



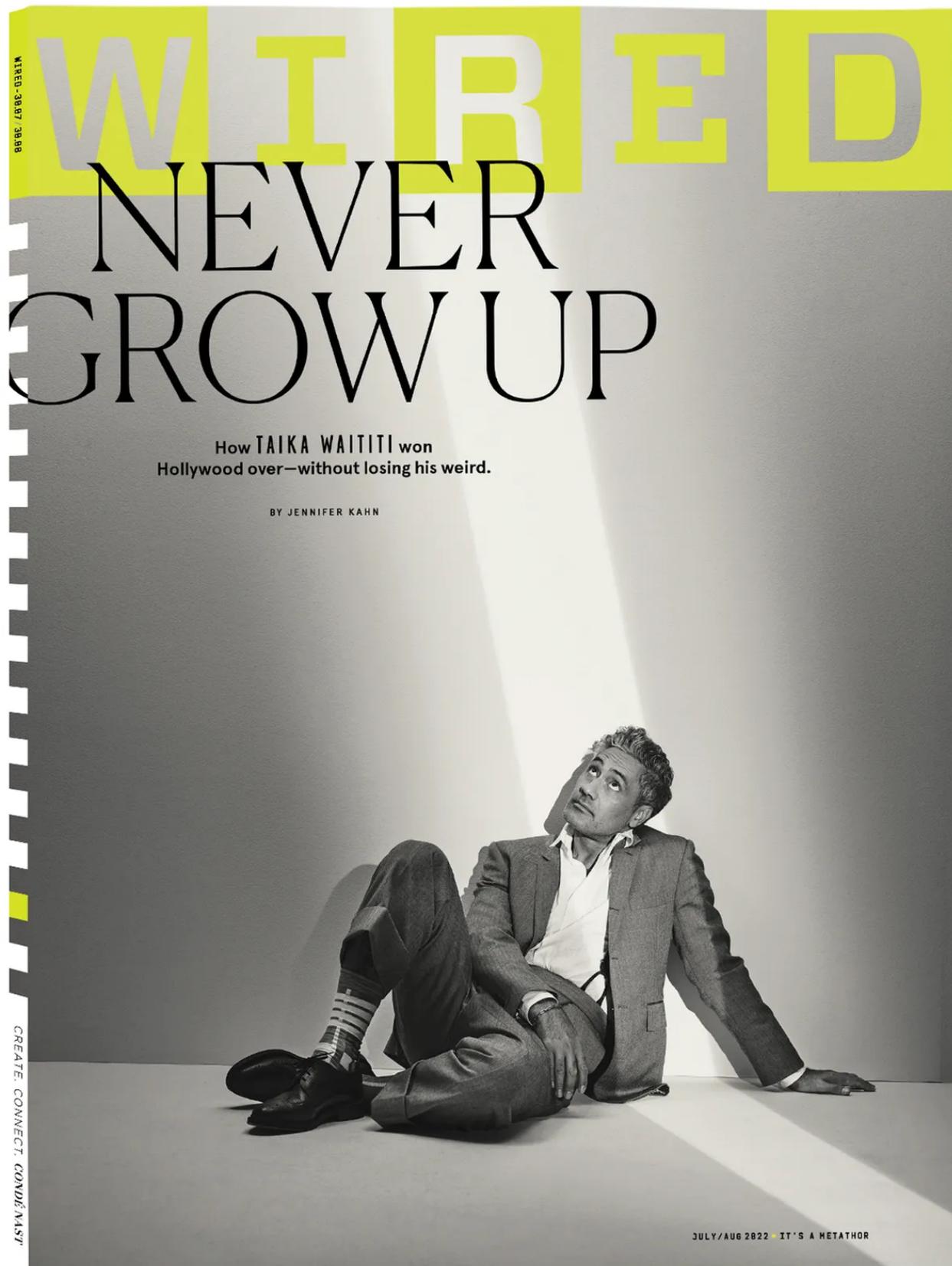
Left to right: Andrea Bryant, LaNijah Flagg, Katrina Miller, and Ayanna Matthews connected as a group when Flagg arrived in Chicago. PHOTOGRAPH: AKILAH TOWNSEND

KATRINA MILLER BACKCHANNEL JUN 7, 2022 6:00 AM

The Unwritten Laws of Physics for Black Women

I just wanted to be a scientist, not a trailblazer. But in my field, people like me are anomalies—and we face constant scrutiny for our race and gender. I look like a clown. I'm drowning in a disposable coverall that hangs off of me in droopy folds, and my size 7½ feet are swallowed up by the smallest rubber boots the lab had on hand—a men's size 12. The thick mass of curls framing my face only accentuates the caricature.

