

THE UNIVERSITY OF TENNESSEE INSTITUTE OF AGRICULTURE

LAND, LIFE & SCIENCE

FALL/WINTER 2018

1968

2018

Real. Life. Solutions.™

UTIA INSTITUTE OF
AGRICULTURE
THE UNIVERSITY OF TENNESSEE



CELEBRATING
50
years
of OUR INSTITUTE

An orange vertical banner is attached to a black pole with a metal bracket. The banner features white text celebrating a 50th anniversary. The text is framed by two thin white horizontal lines. The background is a clear blue sky with some green foliage visible at the bottom corners.

LAND, LIFE & SCIENCE

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The UT Institute of Agriculture provides instruction, research, and public service through the Herbert College of Agriculture; the UT College of Veterinary Medicine; UT AgResearch, including its system of ten AgResearch and Education Centers; and UT Extension with offices in every county in the state.





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Greetings From Our Chancellor

A WORD FROM TIM CROSS

A decade of excellence is the theme of our new UTIA strategic plan. And for good reason.

In 1968, the University of Tennessee Board of Trustees created the UT Institute of Agriculture to allow the University to better serve the people of Tennessee. While our agricultural programs had existed for quite some time, the trustees hoped that the formation of the Institute would harness the power of our units to create even greater change for good. It was a bold experiment that has proven to be a wonderful success.

Now, we invite you to celebrate with us as we take a moment to reflect on the good work completed over these past fifty years. From the fields to classrooms and laboratories, we are connecting the bounty of the earth with science and technology in ways our founders could not have imagined.

As we celebrate fifty years, we are also envisioning our continuing role serving the state of Tennessee, the nation, and world through our newly created ten-year strategic plan. Agriculture is at the heart of our lives. From farm to table, to our clothing, our shelter,

our health, and our economy, the work of our faculty, staff, and students provides Real. Life. Solutions. that make our lives better.

We hope you enjoy this issue of *Land, Life and Science* as we commemorate the past and look ahead to a very bright future, including the naming of the Herbert College of Agriculture and the kickoff of a new capital campaign. We are honored to carry out the mission of our land-grant university and look forward to all that is possible in the next fifty years.

TIM L. CROSS
Chancellor



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A Grand Vision

REFLECTIONS UPON FIFTY YEARS (AND COUNTING) FOR THE UNIVERSITY OF TENNESSEE INSTITUTE OF AGRICULTURE

Two simple facts led to the formation of the University of Tennessee Institute of Agriculture (UTIA) back in 1968. In the words of Joe Johnson, UT president emeritus, one was, “Ag is such a big part of UT. We’re a land-grant institution.” The other was, “Ag is such a driving force in Tennessee.” It was the perfect marriage, and this enduring friend of the Institute is well placed to know. Fifty years ago, Johnson was executive assistant to then-UT President Andy Holt and present when Holt and other officers of the University and the UT Board of Trustees considered the idea. It seemed natural to them to bring the University’s three agricultural units at the time into an institute focused on serving Tennessee and its citizens. So, the board united what was then known as the College of Agriculture, the Agricultural Experiment Station, and UT Agricultural Extension Service into the UT Institute of Agriculture.

Across the fifty years since the Institute’s inception, Johnson has been present for many significant Institute milestones and occasions, including a special one in 2003 when the Institute named its central corridor through campus in his honor. Sizing up the progress and impacts of the Institute he has seen, Johnson says, “I think it has worked out very well.” We think it has, too.

What is surprising is how the Institute’s character was written large even at its outset.

Before all were brought together, UT Extension was already fully engaged in each of Tennessee’s ninety-five counties. UT AgResearch operated experiment stations (now known as centers) at key locations in the state, functioning as its own statewide network that linked scientists working in the field with those generating discoveries in Knoxville laboratories. The Herbert College of Agriculture was continuing its traditions of providing students with solid career preparation and often through innovations in education. The units were high performers with clearly complementary missions before the Institute was created. After bringing these units together, their roles became more integrated and more effective.

Occurring on the heels of the restructuring that established the Institute, the year 1970 brought change in the reporting structure. UTIA’s first vice chancellor, Webster Pendergrass, received the title of vice president, as did leaders of other campuses. This change meant that through Pendergrass, UTIA had become a direct report to the UT System president. It was now fully its own unit, intended to operate separately and distinctly within the University System. The exception was the then College of Agriculture, which then and now is both part of UTIA and the University of Tennessee,

Knoxville. The College’s students are enrolled in UT Knoxville, from which they graduate with degrees.

Four years later, even more transformative change occurred. That year the state General Assembly passed legislation that established Tennessee’s first college of veterinary medicine and placed it as a unit of UTIA. Having this college incorporated into the structure of the Institute made it fully integrated into the food animal production and health system, further filling out UTIA’s land-grant driven outreach, education, and research.

Through these initial developments and the already strong foundations of its units, the Institute grew into its land-grant mission, setting it on course for many achievements and impacts in the years that followed.

From Then to Now

At the outset of the Institute’s years, students enrolled in what is now known as the Herbert College of Agriculture were engaged in hands-on experiences in their academic area through a work-study arrangement that enabled professors to hire student assistants as needed. Some of this work occurred on our agricultural campus, which had at that time a dairy barn, greenhouses where students

Our campus has a close-knit family environment, one where professors take a personal interest in their students' college experience, including knowing their names and teaching their courses.

lived and maintained holdings, and a large field of corn breeding lines and other crops that stretched from where the UT College of Veterinary Medicine now stands on through the present area of the UT Gardens, Knoxville. While the campus has changed, Herbert's commitment to experiential learning has remained firm and will soon branch into exciting new directions and opportunities.

Financial support in the form of scholarships and awards makes students' real-life study and experiences possible. A stellar point about the College is how it gives personal attention to each student to determine the type and amount of aid the student may need, and then the College matches it to available resources. Our alumni and friends are committed to this support. They have funded and endowed scholarships and awards, some specific in focus and many more general, allowing accessibility to greater numbers of students and their needs and merits. Tellingly in 2010-11, which fell within the recent Great Recession, the amount of scholarships and awards available to students topped \$1 million. The commitment individuals and organizations make to assisting our students is something in which we take great pride.

Our alumni, our employees, and our students: All comment that our campus has a close-knit family environment, one where professors take a personal interest in their students' college experience, including knowing their names and teaching their courses. Glen Hall was named the first dean of the then College of Agriculture when the Institute was created and says he was attentive to that family atmosphere, which he set out to foster. Certainly, this atmosphere continues and is both prized and appreciated as a signature element of today's Herbert College of Agriculture.

That family atmosphere also is prized at the UT College of Veterinary Medicine. One of only thirty veterinary colleges in the nation, it provides opportunities for Tennessee students while serving pet owners and the livestock industry as well as protecting public health, enhancing medical knowledge, and generating economic benefits to the state and nation. In the pursuit of knowledge, compassion, and discovery, the College teaches students how to become the very best veterinarians they can. It also serves as a resource for practicing veterinarians and an extension of their practices, delivers high-quality compassionate care, and makes discoveries to advance both human and animal well-being.

More than doubling the class size since accepting its first students, the College now chooses its eighty-five first-year veterinary students from a pool of more than 1,000 applicants. The sense of comradery among the students remains as strong as ever, thanks in part to the College's supportive culture that helps ensure their success.

That supportive culture has also been carefully nurtured among the faculty and

staff working for the betterment of the profession and society. One of the twenty-one founding faculty members describes the family-like atmosphere as one that cultivates mutual respect and cooperation and explains that other veterinary schools had faculty that would stay five or ten years, but people came to Tennessee and never left!

Complementary to the missions of the two colleges, and the key outreach unit for the University of Tennessee, UT Extension is engaged in making life better for Tennessee farmers, families, and youth. True to the land-grant mission of public education, UT Extension has helped transform Tennessee with research-based outreach and its educational programs in agricultural sciences and resource management, as well as family and consumer sciences and youth development. Educational programs range from gardening and landscaping to nutrition, animal health, and family money management. The programs are available to all county residents, often at no charge.

In the meeting of university leaders that resulted in the creation of the Institute, the presence of UT Extension in every county was understood as both a strength of this unit and of the University as a whole. Indeed, then and now, Extension county offices represent the front door of the University to the people of Tennessee. Extension operates as a two-way link between Tennesseans and university specialists, scientists, and researchers. That special relationship and the education





and economic development it fosters are the hallmarks of Extension.

In an average year, the unit has millions of documented contacts with Tennessee citizens, with the overall economic impact of these contacts charting a return of three digits in millions of dollars in estimated economic benefits. For many years, Extension's 4-H Youth Development Program has maintained one of the largest rosters of any state. Through 4-H, youth develop leadership and citizenship skills, self-esteem, and learn about the world around them.

UT AgResearch continues to be a scientific leader within the University and an engine of innovation. One of its greatest strengths lay in the direct connection from laboratory to field research made possible by a network of UT AgResearch and Education Centers that today totals ten units. While that number grew from the earliest days of UTIA, their operation as a network that connects agriculturally distinct regions found within Tennessee's long state borders has continued across our fifty years.

UT AgResearch now harnesses the creative energy of some 160 faculty holding PhDs, specialized staff, and gifted graduate

students. AgResearch makes the agricultural, forest, and ornamental industries more efficient, improves the quality of rural life, and conserves soil, water, air, and wildlife. It develops these impacts through basic and applied research programs on the Institute of Agriculture campus in Knoxville, in partnership with UT Knoxville and the Oak Ridge National Laboratory, and at its centers across the state.

Agronomy and animal science were strong early focuses when UTIA was organized, as were ag engineering, food science, and forestry. These continue. Along the course of our history, bioenergy, biofuels, and biomass have joined our endeavors, and so have wetlands, nanotechnology, and biotechnology that reaches into cellular and molecular levels to achieve understanding and effect improvements, whether in drought or pest-resistant plants or genes capable of transforming the entire beef industry. This is the work of UT AgResearch.

An Anniversary Year

In 1994, as UT celebrated two centuries since its founding, UT agriculture marked 125 years of service. UT Extension marked its centennial in 2010. Now, as the Institute commemorates its fiftieth, we invite you to

read ahead about its history. The articles on the pages that follow reflect on significant programs and developments across our half-century of operation. Because our pages are limited and fifty years have spanned much, we encourage you to help tell our story. As our alumni and friends, consider the key moments of the Institute you witnessed, as well as special moments of your own that connect to us. Those, too, are part of our story and history. Won't you keep this story going by sharing your memories and thoughts on social media? Use the hashtag **#utia50years** to share with us and other alumni and supporters.

As you read further into this issue, past the pages of our history, you'll discover a just-announced transformation of one of our colleges, learn about new priorities guiding the Institute, as well as how you can engage and be a part of our future. Indeed, together, we grow. ■



UTIA Leaders Roundtable

REFLECTING ON FIFTY YEARS
OF REAL. LIFE. SOLUTIONS.

PARTICIPANTS

D.M. “Pete” Gossett, vice president for agriculture, 1987–1998

Jack Britt, vice president for agriculture, 1998–2004

Joe DiPietro, vice president for agriculture, 2006–2010, named UTIA chancellor in June 2010 before becoming UT System president in January 2011

Larry Arrington, chancellor, 2011–2016

Tim Cross, chancellor, 2017–present

Lisa Stearns, vice chancellor and moderator

In May 2018, leaders of the University of Tennessee Institute of Agriculture came together to share past experiences and thoughts about the future.

LISA STEARNS: This is an exciting day for us to have all of you here in one room to share your experiences leading the Institute. We’ve been doing a lot of research on the fiftieth anniversary, and one of the things that became clear to us as we were reading through some older publications was that this was a rather bold move by the Board of Trustees to first, establish the UT system, and then an institute of agriculture. Why do you think it was important for us to become an Institute?

PETE GOSSETT: I think it’s because of the size. There were, at that time, three major divisions: College of Agriculture, Experiment Station, and Extension Services. Vet Medicine came in a few years later; that made it even larger. So, it really made the Institute much more, and gave it a title that made it clear it was more than just a college of agriculture.

LARRY ARRINGTON: You know, to me, it made a bold statement back then about the commitment to the land-grant mission. It made a big statement to the state of Tennessee about taking a stand that we are a land-grant university.

JOE DIPIETRO: When it comes right down to it, this is a very rural state where agriculture is very, very important to the majority of the citizens, and I think we’ve failed to realize that. And even for those who are urban, agriculture is what puts food in their grocery, grass in their front yard, roses in their backyard. So, it was right to do it. It was bold, like Larry says, and I think it was a smart move.

JACK BRITT: I think it’s important to recognize the Institute has more locations in the state than any campus has. The perception sometimes, among the public, is that you’ve got five campuses. Well, the Institute has more than a hundred campus locations if you look at Extension offices and research stations across the state. So, that statewide presence really stamped the Institute of Agriculture as a significant component everywhere in the state for the University of Tennessee System.

TIM CROSS: Yes, I agree. I think it really validated the notion that the state is our campus and having all the locations that we have across the state, serving all the people we do, it made great sense to set us up as a great institution.

LISA STEARNS: What kind of impact has the Institute had on the state of Tennessee—and even internationally beyond our borders?

JACK BRITT: I think about the significant impact the no-till agriculture program had that was started in West Tennessee. I mean, that was a landmark change in the way that we do farming in the nation and really around the world. So, that’s an example of something that started here, grew here, and was built here that everyone uses and recognizes. Even globally—you mentioned the global aspect—no-till has been adopted globally.

JOE DIPIETRO: No-till is just amazing. I mean, I grew up in corn country, in bean country, right? Central Illinois. Illinois farmers adopted no-till practices from Tennessee. When I was a kid, in the wintertime the ditches along fields were just filled with this black topsoil, and we’d drag our ditches back up into the field and start over again. And by adopting no-till in that state, it’s been more effective and efficient and it’s improved soil retention and, of course, lessened erosion. So, I never knew that until I came to Tennessee.

JACK BRITT: Certainly, as an agricultural and environmental practice, it’s profound.

LISA STEARNS: You mentioned that no-till has had a global impact. And you think about people like Donnie and Terry Smith giving a substantial gift to make sure that we are doing international work as well.

LARRY ARRINGTON: Through that process, it was amazing to find out that Tennessee agriculturists recognize that they don’t operate just within the state of Tennessee, that it is a global economy. And they were on board with doing more international work and having the Institute engaged across the world because it contributes back here in Tennessee as well as helping the world. So, it was kind of fun watching all of that develop.

TIM CROSS: We gain from that experience culturally too. I recall an Extension agent had about a three-week international experience. I saw him about a year later and he said he had given seventy-three different talks in the county in which he was located about his experiences to various groups and you know, that’s a great way, I think, to help internationalize our state and to be better connected globally.

PETE GOSSETT: I came here as a faculty member in '65, and the program with India was underway at that time, and we had quite a bit of exchange of faculty between here and India. I think all of them came back with a much broader viewpoint of what we were trying to do here.

LISA STEARNS: So, we didn't want to bring this group down by asking you what was the worst day on the job, so instead . . .

