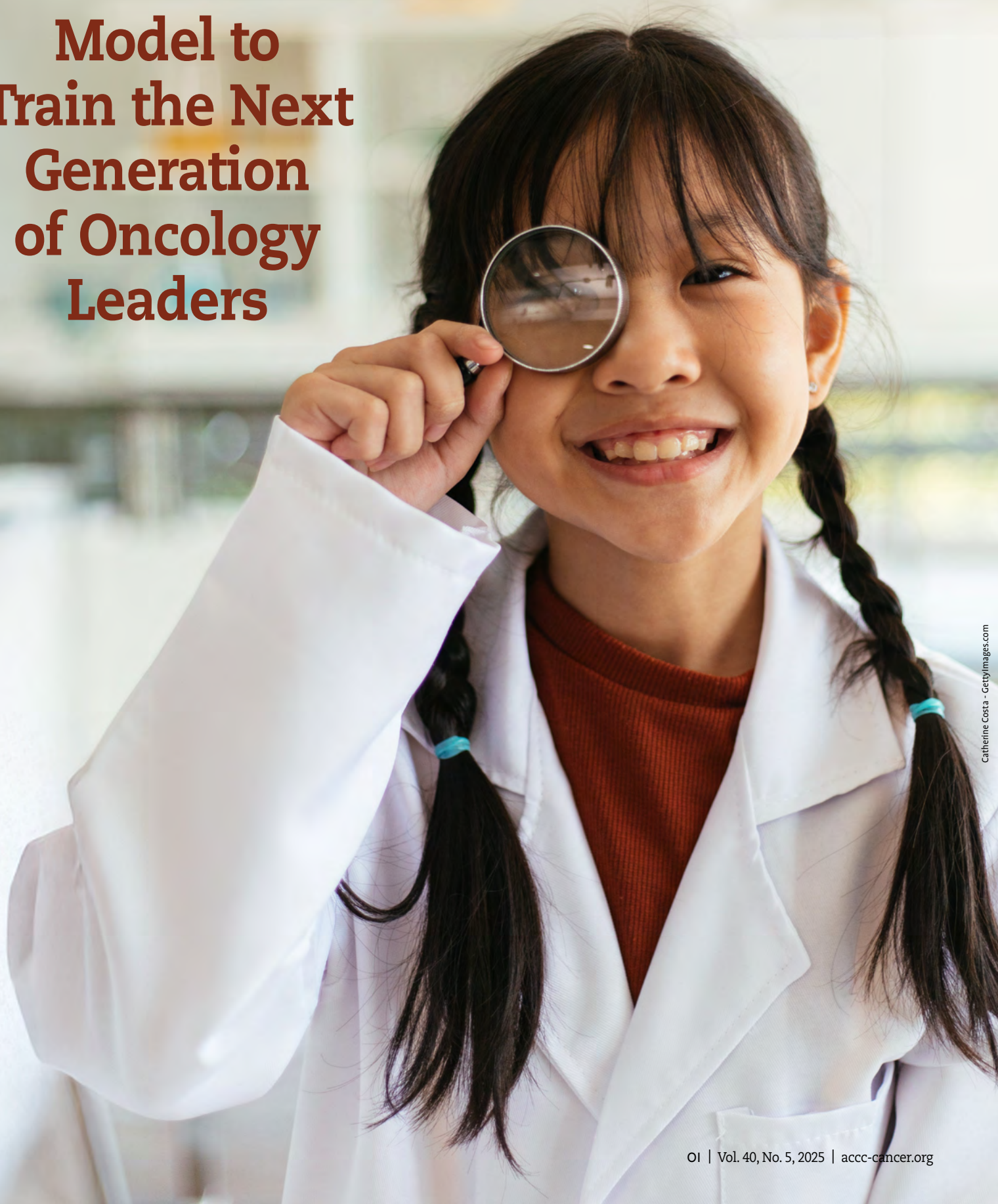


Building a Scalable Model to Train the Next Generation of Oncology Leaders





Supply and demand, a seemingly basic principle in high school economics, is now at the heart of a national crisis. With an aging population, rising cancer rates, and economic uncertainty, the demand for skilled oncology professionals—from frontline clinical providers to research scientists—continues to outpace supply.