Reaching for the box of hairnets perched on a nearby counter, I fish out a thin, papery cap with a sigh. *How the hell is this going to fit over my fro?* I flatten my roots and tie my hair into the tightest bun I can muscle. Stretched as far as it'll go, the hairnet only covers the back of my head. I position another over my forehead and a third to straddle the middle. Has no physicist here ever been a woman or had to contend with hair like mine? With effort, I tug the hood of my coverall over the hairnets. The taut fabric rustles loudly in my ears as I open the door to join my peers.



This article appears in the July/August 2022 issue. [Subscribe to WIRED.](#) PHOTOGRAPH: JESSICA CHOU

I am here, in a basement lab at the University of Chicago, to work on a small-scale particle detector that might help in the search for dark matter, the invisible glue that physicists believe holds the universe together. Dark matter emits no light and, as far as anyone can tell, doesn't interact with ordinary matter in any familiar ways. But we know it exists from the way it influences the motions of the stars. The allure of dark matter is what inspired me to pursue a PhD in physics. But in more ways than one, I keep feeling like I just don't fit.

I had stumbled into physics as an undergrad at Duke University, my curiosity piqued after watching characters in Marvel's Thor zip across the cosmos using something the film called an Einstein-Rosen bridge. Intent on knowing what that was, I went back to my dorm room to do some digging, ultimately signing up for an introductory astronomy elective. In that class I discovered, to my amazement, that studying the universe was like time travel. On the chilly night in Duke Forest when I learned how to set up a telescope, I felt myself catapulting into the past as I peered up at starlight that had been emitted decades, if not centuries, earlier. I returned to campus a few hours before sunrise, exhausted but energized—because I knew I wanted to learn this stuff for real. Years later, when I told a mentor I'd gotten into grad school, he was elated. "You've worked very hard and deserve this," he wrote in an email. "Never doubt your ability."

I rode high on those words when, in 2016, I arrived at UChicago, one of the top physics departments in the country. I was one of two Black women in a department of about 200 grad students. It quickly became clear that she and I were novelties. "I've dated a mulatto like you before," a peer told me in an attempt to make conversation. When I showed up at a weekly meeting that discussed articles in scientific journals, a professor handed me an abandoned backpack near his seat—as if the only reason I could be in that room was to collect a forgotten bag. (He blushed when I shook my head and sat down.) Another time, my adviser asked me to pose for a picture for his grant application. "Of course, I have other photos," he said as he tossed me a wrench. "But it looks better if it's a woman."

One day, worn out by always feeling like an alien, I opened my laptop and poked around the department website. I was searching for signs of Black women who

had come before me—to reassure myself that someone had once done what I was trying to do. No luck. So I turned to Google, where I stumbled on a database simply titled The Physicists, maintained by an organization called African American Women in Physics.

I sorted the catalog by graduation year. A few rows down the first page, I saw the name of a UChicago physicist: Willetta Greene-Johnson, who defended her dissertation in 1987. I scrolled through the next page, and the next, and *kept* scrolling until I finally reached another UChicago entry in 2015. Her name was Cacey Stevens Bester.

That can't be it, I thought. That meant I was on track to be number three.

I was used to being the only Black woman in any given physics classroom. But I hadn't realized the full mathematical truth of how alone I was. When, in conversation with a Black administrator, I asked about being the third in the 132-year history of this institution, he offered a small token of relief. There's one more, he said: Tonia Venters. She earned her doctorate through UChicago's Department of Astronomy and Astrophysics in 2009.

As time passed, I thought of these women often. I was desperate to know whether they too had felt out of place. Or if there was something wrong with me, and I did not in fact belong here. If they knew how to overcome these feelings, I needed to hear it. Because at my lowest points, I felt a strong temptation to leave it all behind—to walk away and never think about physics again.

So, as scientists do, I set off to investigate. I started at the beginning: Willetta Greene-Johnson.



