ALBERT DORMAN
HONORS COLLEGEHONORS INACTION2024





Dear Friends,

I am pleased to present Honors in Action 2024 highlighting some of the many wonderful stories from the past year. The work you see presented here is almost entirely funded by the alumni and friends of the college. Thank you!

The 2023-24 academic year was marked by the passing of Albert Dorman '45 '99 HON. Dr. Dorman, as he will be forever remembered by the Dorman Scholars, was a legend in the world of engineering, a true visionary who never wavered in his commitment to making the world better for others. It was wonderful to honor his memory with his daughter, Laura Dorman, his grandniece, Lilian Boyle, and so many of our alumni, friends, colleagues, and scholars. It was particularly moving to hear the stories from the early years of the Dorman College from President Emeritus Joel Bloom, Dan Henderson '11 HON, Robert Hillier '17 HON, Dhiraj Shah '99H, and Dick Sweeney '82. The deep commitment to intellectual rigor and professional excellence joined with the desire to take on the most important challenges of the day and solve them for the good of all that shaped Al Dorman's life continue to guide our every decision in the college he founded nearly 30 years ago. The Albert Dorman Honors College will not only preserve his memory, but forever carry forward the torch he lit.

We carried that torch significantly forward this past summer when we hired Dr. Emily Tancredi-Brice Agbenyega. Dr. Agbenyega is Dorman College's first university lecturer. Her research examines the barriers that limit access to STEM education for women and minorities. She is developing innovative honors servicelearning courses and filling a significant lacuna in the educational offerings of NJIT. Her courses will allow our scholars to have a deeper understanding of the challenges we face as a city and society, and how they can use their scientific and technical training to help solve real-world problems.

Please take an extra moment to read the letter Dr. Dorman wrote as editor for the *Nucleus* in 1945, when World War II was still being fought in the Pacific. Our work, like his, is a labor of love. We still feel the urgency of his call to come together, to conceive of ourselves as citizens of the world, and build a better society for all, no matter race, creed, or origin.

Sincerely,

J.H.

Louis I. Hamilton, Ph.D. Dean, Albert Dorman Honors College

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ON THE FRONT COVER: Campus Center Rooftop Garden Photo by Peter Labrozzi, NJIT Photographer

ON THE BACK COVER: Letter to the Class of 1945, Albert Dorman Photo courtesy of Nucleus Yearbook, May 1945 RICHARD SCHATZBERG, M.S. '93 (CHAIR) Chief Commercial Officer NeST Technologies, Inc.

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TABLE OF CONTENTS

Remembering Albert Dorman	2
Honors Faculty Highlight	4
Honors Abroad	6
Honors Research	10
Recognition: Scholarships and Fellowships	26
Student Highlights	28
Civic Engagement and Community	34
The Dean's Fund for Student Development	36
ADHC by the Numbers INSIDE BACK COV	ER

In Memory of **Dr. Albert Dorman (1926-2023)**

As we celebrate the triumphs of the 2023-2024 academic year, it's also an opportunity to reflect on the incredible life of Albert Dorman '45 '99 HON. Last November, Dr. Dorman passed away at the age of 97, having dedicated his incredible career to aiding and improving the lives of those around him.

Dr. Dorman graduated first in his class from NJIT with his B.S. in Mechanical Engineering. Following graduation, he served in the U.S. Army Corps of Engineers, and received his M.S. in Civil Engineering from USC in 1962.

In 1954, Dr. Dorman was selected by Walt Disney for the position of civil engineer of record for Disneyland. In retrospect, he admitted that the responsible choice would have been to decline the honor, given his inexperience at the time. However, that

wouldn't have been the Al Dorman way; "I can't say 'no, thank you' to any major challenge," he noted in a 2017 interview, "I can say I'll do my best."

Following his work at Disneyland, Dr. Dorman served as the city engineer for three cities in Kings County, California. Outside of his office, he and his family were equally engaged in the life of the community, supporting events at the public library, local concert series, and for Kiwanis. Later in his career, he became the founding chair and CEO of AECOM, one of the largest international engineering and architectural consulting firms. While over \$14 billion in annual revenue is far from insignificant, Dr. Dorman was most proud of AECOM's dedication to its employees and community, consistently

regarded among the "Best Places to Work" in the nation.

Dedication to serving his community was a constant theme in Al Dorman's life. He served as a board member for countless organizations in the Los Angeles area, including the City of Los Angeles, the State of California Chamber of Commerce, the Gladstone Institute, and the National Foundation for the Advancement in the Arts. In 1984, he served the international community as a member of the host committee for the Los Angeles Olympics, where he had the honor of bearing the Olympic Torch during its relay to the opening ceremonies.



Albert Dorman in the NJIT May 1945 Yearbook



In 1995, Dr. Dorman made a founding gift that elevated the honors program at NJIT into a college of its own. Considered to be the first honors college at a public polytechnic university, the Albert Dorman Honors College has been able to offer unique opportunities in leadership, community service, and education to students across disciplines for nearly three decades. Always humble, Dr. Dorman's pride in the ADHC came from its student successes, remarking "To me...the 'Albert Dorman' isn't the important thing. It's the 'Honors."

Albert Dorman continued to serve as a mentor, leader, and member of his community, whether that be in Kings County, at NJIT, or internationally, until the very end. In 2021, he served as coexecutive producer for the Emmy-Award winning documentary, *Lives not Grades* chronicling the efforts of a university class to alleviate the suffering of migrants. His wife, children, and grandchildren continue to support the university, establishing three new funding sources to support STEM leadership and education at NJIT in 2023. Dr. Dorman was known for his generosity, ingenuity, and leadership—values that are instilled among ADHC scholars during their education. He will be missed by the many lives he touched, including the over 6,000 graduates who are grateful for the opportunities provided by their honors education.



Dr. Dorman and Joan Dorman visiting the Honors College May 2017

In April of 2024, the university remembered Dr. Dorman with a three-day celebration of his extraordinary life and legacy. ADHC alumni joined current scholars in conversation of Dr. Dorman's model of leadership, his experience as a young man working at Disneyland, and his vision for the future of engineering and architecture.







Left: Dick Sweeney '82 '18 HON, J. Robert Hillier '17 HON, Dhiraj Shah '99H, and current scholar Sri Ganisetti '25H join Dan Henderson '11 HON [not pictured] for a panel on Albert Dorman and Leadership

Center: Meagan Hopper '08H, Horane Henry '10H '14, and Tom K. Morris share their experiences Engineering Disney

Right: Samir Saini '97H, Dean Louis Hamilton, Michael J. Hanrahan '96H, and Karen Cilento Ekshian '12H discuss The Future of Civil Engineering and Architecture

ADHC Hires First University Lecturer: Emily Tancredi-Brice Agbenyega

Dr. Emily Tancredi-Brice Agbenyega joined the Albert Dorman Honors College in August 2024 as a university lecturer in Civic Engagement. In this new role, Dr. Agbenyega is responsible for developing and implementing honors service-learning courses as well as expanding civic engagement opportunities, incorporating her experience with interdisciplinary education in an urban environment.

Dr. Agbenyega comes to NJIT after teaching sociology at CUNY and SUNY. As an educator, Dr. Agbenyega prepares diverse students to develop the knowledge and skills needed to do community-engaged research that positively impacts their communities. In her courses, she employs reflective, experiential learning approaches that help students develop critical thinking and leadership skills.

Dr. Agbenyega holds a Ph.D. in Urban Education from Temple University where she researched the impact of sociocultural and science identity on the career trajectories of Latina engineers. She has presented her work at various education research conferences and has collaborated on publications on topics including student motivation and engagement in STEM and qualitative research.

During her first year as part of the ADHC team, Dr. Agbenyega looks forward to involving Honors scholars in her research and expects that their insights as STEAM majors and civic-minded students will contribute meaningfully to the research process. This fall, Dr. Agbenyega started partnering with a local STEAM organization that works with youth on a service-learning project. Scholars will be engaged in both the design and implementation of the project. She looks forward to accompanying students through the process of applying their training to working with a community partner to address a need in the community. Overall, Dr. Agbenyega is eager to learn more about NJIT's dynamic community and to work with scholars to have a positive impact both on and off campus.





hotos: ADHC Team



Dr. Agbenyega will be teaching a new honors course designed for Dorman Scholars in Spring 2025. Entitled Science, Technology, and Urban Transformation (STS325), this course will explore the transformative role of science, technology, and engineering in urban environments, with a focus on Newark, New Jersey. Students will learn how these disciplines can address urban challenges and contribute to sustainable urban development. Specifically, students will engage with local community partners to develop and implement scientific and technological solutions in an urban setting. Students will earn external service hours through their participation in course projects.