JOE DIPIETRO: I can tell you. It was the day I left! This is the best job I've had.

LISA STEARNS: What stands out to you as something that really made you proud to be the leader of this Institute?

JOE DIPIETRO: Well, never did I think we would ever secure seventy million dollars to do the biofuels initiative in the switch-grass industry. I had never seen anything like that before. Right time, right place, right people, both in the legislature as well as the governor's office. It got lift in a hurry. The bio-products off of that program, which we thought about initially but were thinking more about fuel, have actually become much more potent and continue to have tremendous potential for the institution. The other thing I want to mention is field days. Field days are great. I try to go to them at least once a year; in this job it doesn't always happen, but that's where sort of the rubber hits the road whether it be Milan, Ames, or any other place. They're really important because you see what the land-grant mission is all about because you're delivering information to people in their location, at those centers. And they come in droves to get information. And the lunches aren't that bad either.

PETE GOSSETT: Now that you mention field days, Joe, the first vice president after I came to the Institute was Webster Pendergrass. And he was high on field days. He insisted that everybody had to have one a year, at least. A lot of the public didn't know anything about the research—they knew there was a farm out there, and that's about it. So, they were important, Joe. I agree with you entirely.

TIM CROSS: Well, they've certainly helped our visibility across the state. When I think in terms of best days, I have a "best day" once a year and to me it's our awards luncheon every summer. You really see the work of all of our units featured through the faculty and staff who are being recognized. That's just a really good synopsis of the work being done around the state.

LARRY ARRINGTON: When you think of a best day you tend to think about a new facility opening or something like that and certainly, when the Large Animal Hospital opened, it was a fantastic

day. Also, for me the acquisition of Lone Oaks was a big deal. But you know, the best day was when I would get a card, or my phone would ring and the person on the other end would tell me a story about someone in this place who cared enough to make sure that whatever they needed happened. Whether a veterinarian had gone out of their way to take care of the animal or a staff member in the building got them to the right person. And that happened all the time. You would just smile when somebody would let you know that one of our people cared enough to take care of them around here.

JOE DIPIETRO: That's a really good point.

JACK BRITT: I think my best day was the day we dedicated the Plant Biotechnology Building. The reason is that there were so many people who worked together to acquire the funding and we had a unique partnership with DuPont. The chief executive of DuPont at that time was a UT grad, and he invited us to bring our architects and engineers to see their facilities, and they told us how they would design them, and what was good and what was bad. And it was an invaluable amount of advice and feedback, so even now we have the best biotechnology building in the country. And I think it's because of that partnership: People working together.

LISA STEARNS: You've all alluded to this, but talk a little bit about the people who make up the Institute and your thoughts on the impact they have for this organization.

JOE DIPIETRO: [People] throughout the Institute of Agriculture are servant leaders in nature, and also humility runs real thick here and people often don't take enough credit for great successes because they just think they're doing their job. Now that I've worked with all components of the system, it's absolutely unique because it's so uniform and uniting in this Institute. When Larry decided that he was going to retire, I met with his leadership group, and I walked through the door and said, 'I'm coming back. It's the best job I've ever had.' And y'all didn't laugh, you just thought I was maybe coming back. But the reality was it's the people that make this job great for whomever's the chancellor or vice president. The comradery and sense of teamwork and commitment is not only palpable, but unlike any other place in the University of Tennessee System.

PETE GOSSETT: I think the vast majority of the faculty enjoyed working together, . . . (and) seemed to thrive on having a partner to work with, a cooperator, and most projects had possibilities for that.

JACK BRITT: I think the loyalty of the people and the feeling they have for the Institute. You know, when I came it was very clear with everyone I met that they were loyal to the Institute. They loved



ABOVE: Current and former UTIA leaders (left to right) Joe DiPietro, Tim Cross, Pete Gossett, Jack Britt, and Larry Arrington pose in front of Morgan Hall.

BELOW LEFT: Tim Cross with Pete Gossett.

BELOW RIGHT: Jack Britt with Larry Arrington.

working at the Institute, they were proud of what the Institute did, and they were committed to making it successful and serving people, whether they're students, farmers, or animal owners. They feel a comradery here and a loyalty here that makes it a fun place to work.

PETE GOSSETT: I talked earlier about the people, but there was just one little tiny piece we haven't mentioned, and that is the way the people here also care about each other internally as a family, whether it be sickness or death, or whatever the issue is, everybody just pulls together and jumps in there and that's just a wonderful trait of an organization.

TIM CROSS: Yes, that's exactly what I was going to say. We still refer to ourselves as a family, and I think that's a positive thing. Not that we don't hold ourselves accountable, not that we don't expect good work to be done. The sense that we take care of each other as a family really makes a difference throughout the state, whether it's serving low-income families with nutrition help or whether it's treating a 200,000 dollar bull in our large animal surgery suite, folks really think and care about what they do.

JOE DIPIETRO: And don't forget the people outside the Institute, I mean, the family is extended. Farm Bureau, Tennessee Department of Agriculture, the commodity groups; I have never seen that kind of connectivity with a land-grant institution in my career that is available to us, and it's meaningful, it's family-like, and it's sincere.

LISA STEARNS: So, as you think about the leaders that will come after all of you, there certainly are always challenges. Can you talk a little bit about what challenges you might see for us as we look to the next fifty years, Chancellor Cross?

TIM CROSS: Well, I think clearly it's always a challenge to continue to do everything you've always done, and yet do more as advances occur. That's not changed in the past fifty years, and that challenge has always been there. I also think we've got to be growing in order to be keeping up. We're going to be constrained in that growth. I'm not sure funding will always be available to do everything we want to do, or everything that we feel needs done, even such factors as space—office space, classroom space, lab space, parking space. Those will be real challenges in the future as well, but I don't think they're insurmountable.

JACK BRITT: I've been working on a project with a group of colleagues from around the world for the last three years, and we're looking at a specific agricultural sector globally in fifty years.

What I've learned is if you can envision the future that's what the future will be. Because if you have a vision you will take the steps to meet that vision and get there.

JOE DIPIETRO: Figuring out a way to make sure those annual increases in cost that you have, that are a matter of doing business, are covered by state appropriations is a big challenge. In tandem with that, technology probably in the next twenty or thirty years. Where will we be in twenty or thirty when it comes to agriculture and veterinary medicine considering technological advances? And I think our students are likely to come to us wanting the latest technology, and that puts you in a predicament where you have to have the financial ability to get the infrastructure you need to teach people who are coming to us expecting it. So, a lot of challenges. This Institute's always climbed over them. Some gifted leaders will drop into these jobs over the next thirty, forty, fifty years because it's a great place to work, and they'll figure it out because the team will help them.

LARRY ARRINGTON: You know, the Institute is well-positioned over the next fifty years to be a contributor for feeding the world, and so I just think that's a great thing to say. I just wish I was a young assistant professor coming in right now. It'd be fun to come in here right now.

TIM CROSS: We have an opportunity for you.

LARRY ARRINGTON: I said "young."

TIM CROSS: We talked just a moment ago about private support and gifts, and I do think that's a real opportunity for us. We've relied on federal and state funding, local funding, and to a small extent, grant funding. But it is so apparent how much support we get from our alumni, from our stakeholders across the state, and from our retirees, that we launched the public phase of our capital campaign this fall at our Ag Day celebration. And I think it's very fitting to launch the next fifty years with that mindset. We've had some incredible gifts recently, and others that are expected that will really be transformational for the Institute.

LISA STEARNS: It's been so exciting to bring this group together, and you've made it worth it. Thank you! ■

To watch a video of the full interview, visit
tiny.utk.edu/UTIAChancellors

A LOOK BACK AT UTIA'S PAST



Securing the future of black bears in Tennessee and throughout their natural range was at the heart of Mike Pelton's work.

UTIA Bear Study Leads to Worldwide Research

Black bears are cherished wildlife and symbols of East Tennessee. Bear studies to support their wise conservation are woven into the history of UTIA. They span our fifty years of existence and are well-positioned to continue into the future.

Fifty years ago, groundbreaking research began at UTIA on our region's most iconic animal: the black bear.

In 1968, Mike Pelton, now professor emeritus in the Department of Forestry, Wildlife and Fisheries, launched his research on black bear populations at the request of the National Park Service after park rangers noticed a decline in the number of bears throughout the Great Smoky Mountains National Park.

Pelton, along with his graduate student assistants, began collecting samples and data as well as trapping bears and fitting them with radio collars—a first for research in the eastern United States.

The research Pelton and his students conducted on black bears grew to have direct impacts on informing sound conservation and wildlife management practices for the bears and, ultimately, several other species in a number of southeastern states. In fact, Pelton's work created a model for wildlife management that involved partnerships with local, area, and regionwide agencies and private landowners, and his research model drew international attention.

This visibility and the innovations of the UTIA bear research itself resulted in an invitation for Pelton to help orchestrate the first field studies on giant pandas in China. Other research projects drawing from his work include the first brown bear study in Spain, collaborations with renowned bear

researchers in Norway and Russia, as well as surveys of Andean bears in South America and Asiatic black bears in Japan. In all, the foundational bear studies conducted here in Tennessee rippled to affect species on four continents and within seven countries, totaling thirty-seven different study sites.

Although Pelton has retired, scores of his students carry on the science-based management they learned, and the bear research he began at UTIA is still active, although with some significant changes.

The Southern Appalachian Cooperative Bear Study is a research program in the Department of Forestry, Wildlife and Fisheries. This summer, research technicians, students, and volunteers with the program completed their second year of collecting hair samples from black bears. Their four-state research project focused on western North Carolina this summer, and last year they concentrated on Tennessee, Georgia, and South Carolina.

This iteration of UTIA black bear research is using innovative, game-changing methods for collecting the hairs. Previous methods for collecting population data involved trapping, sedating, and giving each bear an ear tag. Today researchers place food bait within a fenced area. When bears enter through the fencing to reach the bait (doughnuts go over well), their hair is snared on the wires and later collected and sent to a laboratory for DNA testing.

Results tell researchers the number of individual bears that visit each site, how often they visit each snare site, and then enable the scientists to track population movement from one site to another. Together, this provides researchers with a database of individual bear action from which they can calculate population density to create sound wildlife conservation and management practices.

While research methodologies have advanced, what endures is the Institute's reputation as home to the longest continuous study of any bear species in the world. That reputation began fifty years ago with Pelton, and his studies remain a standout achievement from UTIA's fifty-year legacy. ■

Sitting Pretty by Farming Ugly

THE SCIENCE, THE FIELD DAYS & TRANSFORMING LIVES

Field days have been at the core of the Institute of Agriculture's mission from its very beginning. Taking visitors to the field, forest, or garden to see research fosters a spirit of openness and encourages engagement and curiosity, as well as important learning.

You've probably heard of no-till farming before and if you haven't, you've at least seen it. Most row crop producers in Tennessee farm this way. Like the name implies, there is no tilling the field between harvesting one crop and planting the next. The seed is basically drilled into the ground. It saves farmers time and money and has improved soil, air, and water quality for everyone.

No-till farming may be considered the norm today, but not that long ago driving by a field that had been planted without first plowing was about as common as a Sasquatch sighting.

That didn't deter UTIA researchers from fine-tuning a technique that has drastically increased agricultural production. This year, as the Institute celebrates its fiftieth anniversary, many still consider the adaptation of no-till farming to be one of the organization's greatest accomplishments.

"It was just a tremendous step forward as far as agriculture is concerned," says Blake Brown, director of the UT AgResearch and Education Center at Milan. "It's probably the most significant program that's been developed, with so many people working together to achieve the results we see today."

To appreciate what Brown means, we need to back up to the 1970s when deep gullies dotted the state, and an average farmer was losing thousands of tons of topsoil every year. West Tennessee was considered one of the worst spots in the entire country

for erosion and was even featured in an issue of *National Geographic* as an example of how over-tilling was hurting farm production.

"To say the stakes were high is probably an understatement," says Brown. "Farm production was losing ground, both literally and figuratively. From a sustainability standpoint, we had almost reached the point of no return."

Finding a solution to this problem became a focus for many young UTIA scientists. These researchers, led by Tom McCutchen, former superintendent of the Milan Experiment Station (today the UT AgResearch and Education Center at Milan), were known as the Tennessee No-Till Team, or TNT for short. An apt name, for sure, because their research certainly shattered traditional farming methods.

"Our work showed that no-till was the best solution to the erosion issue and offered many other benefits to farmers, but it was a tough sell at first," admits Bob Hayes, a TNT member who now is director of the UT West Tennessee AgResearch and Education Center. "People grew up planting crops a certain way. That's just what they knew."

Those traditions made promoting the new technique difficult. When researchers first decided to experiment with planting crops without plowing the ground first, the critics were quick to come up with their own description for the technique—"farming ugly."

With the benefit of hindsight, the term "farming ugly" may sound silly, but to someone accustomed to freshly plowed fields and clean rows, seeing a crop like soybeans pushing through heavy residue of cornstalks and leaves probably did seem unsightly.

Of course, there's nothing ugly about conserving soil, improving organic matter, and reaping savings on fuel and labor costs. All are benefits of no-till. For years researchers, specialists, and county agents shared this message. Gradually the term "farming ugly" changed from a term of derision to one of pride. "I Farm Ugly" was even the slogan for a T-shirt one year at a Milan No-Till Field Day.

Undoubtedly, the Milan No-Till Field Day was the biggest promotion for no-till crop production. The first took place in 1981, and as the years went by the event helped bring national prominence to the University's no-till research program. The small town of Milan, Tennessee, became a destination for anyone interested in a new way to farm, including international scientists, agricultural writers, even governors and a vice president of the United States.

Fittingly, the AgResearch and Education Center at Milan became known as the "Birthplace of Tennessee No-Till."

Field days like Milan No-Till have been at the core of the Institute's mission from its very beginning. Taking visitors to the field, forest, or garden to see research directly focused on their interests is a direct link of



scientists, Extension agents and specialists, and the citizens they serve. Today as the Milan No-Till Field Day continues, you'll find a host of other topics joining it as field day topics offered every year, from facets of traditional production agriculture to fun and educational events, such as the Fall Folklore Jamboree and Summer Celebration.

As UTIA moved into the 1990s, researchers made more advances in no-till technologies. Their studies fine-tuned the use and performance of herbicides and improved the precision of planters. Farmers could now farm more marginal lands with less fuel and machinery. No-till became more widely adopted. Farming ugly was looking good.

"I think the research we did is finally what sold everyone. That's the bottom line," says Paulus Shelby, former Extension cotton specialist. "Once equipment and seed

technology caught up with the research, we saw no-till acres boom, but the research came first."

Today nearly 95 percent of Tennessee soybeans, corn, and cotton are planted using no-till or conservation tillage—a feat that some said would never happen. Perhaps the ultimate measure of no-till's success is in the number of acres that are now planted using sustainable farming practices and the precious soil that has been saved along the way.