Willetta Greene-Johnson teaches physics and chemistry at Loyola University Chicago. PHOTOGRAPH: AKILAH TOWNSEND

II

ON A STICKY August day, I stepped out of the blazing sun into a cool, dimly lit restaurant named Medici on 57th, a longtime staple of the UChicago community. Greene-Johnson was sitting at a table and wrapping up a call, phone tucked underneath a honey-blond bob and clacking against gold hoop earrings. As I sat down, I took in her sleek black turtleneck, Dolce & Gabbana cat-eye frames, and hot-pink stiletto nails. *This is what a physicist looks like*, I thought with a touch of awe. Settling into conversation, I realized that almost everything about her was exceptional.

Greene-Johnson grew up in Midland, Michigan, and had a knack for music. While in high school, she wrote her first concerto and performed it on piano to an

audience. Her dream was to be a composer, but her parents, a chemist and an engineer, implored her to find a more lucrative career. So, in 1974, Greene-Johnson moved to the Bay Area to go to Stanford University.

She decided to study physics. It was, in a way, good timing—a Black American woman had just become the first of her kind to earn a physics PhD, back in Greene-Johnson's home state. At Stanford, Greene-Johnson was the only Black student in her major, but that didn't surprise her. What did was the presence of six Black PhD students in the department. "I had brothers and sisters galore," she told me.

Her adviser greeted her by saying, "I wanted the other one," referring to one of the white women in her class. "But you'll do."

She'd turn to them whenever she was struggling with a homework problem or needed a friendly face. When she told her academic adviser she was considering a master's degree, he encouraged her to reach higher. (That adviser, incidentally, was a white man whose efforts helped Stanford, over the next three decades, produce numerous Black American physicists with PhDs.)

Five years later, Greene-Johnson returned to the Midwest to begin graduate school at UChicago. There were two other women in her class, both white. No other Black grad students were in the department, despite the university's being situated in the city's historically Black South Side.

She joined a research group at the intersection of physics and chemistry. She recalls her adviser greeting her by saying, "I wanted the other one," referring to one of the white women in her class. "But you'll do." In the following months, Greene-Johnson barely heard from him; he preferred to relay information through his postdoctoral researcher. At the end of one group meeting, in which their adviser was on speakerphone, the postdoc asked, "Is there anything you want to say to the students?" The adviser simply hung up.

It was a poor environment for everyone, Greene-Johnson says, but as a Black woman she felt she was “someone to be tolerated.” When she earned the third-highest score on her qualifying exams, she remembers her adviser reacting with shock at her success.

Dig Deeper With Our Longreads Newsletter

Sign up to get our best longform features, investigations, and thought-provoking essays, in your inbox every Sunday.

Your email

Enter your email

By signing up you agree to our [User Agreement](#) (including the class action waiver and arbitration provisions), our [Privacy Policy & Cookie Statement](#) and to receive marketing and account-related emails from WIRED. You can unsubscribe at any time.

Nevertheless, he ended up kicking her out of his lab, on the premise that her research wasn’t moving fast enough. “It was basically, ‘Clear your desk, and good luck,’” she recalls. Greene-Johnson didn’t protest. She waited until the rest of the students left for lunch and quietly packed up her things.

Humiliated, she hid out in her apartment. She was at a loss for what to do next. She also learned that her adviser had tried to get her fellowship taken away, which would have made it impossible for her to continue in another lab. After more than a month away from school, Greene-Johnson decided to regroup. She grabbed coffee with the postdoc, who had recently accepted a position at the nearby Argonne National Laboratory. “You’re a good scientist,” he told her. “Come work for me”—and leave the PhD program behind.

Those words were the validation she needed. More than anyone else, that postdoc had known Greene-Johnson and the culture of their previous lab group well enough to recognize that the problem had been with their adviser—not with her. But she still wanted to earn her degree. *I’m not leaving until I have to*, she remembers thinking.

For the next few weeks, she shopped around for a new adviser, this time paying close attention to the interactions between professors and their students. The one she settled on was aloof but neutral—at least he wasn't expecting her to fail. In this new lab, she'd be theorizing about how small, gaseous molecules bond to a slab of metal.

Four years later, Greene-Johnson was the sole author on a study set to publish in *The Journal of Chemical Physics*—a feat so impressive that she was allowed to submit it in lieu of an extensively written dissertation. She defended her research to an audience of physicists, family, and friends. Afterward, her adviser popped a bottle of champagne for the crowd, shook her hand, and proclaimed, “Congratulations, doctor!” Greene-Johnson was euphoric. Though she didn't yet know it, she'd just made history.