COURSES BY HONORS AFFILIATED FACULTY 2024-2025 ENGL 102H: Introduction to Research Writing FED 101H: Fundamentals of Engineering Design MATH 105H: Elementary Probability and Statistics PHYS 121H: Physics II

FACULTY FELLOWS COURSES 2024-2025

Introduction to Generative AI - Amy Hoover

Migration from Southeast Europe and the Middle East to New Jersey - Elektra Kostopoulou

Common Gound: Public Interest Design/Build Methods for Building Community - Erin Pellegrino and Charlie Firestone

Biology of Sustainable Food Systems - Maria Stanko Maneet Kaur and Sarabjit Singh '02H, '03 Honors Faculty Fellow in Agriculture and Climate Change

Design Thinking: Addressing Structural Inequality - Michael Lee Dr. Joel and Dr. Diane Bloom Honors Faculty Fellowship in STEM Leadership

Computer Systems Security - Ryan Tolboom

From Calligraphy to Coding: A Biomedical Engineer's Journey in Taiwan

In January of 2024, scholars were offered the opportunity to travel to Taipei, Taiwan for two weeks of cultural immersion, Mandarin lessons, and building connections at the National Taipei University of Technology (NTUT, or Taipei Tech). Aliza Mujahid, now a fourth-year biomedical engineering major, shared her experience visiting NTUT in January, and returning in July.



Traveling to Taiwan and experiencing a different culture has significantly broadened my horizons, enhancing my perception of various experiences and ideas from around the world. The journey began with a warm welcome from the staff at Taipei Tech and concluded with a dinner alongside all the deans of the National University, making me feel more privileged than ever. Each day was thoroughly planned, and the food at every location offered a uniquely unforgettable taste. I tried distinct seafood that I had never encountered before, including oysters, octopus, special mushrooms, shrimp with eyes, and much more. The ice cream flavors themselves were unique; you won't find chocolate, vanilla, or strawberry, but rather sesame, soy, and taro. The people are incredibly hospitable and caring, which reflects their meticulous attention to detail. We visited elderly members of the Taipei community, whose love and care were impeccable. They even prepared a song for us, and we were featured on local Taiwanese television. Everything was impressive. I learned a great deal about traditional Taiwanese rituals and culture. My favorites were calligraphy and the tea ceremony. There is a proper way to do everything, from creating the right atmosphere to choosing clothes, from maintaining peacefulness to using the right gestures; every detail counts. The discipline is evident everywhere, from people queuing orderly without any hustle and

bustle to exemplary cleanliness, which embodies what a disciplined society truly looks like. The transportation system is so clean and safe that I, as a woman, had no issues going anywhere alone. Everyone treated each other with respect. From the seaside in Tamsui to the hot springs in Shifen and the Raohe Street Market, every experience was noteworthy. The locales around each district of Taipei had a unique feature attached to them, making it worth visiting each and every one. The peach plum tea of Tamsui and the handicrafts of Yilan, showcasing astounding talent across arts and theater, made this whole trip a complete package of immersing ourselves in a new world in just 14 days. This global learning opportunity provided by the Albert Dorman Honors College has been one of the best experiences I've had so far.









Studying abroad in Taiwan to learn Mandarin and participate in an international robotics competition was one of the most transformative experiences of my academic journey. Immersing myself in the language not only improved my Chinese speaking skills but also deepened my understanding of the culture. This exposure broadened my perspective on global collaboration and innovation—an invaluable insight for an aspiring biomedical engineer. The competitive atmosphere, combined with the precision and attention to detail in Taiwanese robotics, challenged me to refine both my technical and problem-solving skills.

During the summer of 2024, I returned to Taiwan for the robotics competition, where I had the opportunity to apply my learning in a real-world setting. This was one of the most enriching hands-on electronics experiences I have had to date. Working with equipment such as the Pixy2 camera, DC motors, ultrasonic sensors, and integrating them with Arduino code, I gained practical expertise in building a functional robotic system. This experience not only taught me how to collaborate effectively under presssure but also how to troubleshoot and quickly iterate to refine our designs.

These technical skills have had a lasting impact on my academic work. I've already started applying them to my capstone project, which involves using a Pixy2 camera and ultrasonic sensors to control a robotic arm based on an individual's movements. My experience in Taiwan strengthened my confidence in integrating hardware and software components, a crucial aspect of my current and future work. It also underscored the importance of cross-cultural collaboration in engineering, preparing me to contribute to global healthcare solutions.

Aliza Mujahid '25H

2024 NTUT International Competition PBL Workshop at Taipei Tech

Aliza Mujahid, Hari Om Shah, Haripriya Kemisetti, and An'Jolae Seabrooks participated in the 2024 NTUT International Competition PBL Workshop during their time in Taiwan. Students from over six countries, 12 universities, and divided into nine diverse teams came together to work on an autonomous vehicle design project. Two NJIT students' teams received prizes, with Hari Om Shah's team taking gold, and Haripriya Kemisetti's team winning silver.

Dante, Design, and Discovery: Dorman Scholars in Italy

In the 2024 spring semester, 17 scholars traveled to Italy for an experience unlike anything they had known before. Alex Patchedjiev, a fourth-year Computer Science major, described his 10 days in Italy with his classmates as "genuinely magical." Despite starting the trip as acquaintances, Patchedjiev says the group dynamic became one of his fondest memories. "There was such great energy," he noted, when asked about the size of the group, "we all still talk to each other." Even when they were free to explore on their own, the group would reconvene for dinner that night and chat about their adventures. The opportunity was only one component of Dean Louis Hamilton's course Dante: Heaven, Hell, and Medival Florence, a history course that immersed scholars in the world and literary works of Dante Alighieri. Patchedjiev says he walked away from the course as an "amateur Dante scholar," describing the course material as "not watered down at all. We didn't just read the Divine Comedy, we read analyses and historical documents and commentary—so much commentary!" The streets of Florence followed the scholars back home, inspiring their projects as they created interactive maps that bridged the modern city with Dantean events. Fully embracing the "study" in studying abroad, the scholars of the 2024 Dante course returned from Italy with a newfound poetic passion and memories to cherish for a lifetime.



The Spring 2024 faculty-led study abroad trip to Rome and Florence was my first experience going to Europe. I was quite frightened to embark on a 10-day trip to a foreign country, one in which I did not speak the native language, with 16 of my fellow Honors College peers whose names I could barely remember as we numbly sat at our departing flight's terminal barely functioning after a long week of midterms. However, those 10 days spent exploring various medieval churches and museums felt like infinity, in hindsight.

A naive freshman at the time, I had never experienced such bright and prolonged exposure to a new facet of the world, or to a set of Honors students so diverse. Being a liberal arts major at a STEM institution had often left me feeling isolated and separate from my ADHC peers, but the Dante: Heaven, Hell, and Florence class made seemingly complex ideas, such as medieval religion and The Divine Comedy, fairly accessible yet challenging enough that it felt as though you were truly learning, rather than simply studying or memorizing information. The class also stressed the sheer importance of fostering skills such as cultural awareness and intellectual vitality, especially considering the context of our mediadriven society. I am not ashamed to say that there are absolutely no words that can acurately describe how much I've changed from that class, whether it be in the classroom, on the streets of Firenze, or from my classmates. But I can say, I think I experienced what the Italians call "la dolce vita"-the good life.

Shreya Sureshkumar '27H











As an architecture student, my study abroad experience in Italy was invaluable. Experiencing first hand the places I'd only seen in textbooks completed my interpretations of these great works. However, I think the moment that stuck with me most was when a friend and I stumbled upon the workshop of a local artist in Arezzo. Neither of us are fluent in Italian, and he only knew a few English words, but we used a vocal translation app in order to speak to each other— us telling him about the university we came from back in the states, and him telling us about his art education in Italy, along with his current work as a historical art restorer. It was amazing to be up close to these pieces of history that were actively being preserved and learn about them from someone so educated. As remarkable as all of the museums and tours we took were, that conversation was the most impactful to me.

Emma Fernandes-Santinho '28H

Honors Summer Research Institute 2024

The Honors Summer Research Institute (HSRI) provides participants with an eight-week interdisciplinary workshop sequence that helps them develop their research projects and communication skills.

