

The background of the entire page is a light blue molecular structure, possibly representing a protein or a complex organic molecule, with spheres representing atoms and rods representing bonds. A dark blue rectangular block is positioned on the left side, partially overlapping the molecular structure. A solid green vertical bar is located on the far left edge of the page.

Annual Report 2022

ADVANCING CHEMISTRY.
IMPROVING LIFE.

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Robert A. Welch



For **68 years**
The Welch Foundation has
led the way in supporting
basic chemical research.

The Welch Foundation is a legacy to the world from Robert Alonzo Welch, a self-made man with a strong sense of responsibility to humankind, an enthusiastic respect for chemistry and a deep love for the state of Texas.

Born in South Carolina to a prominent family that fell on hard economic times, Mr. Welch came to Houston as a youth and later made his fortune in oil and minerals. Over the course of his career and life, he became convinced of the importance of chemistry for the betterment of the world.

Scientists, geologists and petroleum engineers were among his close friends and associates as were the civic and business leaders of the day. From these associations and his own study, Mr. Welch determined that the pursuit of chemistry and chemical research held great potential for vast good and would continue to have a valuable impact on business, industry, global leadership and the human condition.

Mr. Welch gave serious thought to the disposition of his estate. His decisions reflected his belief in science and the role it would play in the future. In his will, Mr. Welch stated: “I have long been impressed with the great possibilities for the betterment of mankind that lay in the field of research in the domain of chemistry.”

With his death in 1952, Mr. Welch left a generous portion of his estate to his employees and their families. The balance began what is now The Welch Foundation.

Message from the Chair

Dear Welch Friends,

It is great to be back to something approaching normal. While the coronavirus looks to remain with us for the foreseeable future, the dedication of scientists and medical professionals across the globe – including many here in Texas – has given us the tools to prevent and treat serious illness resulting from COVID-19 infections. There is still a long way to go in fully understanding all aspects of SARS-CoV-2, but we are encouraged by the progress being made in discovering its causes and how the virus mutates, eventually leading to finding a cure.

This return to “normal” allowed us to again gather in person to celebrate our award winners and explore the latest advances during our annual research conference. I am pleased to say that we have been able to take some of the lessons learned during COVID to make our programs more accessible to new audiences.

Participation in the conference this year, for example, was offered both in-person and virtually, making it easier for more to attend. The virtual lecture series for high school students that was started during the pandemic will continue to be offered as part of the Welch Summer Scholar Program even as students are again able to enjoy the research and campus experience in person. Behind the scenes, meetings of our Board of Directors and Scientific Advisory Board also benefit from the

flexibility of virtual connectivity.

Looking to the future, the Foundation has approved several new programs to support research in Texas, from undergraduates to our most seasoned scientists. They will launch in 2023.

With a focus primarily on the undergraduate level, the new equipment grant program is designed to complement our existing departmental grants by providing supplemental funding for laboratory equipment. We believe this will improve a small department’s capabilities in chemical research and will give faculty and students a richer laboratory experience.

Realizing that many exciting discoveries come from postdoctoral research, we created the Welch Postdoctoral Fellows of the Life Sciences Research Foundation. It will underwrite three-year fellowships to recent PhD graduates from around the world to support the development of their chemical research careers in Texas. The aim is to fund fellows who intend to tackle important problems in chemistry in interesting and novel ways in Texas university laboratories that provide world-class training.

The Welch eXperimental (WelchX) Collaboration Retreat is an innovative program that will bring early- to mid-career tenured Texas researchers together in a topically focused chemistry meeting and stimulate them



DOUGLAS L. FOSHEE
Chair and Director

to ideate on the challenging issues of our time. The goal is to increase the density of research ties across Texas and spur the growth of basic research in the chemical sciences. WelchX retreat participants have the opportunity to turn the collaborative concepts they design at the retreat into funding proposals to be considered for WelchX Collaborative Pilot Grants of up to \$100,000 for 12 months.

Also new is our Catalyst for Discovery Program Grants that are intended to accelerate progress in fundamental chemical research. The program will support research teams in Texas who are addressing significant problems at chemistry’s leading edge with grants of up to \$5 million.

Taken together, these new programs and initiatives will broaden and deepen our mission to advance chemistry and improve life. I am excited that they will be part of our “new normal.”

2022 Highlights

At the end of fiscal year 2022, The Welch Foundation's endowment stood at \$866 million, and the amount invested in chemistry totaled close to \$1.1 billion in actual-dollar support over the Foundation's 68 years.

In January, The Welch Foundation named two "Rising Star" recipients of the Norman Hackerman Award in Chemical Research: Ryan Hibbs, The University of Texas Southwestern Medical Center, and Guihua Yu, The University of Texas at Austin.

Dr. Hibbs' research is focused on expanding our understanding of how drugs bind to proteins to affect behavior, particularly in the brain. His team leverages technology advances to combine antibody labeling with cryo-electron microscopy to purify receptors from native tissues found in the brain and image them at the atomic level. His work has implications for addiction, mental illness, neurodegenerative disease and anesthesia.

Dr. Yu was honored for his creation of materials for a sustainable world, leveraging nanoscience and nanotechnology to address global issues in energy and water. His team is focused on developing a fundamental understanding of new materials with designed nano-architectures. Based on this research, they then create large-scale assembly and integration strategies for applications in energy, environmental and sustainable technologies.

Carolyn R. Bertozzi of Stanford University was honored as the 2022 recipient of the Robert A. Welch Award in Chemistry for her pioneering contributions to bioorganic chemistry and the development of bioorthogonal chemistry. Also named a co-recipient of the Nobel Prize in Chemistry in 2022, her research focuses on creating innovative chemical approaches and technologies and then applying them to biomedicine. Dr. Bertozzi transformed the field of chemical biology by demonstrating that chemical reactions can be designed with such specificity that scientists can use them in complex environments, including living organisms.

The Welch Conference on Chemical Research was held in October, both in-person and virtually. Experts explored the use of "sculpted light" to sense, probe and control chemistry at the molecular level. The 65th conference, "Molecules and Sculpted Light," was chaired by W. E. Moerner, Welch Scientific Advisory Board member emeritus and the Harry S. Mosher Professor of Chemistry and Professor, by courtesy, of Applied Physics at Stanford University.

The Foundation welcomed Laura L. Kiessling to its Scientific Advisory Board. The Novartis Professor of Chemistry at Massachusetts Institute of Technology focuses her research on developing and implementing methods to investigate cell surface glycans, including the use of polymer chemistry to generate glycoprotein and mucin mimics.

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The Welch Foundation's investment in chemistry has totaled more than **\$1 billion** in actual-dollar support since its inception.

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The Welch Foundation: Fulfilling Our Founder's Vision

Created from an endowment by Texas oilman and philanthropist Robert Alonzo Welch, The Welch Foundation is one of the nation's largest private funding sources for fundamental chemical research at universities, colleges and other educational institutions in Texas. Since its founding in 1954, the Foundation has supported chemistry in Texas through close to \$1.1 billion of research grants and other programs.

Following the dictates of Mr. Welch's will, the Foundation remains true to its mission of supporting fundamental scientific exploration that ultimately helps improve our world. The Foundation's endeavors are guided by a Board of Directors, Scientific Advisory Board and professional staff committed to building a robust scientific community in Texas that advances basic knowledge.

BOARD OF DIRECTORS

The Board of Directors serves as stewards of The Welch Foundation, overseeing its financial health, operational direction, and support for chemistry.

Welch Foundation Board of Directors and Officers



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Vice Chair and Director



GINA A. LUNA
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WILLIAM F. McKEON
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CARIN M. BARTH
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GEOFFREY W. COATES
Cornell University



LAURA L. KIESSLING
Massachusetts Institute of Technology



ANN E. McDERMOTT
Columbia University

The Scientific Advisory Board advises the Board of Directors on scientific issues related to the Foundation's mission. The board is composed of renowned leaders in chemistry and the related sciences who evaluate proposals for research grants, review and recommend finalists for the Welch and Hackerman Awards, and help oversee the other Foundation programs to promote chemistry in Texas. Each year, one member presides over the annual Conference on Chemical Research.



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University of Michigan



KEVAN M. SHOKAT
University of California, San Francisco



JAMES L. SKINNER
University of Wisconsin-Madison



XIAOWEI ZHUANG
Harvard University

Foundation Staff



CARLA J. ATMAR
Director of Grant Programs



COLETTE BLEASDALE
Executive Assistant



CAROLYN KAHLICH
Senior Accountant



LOAN KIEU
Assistant Controller

Led by President Adam Kuspa, the staff oversees and implements the day-to-day operations of the Foundation.



JENNIFER MEADOWS
Administrative Assistant/Coordinator



RON PAGE
Chief Financial Officer



KRISTIN RODEN
Assistant Director of Grant Programs



SHERRY WHITE
Senior Accountant

Welch Award: Bertozzi Revolutionizes Bioorganic Chemistry



Carolyn Bertozzi was honored with the 2022 Welch Award for her many breakthroughs, including the development of bioorthogonal chemistry.

Carolyn R. Bertozzi was named the 2022 Welch Award in Chemistry recipient for her pioneering contributions to bioorganic chemistry and the development of bioorthogonal chemistry. The 2022 Welch Award salutes Dr. Bertozzi's prodigious scholarship, many and varied scientific discoveries, and academic leadership, all directed at expanding knowledge and enhancing life.

