

The University of Texas at Dallas

School of Behavioral and Brain Sciences

2021 ANNUAL REPORT



Dear Friends,

It is with great pleasure that I write to you, friends and extended family of the [School of Behavioral and Brain Sciences](#) at [UT Dallas](#), in this, our first schoolwide annual report. In these pages, we are honored to share with you a look back at the people and research, accolades and activities that have defined the school over the past year.

To those of you who have come to know us recently, you are aware of our organization into three distinct departments: neuroscience, psychology, and speech, language, and hearing. To our longstanding friends and alumni, let me introduce our new departments, the first focusing on fundamental research in neurobiology, the second on developmental, social, and cognitive psychology and cognitive neuroscience, and the third on normal and impaired speech, language, and hearing. In each department, we have increased the breadth and depth of our faculty.

Many of you will be familiar with the amazing UT Dallas centers that work on research in brain and behavior, such as the Callier Center for Communication Disorders, Center for BrainHealth, Center for Vital Longevity, Center for Advanced Pain Studies, and Center for Children and Families. What may come as a surprise to you is that all faculty and students in these centers are members of the School of Behavioral and Brain Sciences (BBS), and all research and clinical care conducted in the centers is accompanied by BBS graduate education of the highest quality in the DFW Metroplex, and in many cases, in Texas and the nation.

The educators and researchers in our departments and associated centers of excellence are known nationally and internationally for their research on mechanisms of brain and behavior, as well as applied and translational work in such important areas as addiction, autism, schizophrenia, acute and chronic pain, stroke, aphasia, traumatic brain injury, age and noise-induced hearing loss, developmental delays in language and social functions, aging and dementia, Alzheimer's and Parkinson's disease, and others. Our new educational initiatives include separate undergraduate tracks for our students wanting to become physicians and other health workers, scientists, counselors, technologists, and business leaders, and new graduate programs to help enhance the mental, neurological, and communication health workforce in our region and state, and to train scientists to address future treatments and cures.

With devoted attention to the health of our faculty and students in the face of the global pandemic, and to the issues of structural biases in opportunity and achievement, we have made significant strides in recent years. Please enjoy the interesting news and features in this report. If you are sparked to help us build specific programs, recruit top faculty and students nationally and internationally, or create new research or teaching environments, please let us know! Thanks for your support.

Best wishes,

Steven Small

Dean, School of Behavioral and Brain Sciences

BBS Restructures Academic Areas to Boost Visibility

To begin the 2020-2021 school year, Dean Steven Small implemented a reorganized departmental structure aligning the school with peer institutions, with the goal of enhancing the reputation of the School of Behavioral and Brain Sciences (BBS) and improving recruiting.

Founded as the School of Human Development in 1975 and renamed in 2003, BBS expanded to include programs in many behavioral and brain sciences. Now with more than 70 faculty members, all with distinct needs and interests, the infrastructure of the school has been redesigned to keep pace.

The former communication sciences and disorders group and some of its programs received a change in name to [speech, language, and hearing](#), capturing the full range of research topics and education.

“We’re changing from indicating a pure emphasis in disorders to a broader emphasis in every intellectual issue related to speech, language and hearing, from fundamental research principles through clinical treatment of disorders,” Small said. “The people are the same, but we’re hoping we’ll recruit more students interested in a broader set of subjects at the undergraduate and graduate levels.”

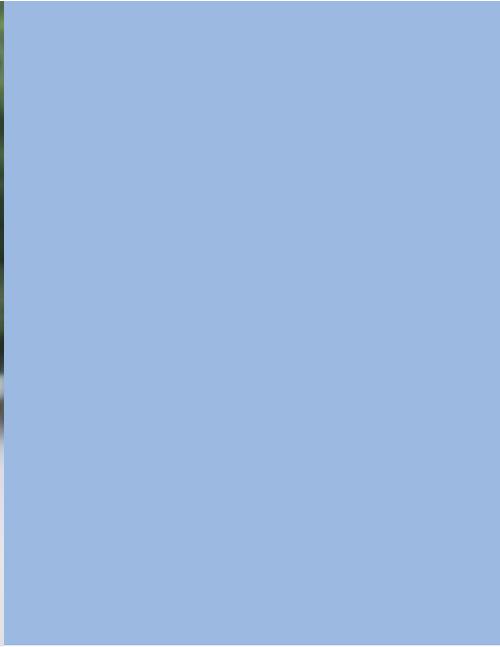
The other two disciplinary areas received name simplifications as well as conceptual restructuring. The psychological sciences area is now part of the department of [psychology](#), and the cognition and neuroscience faculty now play roles in both the department of psychology and a new department of [neuroscience](#). The psychology department unites cognitive neuroscientists — researchers who use brain imaging to study brain-behavior relations — with other researchers focused primarily on behavior.

“Bringing the cognitive group under the same umbrella as the social and developmental researchers — and making psychology our largest department — aligns us with other programs that the best students are considering,” Small said.