The Machine Lab at The University of Chicago. PHOTOGRAPH: AKILAH TOWNSEND



I LEFT MY brunch with Greene-Johnson feeling conflicted. I wanted to be a part of her legacy. I wanted my name added to the African American Women in Physics database. But I couldn't stop thinking about how many of her experiences echoed my own. Hadn't she shattered the glass ceiling? So why was I still pounding against one?

Part of the answer lies in the number of years that passed before another Black woman joined the graduate program: 17. In 2004, Tonia Venters enrolled as an astronomy and astrophysics grad student, eager to probe the nature of the universe by studying its tiniest particles. Her research was similar to my own, so when we arranged to meet on Zoom, I was especially keen to hear what she had to say.

Venters is, as much as anyone, a born scientist. In elementary school, she peppered her teachers with questions. In high school, she cajoled academic counselors to let her take more advanced science coursework. When she got to Rice University, Venters was the only Black student in the astrophysics major—but it didn't seem to matter. She had found her passion, and being the only one wasn't going to deter her.

To Venters, the criticism seemed relentless. There was always something she didn't say, know, or do well enough.

At UChicago, however, Venters immediately felt like an outsider. The environment was intimidating, and she became self-conscious about being outspoken in lectures. In study sessions with classmates, she observed that they often brushed off her suggestions or outright ignored them. One time, she submitted a research proposal for a prestigious fellowship and shared a version of it with a peer. That student tore into it, saying he didn't like her writing style. She landed the fellowship—but couldn't shake his cutting feedback.

Venters started to get quieter. "I was very afraid of making mistakes, and having my mistakes color somebody else's perception of all women, or all African

Americans, or all Black women,” she says. “I could do a hundred things right, and to me it felt like the only thing that mattered was the one thing I did wrong.”

Her performance started to tank. “What happened to her?” a professor asked Venters’ adviser after she stumbled through a presentation. “She used to give such good talks.”

Venters didn’t like staying silent in her classes and research meetings. She felt like she was becoming a worse, less curious scientist, who held back on sharing ideas—the currency of her field. She feared that other physicists wouldn’t take her seriously because she was Black, and a woman. To better fit in, Venters chose to keep her hair straightened and adopted unassuming attire—boxy button-down shirts and loose-fitting jeans—that mirrored the clothing choices of the men surrounding her.

One day Venters was sitting in the waiting lounge for an upcoming appointment with the physical sciences dean. His administrative assistant, a Black woman, suddenly asked her: “Are you the first from your department?” Embarrassed, Venters mumbled that she did not know. The question had often popped into her mind, but she had always pushed it aside. In this space, she’d tell herself, you just don’t go there about race.

But race—and gender, for that matter—were the unavoidable subtexts. To Venters, the criticism seemed relentless. There was always something she didn’t say, know, or do well enough. By the time of her dissertation defense, she had all but given up trying to prove herself. *It doesn’t matter how well I do*, she thought, *these people are not going to be satisfied*. But she got through it. She passed, and in 2009 she earned her PhD.





Tonia Venters studies high-energy particles in blazars and star-forming galaxies. PHOTOGRAPH: AKILAH TOWNSEND

Venters got a job at NASA as a theoretical astrophysicist. She was resigned to being the only Black woman scientist in the room for the rest of her career. And she was—until one remarkable summer day in Rome, where Venters was attending a symposium on gamma-ray astronomy. She was chatting with other attendees during a coffee break when, across the room, a hint of purple and a flash of brown skin caught her eye. *Do my eyes deceive me?* Venters thought, stunned.

She weaved through the sea of conference-goers to a woman whose jewel-toned blouse and natural hair stuck out against the backdrop of white walls, whitewashed tiles, and mostly white people. As Venters approached, she couldn't help but think: *Are you actually here?* And by the look on her face, it seemed the other woman was feeling the same.

That woman was Jedidah Isler, then a grad student who was about to become the first Black woman to earn an astrophysics PhD from Yale. They fell into animated conversation, excited to discover that they both studied blazars, supermassive black holes that lie at the core of faraway galaxies. As they chatted, Venters wondered—but couldn't find the words to ask—if Isler was always this confident. *Wow, somebody owning her Blackness,* she thought.