Her development of “click chemistry” and bioorthogonal chemistry also garnered her the Nobel Prize, sharing the 2022 honor with Morten Meldal and K. Barry Sharpless. Dr. Bertozzi and her co-recipients created “click chemistry,” an approach to make new molecules quickly and precisely under accessible conditions, like using water as a solvent at room temperature. This allows researchers to probe cellular reactions without affecting them. Dr. Bertozzi took it one step further with a creative solution that eliminates the need to use copper, which is toxic, as a catalyst in the process.

“Dr. Bertozzi is one of the most influential scientists in chemical biology,” said Catherine J. Murphy, chair of Welch's Scientific Advisory Board.

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The **\$500,000**
Welch Award celebrates the
outstanding achievements
of scientists whose
research has significantly
improved lives.
.....

“Like many exceptional researchers, she has gone from strength to strength over the course of her career, where finding the answers to one set of questions leads her on to the next problem and then again to the next.”

Dr. Bertozzi says her multidisciplinary breakthroughs all share a theme of creating innovative chemical approaches and technologies and then applying them to biomedicine.

She transformed the field of chemical biology with the notion that chemical reactions can be designed with such exquisite specificity that scientists can use them in environments as complex and richly functionalized as living organisms. By bringing chemistry into play to dissect complex cellular functions, she enabled researchers to visualize and profile biomolecules previously thought intractable to experimental observation. Her work demonstrated how transformational chemical methodology can be when applied to solve problems in life sciences. Her development of chemical reactions that can be performed in biological systems, a field she named bioorthogonal chemistry, continues to revolutionize biology today.

“Chemistry is called the central science,” Dr. Bertozzi noted. “There’s a reason for that. It is central to all the other scientific disciplines, and it’s certainly central to our quality of life. I’m deeply grateful to The Welch Foundation for casting a spotlight on chemistry and the chemical sciences and the critical role they play in the economy.”

Dr. Bertozzi also is celebrated as a glycoscientist exploring cell surface



Adam Kuspa (left), Carin Barth and Doug Foshee congratulate Carolyn Bertozzi.

glycans – the sugars that coat cells – and the glycan-binding receptors that engage in cell-cell interactions and cell signaling. Her work leverages innovative techniques to unravel the mechanics of glycan/receptor biology, a complex and previously little-studied area. She then applies these insights to develop new therapeutic strategies for cancer and many other diseases.

Her team made fundamental discoveries on the origin of cancer-associated glycol-signatures – showing how they relate to tumor progression and their ability to evade both immune responses and drug treatment. She detailed these glycan tumor markers and charted their novel pathways to block the body’s immunosuppression systems that allow the tumors to thrive and grow.

Her translational work in glyco-biology includes developing new therapeutic modalities such as anti-body enzyme conjugates for cancer immune therapy, now in clinical trials,

and new ways to precisely attach drugs to antibodies. Most recently, her lab designed lysosome targeting chimeras, a new class of molecules that target extracellular proteins for degradation using the cell's natural recycling machinery. This could lead to the development of medicines for diseases that currently lack effective treatment options.

In another important contribution, Dr. Bertozzi has developed a new chemical platform to diagnose tuberculosis from patient sputum samples at the point of care. She also created new approaches for *in vivo* imaging, disease biomarker identification, and biotherapeutic development. Many of these tools have been commercialized and are used widely. For example, her bioorthogonal aldehyde tag technology, called SMARTag, is used worldwide to produce next-generation antibody-drug conjugates. Her clever



Carolyn Bertozzi, Stanford University
Credit: Christopher Michel

methodology to image non-protein biopolymers such as glycans, nucleic acids and lipids, has become part of biologists' standard toolkit.

“By innovating the field of bioorthogonal chemistry, Dr. Bertozzi has revolutionized cell biology as we know it,”

said Douglas L. Foshee, chair of the Welch Board of Directors. “The mission of The Welch Foundation is to improve the lives of others through the advancement of chemical research, and Dr. Bertozzi’s discoveries will undoubtedly help future scientists work towards that goal.”

In addition to her research, she is the Baker Family Director of Sarafan ChEM-H, a Stanford institute which pulls together chemistry, engineering and medicine for human health. She has co-founded 10 glycobiology-based start-ups focusing on diagnostic tools and treatments.

Dr. Bertozzi earned her undergraduate and doctoral degrees in chemistry from Harvard University and University of California, Berkeley, respectively. After postdoctoral work at University of California, San Francisco, she joined the UC Berkeley faculty. After 20 years there, she moved to Stanford in 2015 to pursue more translational research.

She is the recipient of many honors and awards, including being elected as one of the youngest scientists ever to the U.S. National Academy of Sciences. Dr. Bertozzi has published more than 400 papers, among the most widely cited in the field, and is the founding editor of *ACS Central Science*, American Chemical Society’s first peer-reviewed open access journal. She is leading the charge on Stanford’s effort to build a multi-disciplinary approach to improving health and is a sought-after teacher, mentor and leader in science advocacy.



Welch Scientific Advisory Board members (from left) Kevan Shokat, Geoff Coates, Ann McDermott, Cathy Murphy and Xiaowei Zhuang celebrate with Carolyn Bertozzi.

Hackerman Award: Foundation Honors 2 Texas ‘Rising Stars’

The vibrancy of Texas’ chemical research community led The Welch Foundation Board of Directors to select two recipients for the 2022 Norman Hackerman Award in Chemical Research: Ryan E. Hibbs, The University of Texas Southwestern Medical Center, and Guihua Yu, The University of Texas at Austin.

Ryan Hibbs wants to understand, at the atomic level, how drugs bind to proteins to affect behavior, particularly in the brain, with implications for addiction, mental illness, neurodegenerative disease and anesthesia. His lab takes a multidisciplinary approach encompassing molecular biology, protein biochemistry, pharmacology, electrophysiology, x-ray crystallography and cryo-electron microscopy to explore how molecules interact with individual proteins to shed new light on the mechanisms of chemical neurotransmission. He is recognized internationally as a leader in ion channel research.

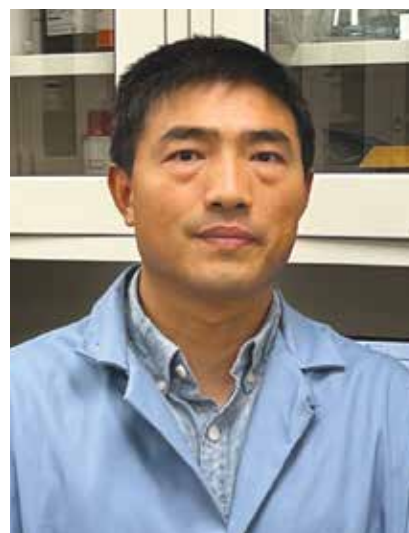
“If you want to understand how things work, you need to understand how they’re built and what they look



Ryan Hibbs, UT Southwestern

like,” Dr. Hibbs said. “Our work has been focused on that very first step of building a fundamental understanding about protein structure that will lead to better drugs and better treatments.”

One of Dr. Hibbs’ earliest breakthroughs was detailing the structure of the neurotransmitter receptor for acetylcholine. His group developed an innovative approach using monoclonal antibody fragments to determine the



Guihua Yu, UT Austin

Named in honor of the long-time chair of Welch’s Scientific Advisory Board, the **\$100,000** Norman Hackerman Award in Chemical Research recognizes the accomplishments of chemical scientists in Texas who are early in their careers.



Welch Chair Doug Foshee (left), SAB Chair Cathy Murphy and President Adam Kuspa congratulate Ryan Hibbs (second from left) at the award luncheon.

structure of multiple nicotinic receptor subunit assemblies, the first time this had been done. Acetylcholine is an important family of proteins with many subtypes, from one that enables muscle contraction to others in the brain involved in addiction.

While continuing his work with nicotinic acetylcholine receptors, Dr. Hibbs began exploring another member of this superfamily, the GABA_A receptor, long known to be important in convulsant disorders, anxiety and as a target in mediating anesthesia. He solved the structure of the GABA_A receptor bound with some commonly used general anesthetics – a goal science had been pursuing for 50 years, given the receptor’s importance in therapeutics.

His team’s next step is to move from the structure of an individual protein to more complex systems that better mimic what is happening in the

brain. Dr. Hibbs is leveraging technology advances to combine antibody labeling with cryo-electron microscopy to purify receptors from native tissues found in the brain and image them at an atomic level. Another project, in conjunction with researchers in Germany, is seeking insight into



Doug Foshee presents Ryan Hibbs with the Hackerman Award.

autoimmune brain diseases.

“The next decade will witness an explosion in our understanding as we expand from looking at structures of individual proteins and start looking at structures of cells and pieces of cells at much higher resolution than we ever thought possible,” Dr. Hibbs said. “We will be creating an anatomical ‘map’ at an incredible level of detail and what we then can learn will be absolutely mind-blowing.”

Dr. Hibbs is the Effie Marie Cain Scholar in Medical Research and holds appointments in both UT Southwestern’s neuroscience and biophysics departments. Active as a teacher and mentor, he also has been a leader in combating racism and promoting diversity within both the neuroscience department and the university overall.

Guihua Yu, associate professor of materials science and mechanical engineering at UT Austin, was honored for his creation of materials for a



Guihua Yu shares his thoughts on receiving the Hackerman Award.

sustainable world, leveraging nanoscience and nanotechnology to address global issues in energy and water. His highly interdisciplinary team draws from chemistry, physics, materials science and engineering to develop a fundamental understanding of new materials with designed nano-architectures and then create large-scale assembly and integration strategies for applications in energy, environmental and sustainable technologies.

“My interest in science is driven by my deep love to explore the unknown – which so often leads to new technology,” Dr. Yu said.