That change sets apart the fundamental neuroscientists, primarily located in the Bioengineering and Sciences Building, in their own department. These researchers are primarily focused on the functions of the central and peripheral nervous systems at cellular, molecular and systems levels.



FROM THE DEPARTMENT OF NEUROSCIENCE: *From left, department head Greg Dussor with Christa McIntyre and Benedict Kolber.*



FROM THE DEPARTMENT OF PSYCHOLOGY: *From left, department head Shayla Holub with Noah Sasson and Jackie Nelson.*



FROM THE DEPARTMENT OF SPEECH, LANGUAGE, AND HEARING: *From left, Angela Shoup with department head Colleen Le Prell (center) and Lisa Goffman.*

Affiliated Centers

Research centers play an important role in the research and educational mission of the School of Behavioral and Brain Sciences (BBS). BBS faculty lead six different research centers at UT Dallas, all of which are integral to the mission of the school. These extraordinary research environments provide laboratory space and/or intellectual ecosystems for almost half of our faculty, and training grounds for the majority of our doctoral students. They also provide hands-on research training for undergraduate students, particularly in our three largest majors: neuroscience, psychology, and speech, language, and hearing sciences. These centers cement the national and international reputation of BBS for groundbreaking research in speech, language and hearing; sensory neuroscience and pain; brain health; children and families; cognitive and brain aging; and neuroplastic therapeutics.



CALLIER CENTER FOR COMMUNICATION DISORDERS

The [Callier Center for Communication Disorders](#) has transformed the lives of children and adults with speech, language and hearing disorders for more than half a century. With BBS faculty educators and researchers, Callier is one of a select few communication disorders centers in the nation that combine clinical care, graduate student training and research within one institution. These three pursuits — treatment, training and research — collaborate to transcend the norm and ensure the best outcomes for people with communication disorders.

In 2020, the audiology graduate program based at Callier was tied for second in the nation by *U.S. News & World Report*, the highest-ranked UT Dallas program this year. The speech-language pathology program was tied at No. 10 in the country.

Center for Advanced Pain Studies

The [Center for Advanced Pain Studies](#) pursues lines of research aimed at alleviating suffering from pain and improving the lives of people with chronic pain and/or migraine. Its faculty investigate fundamental mechanisms underlying these issues, working to discover novel therapeutics through academic, public and private partnerships.

The center serves as a launching pad for entrepreneurship and innovation, while also drawing together investigators across disciplines ranging from neuroscience, molecular biology, bioengineering, chemistry, and neuroengineering to advance discoveries, translate findings, and foster the next generation of multidisciplinary scientists pursuing pain research.



CENTER *for* BRAINHEALTH

The [Center for BrainHealth](#) is a research center investigating the healthy brain and the effects of injury and disease. Founded in 1999 to maximize the cognitive potential of people of all ages, its multidisciplinary team aims to understand, protect, and improve brain function through research and experimental therapeutic training programs.

Faculty and students from BBS working in the center use functional and structural neuroimaging techniques to better understand the neurobiology of cognition and emotion in health and disease.



CENTER FOR VITAL LONGEVITY

The [Center for Vital Longevity](#) pursues research on how and why cognitive abilities change with age and how these changes relate to changes in the brain's structure and function. Since 2010, its scientists have aimed to identify, as early in life as possible, brain markers that predict who is likely to maintain cognitive health and who is most at risk, with the goal of developing behavioral and cognitive interventions that can prevent, slow or even reverse age-related cognitive decline.

Its research scientists use advanced brain imaging and other human imaging technologies to understand, maintain and improve the vitality of the aging mind, studying impairment and diseases such as Alzheimer's and other forms of dementia.



The [Texas Biomedical Device Center](#) is a collaborative multidisciplinary effort to develop technologies that prevent injuries, detect impairments, and restore quality of life lost due to neurological injuries and disease. Since 2012, its researchers have been committed to the development of affordable and innovative therapies and technologies to relieve neurological injury.

TxBDC scientists investigate the effects of these treatments on beneficial neuroplasticity for a number of neurological disorders including tinnitus, stroke, PTSD, multiple sclerosis, phantom limb pain, spinal cord injury, and peripheral nerve injury.

Center *for* Children and Families

The [Center for Children and Families](#) focuses on providing families with child development education and support via research, outreach, and service. Founded in the fall of 2008, the center designs and implements programming that emphasizes child developmental science, provides professional training in early intervention, and studies the effectiveness of those methods.

The success of the center's services rests upon faculty research, based on a wide range of biological, cognitive, language, social-emotional, and cultural areas of development. This advanced knowledge and expertise directly impacts the outreach programs. UT Dallas students also gain academic and hands-on experience assisting in programs.

Faculty Research



[Dr. Chandramallika Basak](#) (above) was senior author on a study in *Memory and Cognition* in which UT Dallas chess team members were compared to chess novices on rapid-fire processing of visuospatial information, pinpointing the strengths and limitations of the subjects' memory framework for chessboard configurations.