This year UTIA hosted the thirtieth Milan No-Till Field Day. Even though no-till has gone mainstream, thousands of producers and agriculturists still turned out to learn how to improve their no-till production. To their credit, UTIA researchers, specialists, and agents have not let up either. They are working hard to improve agricultural production and find solutions for the next fifty years. ■

In its earliest days, education about the benefits of no-till farming was met with skepticism. Leaving residue in the field after harvest, planting without first turning the land, ran counter to ideas of traditional farming. Then the benefits of no-till began to be known and adoption took off.



Then & Now

Times may change, but the need for sound information on nutrition, exercise, and even finances is eternal. Agents and specialists with the UT Extension Department of Family and Consumer Sciences continue to deliver that information to people of all ages in each of Tennessee's ninety-five counties, whether in person or using the latest technology.







1968

4-H's Enduring Values

While change has certainly occurred in the topics Tennessee 4-H'ers study and learn across the Institute's fifty years, the program's values have endured—to equip the state's youth with leadership, citizenship, and life skills that enable them to succeed and thrive.

When the UT Institute of Agriculture was established in 1968, Tennessee 4-H already had six decades of programming under its belt. Recognized nationally for its size and scope, the program had equipped hundreds of thousands of Tennessee youth with leadership, citizenship, and life skills since it began in 1910 with a goal of making the best better.

Yet as 1968—and UTIA—arrived, the most well-known programs of 4-H entered a period of change. Advancing technologies transformed 4-H projects and activities and a growing scientific knowledge base affected agriculture programs. Meanwhile, an emphasis on youth leadership development was shifting to include more in-depth programs. In addition to agriculture, advances in family and consumer sciences also provided unique learning opportunities for 4-H youth in areas such as nutrition, food preservation, food safety, health, and clothing and textiles.

Other traditions that pre-date 1968 continued into the early years of the Institute. Programs on citizenship and leadership continued to be a focal point of the 4-H mission. During the 1960s, Tennessee 4-H members became more active on a national and global scale. An annual delegation began attending the National 4-H Citizenship Short Course in Washington, DC, an event focused on civic awareness and leadership development. Additionally, two international programs, the International Farm Youth Exchange and the Canadian National 4-H Club Conference, provided Tennessee 4-H members with the opportunity to think not only about their club, community, and country but also their world.

From its start in 1910, Tennessee 4-H has offered youth outstanding opportunities for growth. It was a natural fit for the Institute family. Here, 4-H'ers visit outside the Capitol during the 1949 4-H State Congress.

Service is part of the culture of Tennessee 4-H, and each 4-H member volunteers their time selflessly.

In the early 1970s, Tennessee held several first-place national rankings for 4-H project enrollment. Each 4-H club member was expected to have a 4-H project focus to help drive their learning and involvement in their 4-H club work. The largest projects of that period included dairy, horse, field crops, tractor, electric, foods-nutrition, clothing, arts and crafts, entomology, poultry, public speaking, and photography. These projects, while having evolved, are still some of the most popular today.

While the 4-H program is deeply rooted in rural Tennessee, in the late 1960s and early 1970s a national movement supporting urban counties across the nation ensured that all youth had the opportunity to be part of 4-H. The Tennessee 4-H SPIFFY club (Special Program in Food for Youth) provided urban youth with learning experiences in the area of nutrition and food safety. 4-H work in urban counties is still thriving today, making sure that all youth, rural and urban, have the opportunity to be a part of one of twenty-seven different 4-H projects.

The 1980s saw the arrival of new 4-H learning opportunities. Programs focused on performing and expressive arts provided youth with the chance to showcase their talents through theatrical and musical performances. An increased national focus on energy usage prompted the creation of 4-H energy education and conservation programs to help youth become better stewards of resources and gain valuable life skills. Workforce development programs also emerged during this time. Business and industry were expanding and the need for qualified workers was critical. Tennessee 4-H gave youth the technical and people skills necessary to become excellent members of the workforce.

The 1990s and first years of the 2000s brought more focus on positive youth development. This era emphasized training for youth professionals and 4-H volunteers to assure all youth had a safe physical and emotional environment in which to learn. 4-H youth began to take a more active role in planning and developing 4-H programs at the local, state, and national levels. Teen leadership became a very strong part of the program, and these youth became ambassadors for 4-H with local, state, and nationally elected leaders. Tennessee 4-H members actively showcased the personal growth 4-H could make in the lives of young people through program involvement.

Today you'll find program topics continue to evolve. There's STEM (science, technology, engineering, and math) which includes geographic information systems (GIS), computers, robotics, food science, and forensic science. In addition, animal and plant science

programs take a more in-depth look at genetics, breeding, and current production practices. Nutrition is again a major concern of society and our 4-H and Department of Family and Consumer Sciences projects highlight current nutrition and health practices.

Nationally and in Tennessee, an increased emphasis on education quality has provided the opportunity for 4-H professionals to partner with classroom teachers to enhance learning through experiential education. All 4-H curriculum materials are now tied to state educational standards, so school 4-H clubs directly help teachers meet their educational goals.

The strong 4-H camping tradition continues to thrive. Tennessee 4-H camps, with their emphasis on environmental understanding and stewardship, take place at four educational centers. The newest of these, Lone Oaks, is located in West Tennessee about an hour east of Memphis. Thanks to a major UTIA fundraising campaign, this facility, which is currently in development, will have a state-of-the-art STEM center that will provide classroom teachers and 4-H agents with opportunities for educational enrichment through experiential science.

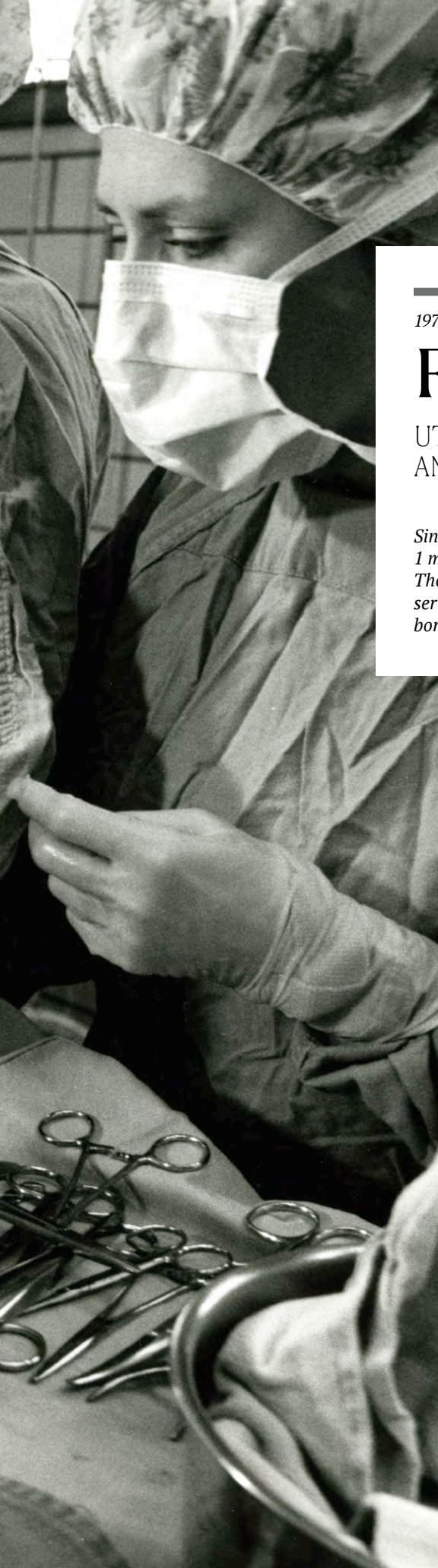
Other programs, like the 4-H All Stars, give Tennessee 4-H members an outlet to put others first through service projects in their local communities. Over the years, 4-H All Stars have completed projects such as volunteering at local nursing homes, conducting city-wide trash pick-ups, gathering food for the needy, building homes in impoverished countries, and raising funds to build a well water system in Africa. Service is part of the culture of Tennessee 4-H, and each 4-H member volunteers their time selflessly.

In classrooms and communities across the Volunteer State, young people continue to pledge their head to clearer thinking, their heart to greater loyalty, their hands to larger service, and their health to better living, making a personal commitment to improve themselves and their communities. Tennessee is proud to be among the largest 4-H programs in the country. On average, more than 180,000 youth, hailing from each of the state's ninety-five counties, continue to live out the 4-H mission and grow because of it. Quality programming ensures that today's 4-H'ers, and those of generations to come, will be leaders of our state and nation. ■



Challenging and fun activities in the 4-H program Junk Drawer Robotics encourage youth to apply the processes and approaches of science, the planning and conceptual designs of engineering, and the application of technology.





1974

Founded to Serve

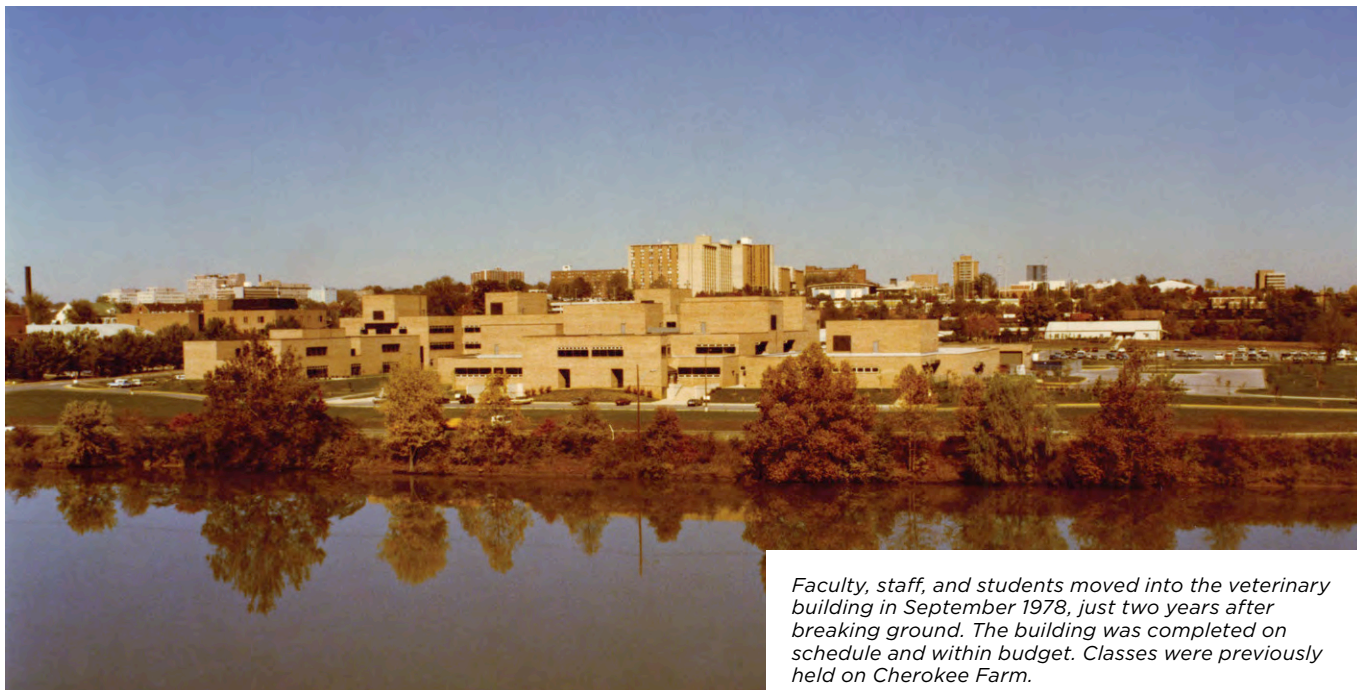
UT COLLEGE OF VETERINARY MEDICINE ASSISTS
ANIMALS, OWNERS & COMMUNITIES ALIKE

Since the opening of its doors, UTCVM has treated more than 1 million patients and has graduated 2,467 veterinarians. Those sizeable impacts are a measure of how this college serves communities, Tennessee, and those living outside the borders of the Volunteer State.

In the 1960s, there were only about 30,000 veterinarians in the country, and Tennessee was well below the then-national average, as home to less than 400. In fact, at least one-third of Tennessee's ninety-five counties had no practicing veterinarian at all. The number of undergraduates enrolling in pre-veterinary medicine at UT was on the rise, but those students had to pursue their studies in other states; most were educated at Auburn University. Recognizing and acting on a need, Tennessee's agriculture and livestock organizations actively advocated to establish a veterinary college to better serve the state's agricultural community and provide an opportunity for students to study and perhaps stay in their home state to practice veterinary medicine.

In 1967, Clyde York, then-president of the Tennessee Farm Bureau Federation and chairman of the Agriculture Committee of the UT Board of Trustees, presented a recommendation to the board to establish a veterinary college. A study coordinated by Webster Pendergrass, then-dean of the UT College of Agriculture and later the first vice president of the UT Institute of Agriculture, determined that a veterinary school at UT was feasible. In a 1993 interview, UT President Emeritus Joe Johnson said there was never any question Knoxville would be the location of the veterinary college. "That was the only logical place to put a veterinary school because of the land-grant mission of the University, the Institute of Agriculture, and UT's large faculty."

Teamwork, whether during a surgical procedure in an operating room or on a field service visit to a farm, is a hallmark of how the UT College of Veterinary Medicine serves pet owners and the livestock industry.



Faculty, staff, and students moved into the veterinary building in September 1978, just two years after breaking ground. The building was completed on schedule and within budget. Classes were previously held on Cherokee Farm.

Acting on direction from the legislature, the Tennessee Higher Education Commission appointed Willis William (W.W.) Armistead to formally study the feasibility of establishing a veterinary school. Armistead was one of the most influential veterinary educators at that time, having helped found and serve as president of both the Association of American Veterinary Medical Colleges and the American Veterinary Medical Association, and was founding editor of the *Journal of Veterinary Medical Education*. In the fall of 1973 Armistead, who was then-dean at Michigan State University College of Veterinary Medicine, authored *Increased Veterinary Services for Tennessee and Consultant's Report*, which ultimately became the planning document for the design and construction of the UT College of Veterinary Medicine.

In the spring of 1974, the bill to establish the veterinary college passed the House unanimously and the Senate with only one dissenting vote; Armistead was named the founding dean. Later, he was quoted as saying, "One of the reasons I came here was that it appeared to me that there was such an unusual amount of support for a new program." The following year, the Tennessee General Assembly allocated \$16.6 million for construction of the \$246,000 veterinary medicine building, the only major capital outlay structure approved for higher education during the session.