In its seventh year, HSRI hosted a record number of scholars, tripling in size over the last three years, and awarding over \$160,000 in grants. This summer, the Albert Dorman Honors College's HSRI, under the guidance of Dr. Elektra Kostopoulou, Dr. Pedro de la Torre, and Ms. Tamara Bacsik, provided interdisciplinary-research, scholarly communication, and conference presentation training to 63 scholars. The participants' research foci included the environment, medical, and social science disciplines.

The HSRI is generously funded by the donors to the Dorman College Dean's Fund for Student Development, Vatsal Shah '08, '09, '14 (Moonshot Grant for Engaged Scholarship), Langan Engineering (Civil and Environmental Engineering), ANS Geo (Civil and Environmental Engineering), and the Martinson Foundation.



Prizes and Honorable Mentions

ANS Geo Fellows: Isabella Puluse '27H Caroline Vierheilig '27 (Dean's Scholar)

Global Studies Fellow: *Rohan Shah '27H*

Interdisciplinary Digital Studies Fellows: John Mohring '26H Alex Patchedjiev '25H Maharshi Vyas '27H

Langan Engineering Fellow: Lindsay Burke '26H

Medical Humanities Fellows:

Ciara Adams '25H Anushka Dixit '25H Wafiza Julkipli '27H Aaradhya Kumar '27H Albin Mullan '26H Melissa Nanotkar '25H Vidhi Patel '27H Tramina Phan '27H Olena Sen '26H Dhanya Sureshbabu '26H Om Tripathi '25H

Dr. James F. Stevenson Innovation Awards: Third Prize - Sudiksha Sahu '26H Honorable Mention - Ciara Adams '25H Honorable Mention - Mark Nyevgen '26H Honorable Mention - Siya Patel '26H

Summer 2024 HSRI Participants



Podcast Interface Study for Influencer Marketing

Melna Abraham, Class of 2027 and Arianna Alves, Class of 2027 Dr. Eugene Cho Snyder, Humanities and Social Sciences

We designed an online experiment to examine the effects of interface and content cues in podcast advertisements. Specifically, we aim to test whether host-read native ads (vs. pre-recorded ad breaks) within the podcast content as well as embedding a video (vs. audio-only) in the podcast mobile interface alter users' ad perceptions.



Assessing Vergence Speed from Virtual Reality System and Vergence Facility as a Potential Biomarker for Concussions

Ciara Adams, Class of 2025 Dr. Tara Alvarez, Biomedical Engineering

Our team collected and analyzed data from concussed and control participants through a VR system and vergence facility. We compared the vergence speed for both groups and determined it as a biomarker for concussions. In doing so, we also concluded vergence facility is an inexpensive accessible tool sports trainers and physicians can use on the sidelines to screen for concussions.



Dynamic Characterization of Combustion of Powders of Reactive Materials

Neil Ahlawat, Class of 2027 Dr. Edward Dreizin, Chemical and Materials Engineering

My research focused on studying the dynamic characterization of combustion for metalbased reactive materials. We worked on developing an apparatus that uses a focused electrostatic discharge as the combustion method and measured the rate of reaction and energy release.



Creating a GUI to Analyze Motor-Evoked Potentials *Pranav Anthapu, Class of 2026 Dr. Elisa Kallioniemi, Biomedical Engineering*

I developed an analysis method for transcranial magnetic stimulation-affected EMG signals to check their usability before analyzing them. Using Python and associated libraries, I created an accurate usability algorithm based on the signal's similarity to the desired shape.

HONORS RESEARCH





Personality Classification Using Natural Language Processing Darren Bonifacio, Class of 2027 Dr. Amy K. Hoover, Informatics

The usage of chatbots continues to grow in fields like health care and education. To improve the adaptivity chatbots have toward users, I built a machine learning model to predict personality based on human-written text using the OCEAN personality model.

Navigating by Nature: Harnessing Birdsong for Spatial Perception Lindsay Burke, Class of 2026 Dr. Petras Swissler, Mechanical and Industrial Engineering Dr. Julia Hyland-Bruno, Humanities and Social Sciences

I developed a MATLAB program to show how microphones with arbitrary placements and a speaker broadcasting a bird chirp could be used to accurately map a room. This serves as a proof-of-concept to apply for a grant and conduct our research in the real world.



Understanding the Mechanism for Handedness Transformation in Eusocial Snapping Shrimp Kristina Camia, Class of 2026

Dr. Philip Barden, Biological Sciences To investigate if social organisms exhibit unique body forms, I analyzed the morphology of Synalpheus snapping shrimp claws in eusocial and non-eusocial species. Volume and linear measurements were used to reveal a potential relationship between claw morphology and social behavior.



Validating Ground Heat Transfer Models for a Net-Zero House with Basement

Austin Chen, Class of 2027 (Dean's Scholar) (URI)

Dr. Hyojin Kim, Architecture

This research aims to validate ground heat transfer models (GHT), for a net-zero house with a basement, in EnergyPlus, a building energy modeling (BEM) engine. Therefore, simulation results of various GHT models are compared for significant differences between models, in improving simulation abilities across BEM.



Using Blue Light Stimulation to Activate Dmrt3a Neurons, a Genetically Conserved Spinal Interneuron Class, for Gait-specific Limb Use in Larval Zebrafish Diandra Debnath, Class of 2027 Dr. Kristen Severi, Biological Sciences My research used optogenetics to stimulate dmrt3a-expressing neurons and observe motor behavior in larval zebrafish.

Testing mnx1:Gal4:UAS:ChR2-YFP fish, we confirmed that blue light effectively activated the protein channel, validating our experimental approach by stimulating the neurons successfully.



Optimizing the Quantification of Process-Related Impurities in Monoclonal Antibodies Anushka Dixit, Class of 2025

Dr. Hao Chen, Chemistry and Environmental Science

Current trends encompassing therapeutic monoclonal antibodies (mAbs) emphasize the need for rapid technologies to identify process-related impurities, specifically host cell proteins (HCPs), within these mAbs. This research focused on implementing microdroplet protein digestion to expedite the HCP identification process by a factor of one million. Wildtype PCDH(D249V) PCDH(M345R)



Using Al Prediction & Genetic Analysis of the Protocadherin Gene Cluster to Improve Diagnosis Yields of Pathogenic Variant Carriers in Diverse U.S. Populations Dev Doshi, Class of 2026 Markita Schulman, Humanities and Social Sciences

I investigated different PCDH α c2 gene variants' impact on neuron self-avoidance and serotonergic tiling, using viruses to infect PCDH α c2 deletion mouse neurons. Computational models assessed if these variants allow proper neural circuit formation. Insights could lead to novel treatment strategies and precision medicine for neurodevelopmental disorders.



Machine Learning Models to Predict Cholera Infection in an Ottoman Asylum

Saketh Golla, Class of 2026 Dr. Burçak Özlüdil, Albert Dorman Honors College

My research applies machine learning models to classify agents as cholera-infected or not in an agent-based model (ABM) of an Ottoman mental asylum. The goal is to understand what factors caused cholera outbreaks in the asylum by comparison of our model predictions with historical data.



Breast Tissue Synthesis to Improve Cancer Detection

Sathvik Gopu, Class of 2026 Dr. Yelda Semizer, Humanities and Social Sciences

I conducted experiments to analyze lesions in mammograms that indicate breast cancer. Identification of these lesions allowed us to create a training program for novice radiologists to identify factors that indicate breast cancer before the tumor shows up on the mammogram. Early detection of breast cancer has been proved to increase survival rate to almost 90%. With this training program radiologists will be able to detect factors of breast cancer without having years of experience and viewing thousands of mammograms.



Molecular Cloning of Neurodevelopmental Disorder Associated G3BP1 Mutants Keya Gulati, Class of 2026

Dr. Pabitra Sahoo, Biological Sciences

This research focuses on the molecular cloning of G3BP1 mutants linked to neurodevelopmental disorders. By creating and studying these mutants, we aim to understand their role in neural development and uncover potential therapeutic targets for treating associated conditions.

HONORS RESEARCH



The Effect of Perfluorooctanesulfonic Acid (PFOS) on Ovarian Follicles *Steven Habeb, Class of 2025*

Dr. Genoa Warner, Chemistry and Environmental Science

Perfluorooctane sulfonic acid (PFOS) is a man-made chemical commonly found in firefighting foams, non-stick cookware, and water-repellent fabric. I am researching its effect on the female reproductive system using mice as a model, focusing on follicle growth, hormone level changes, and gene expression in ovarian follicles.