Conducting a variety of experiments changing the pieces' appearance and position, researchers determined that the 8-by-8 grid was a key factor in recall ability, even when the items on the board are not traditional chess pieces.

"It's almost like chess experts have snapshots of these positions — they demonstrate remarkable visuospatial working memory, given that the information is presented for less than half a second," Basak said. "Any expertise-related advantage disappeared in the absence of the chessboard display. It appears to be essential, acting as a road-map, a familiar framework to aid the memory."

[Dr. Michael Burton](#) (right) was co-senior author on two papers furthering the understanding of how chronic pain functions differently in males and females at the cellular level. Not only do different cells in the body mediate different responses to a drug — the same cells respond differently in one location than in another.

UT Dallas researchers and colleagues from Sweden's Karolinska Institute published two studies regarding sex dimorphisms in the journal *Pain*. The studies focus on the behavior of a protein called high mobility group box-1 (HMGB1), which is released by stressed cells to cause an inflammatory response.

"If you don't look specifically at where the danger signal is acting, you could simply conclude that HMGB1 creates pain in both males and females," Burton said. "However, if you manipulate where that receptor is, move it into a different type of cell, you'll notice that with one kind of cell, only males respond; and with another kind of cell, only females respond."

[Dr. Gregory Dussor](#) published a paper in the *Annals of Neurology* demonstrating a link between the hormone prolactin and the protein calcitonin gene-related peptide (CGRP) in mechanisms that may contribute to migraine, which is three times more common in women.

Employing a genetic engineering technique called "conditional knockout" to delete specific genes in order to study them in living rodents, researchers determined that the migraine-like responses in the female rodents caused by CGRP required functional prolactin receptors; additionally, using receptor blockers, they found that prolactin responses required functional CGRP receptors.

"In this prolactin work, we are showing a clear difference between how males and females respond to CGRP and to prolactin — something you don't see very often," Dussor said.



[Dr. Kristen Kennedy](#) published a study in *Neurobiology of Aging* using diffusion tensor imaging and functional MRI to tie the degradation of white-matter connections in the brain to reduced efficiency in executive functions.

When the brain is confronted with a challenging task, it has to "ramp up" its activity. The acceleration needed changes across the lifespan — basically, you don't ramp up as well when you're older because transmission between neurons is not as intact. Researchers used the two sets of scans to predict cognitive test performance.

"While this doesn't examine causality, this technique can be used to test hypotheses, which are based on our knowledge of how we think the brain works," Kennedy said. "Our theory is that age directly degrades the white matter, and this in turn results in a failure of the gray matter to fully ramp up. The result is a detrimental effect on cognition."

[Dr. Daniel Krawczyk](#) was the senior author of a study in *Computers in Human Behavior Reports* demonstrating the use of virtual reality (VR) to measure how people handle memory-taxing tasks, using the example of compiling grocery lists, and assess strategies people use to make tasks easier.

The study showed how VR can simplify researchers' efforts while providing data in a better format. For instance, VR makes it easier to modulate the task's difficulty level,

changing the “functional load” the brain has to handle.

“Our study is realistic and relevant to daily life, but also sufficiently controlled as a scientific study should be,” Krawczyk said. “Virtual reality comes closer to simulating real-life performance than performing these tests in a lab.”

[Dr. Mandy Maguire](#) (below) was senior author on a paper in *Neurobiology of Language* investigating changes in the EEG readings of children ages 8 to 15 from lower socioeconomic status (SES) as a word’s meaning is learned from context.

By comparing neural activity of more and less successful word learners the researchers hope to better understand why some children struggle and identify ways to help them learn in the future.

Examining neural oscillations, researchers determined better word learners showed increased theta and beta wave power; lower performers exhibited decreased alpha power.

“Beta increases indicate integration of sentence-level information. Theta relates to word retrieval and increased working memory load,” Maguire said. “Alpha decreases, associated with increased working memory demands, may represent compensation for difficulty integrating information.”

While children from poorer households have previously been characterized as broadly struggling with vocabulary, this study shows significant variability in this cohort.

“These children aren’t destined to have poor vocabulary outcomes,” Maguire said. “High-performing children in this sample did as well as higher SES peers have in other studies.”



[Dr. Alice O’Toole](#) published a study in *IEEE Transactions on Biometrics, Behavior, and Identity Science*, outlining the underlying factors that contribute to the imbalance in facial recognition technology’s performance across races, offering a guide to assessing the algorithms as the technology improves.

Her team concluded that there isn’t a one-size-fits-all solution for racial bias in facial recognition algorithms, in part because the factors can be both data-driven and operationally defined — some influence the algorithm’s performance itself, while others originate with the user. However, there are specific approaches that can improve the technology’s performance.

“Everybody’s looking for a simple solution, but the fact that we outline these different ways that biases can happen — none of them being mutually exclusive — makes this a cautionary paper,” O’Toole said. “If you’re trying to fix an algorithm, be aware of how many different things are going on.”