“We work from the bottom up using nanoscience to create novel structures from the molecular/nanoscale level to make new materials with useful properties. This is a key benefit of the Welch support. It allows us to explore risky or ambitious goals, pushing science forward by continuing to tackle and explore the unknown over time.”

In a key breakthrough, Dr. Yu developed a new cost-effective, portable technology that uses gel-polymer hybrid materials for solar-powered water purification. With hydrophilic (attraction to water) qualities and semiconducting (solar-adsorbing) properties, the hydrogels – a network of polymer chains – can produce clean, safe drinking water from any source with record-breaking efficiencies, removing salt and other contaminants. The nanostructured gels work off ambient sunlight to produce significantly higher volumes of water



UT Austin officials joined Welch at the award luncheon: (from left) Doug Foshee, President Jay Hartzell, Executive Vice President and Provost Sharon Wood, Cathy Murphy, Adam Kuspa, Dr. Yu and Vice President for Research Dan Jaffe.

than traditional approaches.

In other recent research, Dr. Yu’s lab has created self-watering soil with super-moisture-absorbent hydrogels that pull water from air at night and slowly release it during the day to irrigate plants, an important development for sustainable agriculture.

Other research is aimed at discovering new phenomena and improving fundamental understanding of energy storage mechanisms for future-generation batteries. Dr. Yu works with metal sulfides and oxides – inorganic solids – to create self-assembled nanomaterials, taking a cue from how nature works to significantly improve energy performance.

His team has created a battery that combines the benefits of both solid-state and liquid batteries, without many of the drawbacks. The battery uses liquid metal-based electrodes that can remain liquefied at a temperature

of 20 degrees Celsius (68 degrees Fahrenheit), the lowest operating temperature ever recorded for a liquid-metal battery, and a significant improvement over the 240 degrees Celsius requirement of current versions.

Dr. Yu’s batteries are less expensive, charge faster, hold charge longer, are more environmentally friendly and can be potentially scaled from powering small handheld devices to energy networks. The team also recently discovered new storage mechanisms of nanoscale transitional metal particles useful for creating even faster-charging batteries.

With appointments in the Walker Department of Mechanical Engineering, the Texas Materials Institute and the UT Energy Institute, Dr. Yu has published more than 240 scientific articles in top journals and ranks among the most-cited researchers worldwide in both chemistry and materials science fields.

Conference on Chemical Research: Sculpting Light Provides Novel Tool for Biomolecular Research



W. E. Moerner, Stanford University, chaired the 2022 Welch research conference.

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For **65 years**,
The Welch Foundation
has hosted a research
conference which draws
leading scientists from
around the world.

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The Welch Foundation's annual research conference explored the use of "sculpted light" to sense, probe and control chemistry at the molecular level. The 65th conference, "Molecules and Sculpted Light," was held both in person and virtually October 24-25. Presenters shared their latest research into using novel light in new ways to do chemistry.

"This conference explored the many fascinating things that can happen to molecules when you pump and probe them with light in novel ways," said W. E. Moerner, conference chair, Welch Scientific Advisory Board member emeritus, and the Harry S. Mosher Professor of Chemistry and Professor, by courtesy, of Applied Physics at Stanford University. "Light is a fine scalpel that allows us to make, measure and learn about small objects at the nanoscale level – all without damaging the biomolecules we are

investigating. Since light has a long wavelength (hundreds of nanometers) compared to the size of molecules (a few nanometers), sculpting light provides ways to overcome this mismatch. Experts shared their current work in this fast-evolving area of chemical science.”

Dr. Moerner pioneered the detection of individual molecules using light more than 30 years ago. Today, scientists have built on this discovery with many exciting applications. For example, placing tiny metallic structures known as “nanoantennas” close to molecules and then exciting them with light allows researchers to strongly explore and/or change the molecule. By using sculpted light approaches, scientists are creating very efficient and sensitive optical sensors to detect pathogens and viruses in our cells at very early stages of disease.



Conference presenter Yoav Shechtman took advantage of the opportunity to catch up on advances by his fellow researchers.



Conference attendees network and share latest research advances with colleagues.

Conference presenters were divided into four broad research areas over the two days.

Kicking off the conference Monday, October 24, the “Single Molecules and Phase” session was chaired by discussion leader Matthew Lew, Washington University in St. Louis. The light emitted or scattered by a single molecule or tiny particle conveys information about its nanoscale environment, and using phase effects, new technologies sculpt this light to extract this information with incredible fidelity. Three presenters discussed advances in this area.

In the afternoon session, “Nanoantennas and Chemistry,” the speakers examined new insights into how small metal particles interact very strongly with light to enhance and modify the way the light interacts with nearby molecules, thus enabling energy and charge transfer as well as novel



Welch President Adam Kuspa visits with conference attendees.

catalysis. The discussion leader was Julie S. Biteen, University of Michigan.

Tuesday morning opened with “Molecular Plasmonics,” led by the University of Minnesota’s Renee R. Frontiera. Two scientists highlighted what happens when the electric and magnetic fields of light are sculpted by the plasmons of nanoscale metallic objects: fascinating hotspots appear with extreme imaging, electronic and energetic effects.

Wrapping up the conference, the last session focused on metamaterials, which provide a broad palette for manipulation and enhancement of light-molecule interactions, enabling new sensing and imaging technologies for biomedicine and the environment. Mikhail Kats, University of

Wisconsin-Madison, guided the discussion of “Metamaterials.”

For the first time, the conference featured a keynote speaker at the Monday luncheon, October 24.



Keynote speaker Peter Hotez with Welch Awardee Carolyn Bertozzi.

Peter Hotez, dean, National School of Tropical Medicine, Baylor College of Medicine, shared his insights on “COVID-19 Vaccines: Science vs Antiscience.” Dr. Hotez, who has provided an informed voice during the pandemic, discussed what we have learned – or not – from COVID-19.

On the conference’s second day, the 2022 recipient of the Welch Award in Chemistry and the Nobel Prize in Chemistry, Carolyn R. Bertozzi, director of Sarafan ChEM-H at Stanford University, discussed her latest research, “Therapeutic Opportunities in Glycoscience.”

A virtual poster session also debuted this year with awards available in each of the four categories: undergraduates, graduates, postdocs and laboratory heads. Posters were available online on the conference website and interested parties could schedule discussions with the presenters. Research ranged from climate-smart chemistry to biochemistry directed at several different diseases and from mechanochemistry to nanoscience. Matthew Jones of Rice University took first place with a \$2,500 prize in the laboratory heads category. Three trainees took home first through third places, respectively: Alaumy Joshi, Texas A&M University (\$2,500); Aman Agrawal, University of Houston (\$1,000); and Yigao Yuan, Rice (\$500).

Programs: Spurring Research, Educational Initiatives

“The Welch Foundation continued its mission to support knowledge-building research across the state in 2022,” said Welch President Adam Kuspa. “Increasing our research grant to \$100,000 annually for each of three years provides a financial underpinning to help our principal investigators manage their research projects while easing some of the strains from the current inflation cycle. We remain excited by the scope and scale of research across the state.”

RESEARCH GRANTS

Launched in 1954, the research grant program was the Foundation’s first. It provides support for fundamental research in chemistry by hundreds of full-time faculty members at Texas colleges and universities. The Welch funding helps foster nascent projects that can have difficulty qualifying for federal grants.

This year, \$17.3 million supported 345 three-year research grants, including 39 new proposals and 53 renewal projects, at 23 Texas institutions. From its inception, The Welch Foundation has contributed close to \$1.1 billion to chemical research, the majority of which went to research grants.



Welch research grants, which support principal investigators across Texas, were increased to \$100,000 annually for three years in 2022.

Starting in Welch’s fiscal year 2022 (September 1, 2021, to August 31, 2022), the research grant grew to \$100,000. The grant is awarded annually for three years and may be renewed based on the proposal submitted by the principal investigator.

A list of principal investigators receiving Welch Foundation grants during fiscal year 2022 begins on page 26. The listing includes researchers’ institutions and the titles of their

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The Welch Foundation
supports basic
research in
chemistry each year
through a range
of programs.
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research projects. The work of two of these principal investigators is highlighted starting on page 20.

DEPARTMENTAL RESEARCH GRANTS

Small- and medium-size colleges and universities often struggle to find the resources to provide student research opportunities despite the institutions' important role in science education. To help meet this need, The Welch Foundation launched a program in 1984 to provide funding to many of these schools with the goal of strengthening their chemistry programs.

Welch departmental grants allow the schools to offer research opportunities to students, support faculty work and enhance chemistry programs. The departments typically use Welch funding to provide scholarships or other monetary support for undergraduates and graduate students, purchase laboratory supplies and equipment, and underwrite student travel to scientific conferences.

Over the years, the Foundation has been informed of how the research experience helps to support and promote a sense of discovery and passion for scientific inquiry – enthusiasm and excitement that is difficult to create through book learning alone. For many students at these institutions, it is their first opportunity to conduct research themselves. Many students later go on to seek advanced degrees and careers in science and medicine.

Descriptions of how two colleges in Welch's departmental grant program,

East Texas Baptist University and Texas A&M International University, have leveraged those funds to enhance their educational missions can be found starting on page 18.

WELCH SUMMER SCHOLAR PROGRAM

The Welch Summer Scholar Program returned to in person in 2022. The five-week residential independent research experience welcomed 36 high school students from across the state to the five participating campuses: Texas Tech University, The University of Texas at Austin, The University of Texas at Arlington, The University of Texas at Dallas and University of Houston.