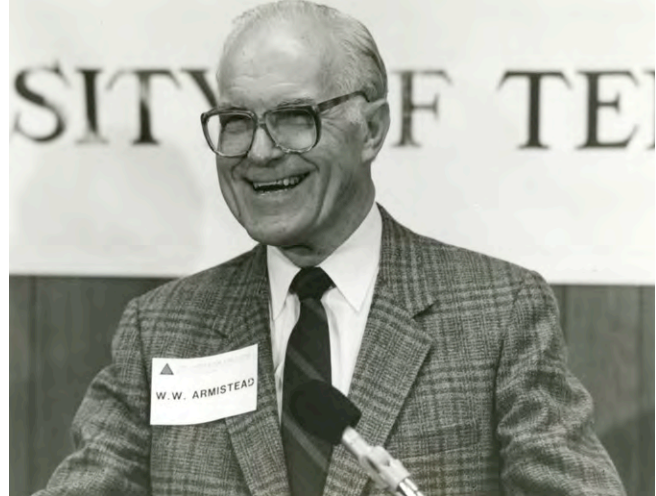
University President Ed Boling's written comments celebrating the 1976 groundbreaking for the country's twenty-first veterinary college described the event as a minor miracle that had to have set some kind of a record because it occurred just two years after it was authorized by an act of the General Assembly. The interval in Florida for the same process was ten years and six years at Louisiana State.

The first class of forty students (class of 1979) was chosen from a pool of 200 applicants and admitted in September of that year. While construction was underway, students attended classes on Cherokee Farm across the river. The building, later named the Clyde M. York Veterinary Medicine Building, was finished in 1978 ahead of schedule and under budget.

Teaching has always been a priority at the veterinary college where a degree has the potential to open up the world for students. Faculty want the students to learn not just for an exam but for a lifetime.

While technology has advanced over the years with innovations such as MRI, CT, joint replacement, open heart surgery, and 3-D printing, the one constant has been that those in veterinary medicine must have a great concern for people. No animal takes itself to the vet.

Since opening its doors,
UTCVM has treated more
than **1 million patients**
and has graduated **2,467**
veterinarians.



LEFT: In addition to students pursuing veterinary degrees, UT College of Veterinary Medicine also trains interns and residents in many disciplines within the profession.

ABOVE (UPPER): W.W. Armistead became the first dean of UTCVM in 1974.

ABOVE (LOWER): A May 1976 official photograph of the original UT College of Veterinary Medicine faculty and administrators.

The founding dean conceived and designed the building with a vision that served the structure more than thirty years before the first major expansion of its clinical space. In 2008 the John and Ann Tickle Small Animal Hospital, a \$10 million expansion, was dedicated. The facility includes oncology, physical rehabilitation and sports medicine, a linear accelerator, and isolation facilities. Just three years later, construction began on a new \$21 million project to expand and renovate the equine and large animal hospitals in order to meet the needs of the animal industries throughout the region for several generations to come. Along with the Equine Performance and Rehabilitation Center, the facility helps the College protect the food supply from farm to fork, meet all the medical needs of horses and livestock in one location, and provide a strong teaching program for students.

For forty-four years, the College has continued to be a resource for the community, Tennessee, and those living outside the borders of the Volunteer State.

This year the College received more than 1,000 applications from students who hope to be one of the eighty-five chosen for the class of 2022. Those chosen will have the opportunity to appreciate the family atmosphere as they learn the art of veterinary medicine and push the edge of excellence. ■





1983

Growing a State Botanical Garden

FROM TRIAL BEDS TO STATEWIDE BLOOMS,
THE UT GARDENS CELEBRATES 35 YEARS

In 1983, trial beds were dug on the south side of the Institute's campus in Knoxville and few could have anticipated how they would grow and flourish into what has become the official State Botanical Garden of Tennessee. The UT Gardens is truly a joy for everyone.

Nearly a hundred elementary school children hop off a bus to enjoy a brown bag lunch. Meanwhile two elderly ladies examine a garden of blooming rose bushes, and several adults, both alone and in groups, walk along garden paths and enjoy the beautiful afternoon. Visited by more than 100,000 guests each year, the beauty and impact is easy to take for granted because it's just another day in the UT Gardens. As the Institute of Agriculture celebrates fifty years of excellence, the UT Gardens celebrates thirty-five years of connecting people and plants.

Both a resource and retreat for the public when community access to green spaces is a challenge for many growing cities, the UT Gardens sites in Knoxville, Crossville, and Jackson provide an opportunity for anyone to surround themselves with green, living plants and experience the peace and simplicity of being immersed in nature. "We all have an innate desire to connect with nature, and especially plants," says Sue Hamilton, director of the UT Gardens.

Gardening in Tennessee is challenging, with extreme summer heat and humidity and frequent winter freezes and thaws. In the UT Gardens, faculty, staff, and students can evaluate the heat and cold tolerance of plants and their flower production, uniformity, and size, as well as their pest resistance, drought tolerance, and landscape appeal.

Beauty and brains—both thrive in the UT Gardens at its three locations across Tennessee. While visitors enjoy living palettes of color, texture, and form, UT scientists and students evaluate the performance of new hybrids and demonstrate how new and tried-and-true perform in the region each Gardens site serves.



Gardens provide a sense of community and draw people from the city into the Institute of Agriculture.

says Walt Hitch, director of the UT Plateau AgResearch and Education Center where the Gardens are located. “The UT Gardens here in Crossville model a wonderful collaboration between the Master Gardeners, Extension, and AgResearch, and the discoveries we make help us understand plant life at a higher altitude.”

Doug Crater, professor and head of what was then known as the Department of Ornamental Horticulture and Landscape Design, initiated the first trial plant beds, which would eventually develop into the Gardens we know today. “Doug brought with him this vision of a plant evaluation program,” says Sue Hamilton, UT Gardens director and Crater’s former assistant.

In the late 1980s, Crater and Hamilton shared a vision to develop the variety trials and surrounding grounds into a more complete university garden. As more people became interested in the plant trials, interest grew in landscape fixtures as well. In the late 1990s, a new landscape construction concentration was added to the Herbert College of Agriculture, then known as the College of Agricultural Sciences and Natural Resources, and students in this concentration soon started building pathways, gazebos, water features, and more for the Gardens as part of their class curriculum. Many hands make light work, and over time the Gardens became a haven of tranquility and natural beauty.

As the UT Gardens in Knoxville developed, its reach expanded to include a location in Jackson, Tennessee, in 2002. Jason Reeves, research horticulturist and curator at the UT Gardens, Jackson, says, “Having a location in Jackson fulfills the need for a public garden, but more than that, it provides a place where data can be collected on performance trials and cultivars in the West Tennessee climate. We are able to share this information with others and greatly increase the stability, production, and appeal of plants in our area.”

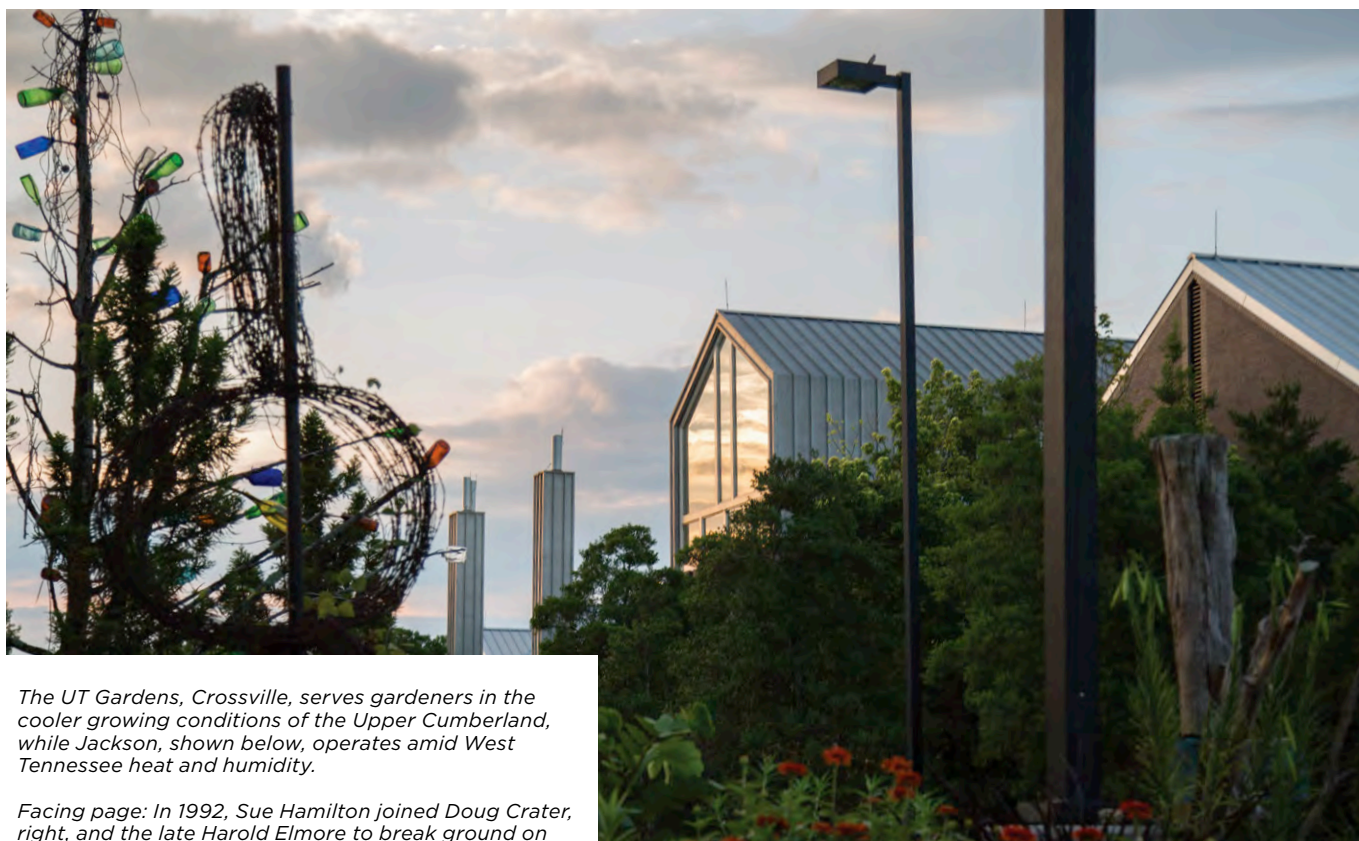
Another addition came in 2013 when the Plateau Discovery Garden joined with the UT Gardens as the UT Gardens, Crossville. “We are at a higher elevation than the rest of the state, and from a plant perspective, that means a lot of different growing scenarios,”

Together, the Knoxville, Jackson, and Crossville sites make up the State Botanical Garden of Tennessee, an honor bestowed upon the UT Gardens in 2013. The designation provides the sites with an elevated platform to reach Tennesseans and those beyond the state borders. “Our Gardens have a research component that many botanical gardens across the United States are not able to have,” says Hamilton. “We try to provide unique solutions to challenges faced in horticulture,” adds James Newburn, assistant director of the UT Gardens, Knoxville.

The impact of the UT Gardens continues today in many ways. Literally a beautiful example of the University’s land-grant mission, students use the Gardens for landscape design projects and as a site for learning labs; researchers study new varieties across Tennessee climates; and green space solutions are shared with the public for their own personal benefit in a gorgeous environment. This fall, a new landscape architecture degree will be offered, a development that would not be possible without the UT Gardens.

“[Each of the UT] Gardens provides a sense of community and draws people from the city into the Institute of Agriculture. They help them realize that while we educate and connect with people, we also do discovery research that results in new plants that will perform the best in their own yards,” says UT President Joe DiPietro.

Today’s UT Gardens is an astonishing testimony to the growth and development the Institute of Agriculture has itself experienced over the past fifty years. What began as a trial garden has now developed into a statewide collaboration that provides real plant solutions to all. ■



The UT Gardens, Crossville, serves gardeners in the cooler growing conditions of the Upper Cumberland, while Jackson, shown below, operates amid West Tennessee heat and humidity.

Facing page: In 1992, Sue Hamilton joined Doug Crater, right, and the late Harold Elmore to break ground on the woody phase of the UT Gardens, Knoxville.

50 YEARS OF REAL. LIFE. SOLUTIONS.

1968

1968

The UT Institute of Agriculture is formed by UT Board of Trustees. Webster Pendergrass named first-ever vice president for agriculture, overseeing the College of Agriculture, the Tennessee Agricultural Experiment Station, and UT Agricultural Extension Service.

Wildlife professor Mike Pelton begins research on black bear populations, research that would ultimately receive international attention.

1970s

1972

UT Forestry Experiment Station brings total of Experiment Stations to ten.

1974

The Tennessee Legislature establishes the UT College of Veterinary Medicine as a unit of UTIA and William Armistead becomes its first dean and, later, UTIA vice president.

1975

Tennessee is the first state to organize 4-H alumni, creating Tennessee 4-H Alumni Inc.

1976

Groundbreaking ceremony held for the Veterinary Teaching Hospital. First class of forty admitted.

1977

No-till research is introduced.

Ag Campus Indian Mound placed on National Register of Historic Places.

1978

Veterinary hospital opens.

1979

First veterinary students graduate.

1980s

1980

UT Agricultural Extension Service and the Tennessee Agricultural Experiment Station along with the National Resources Conservation Service launch the Save Our Soil Campaign to promote and teach no-till crop production techniques.

1981

First Milan No-Till Field Day held.

College of Veterinary Medicine partners with Anheuser-Busch to provide national herd health program for Budweiser Clydesdales.

1982

Campus cafeteria named Mabel's after longtime manager Mabel Davenport.

First Ag Day held.

New ag engineering building opens.

1983

UT Gardens established.

1984

The Webster Pendergrass Library of Agriculture and Veterinary Medicine formally dedicated.

1985

The Center of Excellence for Livestock Diseases and Human Health established by the legislature.

1987

Racheff Chair of Excellence established in the Department of Plant Sciences.

1988

New West Tennessee Experiment Station opens in Jackson.

1990s

1991

The UT Chapter of Minorities in Agriculture, Natural Resources, and Related Sciences is formed.

Eleanor Green begins as head of the Department of Rural Practice, becoming UTCVM's first female department head and also the first woman to head a large animal department in the US.

Sigma Alpha, the sorority for women in agriculture, founds new chapter at UT.

College of Agriculture officially changes its name to College of Agricultural Sciences and Natural Resources.

1994

UT celebrates its bicentennial.

Fourteenth annual Milan No-Till Field Day occurs with 10,000 people attending.

1995

UTCVM's 100,000th patient honored during an informal ceremony.

1998

The Center for Profitable Agriculture formed.

Agricultural Experiment Stations celebrate their one hundredth year.

Agricultural Policy Analysis Center established with the Blasingame Chair of Excellence.

College of Agricultural Sciences and Natural Resources begins Ag Ambassador Program.

2000s

2004

The UT Agricultural Extension Service becomes UT Extension to reflect its broad mission.

2005

UT AgResearch receives \$70 million in funding for biofuels, Center for Renewable Carbon established.

Experiment station names updated to Research and Education Centers to reflect evolving research priorities.

2006

The Center for Agriculture and Food Security and Preparedness is founded.

2007

The UT Biofuels Initiative is launched.

2008

The UT Veterinary Hospital sees millionth patient.

2009

The Tennessee Agricultural Experiment Station becomes AgResearch.

2010s

2010

UT Extension celebrates one hundred years.

TN Farm Credit Scholarships established.