[Dr. Ted Price](#) was corresponding author on a study in *Science Signaling* using a massive repository of RNA sequencing data to produce a map of how specific types of cells interact with peripheral sensory neurons, locating a new pain-inducing molecule that could be a target for future pain-relief treatments.

Heparin-binding epidermal growth factor (HBEGF) is a ligand for a receptor not previously studied in a pain context before. While it holds some potential, Price emphasized the greater significance of what they used to find it: an algorithm for a maplike framework called an interactome, cataloging potential interactions between target tissues and sensory neurons.

“HBEGF is not necessarily going to transform how we think about treating pain,” he said. “The interactome platform can be applied in almost any situation that involves communication between cells to understand how changes in cell-to-cell communication may drive disease.”

[Dr. Karen Rodrigue](#) published a study in *Neurology* suggesting that iron and beta-amyloid may both contribute to the occurrence of Alzheimer’s disease, causing shrinkage of the brain’s entorhinal cortex, a region essential for the processing and recording of memories.

Experiment participants underwent cognitive testing, as well as positron emission tomography and MRI scanning. While it is unclear if there is a direct link between iron and beta-amyloid accumulation, participants who had more of both — as opposed to only more beta-amyloid — showed smaller volumes in the entorhinal cortex.

“It’s among the first evidence that iron may play an important contributory role to the early changes that precipitate AD,” Rodrigue said. “We hope to find better, earlier ways of determining that someone is on a pathway to developing Alzheimer’s disease, enabling potential treatments to start sooner.”

[Dr. Noah Sasson](#) was the senior author on a study in the journal *Autism* which showed that familiarizing non-autistic people with the challenges and strengths of autistic people helped to reduce stigma and misconceptions about autism, but implicit biases about autism were harder to overcome.

The researchers believe promoting understanding and acceptance of autism among non-autistic people, rather than teaching them ways to hide the characteristics that define them as autistic, will improve the social experiences of autistic people.

“It’s not easy to be autistic in a predominantly non-autistic world, and making the social world a bit more accommodating and welcoming to autistic differences could go a long way toward improving personal and professional outcomes for autistic people,” Sasson said.

Impact Stories

Mother Ensures Preservation of Bartlett Legacy

When he arrived at UT Dallas in 1975, a newly minted PhD from Yale, Dr. James Bartlett probably didn't envision staying at the University for more than 40 years. The difference he made in that time — in his field of research and in building the community of a young university — is the essence of his legacy.

After he passed away in the summer of 2019, Bartlett's mother, Barbara Finney, made a decision to include BBS in her estate plans. The University had just announced the creation of the James Bartlett Professorship in the School of Behavioral and Brain Sciences.

"We were stunned that the professorship was established. That's what got Mother excited at what was a terrible time," said Vicki Chamberlain, Finney's daughter and Bartlett's sister. Finney's gift to UT Dallas following her passing in 2020 elevated the James Bartlett Professorship to the [James Bartlett Chair](#).

"She came to me and said, 'This is what I want to do,'" recalled Chamberlain. "I said, 'Great!' I don't know what she would have done if I hadn't liked the idea, but it made us both feel wonderful. The whole process was very healing for her."

Bartlett was a professor in BBS, formerly the School of Human Development. His research focused on how people perceive and remember complex things from everyday life, such as faces, visual scenes and melodies. His ever-present smile, his enthusiasm for research, and his commitment to students and colleagues alike made him a favorite figure in Green Hall.

Through the years, he played many roles for UT Dallas in addition to that of teacher and mentor. He served as associate dean of the School of Human Development, dean of graduate studies and research, and speaker of the UT Dallas faculty. Most prominently, Bartlett was chair of the UT System Faculty Advisory Council from 2004 to 2005, head of the PhD program in cognition and neuroscience from 2004 to 2015, and interim dean of BBS from 2015 to 2018.

Growing up with his father so involved at UT Dallas, Bartlett's son, Dave Bartlett, remembered, "My sister Jessica and I met many of Dad's UT Dallas colleagues as children and adults. He valued them so much. That was a really strong, supportive community for him, personally and professionally, which was very evident to us when he was ill."

[Endowed professorships and chairs](#) are crucial for recruiting and retaining the highest-quality faculty. They exist as long as the university exists, honoring in perpetuity both the donor and namesake of the fund and the professor who holds the fund.



Barbara Finney and her son, James Bartlett

"It's just a wonderful way to preserve his memory," said Chamberlain. "The school was so important to him. This was his life. It preserves his memory in the best way I can conceive of. It's just perfect."

Finney knew the value of an education. As a child growing up during the Great Depression, Finney "had it better than most," said Chamberlain, because the family had a small plot of land on which to grow food. Finney also held a firm belief that education was "the most important thing. That's what you gave your children — an education."

Educated as a lawyer, Finney was a housewife until her husband, Dave Bartlett — Bartlett and Chamberlain's father — died from polio. Suddenly widowed with three young children, she was "determined to keep a roof over our heads," Chamberlain recalled.