Toward the end of our Zoom call, Venters wonders aloud where the women in the African American Women in Physics database ended up, since to this day she encounters so few of them. “Willetta Greene-Johnson,” she says. “What happened to her?” I tell her that Greene-Johnson has been teaching at Loyola University Chicago since 1991.

For a moment, Venters is speechless. “In Chicago?” she finally responds. “Wait. So she was there the whole time?” I nod. “There was another Black woman in the city ... who had gone to Chicago ... that I could have talked to. And I had no idea,” she says, as the pieces come together. “That blows my mind. Yeah, I'm going to be

processing that for a long time.”

IV

IN THE FALL of 2008, the third woman on my list—and the second in the Physics Department—arrived at UChicago. Cacey Stevens Bester was a Louisiana native who had attended Southern University and A&M College, a historically Black school in Baton Rouge. There, she took her first physics class, where she found her first academic mentor. For weeks, Bester nervously jotted down notes while her instructor scribbled equations on the chalkboard. Over time, the professor told Bester about his research, guided her through simple experiments in his lab, and shared with her all the things she could do with a physics degree. By the end of the semester, Bester says, “I was pretty hooked on physics.”

She was also a part of Southern’s Timbuktu Academy, a mentorship program that gave her research opportunities, financial support, and test prep—the tools she needed to be a competitive candidate for graduate school. At physics conferences, she heard inklings of Black students’ difficulty in navigating their primarily white institutions, but Bester could never relate. She knew she could succeed, because the people around her believed she could. She could focus on science, because she didn’t have to worry about anything else.

Graduate school was a complete reversal. Classmates commented on her Louisiana drawl, sometimes saying they couldn’t understand her. They were confused about her hair—how one day it might be straight and the next, curly—and asked her to explain. Growing up in Black neighborhoods, Bester says, she’d heard jokes about these sorts of interactions. But to experience them in real life was jarring.

For the first time, Bester started getting low marks on her assignments. Compared to Southern, where people in her department were proactive about making sure she succeeded, at UChicago she felt entirely on her own. There were pockets of support here too, but a student had to know how to find them, and Bester didn’t. When the scores were posted for her quantum mechanics midterm, she was crushed to learn she had flunked with a grade far below the class average. Her

professor pulled her aside and questioned whether she was prepared for the class, saying that she didn't seem to understand the subject even at an undergraduate level. He recommended a tutor. "I guess he thought he was doing his best to help me," she says. "But it definitely made me feel inadequate."





Cacey Stevens Bester works on experimental soft matter and granular physics. PHOTOGRAPH: AKILAH TOWNSEND

Bester thought often about leaving. She'd wake up some mornings and hate the path she was on. "I loved physics," Bester says, "but there were times when the love of physics wasn't enough." Giving up didn't feel like an option, though. *I'm the only Black girl here, I gotta represent*, she thought. So she took her professor's advice and started getting tutoring from a peer in class. When her grades improved, she realized why she had been doing poorly: Other students were getting better grades because they were studying together. Bester wasn't in those groups.

Fitting in, she realized, was about more than finding a social outlet—it was a means of survival. She worked to mask her accent and stopped using the slang she threw around back home. "I molded myself to find a way to get through," Bester says. She took part in activities that, at first, didn't interest her, such as going camping and playing Catan, a board game popular among her class. On the days when she felt especially disconnected from her heritage, Bester enticed students to her apartment with the promise of shrimp creole and other Southern cuisine. The invitation was also strategic: Once the plan was in motion, Bester would ask, "Since you guys are coming over for food anyway, why don't we do the mechanics homework together?"

When that wasn't enough, Bester scoured the internet for stories of other Black women in physics. It was during one of these sessions that Bester came across Willetta Greene-Johnson. From time to time, Bester Googled her name, curious what she was up to. Eventually, she managed to get Greene-Johnson invited to speak on campus. When she finally met her, Bester was starstruck: "You mean so much to me," she told Greene-Johnson.

In 2015, on the cusp of earning her PhD, Bester attended a lunch at the National Society of Black Physicists conference in Baltimore. All of the women with PhDs climbed onto the stage for a group photo. Bester watched longingly from her seat as the women—many of whom she recognized from her online searches

—crowded together. Here, in one room, was the academic lineage that had kept her going: talented Black women PhDs who were now slamming through glass ceilings as professors, postdocs, and industry professionals around the nation. “I felt like a little girl,” she says, “looking up at the beautiful women I wanted to be one day.”