Working with faculty, the students participated in projects that reflect

the full scope of modern chemistry, including green chemical synthesis of important molecules, synthetic methodology for pesticide mitigation, enzyme chemistry and function, investigation of structure and function of disordered peptides, synthesis of novel materials for a broad variety of applications, chemical manipulation of lipids and membranes, and computational modeling of materials.

“On behalf of my fellow site directors, I can share how delighted we were to return to the in-person Welch Summer Scholars Program after two years of pandemic shut-downs and slow-downs,” said Lauren J. Webb, WSSP Administrator and professor of chemistry at UT Austin. “Our ‘Welchies’ were an enthusiastic and inspiring group of young people.”



Arianna Doss was part of the 2022 Welch Summer Scholar class, participating at UT Austin.

Students were enthusiastic about the program:

“The Welch Summer Scholar Program has truly been an unforgettable experience of a lifetime. ... The taste of college life and learning immense amounts of knowledge that would never occur anywhere else has been very rewarding, and I have formed unforgettable friendships and relationships with amazing people. Thank you for an incredible program!”
(University of Houston participant)

“I just want to say that the Welch Summer Scholars Program is more than just a chemistry research program. Sure, it was amazing to look at all the cool equipment and learn how to use it to run our research projects, but the main thing that I took away from WSSP is that you need to surround yourself with the right people. ... For any future Welch Scholars, I just want them to know that they will make a new family from this program, and they will change your life.” *(University of Texas at Arlington participant)*

“The Welch program was a transformative experience for me since I got to do original research. I learned a lot under [my mentor’s] tutelage and from the postdoctoral scholars in the lab. I covered an amazing amount of ground, reviewed many research papers, got to do hands-on lab experiments, present my work, and even write a paper. ... I would recommend this program to any high school student who enjoys

chemistry or is looking for a life-changing opportunity to get introduced to the field of professional research.” *(University of Texas at Austin participant)*

Because most students learn of the program via teachers, counselors and past recipients, WSSP continues to step up efforts to broaden participation to new schools and parts of the state. The effort paid off with participants coming from Amarillo, Nacogdoches, Wichita Falls and McAllen as well as the most populous areas; two students came from Title I high schools, those with a large population of low-income students.

WSSP also continued the program of weekly virtual seminars that was launched during the pandemic. Open to any interested person through UT Austin’s Zoom webinar platform, the summer lecture series featured nine speakers from around the state with strong records of mentorship and teaching as well as inspiring research in modern chemistry. Presenters included recent Norman Hackerman Award recipients Ilya Finkelstein, Guihua Yu and Delia Milliron.

“Our speakers were all notable for their ability to describe difficult subjects to a general audience in an engaging and inclusive manner,” Dr. Webb noted. “All talks were moderated by a graduate student from that speaker’s laboratory who answered questions in real time (through a chat function) that helped make the talks lively and productive for all participants.”

The past two years’ seminars remain available for viewing on the WSSP website. The seminars have proved popular so WSSP plans to continue the lecture series to complement the in-person experience and reach a broader audience.

WELCH CHAIRS

The Welch Foundation currently endows 49 chairs at 21 Texas universities. In 2022, The Robert A. Welch Chair in Science was established at the Baylor College of Medicine.

This support is designed to recruit and retain talented chemical researchers and teachers to Texas universities as well as strengthen the quality of higher education programs across the state. The Foundation provides ongoing research funding for chairholders, helping support graduate and postdoctoral students working with the professors.

Three scientists were named to Welch chairs: Stefan J. Link, Rice University, The Charles W. Duncan, Jr.-Welch Chair in Chemistry; Yehia Mechref, Texas Tech University, The Robert A. Welch Chair in Chemistry; and Damian Young, Baylor College of Medicine, The R. P. Doherty, Jr.-Welch Chair in Science.

Foundation Grants: Welch Funding Supports New Scientific Advances Across Texas

ALFRED ADDO-MENSAH
Departmental Grant
Texas A&M International University

Based in Laredo and serving a student body of 8,400, many of whom are Hispanic and first-generation college students, Texas A&M International University is now in its second year of a Welch departmental grant supporting its chemistry program.

“Welch funding is so important to our mission,”

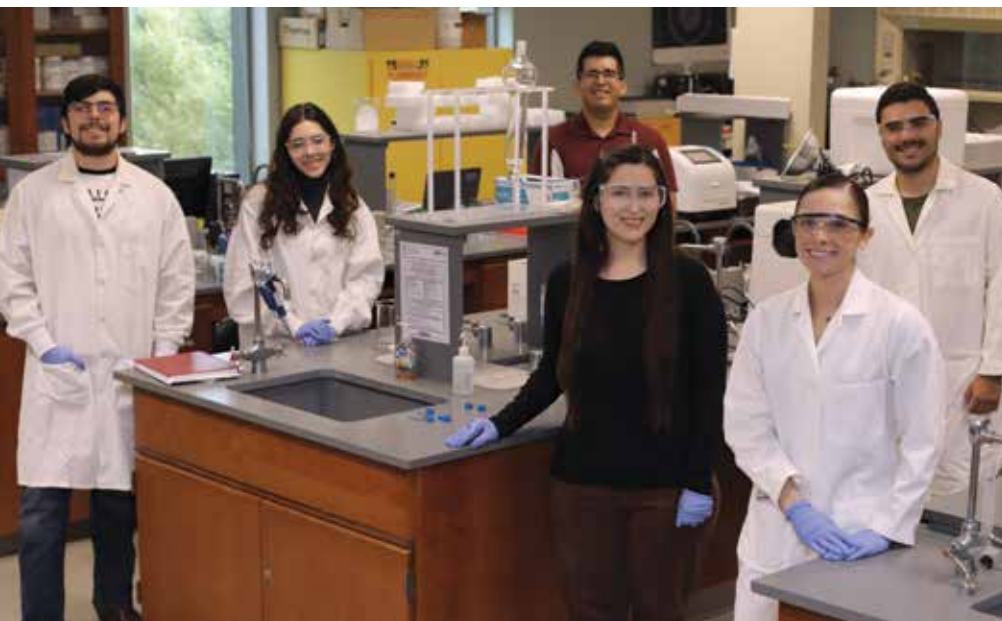
said Alfred Addo-Mensah, associate professor and administrator of the grant. “We had lost focus at one point, but we regrouped and reapplied, and are already seeing the impact.”

TAMIU offers an undergraduate degree in chemistry, and last year, seven of its students, including six women,

took part in the independent research program. They worked with six faculty in chemistry, organic chemistry, biochemistry, biology/chemistry, and materials science/engineering areas.

One student, for example, worked with a faculty member to design functional molecules to extract heparin. This work resulted in a paper in a peer-reviewed journal. Another worked with a petroleum engineering professor to analyze a new compound of crude oil, carbon dioxide and methane using gas chromatography-mass spectrometry (GC-MS). Participating students presented their work at four conferences.

Student success stories include one summer scholar who, after presenting her research involving photochemistry analysis at the spring American Chemical Society conference, was recruited into a doctoral program at Old Dominion University. Another received offers from four universities before selecting The University of Texas at Austin for his graduate studies. In total, four students went on to graduate school or industry positions in chemistry and medicine.



TAMIU leverages the Welch grant to provide hands-on research experience to its diverse student body.

“The Welch support allows us to provide small scholarships so students can work for six weeks, or longer, with a principal investigator. It gives them the opportunity to do research and gain the skills graduate schools are looking for,” Dr. Addo-Mensah said.

The Welch grant also helps the department maintain research equipment so that students can learn how to operate instrumentation.

“We serve a lot of women and minorities through our program, exposing them to new learning and career opportunities,” he added. “The Welch Foundation support goes a long way to make a generational impact.”

He added, “While we don’t have the ‘name’ of some other schools, the grant helps us offer students the chance to do research and be mentored. This helps bridge the educational gap and gain the qualities that make them attractive candidates for grad schools and industry.”

ZHIQIANG AN

*Welch Distinguished University Chair
in Chemistry
The University of Texas Health Science
Center at Houston*

Zhiqiang An focuses on academic drug discovery, both in his own research and as director of the Texas Therapeutics Institute (TTI) at UTHealth Houston.

After a 15-year career in the biotechnology and pharmaceutical industry, mostly at Merck, Dr. An joined McGovern Medical School at UTHealth Houston as TTI’s founding director. Established in 2009, the institute has attracted \$50 million in funding, published more than 150



Zhiqiang An researches antibodies to find potential new drugs.

articles in top-tier journals and filed 45 patents with 15 issued. TTI also has licensed 10 drug candidates, with five in clinical trials. Such contributions currently lead all U.S. academic labs.

Dr. An was a pioneer in researching antibodies for drug modality some 25 years ago. Today, half of the top 50 drugs use antibodies to combat diseases ranging from cancer and COVID-19 to Alzheimer’s and autoimmune diseases.

He and his collaborators have advanced five first-in-class drug candidates into human clinical trials for diseases including acute myeloid leukemia, breast cancer bone metastasis, solid tumor, spinal cord injury and COVID-19. Five additional antibody drug candidates are in preclinical development, including PRTH-101 which blocks T-cell exclusion in the tumor microenvironment.

“I am so excited by our team and our contributions to human health,” Dr. An said. “We anticipate that the next two years will see at least another 10 antibody drug candidates

targeting different diseases enter preclinical development.”