She went to work for Humble Oil in Houston, where her husband had been employed — first in the accounting department, working on pipeline pricing. "They were particularly understanding that she couldn't work late all the time. It was a job where she could come home at night," said Chamberlain.

As fate would have it, her law degree and accounting experience were just what was needed when she transferred to the legal department of Exxon to help advise the lawyers on pipeline pricing. It was, said Chamberlain, "a wonderful end to her career."

Chamberlain recalls Bartlett also believing he was "really lucky to be at the right place at the right time." At UT Dallas, he was able to build on his early research interests in memory and linguistics and to be a foundational faculty member building BBS.

"Mother was really proud that Jim worked in education," Chamberlain remembered. "It meant everything to her that he was an educator."

Now, Finney's gift — like what Bartlett gave to advancing research and mentoring his students — will continue to make an impact for generations.

A Vital Couple of Allies for CVL, BBS

It's a good thing Jack Stilwell always travels with a tuxedo. Otherwise, this story might never have happened.

It was November 1984, and Stilwell — who was living in New York City at the time — was in Dallas on business when he got a call from a friend there. She was hosting a celebration the very next night to benefit the Dallas Opera. She wanted her dear friend Nancy to attend, and hoped that Stilwell would take Nancy as his date. Did he, she asked, happen to have a tuxedo on him?

As it happened, Stilwell traveled so much for work, and was so often asked to represent his company while traveling, that he started routinely taking a tuxedo. He was due back in New York the following day, but he postponed his return. And so, the story of Jack Stilwell and Nancy O'Neil's romance begins with a prescient packing decision.

Stilwell and O'Neil married in 1987, blending a large family of five sons and a daughter, six eventual grandchildren and two eventual great-grandchildren, and many varied interests. A veteran of the United States Navy and a lawyer by trade and training, Stilwell was a serial entrepreneur in ventures as varied as Texas' oil fields, real estate development and the relatively new realm of cable television.

One of his interests was the history of ideas doctoral program at The University of Texas at Dallas. In Stilwell's eyes, there were just four universities in the United States that offered a well-developed curriculum in this area, and UT Dallas was at the top of his list.

Enrolling in January 1985, Stilwell thrived in the history of ideas program, completing his master's in 1988 and his doctorate in 1994. Of his earliest days on campus, he recalls, "They showed up with picnic tables to register people. There was just McDermott Library. It was the program that attracted me, not the facilities."

Though he continued working as a lawyer, Stilwell had always wanted to teach, an aspiration which led him back to UT Dallas. In 2007, Dr. Hobson Wildenthal, who was provost of UT Dallas at the time, made a fateful introduction between Stilwell and Dr. Bert Moore, dean of the School of Behavioral and Brain Sciences (BBS). Dean Moore asked Stilwell to teach a class for the school on dispute resolution — a course Stilwell continues to teach to this day.



Nancy O'Neil and her husband, Jack Stilwell

Through his involvement with BBS, Stilwell learned about the [Center for Vital Longevity](#) (CVL). "I've been interested since there was a CVL," he said. "I'd heard about it and was interested because of the title to find out what their work was."

At the same time, O'Neil, a fourth-generation Dallasite, learned about CVL from the UT Southwestern President's Research Council, where she was a founding member. Early on, the two met Dr. Denise Park, founding director of the center, and were immediately impressed.

"Nancy got interested, and next thing you know, we were going to meetings and such," Stilwell said.

During the early days of the COVID-19 pandemic, the couple stepped up their support of CVL even more. Their anniversary was coming up, and they'd been planning to take a special trip. Knowing that travel wouldn't be possible for some time, the two decided to instead endow a fellowship for promising Behavioral and Brain Sciences graduate students.

"We wanted to help the students and the school in this time of great need," O'Neil said.

Their gift created the [Nancy M. O'Neil and John Q. Stilwell, JD, PhD Fellowship](#) in the School of Behavioral and Brain Sciences, in honor of CVL's 10th anniversary. Each year, the fellowship will be awarded to one student, with the first fellowship having been awarded for the 2020-2021 academic year. Stilwell and O'Neil met the first recipient, Da Yeoun (Hanna) Moon, during a Zoom call in fall 2020.

"It was so interesting to learn about her research. We're pleased to support future generations of scientists and their research through this fellowship," O'Neil said.

The two plan to remain longtime supporters of the Center for Vital Longevity. After all, Stilwell says, "We want to remain vital, and we are acquiring a lot of longevity."