V

i was lucky enough to cross paths with Bester when I was an undergrad at Duke and she was a postdoc. Someone mentioned her to me, so I reached out to grab lunch. Often, I think back on our meeting and wish I had known enough to ask her: *What do I do when I feel like I don't belong?*

I tried my best to fit in at UChicago, but I learned the hard way that who I was at home was not who I could be at school. Anytime I changed my hairstyle (as many Black women frequently do), it opened the door for comments that made me cringe. When I came to school in mini twists—an attempt to circumvent my struggles with the hair nets in the clean room—my adviser said, “I like it better the other way,” as he gestured around his head in the shape of an afro. From then on, I restricted myself to different hairstyles on the weekends only.

Burned out and alone in the library on a Saturday night, Bryant was unable to remember the spark she had once felt for studying life among the stars.

Still, it was impossible to steer clear of awkward conversations, and assumptions, about my appearance. I laughed it off when a colleague asked me for weed, because I wanted to believe it had nothing to do with my race. “You like Dave Chappelle?” a white male student asked one day in the lab. I tensed and chose to lie. “Nah, never heard of him,” I mumbled. He pulled up a Chappelle skit on YouTube. “Check this one out,” he said. “It’s about a white family with the last name Nigger!”

I swallowed my anger and excused myself to the women's restroom, where I knew I'd be alone. There, I stared at my reflection, wondering what I had done to make him so audacious, and I said out loud the things I wished I had said to him.

Other times I felt invisible, or at best inconsequential. I'll never forget the day I came to my desk to work, and my officemates—five men—were discussing the validity of the Google Manifesto, an employee's 10-page anti-diversity memo. For an hour, they debated whether women should, or shouldn't, be equally represented in science and tech. I fumed silently and searched for words to capture how I felt. But my mind went into a fog.

When I opened up to my PhD adviser about moments like these, he was sympathetic but skeptical. "Are you sure you're not overanalyzing?" he asked. "Maybe you should stop looking at things through the lens of a minority." He also warned me to be careful about what I voiced out loud, should I potentially harm the budding careers of the people around me.

Sometimes I turned to Andrea Bryant, the other Black woman in the department working toward a PhD. Her experiences paralleled my own, but in many ways they were worse. We had both joined UChicago through the department's bridge program, a now defunct initiative to increase the number of underrepresented scholars earning doctorates. Bryant arrived with dreams of becoming an astrobiologist, someone who studies the potential for life elsewhere in the universe. Because she had a background in biology, Bryant began her first year with beginner-level coursework in physics.

Although the bridge program had promised otherwise, she struggled to find help when she needed it. "Work harder," a professor responded when Bryant reached out for advice. When she asked a teaching assistant for help on a quantum mechanics assignment, he replied, "Aren't you a graduate student? Why are you taking this class?" Bryant fumbled through a response, searching for words to prove to him that she did deserve to be here.



Andrea Bryant (L) simulates "titanquakes" to learn about Saturn's largest moon. LaNijah Flagg (R) studies the evolutionary dynamics of yeast. PHOTOGRAPH: AKILAH TOWNSEND

She was directed to focus on classes during her first two years, but when a supervisor chided Bryant for how far behind she was on research, she felt lost. She had tried working in more than five research groups, only to be let go from each one for not learning fast enough. “Do you even know what an integral is?” one adviser asked. (She did.) “Maybe your personality is just not fit for theoretical physics,” another colleague told her.

Burned out and alone in the library on a Saturday night, Bryant was unable to remember the spark she had once felt for studying life among the stars. But she refused to quit, for the same reasons that Greene-Johnson, Venters, and Bester stuck it out—to not reinforce the stereotypes they all felt weighing them down. Still, the misery could be overwhelming. “I was hoping for some other event in my life to maybe pull me away from physics, and for that to be my out,” Bryant says.

I was also struggling. We tried to lean on each other, but between teaching, research, and coursework, we barely had the chance. The moment it all became too much for me: I had just sat through an hour-long meeting about my research with my adviser and a postdoc, and I couldn't get a point across without being interrupted. Flustered, I went silent, waiting for someone to notice that I had checked out. No one did. After the meeting, I rushed to the stairwell—which had become my usual spot to cry—and called my mom. “I just can't do this anymore,” I choked out. “I'll just finish up this quarter and master out.”