Design of Novel Autoimmune Antibody-Binding Peptides in Silicon Meera James, Class of 2027 Dr. Vivek Kumar, Biomedical Engineering

To address an unmet need for new therapeutics for multiple sclerosis, we designed and tested a novel peptide treatment using molecular dynamics, simulating our peptide's interactions in a virtual environment and obtaining data from the simulations that allowed us to analyze its binding efficacy.



Influence of Ultrasound Responsive Xenon Microbubbles on Blood-Brain Barrier Repair Following Traumatic Brain Injury

Wafiza Julkipli, Class of 2027 Dr. Rajarshi Chattaraj, Biomedical Engineering

To evaluate the therapeutic potential of xenon microbubbles in treating traumatic brain injury, I analyzed the neuroprotective effects of the treatment on injured rodents. The results indicated that the targeted delivery of xenon gas yielded significant improvements in blood-brain barrier integrity and reduced neuroinflammation.



The Impact of Visual Clutter on Emotion Recognition in Video Conferencing

Jane Kalla, Class of 2026 Dr. Yelda Semizer, Humanities and Social Sciences

To investigate how visual complexity and ensemble perception affects average emotion recognition in video conferencing settings. I used FantaMorph to morph faces and placed them in different visual complexity conditions with the aim to design features for emotionally engaging video calls.

Global Memory



Applying Parallelism to Optimize the Backpropagation Algorithm Aakash Karlekar, Class of 2027 Dr. Shahriar Afkahmi, Mathematical Sciences

Training AI models can consume large amounts of time and resources. By concurrently performing independent operations within the training process, we can make it more efficient. This project applies this idea to improve the model training process of Scikit-learn, a popular data science library.



Determining If the HCS Independence Finding Holds at Higher Latitudes Marwan Kashkoush, Class of 2026 Hameedullah Farooki, Institute for Space Weather Sciences

Small scale magnetic flux ropes (SMFRs) are very abundant within the solar system yet not well understood. My research aims to explore their behavior specifically near the heliospheric current sheet (HCS) to better understand them as a whole.



Optimizing Bioink Formulations for 3D Bone Bioprinting

Aaradhya Kumar, Class of 2027 Dr. Murat Guvendiren, Chemical and Materials Engineering

My research focuses on developing patientspecific bioinks for 3D bioprinting to treat osteoporosis-related bone defects. This includes assessing bioink printability, strength, and fitting modeling to create adaptable bone scaffolds.



Carbon Dioxide Nanobubbles to Enhance Biodegradation in Food Waste Digesters

Audrey Kormann, Class of 2027 Andrzej Zarzycki, School of Art and Design

In order to increase the sustainability of the NJIT dining hall and create an eco-friendly food waste disposal system, I assessed the impact of carbon dioxide nanobubbles on the efficiency of converting organic waste into renewable energy.

Chlorophyll A intensity



 $\ln(C_{Chla}) = 0.6 \ln(C_{TN}) + 0.36 \ln(C_{TP}) + 0.3 \ln(P_{ann}) - 4.43$



Analyzing Spatiotemporal Variations of Harmful Algal Blooms in New Jersey Lakes Using Artificial Intelligence Techniques and Statistical Tests Yash Kumar Jain, Class of 2025 Dr. Huiran Jin, School of Applied Engineering and Technology

Across 1,283 U.S. lakes, I studied key variables affecting two key indicators of Harmful Algal Blooms: Chlorophyll A concentration and Microcystin concentration. A seasonal regression model revealed temperature, precipitation, total nitrogen concentration, and total phosphorus concentration were key factors influencing intensity and length of blooms.



Morphological Changes in Neuroinflammation Markers After Blast Injuries

Robert Lodge, Class of 2025 (URI) Dr. Bryan Pfister, Biomedical Engineering

My research focused on improving methods for analyzing neural inflammation caused by air pressure blasts. I used the Imagej software to test previously used methods and devise new techniques. Eventually, this analysis could be used to research treatments for injuries from blasts in war zones.



Formulation of Novel Ultrasound Theragnostic Using Protein Nanodroplets for Treating Cancer Mukund Maurya, Class of 2027 Dr. Rajarshi Chattaraj, Biomedical Engineering

Phase-shift nanodroplets (PSNDs) vaporize into bubbles when exposed to high-intensity focused ultrasound (HIFU) and are used for ultrasound imaging and disease treatment. This study introduced a new PSND formulation using recombinant oleosin protein to improve targeting and functionality in treating cancer cells.



The Role of MMP-12 in Inducing Caspase-3 Regulated Apoptosis Following Repetitive Low-Level Blast Injury

Aayush Mehta, Class of 2026 Dr. Bryan Pfister & Dr. Ying Li, Biomedical Engineering

This research utilizes rodent models to investigate the behavioral and neurological effects of repetitive, low-level blast injuries. As significant differences in memory and anxiety-like behavior were not found in the acute stages, next steps include performing chronic behavioral tests and imaging for microglia analysis.



Tracking Mechanisms of Phthalate Toxicity in Mouse Ovaries

Margaret Meschia, Class of 2026 (URI) Dr. Genoa Warner, Chemistry and Environmental Science

Phthalates are plastic additives used for flexibility and durability. They are also toxic to human ovaries. I performed organic synthesis to create a click functionalized phthalate which can connect to small molecules. These structures allow us to determine the nuclear receptor and DNA segment affected.



Developing an Objective Software Toolkit to Assess Pupil Asymmetry *Arush Mishra, Class of 2027*

Dr. Tara Alvarez, Biomedical Engineering This project quantifies pupillary response symmetries in persistent post-concussion symptoms (PPCS) with convergence insufficiency (CI) patients compared to binocularly normal controls. Analysis suggests asymmetry exists and may correlate to a commonly reported concussion symptom—photophobia. Further investigation is warranted as a potential biomarker for concussions.



Analysis of Exoskeleton-Patient Interaction during Exoskeleton-Assisted Locomotion Using 3-D Motion Capture and Computer Simulations

Salma Mohammed, Class of 2027 Dr. Saikat Pal, Biomedical Engineering

Robotic exoskeletons are a new rehabilitation technique for spinal cord injury (SCI) patients to regain mobility. I studied the interactions between an SCI patient and an exoskeleton as the patient walked while wearing the exoskeleton. Using computerized simulations, I estimated the forces involved in exoskeletal-



Immersive Design: Amplifying User Learning With Gamification in VR John Mohring, Class of 2026 Dr. Burçak Özlüdil, Albert Dorman Honors College

I developed features in Unity using gamification to assist in the navigation and engagement of users of the virtual reality environment created for the interactive narrative framework developed in NJIT's Digital Spatial History lab, to teach about architectural history.



The Impact of Environmental pH Changes on Mauthner Cell Development in Astyanax Mexicanus Aryan Mudaliar, Class of 2027 Dr. Daphne Soares, Biological Sciences

This project explores how pH affects dendritic development in developmentally plastic and non-plastic larvae of Astyanax mexicanus, a fish species with surface and cave morphs. I analyzed Mauthner neuron structure in varying pH environments to understand the impacts of water acidification on neuronal development, structure, and function.



Quantifying the Mechanical Competence of the Proximal Femur Using Finite Element Analysis Albin Mullan, Class of 2026 Dr. Saikat Pal, Biomedical Engineering

To determine if the spinal cord injury patient is eligible for exoskeleton-assisted walking, it is imperative to determine the mechanical competency of bone in order to prevent

fractures. My research focuses on creating two biomarkers through finite element modeling to determine proximal tibia competency.



pH-Responsive Oligomers for Nucleic Acid Therapy

Melissa Nanotkar, Class of 2025 Dr. Trevor Del Castillo, Chemistry and Environmental Science

My research focuses on synthesizing polymers for gene therapy delivery. These polymers can be modified to target different organs in the body for specific treatment of diseases, and possibly improve transfection efficiency through enhanced endosomal escape.



The Comparison of PAA and Electrospun Polyaniline Nanofibers in the Creation of Pain Biosensors Stephanie Ng, Class of 2026 Dr. Omowunmi Sadik, Chemistry and Environmental Science

To understand the nature of COX-2, I used a pain simulation to collect blood samples and performed an ELISA. There was no significant COX-2 concentration pattern in response to high temperatures. I also investigated the use of PANI in pain biosensors.