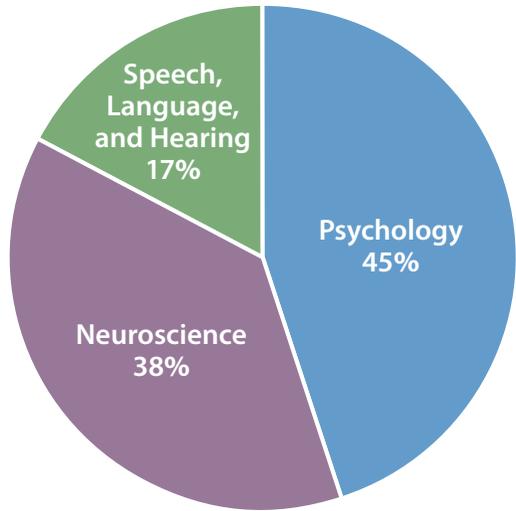
BBS Enrollment

BBS offers
5 undergraduate degree programs,
4 master of science programs,
3 doctor of philosophy programs,
 and **1** clinical doctoral program.

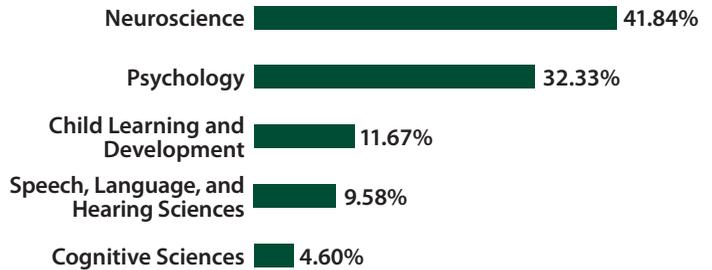
BBS has
more than 2,500 undergraduate students and
600 graduate students.

Our audiology and speech-language pathology programs are ranked No. 2 and No. 10 in the nation respectively, according to *U.S. News and World Report*.

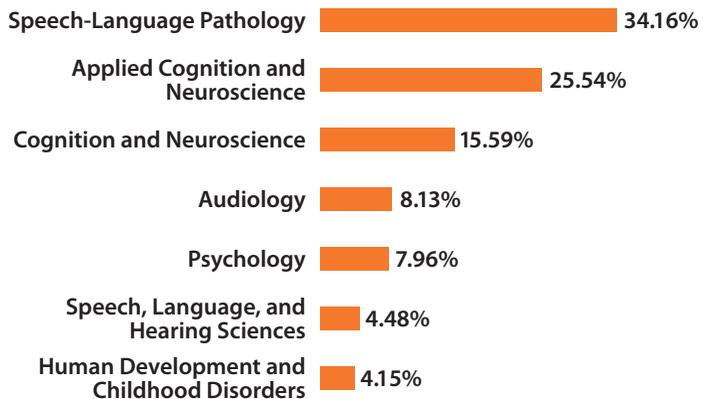
Enrollment by Department



Undergraduate Enrollment by Major



Graduate Enrollment by Major



Grant Highlights

[Dr. Lisa Goffman](#) received a five-year, \$3 million federal grant to pursue a new theory on an underlying mechanism of developmental language disorder (DLD).

The Callier Clinical Research Center, a component of the Callier Center for Communication Disorders, will provide the critical infrastructure as researchers investigate whether a child's slower learning of sequential patterns is linked to DLD, in which children show a persistent underperformance in language skills relative to age — speech sounds, vocabulary, grammar and conversation — where no known biomedical condition is present.

Research from Goffman's lab has shown that these children have broader learning difficulties that also affect cognition and motor skills. "We now think the underlying problem is in learning complicated patterns or sequences. Learning sound patterns in words and grammar in sentences requires complex rules that are particularly challenging for children with DLD," Goffman said.

[Dr. Benedict Kolber](#) received an \$894,342 award from the National Institutes of Health's National Institute of Diabetes and Digestive and Kidney Diseases for his research on the impact of amygdala lateralization on processing and modulation of bladder pain.

Kolber is investigating the extent to which regions in the brain are responsible for persistent pain and accompanying affective disturbances that accompany urologic conditions, with the goal of developing novel central nervous system treatments for urologic chronic pelvic pain (UCPP) syndromes.

"These patients have an extremely poor quality of life due, in part, to the cognitive and emotional problems that accompany their pelvic pain and a lack of effective treatments," he added. "We focus on the amygdala, a brain area involved in both pain and emotion, in studies that will investigate the role of the left versus right amygdala in contributing to and altering bladder pain in mice."

[Dr. Candice Mills](#) received a three-year, \$1.25 million grant from the National Science Foundation to develop an online platform for research on cognitive development in children ages 3 to 6.

This collaborative online infrastructure will help recruit representative, large experimental samples using methods that allow for extensive, secure data sharing. Scientists will extend several classic measures of thinking and reasoning to test predictions on the variability of developmental trajectories, while also integrating new experimental studies into the problem, asking questions that span developmental science.

"The preschool years are a particularly rich time for cognitive development. This project will transform developmental science by creating and then using an infrastructure for online research that enables cross-lab collaborations," Mills said. "By collecting data from children across the country, this project will enable us to build better models of learning and cognition, as well as understand early childhood predictors of school readiness."

See all active research grants at utd.link/grants21.