One focus of Dr. An’s lab is cancer, where his team has made progress developing targeted treatments that engineer antibody proteins to latch onto tumor cells and disrupt their growth. Another project is tackling Alzheimer’s. Recent work found that a tetra-variable domain antibody targeting the triggering receptor expressed on myeloid 2 (TREM2) – dubbed TREM2 TVD-Ig – reduced amyloid burden, eased neuron damage and alleviated cognitive decline in mouse models of Alzheimer’s disease.

“Antibody-based therapy is a viable drug modality for the treatment of Alzheimer’s disease,” Dr. An explained. “One of the major areas of focus at the Texas Therapeutics Institute is developing technologies to deliver antibody-based therapies across the blood-brain barrier for potential treatment of the disease.”

Dr. An credits The Welch Foundation as an important contributor to his lab and the institute’s success.

“Coming from industry, it has been so rewarding to work in academic research where our investigations into nature’s molecular mysteries points us in directions that can make a difference for society and improve health outcomes,” Dr. An said. “Welch support provides a critical underpinning for our lab and our ability to move into new areas quickly.”

JACINTA C. CONRAD

*Principal Investigator
University of Houston*

Jaci Conrad is fascinated by soft materials, such as inks, paints and coatings, which readily deform and exhibit unusual mechanics that are somewhere between those of solids and liquids. Her interests span surfaces and complex fluids, microbiology near interfaces, colloids in confinement and in flow, nanoparticles in transport and diagnostics for public health. She has found that the physics are often similar across systems.

With small particles, such as colloids, nanoparticles, bacteria, viruses and proteins, Dr. Conrad explores how they assemble and transport in fluids and near surfaces that confine, crowd or support them. For example, she

wants to understand how particles are transported into and move through very crowded fluids, which serve as models for cells. Insights gained here could help improve drug delivery and the understanding of other biological processes.

In other collaborative work, her team is using microfabrication and microscopy to investigate how bacteria move on, interact with and adhere to interfaces, and how to modify bacterial motility. This research could have applications for medical diagnostics, antifouling materials and bioremediation.

Her team also is using microfluidics and particle-tracking to develop assays to detect proteins, viruses and bacteria with the goal of creating ultrasensitive diagnostics for bioterrorism and public health.

The Welch grant supports her work

with glassy materials made of small particles, a difficult problem that has been intensely studied for decades.

“Because it has been such an outstanding challenge in fundamental science, it would be next to impossible to get funding if not for Welch,” Dr. Conrad said. “Glasses look like liquids structurally but behave mechanically like a solid. They relax cooperatively, depending on the interactions between particles. Understanding how this happens at the single-particle level will be illuminating for other glassy systems.”

Dr. Conrad uses an analogy to illustrate the collective relaxation of dense particulate materials. In a traffic jam, she says, you can’t move until the car in front of you does and then all the cars start to move together.

Welch support is “amazing,” she said. **“It allows us to do good science in one system and then, by looking for connections, it allows us to do good science in other areas as well.”**

Dr. Conrad jokes that her decision to pursue soft matter physics was spurred by toothpaste. She still vividly remembers her PhD advisor at Harvard discussing its unusual mechanics: When you squeeze the tube, it flows like a liquid, and then sits on your toothbrush like a solid.

“Welch has allowed me to build a body of very fundamental work and explore questions in ways we wouldn’t otherwise be able to,” she added. “I am so thankful.”



Jaci Conrad mentors her research team in the study of soft matter physics.

OLEG V. LARIONOV

*Robert A. Welch Distinguished University
Chair in Chemistry
The University of Texas at San Antonio*

Carbon-heteroatom bond reactions are fundamental in making many everyday items, from computers and cars to drugs and clothing. Oleg Larionov wants to replace the expensive and toxic reagents that catalyze these reactions with more sustainable and less expensive approaches.

“My motivation is looking to solve global problems at a fundamental level,” he said.

“There is no one solution, and we’ve made progress on a number of promising approaches.”

His research program merges catalysis, organoboron chemistry, photochemistry, synthesis of bioactive natural products and heterocyclic chemistry with the goal of developing new reactions, catalytic platforms and synthetic strategies that rapidly build up structural complexity with predictable regio- and stereocontrol.

In one focus area, Dr. Larionov has replaced the precious metals typically used as catalysts with energy from visible light to create previously unknown chemical reactions. Research in this field could lead to more efficient synthetic methods and expedite the discovery and development of new drugs to treat cancer and neurodegenerative and infectious diseases.

He also is experimenting with reactions that do not require additional inputs of either energy or catalysts



Oleg Larionov's lab focuses on creating more sustainable catalysts for heteroatoms and innovative reactions between compounds.

by identifying new ways compounds can react with each other. His team is working to develop innovative synthesis methods, focusing on organic substances that contain sulfur. These compounds play a critical role in drug discovery and materials science. Dr. Larionov and his team have successfully created a framework for chemists to produce organosulfur compounds more efficiently and with less chemical waste.

His team complements experimental research with computational studies using supercomputers to explore potential reactions and identify molecules to target. This has allowed the lab to identify important biological activity and set the stage for more efficient methods of delivering drugs to complex targets. For example, he has synthesized plant-based compounds that can lead to the development of

new cancer treatments, antibiotics and anti-inflammatory drugs.

“There are so many ways to use this new chemistry,” Dr. Larionov said. “We are just scratching the surface of discovering new reactions. And we can apply this approach to many other heteroatoms, such as oxygen, nitrogen, silicon and many others.”

He credits The Welch Foundation for helping jump-start his research program.

“Welch was very instrumental in launching this program when I first came to UTSA in 2010,” he said. “The Foundation provided my first funding and its continuous support has been extremely helpful in maintaining and developing the program into the broad research front we have now.”



Tom Runčevski hopes his modeling of Titan's microcosmos proves useful to NASA, which plans to launch a rover to Saturn's moon in 2027.

TOMČE RUNČEVSKI

*Principal Investigator
Southern Methodist University*

Tom Runčevski is interested in understanding the structure, properties and applications of solid-state molecular materials. Under this umbrella, his lab works in three major areas: engineering of physiologically active molecular materials, molecular reactivity under crystal- and nano-confinement, and molecular minerals on the surface of Titan. The last area – modeling the microcosmos of Saturn's icy moon Titan, which theoretically could support prebiotic life – was launched with Welch Foundation funding.

"We began trying to reproduce Titan's environment in a test tube shortly after I started my lab at SMU in 2018," Dr. Runčevski said.

"It was incredibly risky research, and it wouldn't have been possible without Welch support. After providing proof-of-concept, we landed additional funding from NSF in 2021."

There is an imminent need for this research: With its New Frontiers program, NASA intends to launch a rover to Titan in 2027 that should reach the Saturn's moon in the 2030s. Dr. Runčevski's work is developing a better understanding of the environment of what he calls "that very strange world." As the only place in the solar system (other than Earth), with a dense and chemically reactive atmosphere, Titan is an "organic lab on a huge scale," he says. His team develops models for putative molecular minerals expected to naturally occur

on Titan to study their thermodynamic and structural properties.

Dr. Runčevski is excited about his lab's most recent Titan research on nitriles, which he expects to publish in the second half of 2023. He plans to extend this research to other planetary bodies, such as Europa and Io, as well as molecular minerals and petroleum on Earth.

Another project explores using the confinement of molecules within a crystal lattice to provide a unique platform for the high-pressure synthesis of extended solids. This research is expected to lead to novel materials, such as functionalized graphene and 2D solids. Recently, his team achieved an all-solid-state synthesis of atomically precise polymer materials confined between inorganic crystalline layers.

Dr. Runčevski's lab also is engineering solid-state formulations of physiologically active materials, such as medicines, pesticides, fungicides, food and sport supplements, and dyes and pigments, among others. For example, many drugs and active pharmaceutical ingredients show low aqueous solubility that limits their bioavailability. He aims to create more soluble drug formulations with prolonged shelf-life.

With pesticides, the team is taking the opposite tack, aiming to formulate less-soluble pesticides that would deliver better results at lower volumes. The high solubility of current pesticide molecular materials leads to "washing" them from the crops to the soil, limiting their effectiveness and causing significant pollution.

DONALD B. SPENCER
*Departmental Grant
East Texas Baptist University*

The 2021-2022 academic year was the first for a Welch Foundation departmental grant to support undergraduate research at East Texas Baptist University in Marshall. The school typically has about 40 science majors and four or five pursuing a chemistry degree.

As ETBU is primarily a teaching university with substantial faculty class loads and little research funding, opportunities for hands-on lab experience had been limited at the school. But realizing the benefits of research for students, and energized by a generous grant from a former faculty member which paid for new instrumentation, ETBU applied for a Foundation grant and recruited four students into the program for the fall

2021 semester. Two students continued their projects in the spring.

“Welch funding has been a really good motivator to get individuals involved in research,” explained Don Spencer, program administrator and chemistry professor.

Faculty turnover of two of the three chemistry faculty posed another challenge. After recruiting new team members, including Daniel Bryant and Daniel Korir, the fall 2022 semester saw two students again involved in research.

“Ordinary lab curriculum is ‘canned,’ with expected outcomes,” Dr. Spencer said. “Research removes those certainties and brings the excitement of discovery – the joy and value of science. It also fosters independent thinking and provides an experience that is more reflective of what science is actually all about.”

Dr. Bryant, a synthetic chemist in his first year at ETBU, says it has been both challenging and rewarding to develop research projects that match student interests and that can be done without access to NMR instrumentation, a vital tool in his area.

“Most of our students have an interest in healthcare, so we have created a program to identify toxins in regional wastewater,” he said. “After determining what toxins to study and setting standard operating procedures, we will begin running samples to identify the prevalence of a type of phthalate widely used in cosmetics and other products.”