The National Cancer Institute (NCI) projects a sharp rise in worldwide cancer cases through 2050.¹ New cases are expected to reach 33 million per year—up from 20 million in 2022—while cancer-related deaths could nearly double, increasing from 9.7 million to 18.2 million annually.¹ In the United States, the number of cancer survivors is projected to grow from 18.1 million in 2022 to an estimated 26 million by 2040.¹

Meanwhile, the American Society of Clinical Oncology (ASCO) warns of impending workforce shortages across multiple oncology disciplines, and data from *JCO Oncology Practice* projects a shortage of more than 2250 oncologists and hematologists by 2025.²⁻³

In other words, a perfect storm. A critical imbalance threatening to overwhelm cancer programs of all sizes—with downstream effects on timely access to care, service quality, and the capacity for innovation.

While much of the focus has been on immediate solutions such as mitigating and reducing physician burnout, improving oncology workforce well-being, and reducing the administrative burden of clinical practice, these efforts alone are not enough to combat the impending wave of workforce shortages. For Virginia Commonwealth University (VCU) Massey Comprehensive Cancer Center in Richmond, Virginia, this crisis presented a call to innovate. By developing a comprehensive, cancer-focused research training and education continuum designed to cultivate the next generation of cancer care professionals, [VCU Massey's pathway program](#) not only addresses the quantity of future clinicians and researchers, but also the quality: an intentional, equity-driven ecosystem of high school classrooms, research opportunities, and postdoctoral fellowships has been created to support those preparing to enter the oncology workforce.

The center's scalable model—a vast network of 17 interlocking programs—offers a proactive response to the increasing demands of oncology care and an important lesson: effective cancer care begins long before a patient enters the clinic. It starts with education, mentorship, and equitable access to opportunities that build a dedicated oncology workforce.

By treating the community as an equal partner in research, education, and care, the cancer center ensures that programs and policy initiatives reflect the needs of the populations it serves. This “community-to-bench” model strengthens the integration of community input across all aspects of the cancer center’s work, including its research training and education programming.

Building the Pathway: Vision and Strategy

When Devanand Sarkar, MBBS, PhD, professor of Cellular, Molecular, and Genetic Medicine and associate scientific director of Cancer Therapeutics, was appointed as the inaugural associate director for education and training at VCU Massey Comprehensive Cancer Center in 2017, the pathway program was in its infancy. While individual mentorship and training activities were already underway and VCU Massey valued their importance, the cancer center had yet to launch formal plans for a cohesive, center-wide education and training program. “Historically, we have always been interested in training the next generation, because if we don’t train the next generation, when we retire, there will be a vacuum,” explained Dr. Sarkar.

Sparked by the NCI’s recognition of education and training as a formal pillar of cancer center excellence—on par with research, clinical trials, and community engagement—VCU Massey began to chart its course. With a 50-year history as a national leader in cancer

research, innovation, and community engagement, VCU Massey's mission has always centered around reducing the cancer burden through pioneering research and person-centered care, a massive undertaking in a catchment area marked by deep racial, geographic, and socioeconomic diversity and stark health disparities.

To meet that challenge, senior leadership placed education and training at the heart of its core pillars, positioning it as both a change agent and a pathway to greater equity. Central to this effort is VCU Massey's community-centric approach. By treating the community as an equal partner in research, education, and care, the cancer center ensures that programs and policy initiatives reflect the needs of the populations it serves. This "community-to-bench" model strengthens the integration of community input across all aspects of the cancer center's work, including its research training and education programming.

Students are paired with mentors who guide them through scientific development, career planning, and professional networking, ensuring they have the much-needed support to navigate a complex and competitive field. For many mentors, the work is both a professional duty and a source of personal fulfillment, with rewards that are mutually beneficial.

Robert Winn, MD, director of VCU Massey Comprehensive Cancer Center, Lipman Chair in Oncology, and professor of pulmonary disease and critical care medicine, who has received national recognition for his community engagement efforts, and institutional leaders understood that the future of cancer care depends on the strength and diversity of those entering the field today. To achieve this diversity, the model must be rooted in community partnerships that expand access, build trust, and create pathways for individuals from historically underrepresented backgrounds to pursue careers in cancer research and care.