Selected Publications from the 2020-2021 Academic Year

Abdi, Hervé; Rieck, J. R., ..., Abdi, H., & Grady, C. L. (2021). Reconfiguration and dedifferentiation of functional networks during cognitive control across the adult lifespan. *Neurobiology of Aging*, 106, 80–94.

Burton, Michael; Mody, P. H., ..., Burton, M. D. (2020). eIF4E phosphorylation modulates pain and neuroinflammation in the aged. *GeroScience*, 42(6), 1663–1674.

Clark, Jackie; Ramatsoma, H., ..., Clark, J. L., & Malan, K. (2021). One-ear tip solution for pure-tone audiometry and acoustic immittance measurements: Using insert earphone with an immittance probe ear tip. *International Journal of Audiology*, 1–7.

Dussor, Greg; Avona, A., ..., Dussor, G. (2021). Meningeal CGRP-prolactin interaction evokes female-specific migraine behavior. *Annals of Neurology*, 89(6), 1129–1144.

Engineer, Crystal; Adcock, K. S., ..., Engineer, C. T. (2020). Vagus nerve stimulation paired with tones restores auditory processing in a rat model of Rett syndrome. *Brain Stimulation*, 13(6), 1494–1503.

Goffman, Lisa; Gerken, L. A., ..., Goffman, L. (2021). Not all procedural learning tasks are difficult for adults with developmental language disorder. *Journal of Speech, Language, and Hearing Research*, 64(3), 922–934.

Golden, Richard; Golden, R. M. (2020). *Statistical machine learning: A unified framework*. CRC Press.

Holub, Shayla; Hinkley, S. B., Holub, S. C., & Menter, A. (2020). The validity of cutaneous body image as a construct and as a mediator of the relationship between cutaneous disease and mental health. *Dermatology and Therapy*, 10(1), 203–211.

Kane, Heidi; Kane, H. S., & Krizan, Z. (2021). Sleep, emotional supportiveness, and socially straining behavior: A multidimensional approach. *Sleep Health*, 7(1), 49–55.

Katz, Williams; Glotfelty, A., & Katz, W. F. (2021). The role of visibility in silent speech tongue movements: A kinematic study of consonants. *Journal of Speech, Language, and Hearing Research*, 64(6S), 2377–2384.

Kennedy, Kristen; Boylan, M. A., ..., Kennedy, K. M. (2020). Greater BOLD variability is associated with poorer cognitive function in an adult lifespan sample. *Cerebral Cortex*, 31(1), 562–574.

Kilgard, Mike; Bucksot, J. E., ..., Kilgard, M. P., & Hays, S. A. (2021). Validation of a parameterized, open-source model of nerve stimulation. *Journal of Neural Engineering*, 18(4), 042001.

Kolber, Benedict; Polaski, A. M., ..., Kolber, B. J. (2021). Integrated meditation and exercise therapy: A randomized controlled pilot of a combined nonpharmacological intervention focused on reducing disability and pain in patients with chronic low back pain. *Pain Medicine*, 22(2), 444–458.

Krawczyk, Daniel; Chang, Z., ..., & Krawczyk, D. (2020). Functional performance in a virtual reality task with differential executive functional loads. *Computers in Human Behavior Reports*, 2, 100035.

Lee, Yune; Lee, Y. S., et al (2020). Rhythm and syntax processing in school-age children. *Developmental Psychology*, 56(9), 1632–1641.

Le Prell, Colleen; Le Prell, C. G., et al (2020). Noise-induced hearing loss and its prevention: Current issues in mammalian hearing. *Current Opinion in Physiology*, 18, 32–36.

Lobarinas, Edward; Harrison, R. T., ..., Lobarinas, E. (2021). Cochlear preconditioning as a modulator of susceptibility to hearing loss. *Antioxidants & Redox Signaling*.

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See more faculty achievements from the past year at utd.link/faculty21.

Our faculty has
more than \$24 million in annual
research expenditures for
the 2020-2021 academic year.

Student Successes



Ryland

James Ryland, a cognition and neuroscience PhD student, published a peer-reviewed research article titled “Modeling Axonal Plasticity in Artificial Neural Networks.”

Géraldine Jeckeln, a cognition and neuroscience PhD student, published three peer-reviewed research articles and presented her research findings at three events:

- “Designing calibrated facial proficiency tests,” a talk at the Virtual 10th Annual Forensic Science Symposium.
- “Confidence indicates face identification accuracy: Findings from a confidence forced-choice task,” a poster presentation for the Virtual 18th International Summer School for Advanced Studies on Biometrics for Secure Authentication.
- “Confidence judgments are associated with face-identification accuracy: Findings from a confidence forced-choice task,” a talk at the second Annual Different Minds Collaborative Virtual Spring 2021 Conference.



Jeckeln

Grace Moore, a neuroscience junior, was awarded the Goldwater Scholarship. This prestigious national scholarship seeks to identify and support college students who show exceptional promise of becoming the nation’s next generation of research leaders in the natural sciences, engineering and mathematics fields. Additionally, Moore spent her 2021 summer researching chronic pain at the University of Alabama at Birmingham.