A second project, overseen by Dr. Korir, is focused on designing lipid nanoparticles using mushroom extract for biomedical applications, including treating fibrosis and lung injuries. The student designs, formulates and characterizes the nanoparticles with the goal of optimizing size, surface charge, stability, encapsulation efficiency and delivery.

Before the start of the academic year, students in the research program attend a week-long workshop to introduce the idea of independent scientific research, ground them in instrumentation and literature research, and determine a research direction for their projects.

“Our goal is to set the student up for success,” said Dr. Spencer. “With some experience under our belt, we have the framework to bring the research experience to more of our students – it has proven a great tool for both them and our faculty.”



With help from a Welch grant, undergraduates Rachel Jones and Brailino Santiago gain research experience at East Texas Baptist University.

Statements of Financial Position

AS OF AUGUST 31, 2022 AND 2021

	2022	2021
ASSETS		
CASH AND CASH EQUIVALENTS	\$ 3,646,386	\$ 33,870,414
INVESTMENTS	860,418,996	917,710,334
RECEIVABLES:		
Investment transactions	981,603	1,060,363
Interest and dividends	—	39,217
Other	885,686	898,084
Total receivables	1,867,289	1,997,664
OTHER ASSETS	976,849	1,105,386
TOTAL ASSETS	<u>\$ 866,909,520</u>	<u>\$ 954,683,798</u>
LIABILITIES AND NET ASSETS		
LIABILITIES:		
Unpaid grants	\$ 90,132,264	\$ 103,553,441
Current and deferred federal excise tax payable	2,630,485	4,654,404
Accounts payable and other	294,159	255,997
Total liabilities	93,056,908	108,463,842
NET ASSETS	773,852,612	846,219,956
TOTAL LIABILITIES AND NET ASSETS	<u>\$ 866,909,520</u>	<u>\$ 954,683,798</u>

Statements of Activities

AS OF AUGUST 31, 2022 AND 2021

	2022	2021
REVENUES, INCOME, AND GAINS (LOSSES):		
Interest and dividends	\$ 6,150,246	\$ 3,868,937
Oil and gas royalties and other	9,027,169	3,384,446
Net realized gains on sales of investments	43,017,760	54,143,024
Unrealized (depreciation) appreciation of investments	(98,553,299)	182,202,713
Unrealized depreciation of other assets	(58,214)	(16,739)
Investment management expenses	(3,523,414)	(3,526,151)
Federal excise tax provision	(1,230,209)	(539,176)
Total revenues, income, and gains	(45,169,961)	239,517,054
EXPENSES:		
Grants approved, net	24,822,647	23,115,404
Grants administration	2,813,382	3,141,221
General and administrative	1,717,487	1,296,910
Total expenses	29,353,516	27,553,535
DEFERRED FEDERAL EXCISE TAX BENEFIT (PROVISION) ON UNREALIZED CAPITAL GAINS	2,156,133	(2,840,620)
CHANGE IN NET ASSETS	(72,367,344)	209,122,899
NET ASSETS, beginning of year	846,219,956	637,097,057
NET ASSETS, end of year	\$ 773,852,612	\$ 846,219,956

For the Foundation's complete audited financial statements, please visit www.welch1.org.

Principal Investigators

The Welch Foundation supported **345** active research grants at **23** institutions in 2022.

PRINCIPAL INVESTIGATOR	INSTITUTION	TITLE OF RESEARCH
Girish S. Agarwal	<i>Texas A&M University</i>	Correlated Super-Resolution and Supersensitive Total Internal Reflection Fluorescence Microscopy with Structured Classical and Quantum Illumination.
Michalis Agathocleous	<i>The University of Texas Southwestern Medical Center</i>	The <i>In Vivo</i> Requirement and Cell Type Specificity of the Citric Acid Cycle
Esra Akbay	<i>The University of Texas Southwestern Medical Center</i>	Targeting Arginase Enzyme Activity to Restore Arginine for T Cell Function in the Tumor Microenvironment
Hal S. Alper	<i>The University of Texas at Austin</i>	Biochemical Evaluation of Furan-Fatty Acid Biosynthesis and Production
Neal M. Alto	<i>The University of Texas Southwestern Medical Center</i>	Post-Translational Modification of Host Enzymes by Bacterial Effector Proteins
Oliviero Andreussi	<i>University of North Texas</i>	Modeling Solvation-Driven Rare-Events: From Drug Design to Protein Folding
Mauricio Antunes	<i>University of North Texas</i>	Establishing the Biochemical Determinants of microRNA Long-Distance Mobility in Plants
Xiao-chen Bai	<i>The University of Texas Southwestern Medical Center</i>	Structural Insights into the Activation Mechanisms of pH-Sensitive Insulin Receptor-Related Receptor (IRR)
Carlos R. Baiz	<i>The University of Texas at Austin</i>	Studies in Biophysical Chemistry: Applications of Ultrafast Infrared Spectroscopy
Lane Baker	<i>Texas A&M University</i>	Quantifying Single-Entity Electrocatalysts
Edoardo Baldini	<i>The University of Texas at Austin</i>	Mapping Vibrational Couplings in Two-Dimensional Semiconductors
Kenneth J. Balkus, Jr.	<i>The University of Texas at Dallas</i>	Zeolite Encapsulated Metal Complexes
Zachary T. Ball	<i>Rice University</i>	New Strategies for Catalytic Bond Formations
Laura A. Banaszynski	<i>The University of Texas Southwestern Medical Center</i>	Chromatin-Based Mechanisms of Gene Activation
Sarbajit Banerjee	<i>Texas A&M University</i>	Anion Intercalation as a Means of Dynamically Reconfiguring Electronic Structure in Metastable Solids
Jiming Bao	<i>University of Houston</i>	Correlating Photocatalytic and Photoelectrochemical Activity of Cobalt Oxides with Dynamics of Photo-Excited Electrons and Holes
David P. Barondeau	<i>Texas A&M University</i>	Elucidating the mechanism of Fe-S cluster biosynthesis with time-resolved native mass spectrometry

PRINCIPAL INVESTIGATOR	INSTITUTION	TITLE OF RESEARCH
Jeffrey E. Barrick	<i>The University of Texas at Austin</i>	Chemical Specificity of DNA Uptake by Naturally Competent Bacteria
Bonnie Bartel	<i>Rice University</i>	Novel Peroxisomal Processes in Plants
Brian Belardi	<i>The University of Texas at Austin</i>	Probing Collagen Glycosylation: Synthesis, Self-Assembly, and Detection
Doran I.G. Bennett	<i>Southern Methodist University</i>	Mesoscale Quantum Dynamics in New Semiconductor Materials
Matthew R. Bennett	<i>Rice University</i>	The Role of Protein/DNA Interactions in the Kinetics of Biochemical Networks
Ricardo A. Bernal	<i>The University of Texas at El Paso</i>	High Resolution Cryo-EM Reconstructions of the Heat Shock Protein 60 and its Conformational Intermediates
Eric R. Bittner	<i>University of Houston</i>	Many-body Excitation Dynamics in Molecular Solids
Paul Blount	<i>The University of Texas Southwestern Medical Center</i>	Determining Protein-Lipid and Protein-Protein Interactions for a Channel Involved in Mechanosensing
Joan F. Brennecke	<i>The University of Texas at Austin</i>	Ion Dissociation in Ionic Liquids and Its Impact on Physical Properties and Phase Behavior
Robert Brenner	<i>The University of Texas Health Science Center at San Antonio</i>	Shedding Light on Endoplasmic and Sarcoplasmic Reticulum Voltage Changes During Calcium Signaling
Jakoah Brgoch	<i>University of Houston</i>	Synthesis of Gold Compounds with Unusual Oxidation States and Metalloaromaticity
Jennifer S. Brodbelt	<i>The University of Texas at Austin</i>	Dynamic Structures of Macromolecules in the Gas Phase
Maurice Brookhart	<i>University of Houston</i>	Pd(II)- and Ni(II)-Catalyzed Olefin Polymerizations and Copolymerizations
Shawn C. Burgess	<i>The University of Texas Southwestern Medical Center</i>	Dysregulation of Intermediary Metabolism During Disease
Cassandra Callmann	<i>The University of Texas at Austin</i>	Carbohydrate-Polymer Conjugates as New Chemical Biology Tools and Biomimetic Scaffolds
Can Cenic	<i>The University of Texas at Austin</i>	Transcriptome-Wide Measurement of Translation Using a Novel On-Chip Isotachophoresis Approach
Maria Chahrour	<i>The University of Texas Southwestern Medical Center</i>	Decoding Social Communication Networks through Forward Genetics
Julia Chan	<i>Baylor University</i>	Unravelling the Growth of Quantum Materials
Walter G. Chapman	<i>Rice University</i>	Structure and Properties of Complex Fluids: Phase Behavior and Stimuli Response of Soft Materials
James Chappell	<i>Rice University</i>	Activating Total Synthesis of Natural Products in Diverse Bacterial Species
James Chelikowsky	<i>The University of Texas at Austin</i>	New Computational Methods for Molecular Fingerprinting of Complex Hydrocarbon Mixtures
Banglin Chen	<i>The University of Texas at San Antonio</i>	Porous Mixed-Metal-Organic Frameworks for Recognition of Small Gas Molecules
Zheng Chen	<i>The University of Texas Health Science Center at Houston</i>	Identification of Endogenous ROR Ligands as Modulators of Aging Clock and Physiology