Building the Pathway: Program Structure

With the vision clear, Dr. Sarkar and his team considered key questions: How do you design a program that is truly intentional? One that opens doors and expands access? One that not only starts

strong, but can grow, scale, and endure? Armed with those questions, they set out to build an interconnected, multitiered pathway. Each program was developed with strategic goals centered around cultivating diversity, strengthening mentorship, and forging integral community partnerships. By 2021, VCU Massey had built 4 structured training programs, which have since evolved into 17, spanning the full spectrum of education—from high school outreach programs to postdoctoral fellowships and clinician-investigator development:

- **High School Level.** The [CHiSEL \(Community High School Engagement and Learning\)](#) program offers rising juniors and seniors an immersive, 5-week experience with faculty mentorship. Students gain lab skills, opportunities to network with cancer researchers, and the program culminates with a presentation of their work in a Summer Research Symposium.
- **Undergraduate Level.** Programs such as [CURE \(Cancer-Focused Undergraduate Research Experience\)](#), sponsored by the American Cancer Society (ACS), offer 10-week mentored research experiences on the VCU Massey campus, while the Rudene Mercer Haynes Clinical Trials Office Summer Internship offers interns the opportunity to learn about clinical trials and research.
- **Graduate and Medical Students.** Summer programs like the [Robert A. Winn Excellence in Clinical Trials Clinical Investigator Pathway Program](#) offer medical students a 6-week summer service-learning externship in community-based clinical research sites, and the James D. Popp Student Research Fellowship pairs first-year medical students with a VCU Massey mentor for 8 weeks of cancer-related research in the lab.
- **Postdoctoral Programs and Training.** [NCI-funded T32 programs](#), including the Integrative Training in Cancer Biology and a Cancer Prevention and Control fellowship, as well as the ACCESS (Advancing Careers in Cancer Research for Post-Baccalaureate Students) program, offer 2-year research development opportunities, coursework, skills training, and mentorship.
- **Early-Stage Investigators.** Opportunities like the [Faculty Research Development Program](#) and the Robert A. Winn Excellence in Clinical Trials Career Development Award support clinician-scientists with career development and grant support, guiding them through career progression.

Especially noteworthy is that each program is part of an interconnected ecosystem, with clear pathways for learners to advance from one stage to the next. A high school student can enter through a summer research internship, continue as an undergraduate trainee, move into graduate or medical school research experiences, and eventually transition into faculty or clinical roles. The opportunities are limitless.

This layered approach also ensures that programs are added with purpose and vision. As Dr. Sarkar emphasized, "We knew from the beginning that this had to be intentional. We weren't just adding programs—we were building a model." Today, that model has
(Continued on page 13.)

Mentorship in Action: Voices From VCU Massey



VCU Massey's education and training pipeline is powered by people—personal connections between mentors and trainees that go beyond the lab or classroom. Here, they share what mentorship really looks like in action and what it means to be shaping the next generation of cancer researchers and leaders.



Can Senkal, PhD, member of the Cancer Biology research program at VCU Massey Comprehensive Cancer Center; assistant professor of Cellular, Molecular, and Genetic Medicine at VCU School of Medicine; and mentor for Tristan Blanco

OI. What motivates your involvement as a mentor within VCU Massey's pipeline program, and how do you integrate this role into the demands of your clinical or academic responsibilities?

Senkal. I see being a mentor within VCU Massey's cancer research training and education activities as a part of my profession and a moral responsibility. As a scientist, it is my duty to train the next generation of cancer researchers who will make discoveries and reduce cancer burden worldwide. My approach to mentorship is about being available to offer guidance and solve trainees' problems. In addition to having recurring group and 1:1 meetings, I have an open-door policy so that trainees can approach me any time for advice. This way, problems are solved before they get big and would require more time to handle.

OI. In mentoring students from diverse backgrounds, what approaches have you found most effective in fostering meaningful learning experiences and supporting long-term career growth?