Kilee DeBrabander, a cognition and neuroscience PhD student, published several peer-reviewed research papers about autism. She presented a poster on her research findings at the International Society for Autism Research Annual Meeting titled “Autistic Adults Accurately Detect Social Disinterest in their Conversation Partners when Non-Autistic Adults Do Not.” Additionally, she was nominated for the American Psychological Association Dissertation Research Award and is a recipient of the Carol L. and Maynard S. Redeker Fellowship.



Moore



DeBrabander



Rollins



Holla



Glotfelty

Lily Rollins, an audiology graduate student, was elected national president of the Student Academy of Audiology from July 2020 to June 2022. In April 2021, she won the American Academy of Audiology Foundation’s James and Susan Jerger Award for Excellence in Student Research for her research presentation, “Evaluation of Factors Affecting Audiologists Perception of Professional Autonomy.”

Anisha Holla, a psychology junior, was recognized as a JED Student Voice of Mental Health finalist by The Jed Foundation as one of the top 10 students internationally for her work in mental health. Her efforts which culminated in this honor included founding a nonprofit organization, pushing for enactment of mental health legislation, leading behavioral research, and creating a mobile application designed to address substance use disorders.

Annette Glotfelty, a cognition and neuroscience PhD student, published a peer-reviewed article titled “The Role of Visibility in Silent Speech Tongue Movements: A Kinematic Study of Consonants” through research with Dr. William Katz. Glotfelty presented this study at the 2020 Motor Speech Conference.

See more student successes from the past year at utd.link/students21.

Responses to the COVID-19 Pandemic

The 2020-2021 academic year was in many ways defined by our responses to the COVID-19 pandemic, showing our strength as a community. These achievements go well beyond the social distancing and masks that helped us help each other stay safe.

Even before then, near the outset of the pandemic, UT Dallas faculty and staff responded to the call for more supplies by donating personal protective equipment — including masks, gowns and gloves — to Parkland Health & Hospital System, Dallas County's public hospital and one of the nation's largest public health systems.

Dr. Michael Kilgard, Margaret Fonde Jonsson Professor of neuroscience in the School of Behavioral and Brain Sciences (BBS), said that working with Parkland, the primary teaching hospital for UT Southwestern Medical Center, is a natural UT System collaboration.

"Here at the Texas Biomedical Device Center at UT Dallas, we have partnered with UT Southwestern for years to develop and test new therapies for neurological disorders," said Kilgard, interim executive director and chief science officer at the center. "We are happy to do everything we can to support the physicians and the extraordinary care they are providing to so many."

From March through July of 2021, BBS staff and students were among the many Comet volunteers at the on-campus vaccine clinic, run in partnership with UT Southwestern Medical Center. More than 49,000 vaccine doses were administered, and more than 1,000 volunteers from the community devoted time and work to making that possible.

This past academic year has presented significant challenges, and our hearts go out to those who lost a loved one during this extremely difficult time. UT Dallas is immensely grateful for the strong sense of community we have — whether we are in-person or connected virtually. We continue to be vigilant to make sure the UT Dallas campus is a safe place to learn, live and grow.

Events

The COVID-19 pandemic left many regular BBS events in need of an online home. Among the year's highlights:

- On March 5, 2020, BBS hosted a dinner for about 40 friends of the school at the [UT Dallas Crow Museum of Asian Art](#) in the Dallas Arts District. President Richard Benson and Dean Steven Small both delivered remarks on behalf of the University and school. The keynote speaker was alumnus David Mittelman BS'01, co-founder and CEO of Othram, Inc. Mittelman shared examples of the work that Othram does to solve cold cases using genome sequencing out of their lab in The Woodlands, Texas.
- Staff took the Weeks of Welcome event "**BBS Brain Teasers**" virtual in August 2020, with submitted new student questions answered and senior BBS students speaking about their favorite UTD experiences. A BBS trivia game was also played.
- **Virtual BBS Graduation Celebration events, in Fall 2020 and Spring 2021.** In the fall, Dean Steven Small joined other BBS faculty and staff members in congratulating graduates, while graduates discussed their BBS experiences and their future destinations. Trivia games were held on BBS, UTD, and the Year 2020. In the spring, department slideshows were presented, featuring graduate pictures, degrees and quotes. Department chairs congratulated their graduates and Dean Small announced those who received BBS Honors, Dean's Awards for Excellence and Student Leadership Awards. At both of these events, one graduate was awarded a complimentary UTD Alumni Association membership.
- The "**Brain Matters**" series went online with "All Ears! Hot Topics on Hearing Health and Tinnitus," featuring Drs. Colleen Le Prell and Edward Lobarinas. The discussion ranged from tinnitus, to tactics for protecting hearing in noisy environments, to how loud is too loud for music in headphones.
- Student interest events were hosted by each of the three BBS departments and included research article discussions, round table sessions with the dean, program information sessions and trivia games.