2013

UT Gardens recognized as official State Botanical Garden of Tennessee.

2014

Alumni Donnie and Terry Smith endow Smith Chair for International Sustainable Agriculture.

2015

Beef Heifer Development Program established.

2017

The College of Agricultural Sciences and Natural Resources accepts largest class in history.

UTCVM performs first blood transfusion in a black bear.

2018

The College of Agricultural Sciences and Natural Resources becomes the Herbert College of Agriculture thanks to a gift from alumni Jim and Judi Herbert.

Together We Grow, UTIA's most ambitious fundraising campaign, launches publicly.





2000

The Decade New Science Was Born

For the Institute, the first decade of the new millennium launched an era of new advanced sciences and biotechnology. Quick to arrive were a calf, a chair, and a sweeping new building, with each intended to speed discovery research.

In 2000, the Institute marked the new millennium's arrival with a calf named Millie. A national search would soon culminate in the appointment of a new Racheff Chair of Excellence in Plant Molecular Genetics, and on campus, an exciting new research and teaching facility was being constructed. The era of advanced sciences and biotechnology had begun.

Millie, herself named for the millennium, was UT AgResearch's much-heralded cloned calf. Born of an Angus cow, the brown-and-white Jersey was the first bovine clone in the US originating from adult somatic cells that were cultured using standard techniques—proof that cloning procedures were more straightforward than thought. Millie and other clones born thereafter were produced through the research program of Department of Animal Science professors Lannett Edwards and her husband and colleague, Neal Schrick, who today serves as department head. Their achievement marked a large step toward gaining a better understanding of the procedures required to produce clones of adult animals, showing it was possible for producers to one day replicate high-value traits within their cattle herds. The couple's research continues and has resulted in new and better understanding with patented techniques to improve animal fertility.

Some of the final stages of the work that led to Millie, as well as the calf's own early housing, took place in the Institute's Johnson Animal Research and Teaching Unit (JARTU). Dedicated in 1999, this unit of the UT East Tennessee AgResearch and Education Center was the first designated livestock and aquaculture biotech animal facility at the Institute. Its animal holding areas and connected research facilities have resulted in biotechnology and other advances in areas as varied as livestock productivity and disease resistance; molecular mechanisms of bacterial pathogenesis and drug resistance; and the epidemiology of amphibian, fish, and reptile pathogens.

Born in 2000, the Institute's first calf clone, Millie, offered an early glimpse of how technology can replicate high-value traits within cattle herds. Today, improving the quality of America's cattle industry is just one of the many goals for a UTIA Genomics Center for the Advancement of Agriculture anticipated to begin operation in 2019.



The UTIA Plant Biotechnology Building opened in 2003 as a visible symbol of the new, advanced science underway at the Institute.

Plant biotechnologist Neal Stewart was recruited to fill the Racheff Chair of Excellence in the Department of Plant Sciences. Stewart moved his research group to UTIA to continue research on plant biotechnology, genomics, and ecology, with emphasis on agricultural biotechnology and biosafety of genetic modification. Not long after his arrival, he began investigating genetic modification methods of switchgrass, a native plant that thrives in Tennessee and one that became central to the new UT Biofuels Initiative and the ORNL Bioenergy Science Center. Today Stewart is director of the largest lab on the Institute campus and is also the codirector of the new Center for Agricultural Synthetic Biology at UTIA, which is the first center of its kind at any university worldwide. His goal is to use gene editing and other synthetic biology methods to radically improve the sustainability of crop agriculture. One present vein of work is to drastically improve the photosynthesis of potato in work funded by the Department of Defense's DARPA program. He is also working to make crops that can fix their own nitrogen.

Underway on campus when Stewart arrived was construction of an 81,000-square-foot plant biotechnology building that was futuristic. The facility was designed in partnership with DuPont, thanks to the support and interest of Chad Holliday (industrial engineering '70). Holliday was chairman and chief executive of DuPont at the time, and he invited UTIA to bring the architects, engineers, and building steering committee to see their facilities. Holliday and his scientists gave insight into how their company would design a new facility like the Institute's and candidly shared what they had found good and bad in their own. It was all invaluable, recalls Jack Britt, the Institute's vice president at the time, and the experience resulted in the Institute's biotechnology building being the best in the nation at its debut because of the partnership and people working together.

In all, the Plant Biotechnology Building would contain more than eighty labs, along with classrooms and lecture halls, and a genomics hub for DNA sequencing, genotyping, and microarray analysis. Also housed in the five-level building would be plant growth chambers, plant tissue culture rooms, a biosafety laboratory, and rooms dedicated to radioisotope use and epifluorescence microscopy.

Even today, Britt does not hesitate to name the building as the proudest achievement during his era. At its ribbon cutting in 2003, he was there beaming as he held its doors wide to welcome visitors as they entered for tours. Also proudly there to help cut the ribbon and witness the occasion was Britt's predecessor, Pete Gossett. As vice president from 1987 to 1998, Gossett built support for the facility and was central to securing its funding.

The Plant Biotechnology Building led to much discussion of "multi." The facility and its capabilities were intended to foster multi-member teams engaged in multidisciplinary research, the form of investigation viewed as central to this new era of science. In fact, the initial word was that researchers not engaged in that activity would not have offices in the state-of-the-art building.

Whether rumor or fact, the message likely broadened more than one faculty member's horizons to secure space in the breath-taking facility.

High notes of research outcomes in the Plant Biotechnology Building include novel plant lines such as hardier dogwood trees that are disease-resistant (achieved by Bob Trigiano and Mark Windham, Department of Entomology and Plant Pathology); new diagnostic kits and methods for animal diseases (Shigetoshi Eda, Department of Forestry, Wildlife and Fisheries, and colleagues); discoveries about how soybean cyst nematodes infect soybean, which in turn enables tools to fight them (Tarek Hewezi, Department of Plant Sciences); and one of the first root and soil microbiome DNA sequencing of engineered switchgrass plants achieved in its field (Jennifer DeBruyn, Department of Biosystems Engineering and Soil Science).

In this, our fiftieth year, a line of research in the building that is attracting high scientific attention is being conducted in the Department of Entomology and Plant Pathology. Juan Luis Jurat-Fuentes continues to build upon his years of discovery and field research on the development of insect resistance to transgenic crops that produce insecticidal proteins from the bacterium *Bacillus thuringiensis* (Bt crops). Field-evolved resistance to Bt proteins is a threat to food and fiber crops worldwide—corn and cotton in particular. The fall armyworm that Jurat-Fuentes studies was the first insect to develop field resistance at levels so high that they led to voluntary withdrawal of Bt corn from the local market. This resistance was first detected in fields in Puerto Rico and now in locations in Florida, North Carolina, Brazil, and Argentina. Importantly, the fall armyworm has now invaded Africa to threaten global food security.

Jurat-Fuentes and his research team together with collaborators have identified mutations in a gene that provide fall armyworms their resistance. The team also was able to track changes in the frequency of these gene mutations in populations of armyworms from the Caribbean, the Southeast, and the Corn Belt, the first successful case of DNA-based detection of insects carrying practical resistance to a transgenic Bt crop. This work has enabled the team to develop a rapid tool to detect the presence of insects carrying resistance alleles in a production field. Moreover, this information provides these researchers with keys to advance understanding of the genetic mechanisms involved in the development of resistance to Bt technology, as well as to further accelerate the development of novel insecticidal biotechnologies.

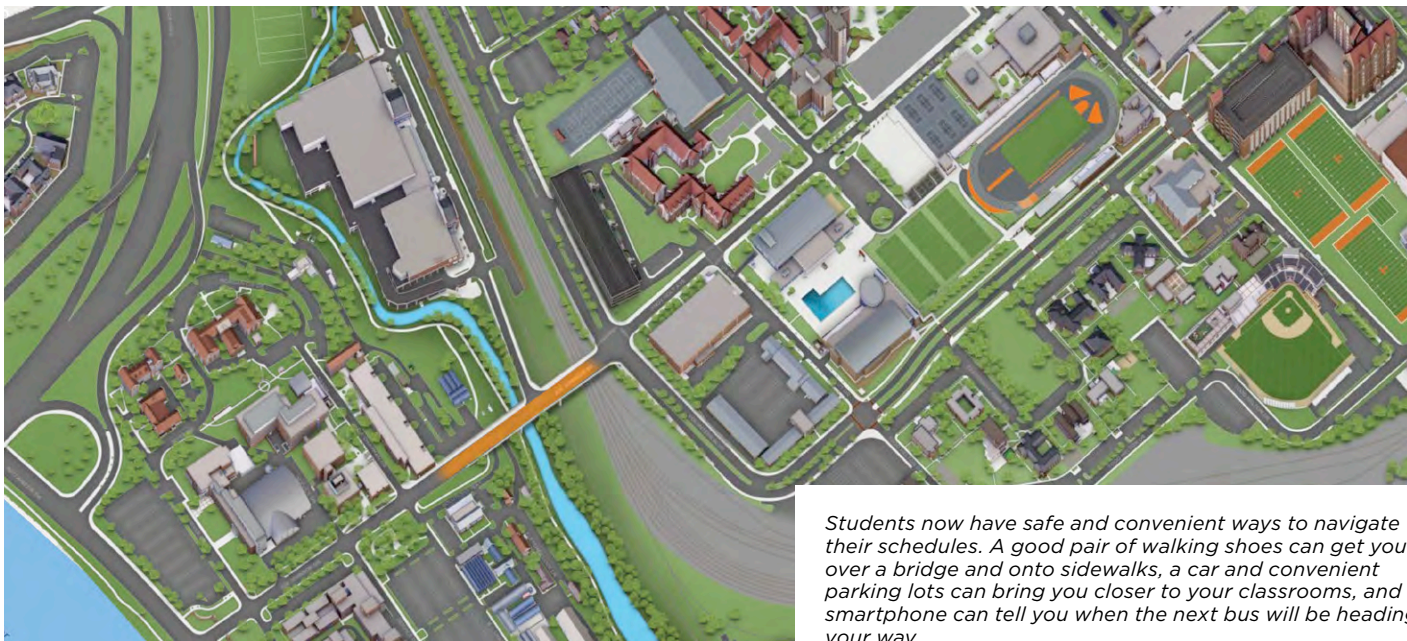
This research program and others by the many agricultural researchers in our departments are the outcomes the Plant Biotechnology Building was intended to achieve. Their discovery research and its applications also show how the early achievements of the 2000s have spread and flourished throughout our disciplines, all the better to deliver UTIA's Real. Life. Solutions. to the people and communities we serve. ■

2002

A Bridge That Spans Campuses

A bridge to unify UTIA with UT Knoxville meant more than linked campuses. The physical structure reflected how these two entities were growing together and becoming better for it through stronger ties.





Students now have safe and convenient ways to navigate their schedules. A good pair of walking shoes can get you over a bridge and onto sidewalks, a car and convenient parking lots can bring you closer to your classrooms, and a smartphone can tell you when the next bus will be heading your way.

Getting to class has not always been easy for our students. In the early 1940s, when most students could not afford cars, those studying agriculture had to walk, bike, hitchhike, or ride the streetcar to get between the agricultural campus and the UT Knoxville campus, especially for the far-flung classrooms on the Hill. And sometimes students didn't have much time to get there, or at least that is what alumni are fond of telling us.

By 1968, when the Institute was founded, free bus transport was available, running on a regular schedule between the two campuses, making student life much more manageable. Yet even buses did not fully ease a divide that existed between the campuses; one found often in mindsets too. There was the tight-knit family sense of being on the ag campus and the fast-paced, seemingly more anonymous "main campus." Many saw these as mutually exclusive or, at the very best, complementary. There was little in the attitudes of the two physically divided campuses of how much better they could be together.

Discussions of building a bridge occurred from time to time over the years. Constructing it was another matter, and it would be a complex one, involving prioritization of campus improvement needs and securing capital outlays. Then there was the engineering challenge of spanning a waterway, a railway, and a connected industrial site. Yet chiefly, other, even harder, spans had to be built first—ones that bridged the hearts and minds of faculty, staff, and students on both campuses. Some saw a bridge as a waste of expenditures. Many on the ag campus feared the very qualities they most loved—the serenity, beauty, and an effectively functioning campus—would be disrupted and potentially lost forever. There were practical matters. A large animal veterinarian was gravely concerned about how increased traffic and any potential speed bumps used to slow it would affect livestock in emergency conditions as their trailers passed over the bumps on the way to the animal hospital. For some, the divided campuses were best left divided.

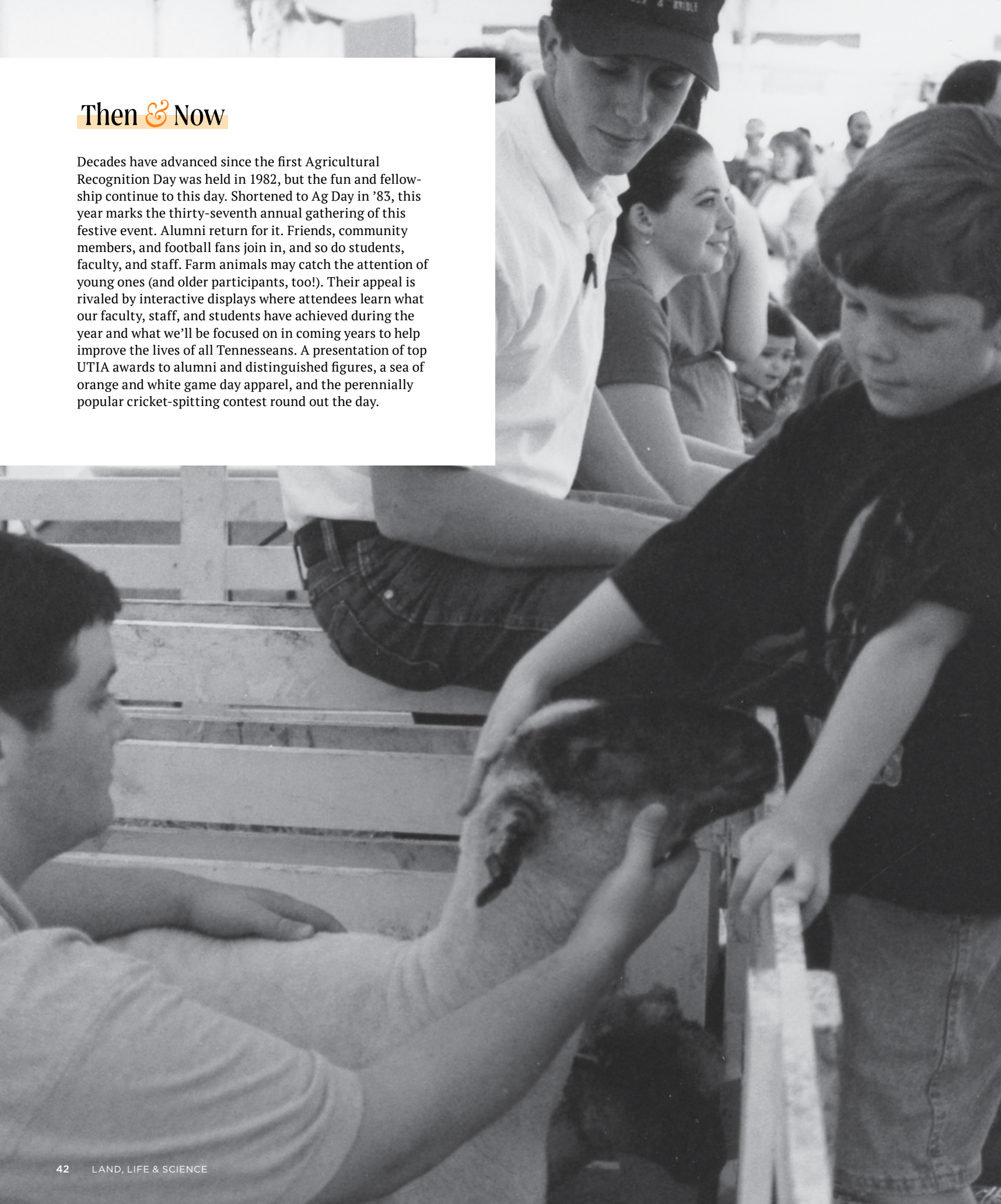
Those were the conditions in the 1990s when a push to build a bridge began in earnest. Plans began in 1998, and issues such as increased traffic and the demolition of three Institute buildings—the Plant Sciences Lab, Plant Sciences Annex A, and the Plant Pest Annex—caused concern. Many staff and faculty were displaced as a result of the demolitions, which was addressed in three phases: the building of a Forest Products Center, temporary office space, and greenhouses. Construction of the bridge began in 2000, and it opened in 2002. Few, if any, of the detriments that had been forecasted came to be. Instead, there is now a physical integration.