Senkal. Our laboratory is open to everyone who is interested in our research. At the same time, we are aware that not all the trainees are the same. There may be differences in the courses they have taken, their interests in aspects of research may be

different, some may have already worked at a research lab, and some may have not even read an original research article. Additionally, trainees have different aspirations with respect to their career goals. I believe that my job is to make sure that the trainees can achieve their career goals and be successful in these positions. This requires individually tailored mentoring to focus on different aspects of career growth based on the strengths and weaknesses of the trainees. I work with the trainees closely to identify what we need to work on together to make them a better candidate for the positions they want.

OI. Could you share an example that illustrates the impact of mentorship—either on a student's trajectory or on your own professional fulfillment as a mentor?

Senkal. With respect to professional fulfillment, there is no instant gratification of mentoring. It is a process where you see the fruits of your work after months, sometimes years. For example, hearing back from former trainees about their current positions and how well they are doing is great, reminding me that the time spent during mentoring was not for nothing.



▲ Can Senkal, PhD, (pictured far right) in his lab with Tristan Blanco and Sachin Kempelingiah.



Tristan Blanco, biology major and fellow in the Cancer-focused Undergraduate Research Experience (CURE) Program at VCU Massey Comprehensive Cancer Center; and mentee of Can Senkal, PhD

OI. What initially drew you to VCU Massey's education and training program, and in what ways has your experience influenced your academic or professional aspirations in oncology or biomedical research?

Blanco. As a VCU biology major with aspirations to enter the medical field, I was drawn to Massey's CURE program (sponsored by the American Cancer Society) because of its unique combination of hands-on research, mentorship, and commitment to health for all individuals. What stood out to me was Massey's focus on both cutting-edge cancer research and its outreach efforts to the community, which is something I deeply connect with. Cancer is personal to me. My grandmother survived stage 4 uterine cancer, and my mom had to undergo a hysterectomy after being diagnosed with stage 1 uterine cancer. Those experiences instilled in me a sense of urgency and purpose. Participating in this program has solidified my interest in oncology and biomedical research, showing me how science can be a direct force for healing and change.

OI. Can you describe a particularly formative experience or project during your time in the program that deepened your understanding of cancer care or research?

Blanco. One of the most formative aspects of this program has been working in a sphingolipid-focused cancer research lab. It's been eye-opening to apply the cellular and molecular biology concepts I've learned in my college courses to real-life experiments and cancer models. Seeing how research happens, how hypotheses are tested, how data are interpreted, and how setbacks are handled has given me a much deeper appreciation for the scientific process. Beyond the technical skills, I've also learned the importance of collaboration, time management,

and staying curious. It's one thing to learn about cancer pathways in a textbook, but being part of a team that's actively studying them adds a whole new level of understanding and motivation.

Its model has attracted national attention, leading many cancer programs to consider how they might adopt similar strategies to broaden access, build training programs, and prepare the next generation of oncology leaders.

OI. How has the mentorship and community engagement embedded in the program shaped your perspective on collaboration or career development within the oncology field?

Blanco. One of the most impactful parts of this program has been the mentorship I've received, not just from my direct supervisor or lab team, but from every level of Massey's leadership. I've felt supported daily, whether it was learning technical skills and research strategies from the PhD student I worked under, receiving guidance and scientific insight from Dr. Senkal, or hearing words of encouragement from Dr. Robert Winn, the director of Massey Comprehensive Cancer Center.

Dr. Winn once told me that I represent the future of cancer research, and hearing that from someone I deeply respect gave me a new sense of purpose. His words pushed me to take ownership of my role in this field and stay committed to driving positive change. Whether it was in the lab, at a Massey seminar, or during a community outreach event, mentorship was always present, it wasn't limited to formal check-ins, but embedded into every experience.

This environment didn't just help me grow as a mentee, it helped me become a mentor myself. I've learned how to communicate science clearly, how to lead with purpose, and how to support those around me. The program has shown me what good mentorship looks like, and it's something I want to model throughout my own career.