Mastering out, as academics call it, meant making the very stigmatized decision to end my studies with a master's degree, which is viewed, to many in my field, as a consolation prize. Was I ashamed? Yes. I would not be known as another Black woman who persevered. But I was too broken to care. I never came here to be a trailblazer—I just wanted to be a physicist. Instead, I would join an even more invisible group: that of the Black women who had loved physics but who had decided this burden wasn't worth it.

Days later, I awoke to an email: *We are pleased to inform you that you have been selected as an awardee in the Ford Foundation 2018 Predoctoral Fellowship Competition!* A few days after that, I received a similar message from the National Science Foundation. I had submitted these applications months before and had pretty much forgotten about them, my thoughts instead growing more certain that I would never be fully accepted in this space. The awards were more than a credibility boost. They offered me freedom to do research anywhere, on anything.

Now I had not one but two golden tickets—and some thinking to do.





Katrina Miller studies neutrinos and what they might reveal about the universe. PHOTOGRAPH: AKILAH TOWNSEND

VI

PHYSICS TAUGHT ME that time moves like an arrow, always pointing forward. But I'd argue time is more like a tightly wound spiral. The names and faces are new at each turn, but this feeling that we don't belong has hardly budged.

Over and over, that truth resurfaces. When I connected with the person who created the African American Women in Physics database, Jami Valentine Miller, I learned that her project began as a simple list of names in 2004. While pursuing her PhD at Johns Hopkins, she started keeping track of other Black women to remind herself that she had company, even if she couldn't see it. "For me, it was a lifeline," she says. Miller kept the list on her student website, and after she graduated in 2007 she moved AAWIP to its own server and incorporated it as a nonprofit. So far, she says, the total number of Black women who have earned physics PhDs in the US is, depending on which related fields are included, around 100.

That so many of us have found solace in Miller's list answers, for me, the question of what we do when we feel like we don't belong. We find community where we can, and often that's in history. Without Miller, I would not have begun to identify the women who came before me or pieced together our lineage. Still, this account may be incomplete. It leaves out any Black woman who may have started on this journey but then chose to leave.

I don't know if there are any women who left. But I always wonder, since—with a big lift from Miller—we have only recently been able to keep track of one another. Even Miller didn't know until well after she graduated that she was the first Black woman physicist to earn a PhD from her university. In fact, it was only through the AAWIP database that Greene-Johnson discovered—decades after the fact—that she'd been UChicago's first, and among the first 10 in the nation.

Greene-Johnson ended up seeking tenure at Loyola, spending a good 70 hours a

week on work before realizing she was sacrificing a rich life outside of the ivory tower: one that included her husband, a growing son, and a career in music. Ultimately, she withdrew her tenure application, opting instead to teach full-time as a senior lecturer. She takes summers off to compose, and even won a Grammy for a gospel album whose lead song she wrote.

Venters also had aspirations of becoming a professor but found her place at NASA's Goddard Space Flight Center. She sometimes incorporates statement earrings into her outfits as a small, but significant, protest. Bester, meanwhile, is an assistant professor at Swarthmore College—the only one of us so far to keep chasing a dream that, at some point, we all had.

At the end of my second year, rather than leave with my master's, I decided to switch labs. I abandoned two years of research, and my dream of studying dark matter, to restart my dissertation on an experiment that hunts for a different ghost particle: the neutrino. Life improved almost immediately. When I gave my adviser updates on my research, I'd brace myself for criticism that never arrived. It took a year of therapy, healthy amounts of praise, and a collection of supportive mentors to stop feeling preemptively anxious. I eventually became comfortable wearing my hair in different styles again.

Still, I am wary. I shy away from forming friendships, avoid social events, and often work at home or in the library. Those choices hurt me as a student researcher. But they protect me as a Black woman. My days simply feel easier when people don't notice me.

Bryant is doing better too. After a string of advisers within the department, she took an internship on NASA's Dragonfly mission, studying seismic wave patterns of Saturn's largest moon, Titan, to learn about its interior structure, including an underground ocean that may be hospitable to life. She's continuing this research with a Dragonfly adviser outside of the university. The experiences are “night and day,” Bryant says. “I feel so valued.”