There is an integration of another form, as well. Building a campus bridge and seeing its results led to a change of mindsets, too, in several ways. In the 1990s, agriculture was moving into a global era where to succeed in its many fields, students needed a broad education and many outside-the-classroom experiences. Increased interactions between campuses and among its members served that need. Potential students also were looking for more. They wanted personal attention along with wide-ranging assets and opportunities. A now-integrated campus offered just that: to be an intimate home for study with all the assets of a major university present as well. Meanwhile a space crunch and awareness of the quality of UTIA's campus facilities led UT Knoxville to schedule an increasing number of its classes on the agricultural campus, bringing students across that bridge. These growing ties unified these two units of the UT System, and already strong bonds between UTIA leaders and the ones both of UT Knoxville and the UT System grew even more.

Today, the bridge has proven its merit. In fact, we wonder how we could live without it. ■

Then & Now

Decades have advanced since the first Agricultural Recognition Day was held in 1982, but the fun and fellowship continue to this day. Shortened to Ag Day in '83, this year marks the thirty-seventh annual gathering of this festive event. Alumni return for it. Friends, community members, and football fans join in, and so do students, faculty, and staff. Farm animals may catch the attention of young ones (and older participants, too!). Their appeal is rivaled by interactive displays where attendees learn what our faculty, staff, and students have achieved during the year and what we'll be focused on in coming years to help improve the lives of all Tennesseans. A presentation of top UTIA awards to alumni and distinguished figures, a sea of orange and white game day apparel, and the perennially popular cricket-spitting contest round out the day.







Tennessee-grown switchgrass is among a portfolio of crops rich with potential as bioenergy sources. UTIA began intense explorations of how to transform them into energy and fuel in 2007. Today the research has broadened to include renewable, bioderived products to serve an array of industrial purposes. Showing their potential, one is to replace petroleum as an input for plastics.

2007

A Bold Initiative

BUILDING A BIOFUELS INDUSTRY IN TENNESSEE

In the middle of the first decade of the 2000s, the state of Tennessee was seeking a solution for energy independence and a head start to enable the state to lead in the expected new economic sector of alternative fuels. The state and UT leaders turned to UTIA to provide both, and the UT Biofuels Initiative was born.

In 2006 Tennessee's economy was booming and the state had a sizeable budget surplus. One of the few specks on the horizon for continued economic growth was the skyrocketing prices of oil. The country's "addiction to oil" was a frequent topic of discussion and the concern was not solely on sufficient supply to meet demand. Oil imports brought with them volatility in pricing and an unwanted vulnerability to equally volatile geopolitics. For many, these issues constituted a threat to national security and independence. Meanwhile, domestic oil production was continuing a slide begun in the 1970s, one that would extend to 2008 and represent production numbers falling by almost a half, reflecting how conventional oil sources in the nation were being depleted.

Then-Tennessee Governor Phil Bredesen saw both need and opportunity. He also saw how the development of alternative energy sources could serve both that need and opportunity, and potentially constitute the next industry boom. What if Tennessee could pioneer advanced bioenergy systems and, simultaneously, develop a robust supply chain to do it? With those thoughts in mind, Bredesen turned to leaders of UT and challenged them for a big idea able to achieve that vision.

UTIA was eager to accept the charge. The Institute had a decades-long history of developing energy crops like switchgrass. UT AgResearch had just become the Southeastern Regional Center for a new federal Sun Grant Initiative. The Sun Grant's goal was to create a national network of land-grant universities partnering with US federal agencies to build a biobased economy. A growing number of collaborations on cellulosic biofuels between AgResearch scientists and their counterparts at Oak Ridge National Laboratory were underway. All the elements were in place to hit the ground running. In 2007, that is just what happened when the state of Tennessee made an unparalleled \$70.5 million commitment to UT intended to create a biofuels industry, one to include a tightly integrated supply chain for new energy crops. Appropriately named the UT Biofuels Initiative (UTBI), the University's response ultimately grew into a comprehensive and integrated research, development, and demonstration program.

In intensive work across the next six years, bioenergy researchers generated solutions on the needed steps to transform switchgrass into fuel, while UT Extension specialists and agents contracted with farmers to grow it. Supply chain logistics on how to transport the harvested grass to a processor also had to be established.

As these efforts progressed, domestic fuel production increased thanks to new extraction technologies and the arrival of more

fuel-efficient vehicles. But energy independence remained a driving force for development of alternative fuels, and new awareness of how biomass processing could replace other chemicals and products currently derived from fossil fuels eventually broadened the scope of the program. These coproducts include plastics, lubricants, and packaging materials.

Members of the UTBI forged partnerships with industry leaders, including DuPont Cellulosic Ethanol, which built a process development plant in nearby Vonore. Trials at the plant provided investigators with essential insight into the remaining challenges and clear guidance for commercialization. Two new companies built on biomass feedstock were established—Genera Energy Inc. and Prisma Renewable Composites.

The UTBI established a versatile, multidisciplinary team of researchers to drive innovation in bioderived fuels, chemicals, and materials. This team of scientists and engineers make up UTIA's Center for Renewable Carbon and continues work to advance innovative approaches to expand Tennessee's bioeconomy. CRC researchers have provided answers to Tennessee landowners on best management practices for sustainable, high-quality feedstock such as switchgrass and have introduced technologies that can transform that renewable resource into biofuels and other biode-derived products.

Through the UTBI, the supply chain and conversion systems needed to transform renewable products into fuel were developed and demonstrated as both practical and efficient. This progress was essential to position Tennessee to compete in the next phase of the bioeconomy. It's essential because it's an extremely vibrant, but also extremely dynamic, business environment. Only five years ago, the nation's scientific community was focused on cellulosic ethanol to blend with gasoline. Today, the aviation industry is intent on utilizing renewable fuels to meet environmental regulations being imposed around the globe.

It's all but impossible to imagine a future without petroleum. But the reality remains that it is a finite resource. Alternative sources of electricity are rapidly developing. Yet, the only option for now to obtain renewable *liquid* fuels and chemicals, and the essential materials that make modern life possible, is biomass. Because the production of a sustainable supply of biomass is something that Tennessee now knows how to do, our economic future is bright. ■



2010s

Women at UTIA

Women as students, as leaders, and administrators—all have significantly changed across our fifty years.

Women have always held a central role in the operations of the Institute, but in the past fifty years, this role has increased, starting with the student makeup of our two colleges. When Glen Hall joined the faculty in 1955, he knew of only one woman student in the then-College of Agriculture—an animal science major who went on to work at the veterinary pharmaceutical company Elanco. Hall himself was appointed dean of the College when the Institute was founded. He says female students began to increase in number in the early 1970s and over time their growing number became a clear trend. By the 1990s enrollment of women exceeded men in both that college and the College of Veterinary Medicine, as they do today. The shift reflects enrollment trends in agricultural programs across the country.

Women have comprised the agents, specialists, and leaders in the UT Extension Department of Family and Consumer Sciences dating back to the earliest years of our land-grant outreach and certainly in the 1970s to present, where you'll find both men and women in the department and among its statewide workforce. In other units, academic and administrative, women's presence as professors and program and department heads grew slowly in UTIA's early years, but women certainly were present. At the time of the Institute's founding, women were already leading departments within the College of Human Ecology, a department organizationally shared at that time with the Institute. One was Mary Rose Gram, head of nutrition from 1964-1973 and administrator of Food Science,

Nutrition and Food Systems from 1974 to 1976. Subject areas of Gram's department later became part of the Departments of Animal Science and Food Science. In UT Extension, women continued their highly visible service and outreach that trace back to the earliest days of agricultural teaching at UT.

By the 1990s, though, change was quickening. In the College of Veterinary Medicine, Eleanor Green began duties as the College's head of the Department of Rural Practice. Her appointment marked the UTCVM's first woman department head, and she was also the first woman in the US to head a large animal department. Also that decade, Mary Albrecht was recruited to head the former Department of Ornamental Horticulture and Landscape Design. Later she transitioned to associate dean of what was by then called the College of Agricultural Sciences and Natural Resources and ultimately served as its interim leader for several years. By that time women made up 50 percent of CASNR's enrollment. Aware of those changing demographics in both enrollment and women's growing roles in agriculture, Albrecht remembers challenging department heads to achieve greater diversity in faculty appointments. She also relays how early women faculty would gather from time to time at a restaurant off campus to share experiences and mentor each other.

It was in this decade, in the Institute's middle years, that Marjorie Penfield served as director of the UT Food Sensory Laboratory, having succeeded Bernadine Meyer in that position. She also briefly served as interim head of her department. Meanwhile, Sue Hamilton was at work in the early UT Gardens. Her contributions and vision flourished along with the Gardens, in fact, ultimately resulting in her appointment in 2008 as the Gardens' director. These are but several examples of women who served in high-visibility positions during the Institute's middle years.

Growth continued in the 2000s. In the College of Veterinary Medicine, Hildegard Schuller was appointed acting head of the then



Department of Pathobiology in 2001 and then, in 2004, was formally appointed to the position. In 2007, Claudia Kirk was named acting head of the Department of Small Animal Clinical Sciences and then formal head in 2008. She then was appointed associate dean of academic affairs for the College in 2013. Meanwhile, Sharon Patton was interim head of the Department of Biomedical and Diagnostic Services in 2011, then later that year, director of Diagnostic Laboratory Services.

In 2007, Caula Beyl was chosen as the new dean for the College of Agricultural Sciences and Natural Resources, the first official dean of the College's nearly century-old history who was a woman and also among only a handful of women in that role among the nation's land-grant colleges. Three years later, Beyl, recognizing the need for additional focus and attention to support several areas of concern, empowered three faculty coordinators to develop initiatives and track progress in undergraduate research/honors programs, technology enhancement, and international programs. Coordinators are given a modest administrative stipend for the extra duties assumed. The first to be appointed was Kimberly Gwinn, an associate professor in the Department of Entomology and Plant Pathology, who began as the College's coordinator for the undergraduate research and honors programs.

A leadership milestone occurred in 2016 when a departmental colleague of Gwinn's, professor and graduate director Bonnie Ownley, began a term as president of the UT Faculty Senate, one of the most highly visible leadership positions at the University. That same year, one of Ownley's advisees, doctoral student Shalini Yerukala, began as president of the UT Graduate Student Senate.

Now, in 2018, women's leadership includes Beyl continuing as dean of the Herbert College of Agriculture. Laura Stephenson is assistant dean and professor of UT Extension Family and Consumer Sciences. Julie Carrier heads the Department of Biosystems Engineering and

Soil Science, Claudia Kirk continues as associate dean of UTCVM academics, and Lisa Stearns serves as UTIA vice chancellor of marketing and communications.

As women in faculty and leadership positions continued to grow, more dramatic shifts were affecting the role of administrative assistants throughout UTIA, a role historically referred to as "secretary." The needs of UTIA leadership changed alongside technology, shifting secretaries whose tools had been mimeographs and overheads to administrative professionals working on word processors, and later computers. The arrival of voicemail in some units in the 1990s freed time traditionally devoted to answering phone calls, allowing them to take on greater responsibilities. The net effect is a greater opportunity for impact from women and men in these support roles. Entering the workplace, administrative assistants and professionals began to conduct their work in new ways that often saw valuable employees become invaluable and even more central to their department's operations. Today at the Institute, you'll find administrative professionals proposing and scheduling professional development opportunities for all members of their units, using complex UT System software to manage databases, producing written or graphic-based content for their departments, and organizing large-scale events.

Fifty years from our beginning, the expanding roles of women have changed the composition of our classrooms, our faculty and administrators, and the workforce as a whole. The Institute is more diverse for it. Importantly, we are more reflective of the communities that surround us and of which we serve. Those are strengths that serve everyone. ■



Then & Now

Stately Morgan Hall marks its centennial in 2019. The oldest building on the Institute's Knoxville campus houses academic departments and classrooms and serves as home for leadership of UT AgResearch, UT Extension, the UT Herbert College of Agriculture, and the 4-H Youth Development Program. All underscore this historic building's central role to UTIA's statewide operations.



MORGAN
HALL

LAND GRANT UNIVERSITY

In 1897, by special Congressional action, the State of Tennessee became eligible to designate an institution to teach areas of learning related to agriculture and the mechanic arts and to receive the proceeds from the sale of federal lands as proscribed by the Morrill Act of 1890. On January 16, 1909 that Tennessee University founded The University of Tennessee. In 1979, was named Tennessee's Land Grant University. The institution accepted its designation January 16, 1909.



International exchanges and outreach have grown across UTIA's fifty years. Today they are accelerating rapidly through UT alumni Donnie and Terry Smith's establishment of the Smith Chair and Center for International Sustainable Agriculture. In Cambodia, Smith International Center efforts include introducing agricultural technologies that can improve household nutrition and income.



1990s-TODAY

Exchanges of Ideas & Culture

The year 1991 marked the founding of a pivotal UT chapter to serve minority students. Already, though, the student body was growing more diverse in student origins and ethnicities, as well as from where they hailed. Also increasingly diverse was UTIA's outreach beyond the US borders: change that took a profound step forward in 2014 when alumni Donnie and Terry Smith endowed an international chair.