David Turner, PhD, member of the Cancer Prevention and Control research program at VCU Massey Comprehensive Cancer Center; associate professor of surgery at the VCU School of Medicine; and mentor for Krithika Senthil

OI. What motivates your involvement as a mentor within VCU Massey's pipeline program, and how do you integrate this role into the demands of your clinical or academic responsibilities?

Turner. What motivates me as a mentor is the opportunity to support the next generation of cancer researchers and clinicians. I integrate mentorship into my academic responsibilities by treating it as a synergistic component of my research, teaching, and service rather than as a competing obligation. Mentoring is both a privilege and a responsibility, creating pathways for students to have access to the networks and opportunities that shape scientific careers. I integrate this role into my academic responsibilities by embedding trainees into ongoing projects where their work is both meaningful to their development and aligned with the lab's research goals.

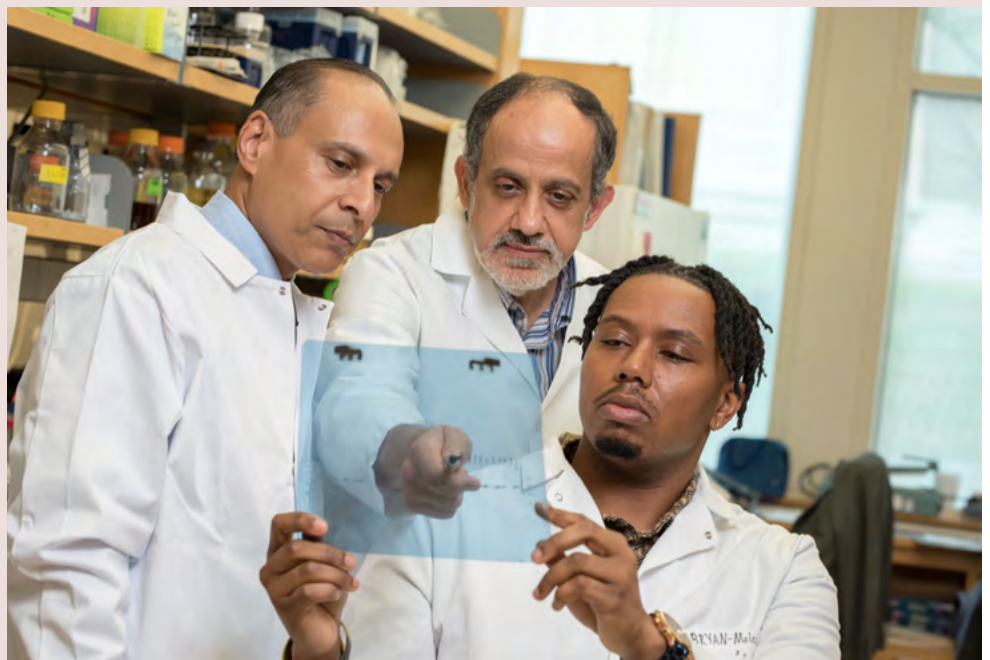
OI. In mentoring students from diverse backgrounds, what approaches have you found most effective in fostering meaningful learning experiences and supporting long-term career growth?

Turner. I focus on meeting each trainee where they are and aligning their goals with meaningful research experiences. I create individualized research projects, provide access to networks and resources, and emphasize how their

work connects to real-world outcomes. By combining tailored guidance with skill-building and exposure to opportunities, I aim to foster confidence, independence, and long-term career growth.

OI. Could you share an example that illustrates the impact of mentorship—either on a student's trajectory or on your own professional fulfillment as a mentor?

Turner. One example that stands out is a first-generation college student I have mentored through several stages of their career. Initially unsure of their place in research, they worked with me on a project linking nutrition and cancer risk. Over time, their skills and confidence grew to the point where they presented their findings at a regional conference, published their first paper, and received fellowship funding. They now have their own independent faculty position at another institution. That experience not only solidified their decision to pursue graduate training but also opened doors through networking opportunities.



