00-12:00PM Facebook Live Talk on Preventing Men’s Cancers in Latinas 1:00-2:00PM Facebook Live Talk on Preventing Women’s Cancers in Latinas.
April 18th, 12:20-2:05PM BC Cancer Center (BCCC-CURE) and Health and Nutrition Sciences Department, AAIUH Led Lung Cancer Health Education Session. Hosted by Dr. Horlyck-Romanovsky, Dr. Kiyoka Koizumi, & Prof. Jolanta Kruszelnicka.

April 27th, 12:00-2:30PM BC Health and Wellness Fair: Taking Care of Your Own Health (at the BC West Quad) Co-hosted by BCCC-CURE and BC Division of Student Affairs, Health, and Wellness.

May 23rd, 5:30-7:30PM Patient Education Program, "Navigating Cance Care". Hosted by the Leukemia and Lymphoma Society at St. Stephen’s Lutheran Church.
Aneta Mieszawska, Ph.D
Associate Professor, Chemistry Department, Brooklyn College and Faculty, Chemistry, Biology and Biochemistry PhD Programs, The Graduate Center

In 2-3 sentences can you describe your cancer research topic?

My research focuses on the development of novel and multifunctional nanoparticle systems for cancer diagnosis and treatment. A current major area is the development of peptide-coated nanoparticles encapsulating platinum agents for ovarian cancer therapy. The nanoparticles can be further modified to have a variety of additional functional properties, such as fluorescence or active targeting to cancer cells.

When and where did you start doing cancer research?

I started doing cancer research in 2011 when I joined Nanomedicine Research Lab in Translational and Molecular Imaging Institute at Icahn School of Medicine at Mount Sinai.

When did you start your research at Brooklyn College?

I joined the Chemistry Department of Brooklyn College as an Assistant Professor in the Fall 2013, where I started my chemical biology lab.

Briefly, what are the most rewarding and most challenging components of your cancer research career?

I was amazed when I was starting out - and I still am today - that we could alter cell’s faulty switches with drugs in a very specific way, and in addition enhance the effects using nanocarriers. This may have a huge impact on human life. So my passion is based heavily on the dual attraction of scientific curiosity and a desire to cure disease. Being a part of translational research is very rewarding and working very closely with both basic researchers and clinicians has been fantastic.

Do you collaborate with external institutions?

Yes, I collaborate with Icahn School of Medicine at Mount Sinai.

What do you do for fun in your free time?

I love traveling, running and hiking.
Philip Asamani  
PhD Student, Biochemistry Program, Brooklyn College and The Graduate Center, The City University of New York

In 2-3 sentences can you describe your cancer research topic?

Epigenetic markers play an important role in cancer progression. Most research in drug discovery focuses on developing effective biological candidates that regulate these epigenetic tools. My research spans computational, peptide chemistry, and chemical biology. I'm using knowledge from these areas to develop bio-esters stapled peptide inhibitors to regulate PRC2. This epigenetic complex regulates cancer progression by silencing some key tumor suppressors in the biological system. Targeting such a complex will be vital for cancer therapy.

When did you start your research at Brooklyn College? When did you join the Graduate Center?

My interest in pursuing cancer research started way back in 2016 during my undergraduate studies but officially, started this pathway of research in 2021 when I joined The Graduate Center-CUNY for my Ph.D. Program in Biochemistry. In September 2022, I joined the Gerona Navarro LAB in Brooklyn College as a graduate student.

Briefly, what are the most rewarding and most challenging components of your doctoral studies?

As a doctoral graduate student, one of the gratifying things is seeing my ideas bring forth outcomes that will not answer questions about my curiosity alone but help the contribution of science. For the past 1-2 years in my study, especially after officially starting working on the main project toward my Ph.D. thesis, I can boastfully say that there has been a massive improvement in my communication skills while sharing knowledge, developing specific skills to become an expert and the ability to work in a collaborative environment. Finally, having PIs who are down to earth and always ready to give me a chance to try my idea is one thing I’m grateful for. The most challenging aspect of the journey is the frustration that sets in especially when experiments are not working as expected.

Do you collaborate with external institutions?

Yes, my lab have collaboration with Daniel Heller’s Lab at Memorial Sloan kettering Cancer Center.

How has BCCC-CURE supported you?

The BCCC-CURE has been of great support to me through this early stage of my studies. The center has helped me to sharpen my mentorship skills through the Gray Foundation grant. This grant allowed Ph.D. students like myself who are passionate about teaching and mentorship to mentor students. The BCCC-CURE hosts stimulating seminars that bring researchers from different backgrounds allowing students to learn from such experts from their related fields.