Last year, I received an email that made my jaw drop. Another Black woman had just been accepted into our PhD program. Her name was LaNijah Flagg. I couldn't

wait to meet her. I was also dead set on making sure she knew what she might face. I immediately emailed her and Bryant, congratulating Flagg on her success and suggesting we talk soon. “I’m definitely glad to connect,” she responded. “I have a lot of questions about how to operate in this new space.”



LaNijah Flagg returned to her hometown of Chicago to start graduate school. PHOTOGRAPH: AKILAH TOWNSEND

We planned to grab dinner a few weeks before the school year started. “Y’all mind if I bring a friend?” Flagg asked the group chat. She invited a second-year biophysics PhD student, Ayanna Matthews, whom we had never met because of the pandemic. We think she’ll be the first Black woman to graduate from her department too.

Laughing over pasta and drinks on a cool August night, I soak in the sight of us. “To Black women in physics,” I say with a smile, as we raise our glasses for a toast. Having a seat at *this* table, surrounded by physicists who look like me, I feel lighter than I have in years. All of us are bursting with laughter and conversation that effortlessly moves between the details of our research and the best salons in

Chicago to get our hair and nails done. We stay at the restaurant well past closing—until a server politely asks us to leave—then walk home together to hold onto the moment a little longer, promising, as we part ways, to keep in touch throughout the school year.

And we do. In the group chat, Flagg shares her experiences at UChicago: how, after she failed her first exam, someone suggested she register for a learning disability. The way a professor insinuated that her undergraduate coursework was not sufficient for her studies here. The time a student invited her to a Halloween party, saying, “It’s last minute—but that’s OK, because your hair is like a costume, anyway.” Often, though, she surprises me. She’ll find just the right words to clap back. Having us around, she says, gives her the confidence to keep going.

Our group has been cathartic for me too. For the first time in years, school doesn’t feel like a place to escape from. I am more free to be myself. But reporting this story has confirmed what I had suspected: The problem is not with us. It’s systemic, and it can only begin to change once there are more of us—taking up space, sharing our views, being ourselves. That’s why it’s so disheartening that this everyday sense of community is rare in physics. Realizing this, I now long for a life where I’ll feel more at home—if not in the work itself, then in a career that leaves room for the cultivation of community elsewhere.

I am also reclaiming my voice. I started writing this story to bring my academic lineage to light, to understand why there were so few of us and how the women who came before me had persevered. It ended up being something more—a way to make up for the times when silence and invisibility felt like our only options.

As I round out the final year of my PhD, it feels risky—but empowering—to unapologetically proclaim my truth. I hope to finish my studies by the end of this summer. After that, despite the protests of so many in the field, I am leaving academia. I will be embarking on a new journey: as a writer.

Cover: Styling by Jeanne Yang and Chloe Takayanagi. Styling assistance by Ella Harrington. Grooming by April Bautista using Oribe at Dew Beauty Agency. Prop styling by Chloe Kirk.

This article appears in the July/August 2022 issue. [Subscribe now.](#)

Let us know what you think about this article. Submit a letter to the editor at mail@wired.com.

More Great WIRED Stories

-  The latest on tech, science, and more: [Get our newsletters!](#)
- [Can democracy](#) include a world beyond humans?
- [China could build your next car](#)
- It's time to bring back the [AIM Away Message](#)
- [Finally, a novel](#) that gets the internet right
- [How Covid tracking apps](#) are pivoting for profit
-  Explore AI like never before with [our new database](#)
-  Want the best tools to get healthy? Check out our Gear team's picks for the [best fitness trackers](#), [running gear](#) (including [shoes](#) and [socks](#)), and [best headphones](#)

[Katrina Miller](#) is a PhD student and journalist covering space, physics, and culture. She also writes creative nonfiction.

CONTRIBUTOR

TOPICS LONGREADS PARTICLE PHYSICS DIVERSITY WOMEN IN TECH ASTRONOMY GENDER RACE

MAGAZINE-30.07-30.08

MORE FROM WIRED



The Loneliness of the Junior College Esports Coach

BRENDAN I. KOERNER



Here Comes the Sun—to End Civilization

MATT RIBEL



Humans Have Always Been Wrong About Humans

VIRGINIA HEFFERNAN



When Covid Came for Provincetown

WHEN COVID CAME TO PROVINCETOWN

MARYN MCKENNA

Can Democracy Include a World Beyond Humans?

JAMES BRIDLE