▲ As a national leader in cancer research training and education, VCU Massey Comprehensive Cancer Center supports the development of emerging scientists from high school to early professional careers. Pictured left to right: Devanand Sarkar, PhD; M. Imad Damaj, PhD; and Bryan McKiver. (Credit: VCU Massey Comprehensive Cancer Center)



Krithika Senthil, second-year medical student at VCU School of Medicine; bachelor's degree in public health; and mentee of David Turner, PhD

OI. What initially drew you to VCU Massey's education and training program, and in what ways has your experience influenced your academic or professional aspirations in oncology or biomedical research?

Senthil. What drew me most to VCU Massey's education and training program was its clear commitment to longitudinal mentorship. The environment fosters sustained guidance that has been instrumental in refining my research interests, strengthening my technical skills, and encouraging me to think critically about the broader impact of my work.

My primary research interests center on the relationship between nutrition and cancer, and Massey's extensive resources allowed me to explore this intersection in meaningful ways. Working with leaders in the field, such as Dr. Turner, has been especially inspiring. Under his guidance, I've gained a deeper understanding of how the tumor microenvironment influences cancer progression, particularly in prostate cancer. These experiences have solidified my goal of pursuing work that integrates molecular research with strategies to address cancer prevention and health disparities.

OI. Can you describe a particularly formative experience or project during your time in the program that deepened your understanding of cancer care or research?

Senthil. My summer research project centered around studying how advanced glycation end products (AGEs), harmful compounds formed when sugars react with proteins or fats, may influence prostate cancer progression. We focused on their interaction with cancer-associated fibroblasts, which are cells in the tumor microenvironment that can encourage cancer cells to spread. Our findings showed that AGE exposure made these fibroblasts more likely to promote tumor cell migration, revealing a potential pathway that could be targeted to slow cancer growth.

Our lab has found that Black men with prostate cancer tend to have higher AGE levels than White men, potentially due to dietary patterns linked to social and economic factors. This research demonstrated the connection between molecular biology and community health, reinforcing my interest in continuing to pursue research focused on addressing cancer disparities through translational research.

Through intentional programming,
hands-on mentorship, and
community connections,
VCU Massey is creating a pipeline
that both reflects and serves
the communities most impacted
by cancer.

OI. How has the mentorship and community engagement embedded in the program shaped your perspective on collaboration or career development within the oncology field?

Senthil. This summer underscored the collaborative nature of oncology research. My project involved working closely with teams across the cancer center and the health system, from surgeons who obtained tissue samples to pathologists who processed and analyzed them. Watching so many different specialists contribute their expertise to a shared goal highlighted how progress in cancer research depends on strong, interdisciplinary collaboration.

I also saw how research can directly engage with community needs. In Dr. Turner's lab, our work on AGEs and prostate cancer disparities linked laboratory discoveries to real-world challenges, demonstrating that effective cancer research addresses both biological mechanisms and the social factors that influence health outcomes. This experience shaped my perspective of cancer research as not only one of rigorous science but also of improving the health of communities most affected by cancer.



▲ Tristan Blanco, a biology major and fellow in the Cancer-focused Undergraduate Research Experience (CURE) Program at VCU Massey Comprehensive Cancer Center. (Credit: Jordan Mulholland)

(Continued from page 8.)

attracted national attention, leading many cancer programs to consider how they might adopt similar strategies to broaden access, build training programs, and prepare the next generation of oncology leaders.

Mentorship and Multidisciplinary Collaboration

Across each tier, mentorship at VCU Massey is meticulously structured. Every mentor goes through rigorous training to ensure they are equipped to address the needs of students, with an emphasis on cultural competence and awareness, mental well-being (especially in the post-COVID era), and the sensitivities of working with minors.

As Dr. Sarkar explained, “We have guidelines, mentorship workshops, and training sessions. Most of the mentors know this [information], but it’s relearning that there are things like cultural awareness and language differences, mental welfare of students and how to approach this. These are the things that one needs to be mindful about in training and thinking about, especially after COVID.”

However, mentorship at VCU Massey goes beyond compliance or training—it is about active engagement and building meaningful relationships. Students are paired with mentors who guide them through scientific development, career planning, and professional networking, ensuring they have the much-needed support to navigate a complex and competitive field. For many mentors, the work is both a professional duty and a source of personal fulfillment, with rewards that are mutually beneficial.