In the Institute's earliest years, students who were women, African American, and of other races, whether from within the US or beyond, were uncommon, as they largely were among faculty and staff. But as it was for so many aspects of life, the 1970s was a period of change, and enrollment by women began to grow. A few African American students were present and, still, equally few other ethnicities, but their numbers were increasing and interest was afoot in trying to serve their needs and advance them toward their goals.

This growth of diversity reflects the nature of agriculture itself, including its many fields. Success can depend on information sharing among parties, and often diverse ones. It is how ideas, techniques, and methods spread. Increasing enrollment of

nontraditional students brought new ideas in and also, after graduation, increased their flow to others.

By 1991, growth in enrollment by nontraditional students resulted in a new chapter of the national organization—Minorities in Agriculture, Natural Resources, and Related Sciences (MANNRS)—being founded on campus. Some twenty students were early members. While MANNRS was largely African American, it was and is open to people of all racial and ethnic groups.

Former College of Agriculture faculty member and associate dean Gary Schneider says at that time, such a concentrated effort to support and strengthen the college experiences of minority students was not common in the country.

The chapter focused on agriculture, natural resources, and related sciences. Today, the UT Chapter reaches beyond UTIA to include students from disciplines taught outside today's Herbert College of Agriculture. The chapter and national organization provide a network to support professional development of minorities, as well as role models and opportunities to grow as leaders and professionals.

ABOVE: A new chapter of *Minorities in Agriculture, Natural Resources, and Related Sciences (MANNRS)* was begun at UT in 1991. Among twenty students participating were RaSharon Moore, member-at-large representative; Stephen Thomas, national vice president; and Jerri Marr, UT Knoxville chapter president. Chapter advisor was Michael Heard (right).

Going Global

As enrollment broadened, so did the outreach of UTIA's programs. The Institute's pioneering no-till agriculture innovation is an excellent example, with it attracting widespread interest nationally and internationally by the 1970s. International outreach was also occurring, although usually limited in scope and time. Exchanges became more frequent in the 1980s and '90s. By 2000, UTIA had an international office and was engaged in active exchanges with Thailand. These largely centered on Thai students visiting campus and UTIA faculty and staff touring operations in that country. Aquaculture is one example, occurring at a time when production of fish and shellfish was being considered as a profitable new niche market for Tennessee.

The land-grant mission and providing Real. Life. Solutions. have always been the heartbeat of the Institute, and not just for Tennesseans. Even our earliest leaders emphasized international trips to exchange and extend research information, improve teaching, and arrange for foreign students to come to UT for studies.

From 1972 to 1989, 17 percent of agricultural economics PhD students were international students, reflecting interest from abroad in the science underway at UTIA. Increasing international opportunities for UT students and growing the number of international students on the UT campus had been a long-held goal. In 2004 this goal was thrust into the limelight as UT Knoxville's "Ready for the World" plan began. "Ready for the World" is a long-range plan to transform the campus into a culture of diversity that would best prepare students for working and competing in the twenty-first century. The plan, which applied to students under the umbrella of the Institute, increased funding and support for international opportunities.

Today the solutions discovered at UTIA are positioned to travel much farther, most notably due to the pioneering work of the Smith Center for International Sustainable

Agriculture. The Center had its beginnings in 2014 when Institute supporters and UT alumni Donnie (BS animal science '80) and Terry Smith (BS elementary education '80) created and endowed the Smith Chair for International Sustainable Agriculture to lead UTIA's role in developing sustainable solutions to feeding the world. To address the global issue that one billion people on the planet go to sleep hungry each night, the Smith International Center focuses on researching and delivering locally suited, science-based solutions to food insecurity in countries such as Cambodia, Rwanda, and Guatemala.

Tom Gill, an assistant professor in international agriculture from Penn State, was chosen as the new chair for the Smith International Center. At the time of the Smiths' gift, then-UTIA Chancellor Larry Arrington noted that, "The Smith Endowed Chair will take us to the next level in international partnerships and provide solutions that help feed the world. Our faculty and students need opportunities to learn more about how people in Tennessee relate to the worldwide economy."

Those learning opportunities are happening. This academic year, 125 of our faculty, staff, and professional and graduate students took 253 trips to fifty-nine different countries.

As global travel continues to become more affordable, technological advances make long distance collaboration both easier and more accessible through mobile devices. These leverage UTIA's abilities to spread innovations more broadly and quickly. Already we are seeing substantial impacts of how our solutions developed for Tennessee are increasing food security well beyond our borders. Through the momentum of the Smith International Center and the Institute's commitment to providing Real. Life. Solutions., we are achieving success in improving food security in other countries, and that's something in which we all take great pride. ■

ABOVE RIGHT: Shown here examining a soybean production field, UT alumnus Donnie Smith, center, joined soil scientists Forbes Walker, left, and Neal Eash (in yellow) on a 2015 visit to Rwanda. Their aim was to explore potential collaborations to improve the supply of nutritious animal feed to Rwandan farmers. With them are members of Zamura Feeds, which, above, has become a partner with UT in the operation that developed.

BELOW RIGHT: On a study abroad class in March, Herbert College of Agriculture and other UT students worked on a USAID project called Mas Riejo. In Spanish, it means more irrigation. Here they lay irrigation pipes.



LOOKING FORWARD TO UTIA'S FUTURE





Charting the Next Ten Years

When the UT Board of Trustees met in 1968 to consider the creation of the UT Institute of Agriculture, Ed Boling, then-vice president for development and administration, stressed that agriculture's connection throughout the state, coupled with the Institute's exceptional service programs, would further strengthen UT's land-grant mission.

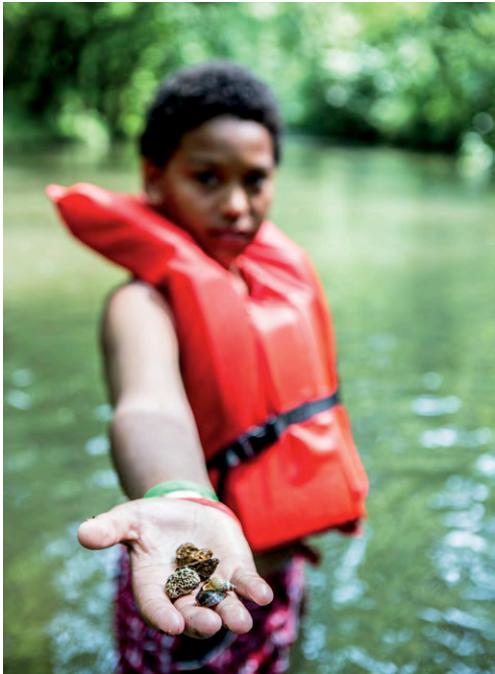
A half-century later, Boling's foresight holds true. Today the Institute remains uniquely poised to meet the grand challenges of the future through teaching, discovery, and service.

"As UTIA celebrates its first fifty years as an Institute, it seems only fitting that, as we honor our past, we also look to our future," says UTIA Chancellor Tim Cross. "Charting our next ten years will help us continue the momentum created by those who came before us."

In 2017, UTIA began the process of creating a new strategic plan. The result, *A Decade of Excellence*, provides a framework for faculty and staff working to meet the challenges of a rapidly changing world. The document also links to each of UTIA's unit plans and the UT System and UT Knoxville strategic plans.

A Decade of Excellence was over a year in the making. The planning process emphasized the engagement of all UTIA faculty, staff, students, and stakeholders to identify goals and action plans to guide the Institute's next decade. The plan incorporates existing UTIA priorities and brand identity.

Chris Clark, professor in the Department of Agricultural and Resource Economics, led the UTIA Strategic Planning Team. Serena Matsunaga supported the team as an external consultant.



The team sought stakeholders’ ideas and opinions through multiple listening sessions and surveys in early fall 2017. Feedback and data in hand, the team and Institute administrative leadership met in Franklin, Tennessee, to continue work. During that retreat, multidisciplinary teams developed draft vision and mission statements, goals, and potential metrics based on external trends, unit assessments, and stakeholder input. From there, a draft plan again was circulated to stakeholders before being put before the UT Board of Trustees for approval in March 2018.

The final document outlines six goals for UTIA, includes a new mission and vision, and highlights the benefits of working across disciplines. “Given the competing challenges we face, our faculty and staff can connect across our strengths to better serve our mission and clients,” says Cross.

Those competing challenges include population growth, evolving technology, and increasing globalization. With experts in diverse areas, the Institute is poised to help ease Tennessee’s educational attainment gaps, bolster economic opportunities on and off the farm, conserve natural resources, provide solutions to complex health and family challenges, and help the Tennessee farming community transition to the next generation—all the while strengthening the land-grant mission as Boling predicted so long ago. ■

To learn more about the new UTIA strategic plan, visit tiny.utk.edu/UTIAstrategicplan.

OUR GOALS

The new UTIA Strategic Plan, *A Decade of Excellence*, encompasses the views of faculty, staff, students, friends, and stakeholders. It includes six distinct goals, all tied to the land-grant mission and the Institute's promise to create **Real. Life. Solutions.**

1 | DRIVE DISCOVERY

Cultivate innovation and invention to meet the grand challenges of tomorrow by collaborating within our organization and with outside partners and by building on existing strengths.

2 | EXPAND REAL LIFE LEARNING

Develop students and professionals to be life-long learners and leaders in the agriculture, natural resource, and public and animal health industries.

3 | RAPIDLY DEPLOY SOLUTIONS

Rapidly deploy practical, cutting-edge solutions through effective use of innovative educational methods across a variety of platforms.

4 | DELIVER PROGRAMS THAT IMPROVE LIVES

Deliver programs that improve health and well-being, conserve natural resources, and help Tennesseans adapt to a rapidly changing world.

5 | GROW AND DIVERSIFY RESOURCES

Strengthen our relationships with funding partners by demonstrating relevant impact; diversify our sources of funding through entrepreneurship and new partnerships.

6 | IMPROVE INSTITUTE EFFECTIVENESS

Reinforce a positive work culture, increase efficiency and productivity, and simplify administrative processes.

OUR MISSION

As a land-grant institute, we provide **Real. Life. Solutions.** through teaching, discovery, and service.

OUR VISION

Over the next decade, we will excel as an Institute by developing practical solutions and services that advance agriculture, education, natural resource management, human and animal health, and our communities.

To accomplish our vision, we will . . .

- Connect across strengths within UTIA and with partners.
- Focus on grand challenges and established priorities.
- Help people and communities adapt to an ever-changing world.

UTIA PRIORITIES

We are committed to discovery and solutions that boost our economy, protect the environment, and enhance health for the people of Tennessee and our world.

- Supporting Food, Fiber, and Energy Systems
- Enhancing Biodiversity and Environmental Quality
- Enriching Our Economy
- Developing Our Workforce
- Strengthening Our Health

Meet Today's Herbert College of Agriculture

One hundred dollars. Thirty-six years ago that was a lot of money to part with for Jim and Judi Herbert. Jim is a 1962 graduate of the then-UT College of Agriculture, and Judi a 1963 graduate of the UT College of Arts and Sciences.

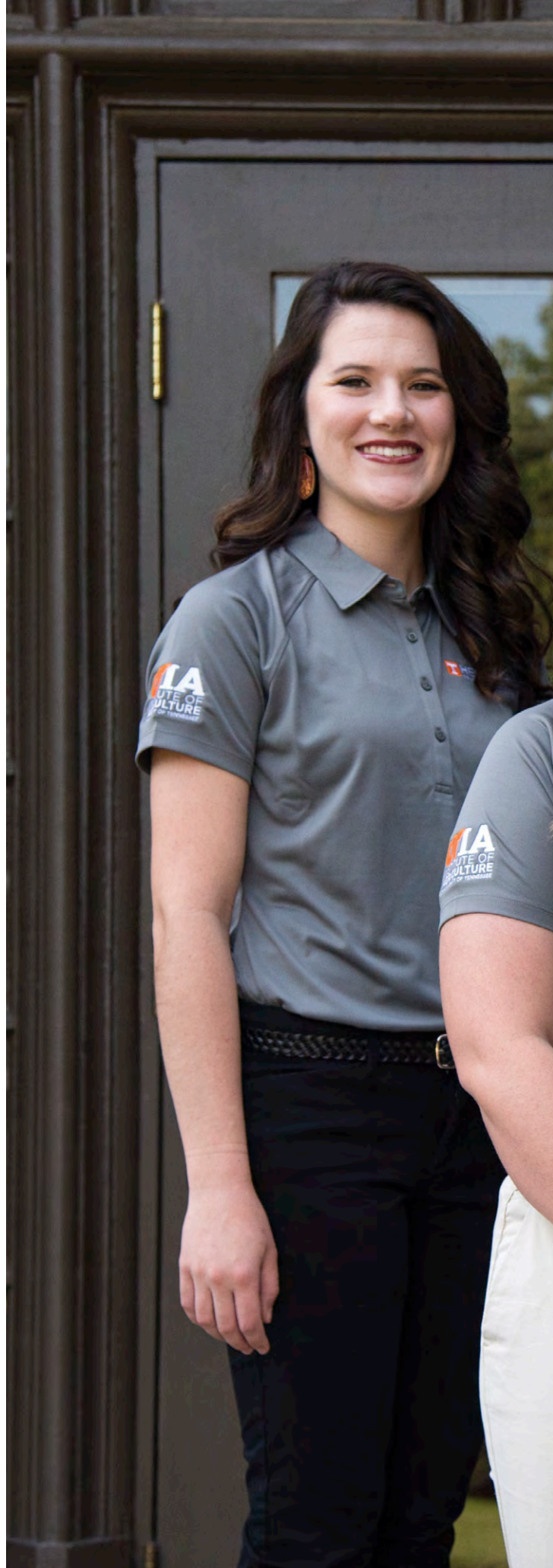
The couple had just moved to Lansing, Michigan, to cofound a biotechnology business that would revolutionize food safety. Today, the publicly held company is a pioneer in rapid diagnostic testing and focuses on the development, manufacturing, and marketing of products for food and animal safety in 142 countries. However, in 1982, the field of biotechnology was just beginning to be understood and Jim's vision of food safety was untested. And, yet, in this time of instability, the couple remembered to make a gift to their roots, the University of Tennessee.

The next year, the gift was still \$100, but a few years down the road, as the company grew, so did the gifts—\$150, \$250, \$1,000, \$10,000 . . .

"The University of Tennessee is a place that so many in our family have called home," says Judi Herbert.

Perhaps it's only fitting that the UT College of Agricultural Sciences and Natural Resources and the Herbert family made the union official. A specially called meeting of the UT Board of Trustees on April 17 marked the approval of the new name, the Herbert College of Agriculture, in recognition of Jim and Judi's lifelong devotion to the University of Tennessee.

Herbert College of Agriculture student ambassadors show the excitement students feel about the new name and enhanced capabilities of their college.







Jim and Judi Herbert enjoy a sparkling cider toast in celebration of the unveiling of the Herbert College of Agriculture name.

“Agriculture is one of those essential parts of human existence and the study of agriculture touches almost every aspect of life,” says Caula Beyl, dean of the Herbert College of Agriculture. “It is particularly fitting that the Herberts lend their name to this College for several reasons. Both Jim and Judi were educated at the University, they are well known for their significant philanthropy, and the company they founded has gone on to push the field of agriculture to new heights.”