Examining Relationships Between Mood and Music Listening Habits *Rain Nutt, Class of 2025 (Dean's Scholar) Dr. David Rothenberg, Humanities and Social Sciences*

I created a modular research tool and accompanying survey approach that integrates with the music streaming platform Spotify. It can correlate Spotify's algorithmic song analyses ("audio features") of each user's favorite songs with their self-reported mood, both over the past month.



An Ultrasound-Based Chemical Kinetic Model for Unraveling the Mechanism of Decomposing Per- and Polyfluoroalkyl Substances (PFAS) Udochukwu (Laura) Nwanebu, Class of 2027

Dr. Jay Meegoda, Civil and Environmental Engineering

I created a kinetic mode demonstrating PFAS degradation using reaction rate theory, and Avogadro 2.0, NJIT HPC for PFBA, and PFBS to obtain cartesian coordinates optimized to the relative energy of the reactant, transition state, and product.



Utilizing Ultrasounds to Decompose Microplastics

Arwa Ouali, Class of 2027 (URI) Dr. Ashish Borgaonkar, School of Applied Engineering and Technology Dr. Jay Meegoda, Civil and Environmental Engineering

Microplastics currently cannot be degraded without releasing toxic byproducts into the environment. My project utilizes ultrasound to degrade microplastics and tests the particle size and surface charge to determine how efficient ultrasonication is in improving the quality of water.



The Effects of Neuromodulation on the Stability of Neuronal Activity: A Computational Modeling Approach Taylor Pape, Class of 2025 Dr. Farzan Nadim & Dr. Dirk Bucher, Biological Sciences

This investigation evaluated the role neuromodulators play in increasing stability across individuals. A computational model of the Pyloric circuit was first built in NEURON (a simulation environment). The next step is to begin experimenting with different combinations of neuromodulators along with varying concentrations.



The Role of Quadrupolar Magnetic Fields in Initiating a Coronal Mass Ejection

Jaiman Parekh, Class of 2026 Dr. Satoshi Inoue, Physics

I researched the role of certain configuration of magnetic fields on coronal mass ejections. Specifically, I set up a magnetic field with four poles and applied a twisting motion to the inner set of poles. I then investigated how this method differed from current literature.

Role of Stromal Cells for Breast Cancer Invasion in an Engineered Tumor Model

Vidhi Patel, Class of 2027

Dr. Amir K. Miri, Biomedical Engineering The research focused on fabricating a highthroughput 3D model chip to efficiently test breast cancer tumor growth and response to medication. Use of simple lab materials and a high survival rate proved the chip to be a successful contender for drug testing.



Geographical Data Visualization and Analysis for Roman Street Shrines *Alex Patchedjiev, Class of 2025 Dr. Louis Hamilton, Albert Dorman Honors College*

I developed a research tool that allows the Rome Research Group to collaboratively administrate a relational database on street shrines in the city of Rome. The tool allows for spatial analysis on various factors with the results visualized in SharePoint ArcGIS.



Exploring the Synthesis of Sequence-Defined Mixed Alpha-Amino and Beta-Amino Esters and Evaluating Their Effectiveness and Toxicity in Cells *Tramina Phan, Class of 2027 Dr. Trevor Del Castillo, Chemistry and Environmental Science*

To synthesize sequence-defined oligomers, I worked on exploring the potential of decalactone. In addition to polymerizing this monomer, I also hydrolyzed decalactone under several different conditions with the purpose of determining the optimal route for ring openings. All of these reactions were evaluated using NMR and will contribute to future studies.



An Analysis and Optimization of the Factors That Impact Anaerobic Digestion and Biodigester Efficiency Isabella Puluse, Class of 2027 Dr. Martina Decker, School of Art and Design

Biodigesters convert food waste into alternative energy (methane biogas) through the process of anaerobic digestion. I used a 4-beaker setup to analyze different factors that impact methane production, such as the source and amount of bacteria, in order to determine optimal conditions for biodigester efficiency.



CDC42 Molecular Mechanism in Colorectal Tumors Simritt Rai, Class of 2027

Rhea Sansguiri, Class of 2027 Dr. Nan Gao, Rutgers Biological Sciences

Understanding the cellular mechanisms of colorectal cancer are imperative to achieve earlier detection and increase survival rates. We studied the CDC42 gene, which plays a role in cancer cell proliferation, in normal mice cells versus cancerous mice cells in order to determine differences in the cellular interactions.



Are Human Interaction Biases Employed When Using Cross-Species Communication Signals? Grace Revoredo, Class of 2027

Dr. Julia Hyland-Bruno, Humanities and Social Sciences

To investigate if the pervasive alignment behavior within dialogue results from humans' sophisticated linguistic communication or our basic social cognition, I am helping to design the code in an online experiment to explore the extent of nonlinguistic alignment.



Quantifying Beak and Respiratory Movement of Zebra Finches Using DeepLabCut

Sophia Rollo, Class of 2027 Dr. Julia Hyland-Bruno, Humanities and Social Sciences

Zebra finches are songbirds often used to study communication. Communication has many modalities, such as physical movement, that require high quality data to study. I aimed to test the effectiveness of pose-estimation softwares SLEAP and DeepLabCut using zebra finches across individuals and contexts to improve the quality of data collection.



Assessing the Exoskeletal-Assisted Locomotion of Adults With SCI Through 3D Motion Analysis Techniques

Harish Sekar, Class of 2027

Dr. Saikat Pal, Biomedical Engineering Currently, upright mobility in spinal cord injury (SCI) patients can only be restored through wearable exoskeletons. We use motion capture to ensure the safety of SCI patients in exoskeletons, as they are at an increased risk of fracture due to loss of bone density.



Creating a Multi-User Virtual Reality System for Ontology Visualizations *Srinesh Selvaraj, Class of 2027 Dr. Margarita Vinnikov, Informatics* An ontology consists of terms in a specific domain that are connected as a network graph. I am working with the VROOM program, which can visualize complex ontologies in 3D using virtual reality. Using Unity's built-in libraries, I implemented features to make VROOM multiplayer.



Analytical Software Technique for Determining the Natural Frequencies of Pupillary Responses in Vergence Eye Movements

Olena Sen, Class of 2026 Dr. Tara Alvarez, Biomedical Engineering

This study developed a technique for spectral analysis of pupillary responses within persistent post-concussion symptoms (PPCS) with convergence insufficiency (CI) patients. Results demonstrated PPCS-CI patients with photophobia had decreased low frequency magnitudes. Inspiration to validate these differences will expand analysis sample sizes and diagnostic viability.



Enhancing Generalization and Accuracy in Predicting Days of Maintenance Delay for U.S. Navy Ships Jainam Shah, Class of 2027 Dr. Senjuti Basu Roy, Computer Science

This research enhances prediction accuracy for U.S. Navy ship maintenance delays using a robust ML pipeline. It investigates different reduction methods, such as weighted average fusion, to improve predictions. A customized success metric compares these methods by factoring in error and operational costs. BASIC RETRIEVAL-AUGMENTED GENERATION ALGORITHM

Quantifying Global Learning: A Data-Driven Analysis and Visualization of the Study Abroad Experience Rohan Shah, Class of 2027 Dr. Sunil Dhar, Mathematical Sciences I studied the impact of the NJIT study abroad program on student outcomes using an AI LLM Retrieval-Augmented Generation (RAG) algorithm against national benchmarks and displayed my findings via an interactive dashboard for Office of Global Initiatives to

tailor the program to NJIT students' needs.



Upstream Migration of Natural Killer Cells

Arya Shahane, Class of 2027 Dr. Alexander Buffone, Biomedical Engineering

Using literature reviews, I learned of directional migration of natural killer cells (lymphocytes) in vitro to see whether migration occurred with or against the blood's shear flow. Past research suggests that downstream, not upstream, migration will be observed due to integrin expression on the cells.

HONORS RESEARCH



Autonomous Robot Self-Assembly Inspired by Slime Mold Growth Luke Shen, Class of 2027

Dr. Petras Swissler, Mechanical and Industrial Engineering

I studied the navigational and network building ability of slime mold swarms and applied their behavior to build a robot selfassembly algorithm, along with asimulation for testing. Unlike other robot self-assembly systems, my algorithm allows the robot swarm to act autonomously without the need for global communications.



Development of a Novel Male Contraceptive Using Cyclic Peptides to Inhibit Fertilization *Kabir Singh, Class of 2027*

Dr. Vivek Kumar, Biomedical Engineering

Almost half of pregnancies are unintended, with 60% ending in termination. Male contraceptives are limited to condoms and vasectomy. This project aims to design cyclic peptides that block sperm proteins from binding to egg receptors, inhibiting fertilization and offering a novel male contraceptive.