Can Senkal, PhD, member of the Cancer Biology research program at VCU Massey Comprehensive Cancer Center and assistant professor of Cellular, Molecular, and Genetic Medicine at the VCU School of Medicine, shared, “I see being a mentor within VCU Massey’s cancer research training and education activities as a part of my profession and a moral responsibility. As a scientist, it is my duty to train the next generation of cancer researchers [who] will make discoveries and reduce cancer burden worldwide.”

David Turner, PhD, member of the Cancer Prevention and Control research program at VCU Massey Comprehensive Cancer Center and associate professor of surgery at the VCU School of Medicine,



▲ Students in VCU Massey Comprehensive Cancer Center's 2025 Cancer Research Training and Education Coordination Career Pathway Initiative presented their research posters to faculty and members during the Summer Student Poster Research Symposium. (Credit: VCU Massey Comprehensive Cancer Center)

added, "I integrate mentorship into my academic responsibilities by treating it as a synergistic component of my research, teaching, and service rather than as a competing obligation. Mentoring is both a privilege and a responsibility, creating pathways for students to have access to the networks and opportunities that shape scientific careers."

For a deeper look at how mentorship shapes both mentors and students at VCU Massey, see the sidebar featuring a Q&A with Drs. Senkal and Turner and the trainees they guide.

Clinical Trials and Research Training

One of the key aims of these student education and training programs is to prepare learners to lead and participate in clinical research. VCU Massey's research programs—spanning more than 38 academic departments with collaboration across its Cancer Biology, Developmental Therapeutics, and Cancer Prevention and Control research programs—touch everything from basic research to translational, clinical, and population sciences.

Through VCU Massey's Clinical Trials Office and its vast opportunities for early-stage clinical investigators through the National Institute of Health (NIH) and ACS, learners gain hands-on training in study design, regulatory processes, patient engagement, and equity—all critical areas for future careers in clinical trials.

Furthermore, as 1 of only 14 Minority/Underserved NCI Community Oncology Research Program (NCORP) sites in the US, a national effort to bring clinical trials to minority and medically underserved patients within their own communities, VCU Massey ensures that it prepares an inclusive, culturally aware next generation of researchers and clinical investigators equipped to address disparities in cancer care and research.

Measuring Impact and Alumni Outcomes

VCU Massey's success, driven by intentional strategy and vision, has extended well beyond the initial implementation of its programs. Equally important has been its efforts to assess the effectiveness and

long-term impact of these initiatives. To do this, VCU Massey developed a comprehensive tracking system that follows students and trainees throughout their academic and professional careers, using a variety of methods such as one-to-one tracking, social media, and publication records. Managed by its own dedicated staff member, the system collects data on multiple outcomes, including:

- **Academic achievements.** Assessing the accomplishments of trainees during and after their participation in programs
- **Career pathways.** Tracking the professional trajectories of alumni to determine the impact of the training on their career choices
- **Publications and research contributions.** Monitoring the involvement of alumni in research activities, including publications and presentations at conferences.

As Dr. Sarkar explained, “There are 110 postdoctoral researchers and fellows [who] have gone through our programs, and we can see where they are now—how many are in academia, how many are in industry, etc. We have a fantastic tracking system that took years to develop, but it’s really working.”

Behind this success is a robust network of support and funding: a combination of institutional resources, targeted grants, and philanthropic contributions, providing the means necessary to sustain mentorship, training, and long-term tracking of outcomes.

Ultimately, the true measure of a program’s impact lies in the success of its alumni. Graduates of VCU Massey’s training programs have reached notable milestones, including academic appointments

at renowned institutions, leadership positions in pharmaceutical and biotechnology companies advancing cancer therapies, and influential roles within communities driving initiatives to reduce health disparities.

Looking Ahead

VCU Massey’s approach shows that the future of oncology does not start in the clinic or lab—it starts and ends with people. Through intentional programming, hands-on mentorship, and community connections, VCU Massey is creating a pipeline that both reflects and serves the communities most impacted by cancer. 

Rania Emara is the managing editor of Oncology Issues and the assistant director of Editorial Content and Strategy for the Association of Cancer Care Centers in Rockville, Maryland.

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