What do are your plans for the future?

I have always loved to have a career in academia to raise a new generation of critical-thinking and problem-solving scientists. For this reason, my desire in the future after successfully graduating, I would like to role in academia as a PI and teaching professor.

What do you do for fun in your free time?

I love politics, listening to stimulating conversations, argument, and try to hangout with my friends. Also, I enjoy working out.
In 2-3 sentences can you describe your role at BCCC-CURE?

I am Operations Manager and Community Outreach Coordinator at BCCC-CURE. In my operational role, I am in charge of the financial aspects of our office as well as the logistics of event planning. Additionally, I manage our interns, who do a wonderful job creating cancer prevention content, fliers for our events and posts for our social media.

In my role as Community Outreach Coordinator, I work with our Associate Director of Community Outreach, Prof. Jennifer Basil, to coordinate events in which health educators from partner organizations, give cancer prevention information sessions to members of the community.

When did you start your role at BCCC-CURE?

I have been at BCCC-CURE since the very beginning. We started the center in Fall of 2020, while in the middle of the pandemic, and we did not have an actual office at BC until May of 2022, so you can say that there were two start dates. Being able to physically be in a new office space after so much time, working from home, was a wonderful experience!

Briefly, what are the most rewarding and most challenging components of your role at BCCC-CURE?

The most rewarding part of my job is undoubtedly being able to provide information to community members about cancer prevention and to help students with some of our academic programs and research grants. The most challenging component is being able to balance all the different types of tasks I have to do as both an operations manager and a community outreach coordinator. However, I love being able to do the managerial work to make the center run smoothly, and at the same time, continue to be in touch with the students and the community I so much love to help!

Can you tell us a little bit about your own research?

I do not do cancer research per se, since I am not a professor. My background is in bilingual education and community organizing within the Latinx communities in Brooklyn. However, I would love to play a role in helping some of our Health and Nutrition Science and Psychology Researchers study the impact that HPV awareness campaigns can have in preventing HPV related cancers in the Latinx community in Brooklyn.

In your role, do you collaborate with external institutions?

Yes, building new collaborations and enhancing new initiatives with our partners, both medical centers and community organizations, is a large part of my job. Some of the institutions we work with are Brooklyn non-for-profit organizations and hospitals that are supporting those most vulnerable to health disparities in our community. Mixteca Organization, for example, works with the Latinx community in Sunset Park. The last two years, we have provided cancer prevention information sessions in Spanish to their members and helped them get free breast cancer screenings thanks to our partners Mount Sinai Tisch Cancer Center, and Project Renewal.

What do you do for fun in your free time?

My favorite thing to do lately is play board games with friends and family. I love hiking and being in nature as much as I can, even if it means a walk through Prospect Park. But my all time favorite is to travel to new places where I can learn new things and feel like I’m a kid living an adventure.
BCCC-CURE Fall 2023 Scientific Seminars

**September 22nd**, First Brooklyn Blood Cancer Symposium (4 speakers confirmed including Keynote speaker).

**September 29th**, Joint seminar with the Chemistry Department. Assist. Prof. Columba de la Parra (Chemistry Department, Lehman College CUNY). Title: “An alternate translation initiation by DAP5 in Breast Cancer and its Role in Cancer Metabolism”. Host: Prof. Maria Contel

**November 3rd**, Joint seminar with the Chemistry Department. Prof. Jason S. Lewis (BCCC-CURE Advisory Board member; Emily Tow Chair in Oncology; Vice Chair for Research, Department of Radiology; Chief, Radiochemistry and Imaging Sciences Service; Director of the Radiochemistry and Molecular Imaging Probe Core Facility, Memorial Sloan Kettering Cancer Center). Title “Interrogating Cancer through Imaging”. Scientific talk and student’s career event. Host: Prof. Maria Contel

**December 1st**, Joint seminar with the Biology Department. Prof. Robert G. Roeder (Arnold and Mabel Beckman Professor, Laboratory of Biochemistry & Molecular Biology, The Rockefeller University). Title: “Transcriptional regulatory mechanisms in animal cells”. Host: Prof. Murat Alper Cevher

**December 8th**, Joint seminar with the Chemistry Department. Dr. Guillermo Moreno Alcantar. Alexander von Humboldt Postdoctoral Fellow. Technical University of Munich, Germany. Title: “Supramolecular metallassemblies: multifunctional platforms for biomedical applications”. Host: Prof. Maria Contel

Please visit our [website](#) to find timely information about our past and upcoming educational opportunities, community outreach events, and information about becoming a BCCC-CURE member.

Thank you,
The BCCC-CURE Team

[Contact our office!]