PRINCIPAL INVESTIGATOR	INSTITUTION	TITLE OF RESEARCH
Zhijian J. Chen	<i>The University of Texas Southwestern Medical Center</i>	Regulation of NF-kappB by Liquid-Liquid Phase Separation
Kwan H. Cheng	<i>Trinity University</i>	Understanding Molecular Mechanisms of Amyloid Diseases from Multiscale Simulations of Early Aggregation of Disordered Protein on Lipid Nanodomains
Jae-Hyun Cho	<i>Texas A&M University</i>	Biophysical Bases of Evading Host Innate Immune Responses by Pandemic and Seasonal Influenza Viruses
Yuh Min Chook	<i>The University of Texas Southwestern Medical Center</i>	Structural and Biochemical studies of KaryopherinB2: Understanding Defects in Neurodevelopment Diseases and Development of a PY-NLS Prediction Method Mechanisms of Importin 8-Mediated Nuclear Import
Melanie H. Cobb	<i>The University of Texas Southwestern Medical Center</i>	Regulatory and Catalytic Properties of MAP Kinase Cascades
James J. Collins III	<i>The University of Texas Southwestern Medical Center</i>	Regulation of Parasite Reproduction by a Non-Ribosomal Peptide
Robert J. Comito	<i>University of Houston</i>	Main Group Catalysts for Advanced and Sustainable Polymers
Maralice Conacci-Sorrell	<i>The University of Texas Southwestern Medical Center</i>	Novel Roles of the Tryptophan Catabolite Kynurenine in Signal Transduction
Qian Cong	<i>The University of Texas Southwestern Medical Center</i>	Identification of New Regulatory Proteins for Enzymes in Human Pathogens
Jacinta C. Conrad	<i>University of Houston</i>	Dynamics in Deeply Supercooled Nanoparticle Liquids with Attractive or Anisotropic Interactions
Lydia M. Contreras	<i>The University of Texas at Austin</i>	<i>In vivo</i> Structural Characterization of Catalytic and Regulatory RNAs
Christina B. Cooley	<i>Trinity University</i>	Fluorogenic Reversible Addition-Fragmentation Chain-Transfer Polymerization for Biomolecular Detection
David R. Corey	<i>The University of Texas Southwestern Medical Center</i>	Recognition of Cellular Targets by Synthetic Nucleic Acids
Thomas R. Cundari and Mary E. Anderson	<i>University of North Texas</i>	Hydridic Activation of Methane
Jenee D. Cyran	<i>Baylor University</i>	Elucidating Sunlight Driven Chemical Processes at Aqueous Interfaces
Sheena D'Arcy	<i>The University of Texas at Dallas</i>	A Novel HDX Workflow to Study Histone Dynamics in Multi-nucleosome Systems
Pengcheng Dai	<i>Rice University</i>	Transport, Magnetic, and Neutron Scattering Studies of Quantum Materials
Kevin N. Dalby	<i>The University of Texas at Austin</i>	Inhibiting a Mechanosensor for Cancer Therapy
Weiwei Dang	<i>Baylor College of Medicine</i>	Regulation of Telomere Function Through Lysine Methylation in Telomere Shelterin Complex
Gaudenz Danuser	<i>The University of Texas Southwestern Medical Center</i>	Intersection of Cell Morphology and Metabolism in Drug Resistance of Melanoma
Donald J. Darensbourg	<i>Texas A&M University</i>	Reactivity Studies of Metal Catalyzed Production of Polycarbonates from Novel Oxiranes and Carbon Dioxide

PRINCIPAL INVESTIGATOR	INSTITUTION	TITLE OF RESEARCH
Marcetta Y. Darensbourg	<i>Texas A&M University</i>	Paradigms for Redox-Active Ligands in Bi- and Polymetallic Complexes
Jef K. De Brabander	<i>The University of Texas Southwestern Medical Center</i>	Synthesis and Chemical Biology of Bioactive Small Molecules
Marcos De Moraes	<i>Rice University</i>	Functional Characterization of Bacterial Deaminase Toxins and Their Use as Genome Editing Tools
Nicole J. De Nisco	<i>The University of Texas at Dallas</i>	Glycosaminoglycan Utilization and Metabolism by the Microbiota of the Urogenital Tract
H. V. Rasika Dias	<i>The University of Texas at Arlington</i>	Metal Complexes of Highly Fluorinated Ligands
Loi H. Do	<i>University of Houston</i>	Molecular Engineering of the Second Coordination Sphere for Controlled Olefin Polymerization Catalysis
Sheel C. Dodani	<i>The University of Texas at Dallas</i>	Harnessing the Plasticity of Anion-Binding Proteins to Engineer Genetically Encoded Fluorescent Indicators and Integrators
Peter M. Douglas	<i>The University of Texas Southwestern Medical Center</i>	Intracellular Lipid Surveillance via Nuclear Hormone Receptor Sequestration by RAB GTPase Geranylgeranylation
Michael C. Downer	<i>The University of Texas at Austin</i>	Femtosecond Optical Probes of Nano-Interface Chemistry
Michael P. Doyle	<i>The University of Texas at San Antonio</i>	Challenging Selective Chemical Reactions of Diazo Compounds
Livia Schiavinato Eberlin	<i>Baylor College of Medicine</i>	Understanding Molecular Extraction and Ionization Mechanisms in Solvent-Based Ambient Ionization Mass Spectrometry
Ron Elber	<i>The University of Texas at Austin</i>	Rafts and Biological Membranes
Andrew D. Ellington	<i>The University of Texas at Austin</i>	Machine Learning for Improving Protein Stability and Function
Donglei L. Fan	<i>The University of Texas at Austin</i>	Innovative Mechanism for the Synthesis of 3-D Nanosuperstructures by Electrochemical Reactions
Lei Fang	<i>Texas A&M University</i>	Synthesis, Coordination Chemistry, and Catalysis of Fully Fused Polypyridine Ligands
Walter L. Fast	<i>The University of Texas at Austin</i>	Chemical Probes of Biological Catalysts
Josephine Ferreon	<i>Baylor College of Medicine</i>	Disordered Protein Condensates as Novel Nanomaterials
Michael Findlater	<i>Texas Tech University</i>	Base-Metal Catalyzed Transformations
Ilya J. Finkelstein	<i>The University of Texas at Austin</i>	Massively Parallel Peptide Interaction Mapping on a Repurposed Next-Generation DNA Sequencer
Skye Fortier	<i>The University of Texas at El Paso</i>	Uranium-Arenes as New Actinide Platforms
Frank W. Foss, Jr.	<i>The University of Texas at Arlington</i>	Ion Binding, Mobility, and Single Molecule Fluorescence Sensing at Molecularly Designed Gas-Solid Interfaces
Matthew S. Foster	<i>Rice University</i>	Fractal Mechanisms of Coherent Dynamics in Complex Quantum Materials
Doug E. Frantz	<i>The University of Texas at San Antonio</i>	New Catalytic Methods Towards the Synthesis of Allenes

PRINCIPAL INVESTIGATOR	INSTITUTION	TITLE OF RESEARCH
Kendra K. Frederick	<i>The University of Texas Southwestern Medical Center</i>	In-Vivo Structural Biology for Protein-Folding Diseases
Benny D. Freeman	<i>The University of Texas at Austin</i>	Fundamental Experimental and Modelling Study of Ion and Water Transport in Polymeric Double Network Ion Exchange Membranes
Masaya Fujita	<i>University of Houston</i>	Understanding the Functional Roles of Multiple Kinases Controlling a Complex Network of Chemical Processes
François P. Gabbaï	<i>Texas A&M University</i>	Tellurium (IV) Lewis Acids for the Complexation, Sensing, and Shuttling of Anions
Matthieu G. Gagnon	<i>The University of Texas Medical Branch</i>	Structural Studies of the Chemical Interactions During Non-Canonical Reading of the Genetic Code
Elyssia S. Gallagher	<i>Baylor University</i>	Examining the Effects of Metal Ions on Carbohydrate Structure During In-Electrospray H/D Exchange: A Fundamental Study
Don B. Gammon	<i>The University of Texas Southwestern Medical Center</i>	Biochemical Characterization of an Evolutionarily-Conserved Host Antiviral Complex Using Viral Antagonists
Venkat Ganesan	<i>The University of Texas at Austin</i>	Fundamental Studies of Self-Assembly in Mixtures of Organic and Inorganic Molecules
Xue Gao	<i>Rice University</i>	Mechanistic Study of the Stereochemically Controlled Biosynthesis of Fungal Natural Products
Yang Gao	<i>Rice University</i>	Investigating the Catalytic Mechanisms of Mg ²⁺ -Dependent Enzymes with Time-Resolved Crystallography
Jeremiah J. Gassensmith	<i>The University of Texas at Dallas</i>	Remote Control Over Protein-Viral Nanoparticle Dynamics in Complex Environments
Haibo Ge	<i>Texas Tech University</i>	Catalytic Functionalization of Unsaturated Hydrocarbons
Feliciano Giustino	<i>The University of Texas at Austin</i>	Designer Perovskites for Light Harvesting and Light Emission
John A. Gladysz	<i>Texas A&M University</i>	Werner Complexes as “Organocatalysts”
Margaret E. Glasner	<i>Texas A&M University</i>	Role of Underground Metabolism in the Evolution of New Metabolic Pathways
Vishal M. Gohil	<i>Texas A&M University</i>	Phospholipid-Protein Interactions in Mitochondrial Bioenergetics
Elizabeth J. Goldsmith	<i>The University of Texas Southwestern Medical Center</i>	Isoform Specific Osmotic Activation and Chloride Inhibition of WNKs
John B. Goodenough	<i>The University of Texas at Austin</i>	Influence of Counter Cation in Mixed-Metal Oxides
Kayla N. Green	<i>Texas Christian University</i>	Building Better Molecules to Target Oxidative Stress
Nick V. Grishin	<i>The University of Texas Southwestern Medical Center</i>	Harvesting unique chemistries through genomic sequencing and structure prediction.
Qing Gu	<i>The University of Texas at Dallas</i>	Super-Resolution Chemical Imaging Microscopy with Perovskite Gain-Assisted Hyperbolic Metamaterials
Yogesh Gupta	<i>The University of Texas Health Science Center at San Antonio</i>	Covalent Nucleic Acid Modifications in DNA Repair and Innate Immune Response