Nature vs. Nurture: The Study of Environmental Influences on Astyanax Social Development

Dhanya Sureshbabu, Class of 2026 Dr. Daphne Soares, Biological Sciences

To test whether environmental influences (nurture) have an impact on genetic disposition (nature), I conducted an observational study on mixed groups of Astyanax mexicanus, a species of fish with a naturally evolved asocial and social morph, and observed changes in their social behavior throughout development.



Sequence-Defined Polyester Oligomers for Nucleic Acid Therapy Girish Subramani, Class of 2026 Dr. Trevor Del Castillo, Chemistry and Environmental Science

Clinicians and biotechnologists have acknowledged the importance of novel chemical-based delivery systems for nucleic acid therapy. I aim to design, synthesize, and test a novel charge-altering releasable transporter (CART) for cell/organ selectivity and nucleic acid delivery efficacy.



Increasing Digital Accessibility of NJIT's Online Learning Presence Jonas Tirona, Class of 2027 Dr. Philip Klobucar, Humanities and Social Sciences

My research identifies barriers to digital accessibility at NJIT and proposes innovative solutions, including a comprehensive digital accessibility training framework that teaches the creation of accessible digital content, to increase digital accessibility and enhance online learning for students with alternative learning needs.





Factors Associated With Research Productivity and NIH Funding in Academic Rhinology

Om Tripathi, Class of 2025 Dr. Andrey Filimonov, New Jersey Medical School

I investigated if the h-index or more contemporary bibliometrics such as relative citation ratio (RCR) are better time and field-independent indicators for scholarly productivity within academic rhinology. Moreover, I studied factors associated with academic rhinology that can highlight inequalities within publications and funding.



Characterizing the Baseline Energy Use for NJIT Campus Buildings: Leveraging High-Resolution Data Caroline Vierheilig, Class of 2027 (Dean's Scholar) Dr. Hyojin Kim, Architecture

To determine the value of using higherresolution spatial and temporal energy data for building performance measurements, I conducted multi-year energy analyses on NJIT campus buildings using data at annual, monthly, and daily time resolutions. Monthly and daily data provided deeper insights into building performance. Percent of Issues Campus or Local



A Statistical Analysis of Student Voice Trends in NJIT's "The Vector" Maharshi Vyas, Class of 2027 Miriam Ascarelli, Humanities and Social Sciences

My research analyzed trends in NJIT's school newspaper, *The Vector*, using statistics. We found a preference for New Jersey over New York, a growing interest in local events, and possible stagnation in *The Vector's* growth.



Point of Care Devices for Zoonotic Disease Detection Nader Zahran, Class of 2027 Dr. Basuray Sagnik, Chemical and Materials Engineering

I helped prototype a novel method for the detection of zoonotic diseases in an efficient, cost effective manner. I connected a raspberry pi with several Labsmith sensors and syringes to measure the impedance of a given sample, and run analysis on the returned values.

Honors Interdisciplinary Research Forum

In the Fall of 2023, ADHC added a new initiative, Honors Interdisciplinary Research Forum (HIRF) to its offerings. Organized and funded by ADHC every semester, HIRF has been conceptualized as an opportunity to incorporate experiential learning into honors education, in this case showcasing and encouraging undergraduate research and providing a platform for practicing scholarly/scientific communication. Initiated in collaboration with Honors Affiliated Faculty in HSS Kim Chen, Jake Slovis, Johanna Deane and Chair Maurie Cohen, in Fall 2023 and Spring 2024, HIRF showcased work from Honors Introduction to Research Writing (ENGL 102) and Honors Introduction to Research Methods (STS 205). The event is a digital poster session that provides a great opportunity for the Dorman scholars to present the research that they have been working on all semester and for members of the community to see the kinds of research our undergraduates are conducting starting in their first year. Faculty members and other volunteers to judge the posters and winners are announced at the end of the event. HIRF is also part of the Honors Colloquium Series and scholars attend as audience to the poster session and select winners for the "Peer Recognition Award."

The inaugural Honors Interdisciplinary Research Forum took place on December 6, 2023 showcasing the work of Dorman Scholars through 100 digital poster presentations. Over 200 scholars and faculty members visited the event and 23 judges evaluated the work. In its second installment on April 19, 2024, close to 100 Albert Dorman Honors College scholars from Introduction to Research Writing and Introduction to Research Methods presented their semester's research, with topics ranging from TikTok influencer marketing to an analysis of healthcare in the United States.









Fall 2023 HIRF Winners

1st Place: Julia Navarro "Hurricane Maria: A Perfect Storm (The Intersection of Colonialism, Climate Change, and Art in Puerto Rico)" **2**nd **Place: Anmol Bhatia** "Effects of Systemic Medical Discrimination on Individuals Who Are Transgender in the U.S." 3rd Place: Graham Beyer "Gamification and Game-Based Learning in Early Computer Science Education"





1st Place: Kaitlyn Huang "Addressing Anxiety and Depression in University Students via Understanding the Gut-Brain Axis and Promoting Gut-Healthy Dining Options"

Spring 2024 HIRF Winners

2nd Place: Puja Bhavasar "Artificial Intelligence Enhanced Portable Optical Coherence Tomography Imaging for Ophthalmic Detection: Improving Ocular Health in Rural India" 3rd Place: Marley Espiritu "The Social Function of 'Delusional'"







Prestigious Fellowships in 2023-2024

Joining NJIT's list of prestigious fellowship awardees, 11 students were recognized for their efforts and achievements during the 2023-2024 academic year.

This class of fellowship recipients majored in an array of disciplines, including biomedical engineering, mechanical engineering, human computer-interaction, chemical engineering, environmental science, architecture, and business. Among them, is a Fulbright grantee who will teach English in Spain during the coming year. Five students received the Benjamin Gilman Scholarship to support their international study and three were selected by Germany's DAAD RISE program to pursue summer research. NJIT also has its first recipient of the Ernest Hollings Scholarship, which provides a two-year academic scholarship and a summer research internship at a NOAA facility.

"So many of our students have taken advantage of the opportunities available at NJIT, and I am delighted by their successes. I am eager to see what the future holds for this accomplished group of students," said Dr. Paul Hoyt-O'Connor, director for honors advising and prestigious fellowships, who highlighted these awardees during a ceremony on April 30, 2024. He firmly believes that these awards will support students as they take the next steps in their academic and professional journeys.

The university has boasted more accolades in the past several years; it has retained its R1 status, which is the highest designation by the Carnegie Classification®, as a research institution. The Princeton Review rankings have featured NJIT in the Top 35 Best Value Colleges.

"We aim to provide a holistic education of the mind and heart. In doing so, we equip students with both power and marketable skills, like being able to articulate ideas, collaborate and have empathy and grit," NJIT President Dr. Teik C. Lim said.

Barry M. Goldwater Scholarship



Danna Valentina Sanchez Hernandez, **Biomedical Engineering**

was awarded the prestigious Barry M. Goldwater Scholarship for her innovative research exploring fluid dynamics and marine life locomotion. Her work, conducted at NJIT's Fluid Locomotion Laboratory, focuses on the schooling behavior of blacktip sharks (Carcharhinus limbatus), uncovering how their synchronized movements reduce drag and increase swimming efficiency by 30%. This research, which recently earned first place at NJIT's Dana Knox Research Showcase, could lead to bioinspired underwater technologies that emulate these natural strategies.

At NJIT, she quickly found a research home with Associate Biology Professor Brooke Flammang. There, she has contributed to projects such as developing electronic marine animal tags inspired by remora fish suction disks, used in conservation efforts. Hernandez plans to pursue a Ph.D. in animal biomechanics with applications in veterinary medicine, continuing to merge her love of engineering and biology to address real-world challenges.

Story by Jesse Jenkins,

Office of Communications and Marketing Edited for this publication by Michelle Fernandez, ADHC Outreach Coordinator



Owen West, **Biomedical Engineering**

has transformed his passion for baseball into a love for structural biology, earning him the prestigious Barry M. Goldwater Scholarship. West's research focuses on designing selfassembling peptides-tiny artificial proteins that could revolutionize regenerative medicine. Working under Associate Professor Vivek Kumar, he is developing peptides that, when injected, form a gel capable of promoting muscle and blood vessel growth at injury sites. His work combines computational modeling and lab-based testing to create innovative biomedical solutions.