The Herbert College of Agriculture becomes the third college in the 224-year history of the University of Tennessee, Knoxville, to be named, and only the second land-grant agricultural college in the nation named from a philanthropic gift.

Jim Herbert received an honorary doctorate from the now Herbert College of Agriculture in 2016 (he also holds honorary doctorates from Michigan State University and Queen’s University of Belfast, Ireland). During his commencement address at UT in 2016, he challenged the graduates to take pride in their successes “. . . but only long enough to give one confidence to move forward.” It is advice he has followed in his own career.

The Memphis native’s UT connection began in an unconventional dorm: a greenhouse behind Morgan Hall where he watered plants in exchange for board. His future wife found her way to the University by way of Kingsport a year later. Both discovered their stride in Greek life, which remains important to them to this day. The couple met through their mutual involvement in student government,

each representing their respective fraternity and sorority, Farmhouse and Sigma Kappa.

Jim studied animal husbandry and Judi earned her bachelor’s in English. Following their marriage, the couple traveled the country in fourteen career moves before arriving in Lansing, Michigan, in 1982. Along the way, their family grew to include children Melissa and Scott, UT ’87. The family put down roots in Lansing and began to invest in the community while continuing to remain connected to their alma mater. Their local giving culminated in the Herbert-Herman Cancer Center at the Sparrow Health System, which is affiliated with the Mayo Clinic. Judi is a fourteen-year breast cancer survivor and Jim had successful lung cancer surgery in 2011. Both were treated in Lansing at the Sparrow Cancer Center.

At the University of Tennessee, the Herberts’ involvement grew. Judi continues to serve in Sigma Kappa leadership and sits on the UT College of Arts and Sciences Dean’s Advisory Board. Jim is a member of the UT Foundation Board of Directors. In 2016, the couple established the Herbert Scholars program leading to their recognition that same year as UT Philanthropists of the Year. The couple established the program to provide financial assistance for undergraduate agriculture students engaged in experiential learning opportunities during the summer. Another large contribution in 2016 served as a matching challenge during the Big Orange Give campaign. It helped the University raise more than \$1 million in a single day. However, it is their most recent gift, the Herbert College of Agriculture Strategic Endowment, which marks



one of the largest gifts ever to the University and holds the goal of strategically positioning the College for future success.

“This tremendous gift is most amazing because of its flexibility,” says Tim Cross, chancellor of the Institute of Agriculture. “The Herberts’ desire to enhance student learning, faculty engagement, as well as programs make this endowment truly capable of empowering the Herbert College of Agriculture for generations.”

The endowment will offer broad support to the College. While it already prides itself on preparing world-class students for careers in agriculture, natural resources, and other professional arenas, the additional support enables the College to expand classroom and experiential learning and to provide its students with nationally competitive professional leadership opportunities in agriculturally related businesses and organizations.

“This gift will be among the most transformative in the University’s history,” says UT President Joe DiPietro. “It will elevate the College into an elite group of the very best public land-grant colleges of agriculture in the nation.”

“You know somebody said, ‘Oh, why the college of agriculture?’ And my answer is that the college of agriculture is a culmination of a lot of different disciplines at the University of Tennessee,” says Jim. “It’s possible only because of what’s going on in the sciences. If we didn’t have botany and zoology and microbiology and chemistry we wouldn’t be able to do the things in agriculture we do today. If we didn’t have a business school where you could learn something

about economics and figure out how to count your money, we wouldn’t be able to do it in agriculture. So, even though this gift is centered on the college of agriculture, it’s really to recognize the contribution the entire University makes to agriculture.”

The Herberts hope their investment will be a catalyst for others to invest in a university system that is growing ever more dependent on private financial support. They also hope that future graduates of the Herbert College of Agriculture may remember their roots at the University of Tennessee.

“Philanthropic investments like this are catalysts for advancing the land-grant mission and making a global impact,” says Keith Barber, UTIA vice chancellor of institutional advancement. “Jim and Judi have hearts for educating students who have the potential to change the world.”

“We certainly hope that it gives them every opportunity to be a great contributor to their world,” says Judi. “And we feel like that that’s what the University did for us from our beginning.”

The Herbert College of Agriculture welcomed its first class this fall under its new name. Students may notice new signage as they walk to class, yet the ever-present commitment to providing Real. Life. Solutions. in each and every classroom (and greenhouse!) remains. The dedication to quality experiential learning and high-quality faculty instruction is embedded deeper than the physical foundations of the buildings. Now, the College will have a few new tools to get the job done. ■



TOGETHER WE GROW

the Future of UTIA

The study and exploration of agriculture has the power to change the world. No organization knows this better than the UT Institute of Agriculture. It is woven through every facet of our lives.

While the education, research, and outreach efforts in the realm of agriculture have existed at the University of Tennessee from its inception, 1968 brought the field to new relevance and prestige in the form of UTIA. Fifty years ago, the University of Tennessee, which was founded far earlier as a land-grant university, recognized that agriculture and its related fields represented a unique calling, special enough to warrant its own independent representation within the university system.

Today, we recognize that history which extends before 1968, and we prepare for a future that will stretch out much further than 2068. September 22, 2018, marked the public launch of UTIA's most ambitious fundraising campaign ever. It comes on the heels of the Institute's fiftieth anniversary celebration. The UTIA campaign Together We Grow has the lofty goal to raise \$175 million from non-public sources to extend Real. Life. Solutions. to new generations.

It is a ten-year campaign that began its silent phase in 2012 and will conclude in 2022.

"I think it is very fitting to launch the next fifty years with this sort of mindset," says Tim Cross, UTIA chancellor. "We've had a history of incredible gifts and others that are expected that will be transformational for the Institute."

Fiscal year 2018 marked a new high in fundraising at the Institute. More than \$66 million impacted programs, provided scholarships, purchased better equipment, and led to enhancements in every unit. Keith Barber, UTIA vice chancellor of institutional advancement, says this is a great start and representative of tremendous generosity, but the need remains even greater.

"The private investments we receive today will have an impact on our mission as an Institute, and whether that is a current gift or an endowed investment, both are paramount," says Barber. "Our charge as a land-grant university is to provide opportunity, education, and cutting-edge research. Every gift invested into those purposes will produce exponential impacts."

UTIA is composed of four entities: UT AgResearch, UT Extension, the Herbert College of Agriculture, and the UT College of Veterinary Medicine. All exist under the broad definition of agriculture and all are poised to address some of the biggest challenges on the horizon.

While public funding is on a consistent downward trend, private donor support enables growth and ensures programs integral to the Institute's mission survive.

The Smith Center for International Sustainable Agriculture is an example of how private support fast-tracked programmatic growth. The Center exists at UTIA because of the generous donation of private donors, Donnie and Terry Smith, whose passion is to feed a growing world. This gift enables faculty, staff, and students to think and act globally in pursuit of sustainable solutions to our world's agricultural, food, and natural resource challenges. An entire program of study, research, and outreach exists because of the generosity and foresight of donors.

"Some donors like to invest in a particular project because that is a passion they have," says Fred Tompkins, interim dean

“Our charge . . . is to provide opportunity, education, and cutting-edge research. **Every gift invested into those purposes will produce exponential impacts.**”

of AgResearch. “Others will invest in capacity. They are going to provide the professorship so that we can go and hire the best and brightest and most innovative thinkers that are going to dig into some of these projects and over their careers are going to make advancements. Are those good investments? They absolutely are. We need brainpower, and we need the innovation and the talent.”

Tompkins adds, “We might not instantaneously see a project stand up out of that gift, but over time, we’ve gathered information that has resulted in improved technological advances. Those donor dollars are hugely important in that.”

Long before the Institute became an entity, the University was founded to serve the land-grant mission. UT Extension has always been at the heart of that mission with offices in every county and programs serving local communities. Robert Burns, dean of Extension, is keeping his focus on the local community needs. Programs like 4-H provide leadership and STEM education for K-12 students. Others, such as Be More, seek to address the obesity crisis through health and nutrition education. As new challenges face communities, Extension tries to provide the resources and education that communities need to address the issues.

“I see donor dollars as being critical in helping us address new challenges that we may not have recognized five, ten years before,” says Burns.

From the local communities to the college campus, education is a unifying thread that binds the Institute together. The Herbert College of Agriculture seeks to educate the next generation of scientists, economists,

researchers, and others who will soon shoulder the burden of solving tomorrow’s challenges.

“We are excited to be embarking on a new chapter with expanded opportunities for experiencing learning like no other time before. This new journey has been enabled by the generosity of the College’s namesake and by all those donors who felt the desire to give back and support the students as they were once supported,” says Caula Beyl, dean of the Herbert College of Agriculture.

“If people are concerned about feeding the estimated 9.6 billion people across the world by 2050 while preserving the quality of our environment, land, air, and water, the Herbert College of Agriculture is the place to invest because we encompass it all,” says John Stier, associate dean of the College.

A growing trend at the College is to fund scholarships for experiential learning opportunities. Funds like the Jim and Judi Herbert Student Enhancement Endowment in Agriculture and the Farm Credit Scholars program seek to place students in internships and experiences to learn firsthand about their future careers, accelerating the transition from the academic world to their professions and changing the world.

“The way these students are going to solve these problems is incredibly exciting to me,” Stier says. “I don’t know how they’ll do it, but they’ll do it.”

Jim Thompson, dean of the College of Veterinary Medicine, anticipates partnering with those who believe in the mission of UTIA and the College.

“When I think of donors who want to engage with us, I think of their brainstorming ideas to help us advance, and I think of their ability to provide financial gifts to help us move the organization forward,” he says. “Both are critically valuable.”

The Bandit Amidon Veterinary Scholarship for Rural Practice provides tuition support while students complete their veterinary medicine degrees. It is the collaboration of Tom and Claudia Amidon and Thompson. The Amidons are not graduates of the school but were struck with the compassion and sincerity of the veterinarians, staff, and students who cared for their cat Bandit. When they approached Thompson concerning their desire to impact future generations of veterinary students, the plan for a scholarship targeting future rural veterinarians was formed.

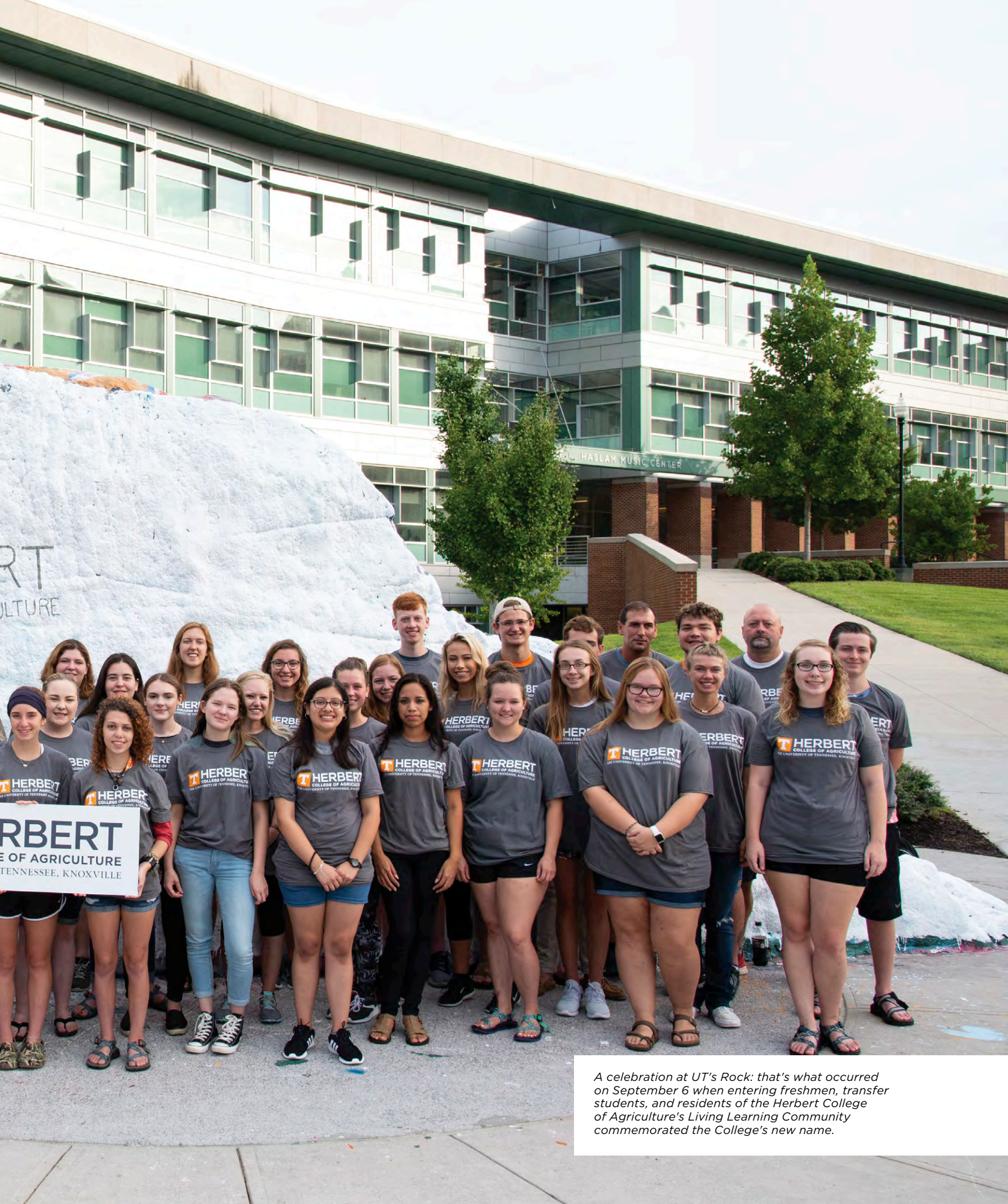
The College of Veterinary Medicine takes seriously its responsibility to care for the health and emotional well-being of pets and people, the safety of our food sources, and the advances of biomedical technology to benefit humans and animals.

Barber anticipates a wealth transfer from one generation to the next over the following decade that could put as much as one trillion dollars in transition.

“If even a fraction of that money changing hands is invested philanthropically, those investments have the potential to enhance the world through,” says Barber. “That is what we are trying to do here. Whether your passion is to improve the health of your community, develop Tennessee’s workforce, enrich our economy, enhance biodiversity and the environment, or simply feed and clothe a growing world, you can impact that change through giving in support of UTIA.”

In the coming months, expect to learn more about how you can invest in UTIA. To join Together We Grow and to make your investment in Real. Life. Solutions. visit together.tennessee.edu. ■





A celebration at UT's Rock: that's what occurred on September 6 when entering freshmen, transfer students, and residents of the Herbert College of Agriculture's Living Learning Community commemorated the College's new name.



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This year, the UT Institute of Agriculture celebrates fifty years of fulfilling the land-grant mission. Watch a video commemorating this special milestone at tiny.utk.edu/UTIA50th.