West credits his early fascination with the mechanics of pitching for sparking his analytical mindset. He transitioned from the baseball field to the research lab, where he now applies his engineering instincts to the molecular scale. Praised by Kumar for his "dedication, drive, and determination," West plans to pursue a Ph.D. in structural biology. His ultimate goal is to develop life-changing medical treatments, establish a biotech company, and teach as a professor of biochemistry.

Story by Evan Koblentz,

Office of Communications and Marketing Edited for this publication by Michelle Fernandez, ADHC Outreach Coordinator

Story by Andrew McMains, Office of Communications and Marketing Edited for this publication by Rachel Lindebland '28H

Gilman Scholarships



Melissa De Cunto, Business



Yassmine Mahmoud, Industrial Engineering



Sharon Cho, Science, Technology and Society



Tatiana Florexil, Architecture



Aliza Mujahid, Biomedical Engineering

German Academic Exchange Service (DAAD) RISE



Melisa Bilgili, Chemical Engineering



Kapila Mane, Human-Computer Interaction

Fulbright Program



Anna Maria DiBrita, Biomedical Engineering



Soham Shashikumar, Human-Computer Interaction

STUDENT HIGHLIGHTS

Dorman Scholars Class of 2024



Emily Corcoran

Emily Corcoran graduated with a bachelor's in mathematical sciences, with a concentration in Applied Statistics and Data Analysis. As a student, she appreciated the diversity of classes at NJIT: "Despite being a mathematics major, some of the most enlightening courses that I experienced throughout college focused instead on theatre or psychology." The breadth of her education helped her realize her interest in financial risk management, which she will be pursuing professionally as an analyst for New York Bank SMBC. In addition, she won a CSLA Outstanding Student Award for her research into data assimilation for glacier modeling, which was accepted for publication in *La Mathematica*, the official journal of the Association for Women in Mathematics.



Fimimolaoluwa Are

Chemical engineering graduate Fimimolaoluwa Are received the Madame Mau Outstanding Female Engineering Student Award and the Jacqueline

Kane Endowed Scholarship in recognition of her academic excellence and advocating for diversity in STEM. As a member of the NJIT chapters of the Society of Women Engineers and the National Society of Black Engineers, where she served as president as a senior, she found NJIT to be a supportive and welcoming community. Under the guidance of university lecturer Nellone Reid and alumna Daniela Bushiri, she found valuable and diverse internships at Phillips 66, Dow Chemical, and the Refinery Automation Institute. After graduation, she will train and work full time as a chemical engineer for Honeywell's Field Operating Service team.

Madeline Miller

Majoring in the interdisciplinary field of cyberpsychology, Madeline Miller joins her father as a graduate of NJIT. During her four years at the university, she explored the design of social media platforms and user interaction. She received a CSLA Outstanding Student Award for her research into the algorithmic biases of TikTok, and its correlation to anxiety, depression, and memory loss. She plans to enter fields related to social media, user experience, and design thinking, and aims to return to NJIT for graduate studies. Reflecting on her experience, she said: "I've cultivated lifelong friendships, cherished countless memories and honed essential research skills crucial for my future career."



Vaisnavi Nemala

Having joined the newly launched bachelor's in data science as a first year scholar, Vaisnavi Nemala's three years at NJIT has been a whirlwind of programming and AI. She joined Professor Hai Phan's research lab during her first week at the university with little prior programming knowledge. Through their research relationship and her diligence in studying machine learning on her own time, she was invited to present at the 32nd ACM CIKM 2023 Conference in England. As lead principal investigator for the paper Differential Privacy in HyperNetworks of Personalized Learning, she was the only undergraduate invited among Ph.D. candidates from several top institutions in the

country. She has received a \$45,000 fellowship from Carnegie Mellon University to pursue a master's in AI engineering and research their interpretability and fairness.



Neel Patil

When Neel Patil was accepted to NJIT, he knew he wanted to follow his passion and aptitude for computing. He discovered a love of programming while he was still in middle school, and following in his father's footsteps as a computer scientist came naturally. Picking up a second major in applied mathematics,

in the summer of 2023 he was able to combine his talent for computing with another of his lifelong interests—basketball. Patil was offered a software engineering internship with FanDuel, a popular sports-betting app with over 12 million registered users. Following his graduation from NJIT, he was offered a full-time position with FanDuel as a software development engineer.



Anneliese Schmidt

Applied physics graduate Anneliese Schmidt has had an eventful few years at NJIT. After discovering her passion for physics research, she changed her major and was accepted to the NJIT Institute for Space Weather Sciences REU program to study small-scale dynamics in the solar atmosphere using data from

NJIT-run Big Bear Solar Observatory (BBSO) in California. She also had an internship at NASA studying solar flares from the Solar Orbiter satellite mission and presented findings from these programs at the American Geophysical Union Fall Meeting in 2022 and 2023. She is excited to spend the summer back at the BBSO to work on remote-sensing instrumentation to observe the sun and will be continuing her education at NJIT this fall by starting her Ph.D. in applied physics.



Mira Sapozhnikov

Forensic science graduate Mira Sapozhnikov is dedicated to bringing scientific accuracy to criminal justice. The recipient of the New Jersey Association of Forensic Scientists' Scholar of the Year Award, she was a member of the NJIT forensics team that helped exonerate a man wrongfully convicted of murder after nearly

30 years in prison. Concentrating in biology, she has conducted research into the detection of HIV in human plasma, molecular biomarkers for cognitive decline in Alzheimer's, and has independently completed a literature review on how Y-chromosome methylation impacts male mortality and age. Postgraduation, she will be working in an endocrinologist's office, and plans to eventually pursue an M.D./Ph.D. and become a forensic pathologist.



Gabriella Zalot

As a part of NJIT's Division 1 soccer team and ADHC, Gabriella Zalot has demonstrated both athletic and academic excellence on her path to a bachelor's in law, technology, and culture. She undertook a variety of historical research projects, including studies into reproductive rights in post-decolonization

Tunisia and how the connection between suburbanization and environmental inequity in Trenton, N.J. and Levittown, P.A. has contributed to issues regarding lead contamination and exposure. In addition to her sports and academic responsibilities, she involved herself with the e-board of the Pre-Law Society and various other extracurriculars on campus. After graduation, she plans to work as a paralegal or legal secretary before attending grad school.

Edited by Rachel Lindeblad '28H

STUDENT HIGHLIGHTS



The Mayor's Scholars Program is a competitive scholarship initiated in collaboration with the Office of Newark Mayor Ras J. Baraka and NJIT.

The program was established in 2019 and supports Newark residents who meet the eligibility requirements for admission to the Albert Dorman Honors College. Each year, NJIT works with the Newark Public Schools to select Newark Mayor's Honor Scholars. ADHC encourages the Mayor's Scholars to identify and articulate their interests, be part of building sustainable community, service and leadership, and to live meaningful and rewarding lives. The Newark Mayor's Scholars Program seeks to foster future leaders of Newark and the nation.

Newark Mayor's Scholars



Class of 2025: Priestly Ogbonna, Joshua Dadzie, Oluwaseyi Ikujuni, Dequan Marshall, and Yorquiria Maldonado Mejia (not pictured)



Class of 2027: Laura Nwanebu, Mitchel Elusanmi, and Arianna Alves

Bloom Scholars

In 2024, ADHC welcomed the second cohort of Bloom Scholars. These exemplary students were selected from NJIT's Educational Opportunity Program (EOP), where they were identified as leaders in academics and their EOP community during the first-year summer program.

Leilah Bampoe-Parry '27H, Margarita Tax-Martinez '28H, Kimberly Illescas '28H, Derrick Ogega '28H, Alexander Milton '27H, and Samuel Roberto '27H



Class of 2026: Nyssa Nixon, Kaily Peixoto, and Oluwanifemi Fuwa



Class of 2028: Samantha Serrano, Temitope Ikujuni, and Isabella Delgadillo (not pictured)



Women With STEAM

Women With STEAM (WWS) is an initiative that launched in 2015 with the goal of providing support, mentorship, and community to Honors Scholars who identify as women and transgender/non-conforming (TGNC). Founded as a scholarship by Lois Chipepo, the program quickly grew to include mentorship sessions, meet-and-greet events, and networking events for students and alumnae of the program. The scholarship, now renamed in honor of Chipepo, is still awarded to 10 incoming scholars each year, with an incentive to stay involved with the WWS program.

During the 2023-2024 academic year, WWS hosted nine impactful events, ranging from professional development workshops and alumnae panels to social gatherings that fostered connections within the community. These events provided invaluable resources and opportunities for scholars to build confidence, expand their networks, and develop essential skills for academic and professional success. As the number of women and TGNC individuals enrolled at NJIT increases each year, WWS continues to equip these scholars with the tools they need to thrive throughout their academic careers and in the workforce.



Fall 2024 Women With STEAM Meet-and-Greet







74 WWS members in 2024

13 Alumni-Student Mentorship Pairs

Fall 2024 Incoming Class **10** Lois Chipepo WWS Scholarships

49% students identify as female or TGNC

ADHC and YWCA host STEM Summit: Changing the Face of STEM

Last November, the Albert Dorman Honors College, in partnership with the YWCA, hosted the STEM Summit: Changing the Face of STEM, an event designed to empower and inspire women and girls in science, technology, engineering, and math. As part of National STEM/STEAM Day, the summit brought together women from various STEM fields and middle school girls for a day of professional development, networking, and mentorship.

The event featured a keynote address by Kanesha Jones, Director of Product Quality Vigilance at Janssen Pharmaceuticals, and was followed by dynamic sessions tailored to women and girls. For the women's track, the program included panels featuring ADHC board members and industry leaders such as Renata Vallese Munhoz, Vice President of Manufacturing at Mars Wrigley, who shared insights during the afternoon panel, and Erica Feldman, a prominent advocate for STEAM initiatives, who facilitated networking and job fair opportunities. Meanwhile, girls participated in speed mentoring sessions with female professionals and engaged in hands-on STEAM activities led by inspiring figures, including NJIT's Women in Computing and other leaders in biomedical engineering and public health. By fostering meaningful connections and creating opportunities for dialogue, the STEM Summit exemplified the Honors College's commitment to supporting underrepresented groups in STEM and building a more inclusive future for innovation.





CIVIC ENGAGEMENT AND COMMUNITY

Albert Dorman Future Leader Award 2024 The award recognizes the academic excellence and demonstrated leadership potential of a graduating scholar.

Grace Burke '24H, Web and Information Systems

Burke was an ambassador for the Murray Center for Women in Technology, earning their ACE-Network Scholarship, and she served as NJIT Women in Computing Society - Community Outreach Chair. She was also a member of NJIT's D1 Track and Field team. In the fall, Burke is starting a Master of Science in Information Systems at NJIT.



Burke (above) and Boateng (below) receiving their awards at the 2024 Senior Banquet

Dorman Honors Scholar Exceptional Service Award 2024 Provides funding for Newark-focused community service projects designed and led by Dorman scholars.

Okyere Boateng '24H, Computer Science

Boateng, who came from Science Park High School, majored in computer science at NJIT's Ying Wu College of Computing as a Newark Mayor's Scholar at the Albert Dorman Honors College. He also served on a subcommittee on community engagement for the development of the university's new strategic plan.



Joan Dorman Prize in Community Education and Development

2024 Recognizes Dorman Honors Scholars whose volunteer efforts serve the educational needs of young Newark residents.

> Kevin Diggs '26H, Computer Science

The Edward J. Schmeltz '71 Award for Civil Engineering Excellence

Claire Rapier '26H, Civil Engineering

The Hank Geiser '45 Award

Julia Kuzan '24H, Chemical Engineering and Business



Above: Scholars participating in the first-year planting project Right: Dorman Scholars at the planting of NJIT's food forest





The Greener Community

At the center of the Albert Dorman Honors College's commitment to service lies the First-Year Seminar Biodiversity Initiative. Starting in their first semester at NJIT, Honors Scholars begin their path toward becoming an involved member of a more sustainable community. Throughout First-Year Seminar, interdisciplinary groups of scholars come together to develop and implement proposals to increase native biodiversity on campus. This project allows students to practice their skills in leadership and creative problem solving directly from the outset of their college career. Furthermore, within their first semester each scholar has a place in Newark they can point to and see where their efforts have made an impact.

From its humble beginnings in Fall of 2017, the Biodiversity Initiative has grown to include five distinct gardens and a formalized annual survey of biodiversity across campus. In its inaugural year, scholars planted two plots on the southwest side of Martinson Hall, adding six distinct native species to attract local birds and insects. They turned their attention to the embankment outside of Eberhardt Hall in the subsequent year, planting an array of hardy plants that would both prevent erosion and support fauna.

Working around the limitations posed by an urban environment, the initiative turned to alternative allocations around campus. Gardens were established on the north and west sides of the campus center's rooftop

terrace. The east garden was designed to explore the influence of color and scent on pollinator attraction with various flowering plants, while the west garden examined the effectiveness of green mulch (a barrier of uprooted weeds that protects and fertilizes soil) on the success of plants grown from seed. Last year, scholars brought life to unused space between the Student Mall, the York Life Sciences Building, and the Summit Street Parking Deck. The most diverse garden yet, 19 different species were planted, ranging from mountain laurel (Kalmia latifolia) to swamp milkweed (Asclepias incarnata), and most notably three redbud trees (Cersis canadensis).

Through surveys of the gardens nearly 200 distinct taxa within NJIT's campus have been identified, with more found each year. Survey records range from the inconspicuous flattailed leaf cutter bee, to the beautiful plumage of the yellow-throated warbler.

The First-Year Seminar Biodiversity Initiative serves as a reminder that, when working towards the same goal, we are capable of affecting incredible change in our community. For a closer look into the initiative, scan the QR code below.

Rachel Lindeblad '28H



The Dean's Fund for Student Development is funded through the generosity of alumni and friends at Albert Dorman Honors College.

It enables scholars to engage in co-curricular educational activities that transform their careers. Many of our Goldwater Scholars' first independent research experiences and first research conferences were funded through the Dean's Fund. Many of our Fulbright Scholars first studied internationally with the support from the Dean's Fund. The Fund supports applied-learning experiences and our commitment to building a more sustainable campus and strengthening our community, by funding projects such as the Food Forest Planting project in front of Laurel Hall, which is part of a larger bio-diversity initiative to build a more sustainable ecosystem on campus. In the 2023-24 academic year, the Dean's Fund for Student Development and other donations provided over \$200,000 in funding to support the first-year experience, international study, study tours in Newark and New York City, undergraduate conference travel, and undergraduate research in last year's Honors Summer Research Institute (HSRI). HSRI participants presenting their summer research findings







ADHC Study Tours to the Newark Museum of Art (left) and the MET Cloisters (right)

Scholars presenting at undergraduate research conferences in 2023







Average SAT score for class of 2028 **1508** Number of applications received for Fall 2024

4,042

98% of first-year class arrives with AP, IB, or college credits

Incoming class 49% female

24,278 hours of volunteer service on campus at NJIT

25,707 hours of volunteer service in our communities

15,672 hours of service in Newark by over 450 scholars 13

Prestigious Fellowship Awards

3 German Academic Exchange Service Research Internship in Science and Engineering (DAAD RISE) Awards

5 Gilman Awards

2 Goldwater Awards

1 U.S. Student Fulbright Program Award

1 Ernest Hollings Scholarship

1 North American Language and Cultural Assistant Program



ALBERT DORMAN HONORS COLLEGE

OFFICE OF THE EDITOR

A LABOR of love has been completed. Against what seemed to be unsurmountable financial difficulties and wartime restrictions, we have been able to present a keepsake, unpretentious in size and quality it is true, but attempting to catch the essence of the spirit which made us such a closelyknit group in our college days. Before proceeding further I must give credit where it is due: to all the members of the Class for their cooperation, and especially to Fred Goldberg, Jerry Friedman, and Bob Salamon, without whose patricular talents this yearbook would have been impossible.

Ours were trying school times; our country was engaged in a struggle to decide whether the maxim "might makes right" could be enforced upon free peoples. More than ever before we became "world-conscious"; conscious that the problems of one nation or of one race are the problems of all the nations and all the races, conscious that the folk of other lands are after all basically similar to the folk who dwell within our borders, similar in respect to fears and hopes. We were stirred deeply by the ideal of the four freedoms: that henceforth man shall live with freedom of speech and religion, and free from fear and want, no matter how humble his position. Yes, we were stirred, and fright-ened, for it was thus that our task as world citizens was outlined. Like few before us, our responsibility had been broadened to include not only our country, but the community of nations as well.

To the United States we owe sincere effort both as engineers and citizens. We must work each according to his capacity to make ours a prominent nation to which others may look for guidance. We must all contribute to better its social and economic conditions and finally we must gain confidence and belief in America as it enters its maturity.

Our path lies clear before us; may God bless us one and all as we traverse its infinite length.

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