PRINCIPAL INVESTIGATOR	INSTITUTION	TITLE OF RESEARCH
Anna-Karin Gustavsson	<i>Rice University</i>	Binding Dynamics and Nanoscale Architecture of CaMKII-Actin Network Reorganization at the Single-Molecule Level
Osvaldo Gutierrez	<i>Texas A&M University</i>	Unraveling the Mechanistic Complexity of Multicomponent Nickel-Catalyzed Dicarbofunctionalization of Unactivated Alkenes
Naomi J. Halas	<i>Rice University</i>	Nanoparticle growth and surface chemistry to enhance chemical reactivities
P. Shiv Halasyamani	<i>University of Houston</i>	New Multiferroic Mixed-Metal Fluorides: Synthesis, Crystal Growth, and Characterization
Michael B. Hall	<i>Texas A&M University</i>	Computational Chemistry on Transition Metal Systems
Yimo Han	<i>Rice University</i>	Investigation of the Structural Dynamics of Voltage-Responsive Membrane Proteins
Eva Harth	<i>University of Houston</i>	Advanced Nanostructured Plastics and Networks by Engaging Multiple Polymerization Pathways
Graeme Henkelman	<i>The University of Texas at Austin</i>	Design of Materials for Energy Conversion and Storage
W. Mike Henne	<i>The University of Texas Southwestern Medical Center</i>	Mechanisms of LD Sterol Organization and LD-Lysosome Inter-Organelle Trafficking
Ryan E. Hibbs	<i>The University of Texas Southwestern Medical Center</i>	Structural Principles of Inhibitory Neurotransmitter Receptor Modulation
Lea Hildebrandt Ruiz	<i>The University of Texas at Austin</i>	Atmospheric Chlorine Oxidation Chemistry: Effects of Photolysis, Relative Humidity and Precursors
Christian B. Hilty	<i>Texas A&M University</i>	Mechanisms of Graphene Based Single Site Catalysts Determined by Hyperpolarized NMR
Gary Hon	<i>The University of Texas Southwestern Medical Center</i>	Mechanisms of Combinatorial Enhancer Function on Bistable Expression States
Lora V. Hooper	<i>The University of Texas Southwestern Medical Center</i>	Biochemical Studies of Small Proline-Rich Proteins, A New Class of Endogenous Antibiotics
Gerta Hoxhaj	<i>The University of Texas Southwestern Medical Center</i>	Regulation of NADP ⁺ Biosynthesis by Oxidative Stress And Its Role In Tumorigenesis
Todd W. Hudnall	<i>Texas State University</i>	Diborylcarbenes: A Decades Old Search for Unprecedented Electrophilic Carbenes
Kami L. Hull	<i>The University of Texas at Austin</i>	Cu-Catalyzed Carboamination of Olefins
Simon M. Humphrey	<i>The University of Texas at Austin</i>	Discovery of Metal-Organic Frameworks with Previously Inaccessible Network Types and Unique Solid-State Characteristics
Kristin M. Hutchins	<i>Texas Tech University</i>	Mechanochemistry as a Green Synthetic and Crystallization Tool for Drug Development
Oleg A. Igoshin	<i>Rice University</i>	Non-equilibrium mechanisms controlling the selectivity of biochemical information processing
Andrea Isella	<i>Rice University</i>	Investigating the Origin of the Chemistry of Planets
Dmitri N. Ivanov	<i>The University of Texas Health Science Center at San Antonio</i>	Deciphering the Role of dNTP Metabolism in Antiviral Immunity, DNA Repair and Cell Cycle Control

PRINCIPAL INVESTIGATOR	INSTITUTION	TITLE OF RESEARCH
Brent L. Iverson	<i>The University of Texas at Austin</i>	Dynamic Supramolecular Solids
Junji Iwahara	<i>The University of Texas Medical Branch</i>	Biomolecular Electrostatics by NMR Spectroscopy
Khuloud Jaqaman	<i>The University of Texas Southwestern Medical Center</i>	In situ Measurement of Inter-Receptor Interaction Kinetics on the Cell Surface
Jenna L. Jewell	<i>The University of Texas Southwestern Medical Center</i>	GPCR Signaling and mTORC1 Inhibition
Jean X. Jiang	<i>The University of Texas Health Science Center at San Antonio</i>	Modulating Hemichannel Activities Using Targeting Antibodies
Jin Jiang	<i>The University of Texas Southwestern Medical Center</i>	A Non-Canonical Role of Hippo Signaling in Cancer
Youxing Jiang	<i>The University of Texas Southwestern Medical Center</i>	Structural Mechanisms of Gating and Selectivity of Lysosomal Cation Channels
Lukasz A. Joachimiak	<i>The University of Texas Southwestern Medical Center</i>	Role of Local Structure in Modulating Assembly of Intrinsically Disordered Proteins
Keith P. Johnston	<i>The University of Texas at Austin</i>	Reversible Clusters of Nanoparticles in Crowded Environments and at Interfaces
Karl M. Kadish	<i>University of Houston</i>	Electrochemistry and Spectroelectrochemistry of Compounds with Multiple Redox Centers
Alamgir Karim	<i>University of Houston</i>	Understanding stabilization and molecular transport of RNA and charged polymer across membraneless coacervate droplets
Adrian T. Keatinge-Clay	<i>The University of Texas at Austin</i>	Engineering and Harnessing Tetraketide Synthases
Ben K. Keitz	<i>The University of Texas at Austin</i>	Evolving Synthetic Reactions Through Extracellular Electron Transfer
Jennifer J. Kohler	<i>The University of Texas Southwestern Medical Center</i>	IL-22-Induced Intestinal Glycosylation
Michael Kolodrubetz	<i>The University of Texas at Dallas</i>	Computational Path Integral Approaches to Non-Equilibrium Quantum Systems
Anatoly B. Kolomeisky	<i>Rice University</i>	Theoretical Understanding of the Mechanisms of Chemical Processes on Heterogeneous Catalysts
Junichiro Kono	<i>Rice University</i>	Optical, Infrared and Terahertz Spectroscopy of Low-Dimensional Materials
Genevieve Konopka	<i>The University of Texas Southwestern Medical Center</i>	Chemical Regulation of Human Brain Cell Type Specification
Anna Konovalova	<i>The University of Texas Health Science Center at Houston</i>	Mechanism of Signal Transduction Across the Bacterial Cell Envelope
Brian A. Korgel	<i>The University of Texas at Austin</i>	NIR II Light-Emitting Nanocrystal Quantum Dots
László Kürti	<i>Rice University</i>	New Paradigms in Heterocyclic Chemistry
Arthur Laganowsky	<i>Texas A&M University</i>	Molecular Assemblies of Oncogenic RAS Mutants with SOS and BRAF
Helen C. Lai	<i>The University of Texas Southwestern Medical Center</i>	Molecular Interactions of the Prdm12 Transcription Factor Implicated in Painlessness

PRINCIPAL INVESTIGATOR	INSTITUTION	TITLE OF RESEARCH
Keji Lai	<i>The University of Texas at Austin</i>	Nanoscale Electrical Probing of Chemical Reactions in Layered Materials
Alan M. Lambowitz	<i>The University of Texas at Austin</i>	Bacterial Reverse Transcriptases
Christy F. Landes	<i>Rice University</i>	Orientational Effects on Protein Dynamics at Chromatographic Supports from a Single Analyte Perspective
T. Randall Lee	<i>University of Houston</i>	Xanthate, Dithiocarbamate, and Dithiocarboxylate Salts as Nanoscale Coatings and Inks for Soft Lithographic Patterning
Guigen Li	<i>Texas Tech University</i>	Multi-Layer 3D Chirality and its Asymmetric Catalytic Assembly
Pingwei Li	<i>Texas A&M University</i>	The Structural Basis of Lipopolysaccharide Sensing by the Caspase-4 Inflammasome
Wenbo Li	<i>The University of Texas Health Science Center at Houston</i>	Elucidating the Role of RNA m6A Methylation in Enhancer and Chromatin Control
Xiaochun Li	<i>The University of Texas Southwestern Medical Center</i>	Structure and Function of Sterol-Sensing Domains in Membrane Proteins
Xiaoqin (Elaine) Li	<i>The University of Texas at Austin</i>	Mediating Exciton Dynamics and Energy Transport via a High-Q Cavity
Ruibin Liang	<i>Texas Tech University</i>	Multiscale Simulation of Molecular Photoswitches in Biological Systems
David S. Libich	<i>The University of Texas Health Science Center at San Antonio</i>	The Structural Biology of EWSR1 and EWS-FLI1 in Biomolecular Condensates
Erez A. Lieberman	<i>Baylor College of Medicine</i>	Identifying and Controlling New Factors that Facilitate Chromatin Loop Formation
Jung-Fu Lin	<i>The University of Texas at Austin</i>	Fixation of Single-Bonded Nitrogen Compounds
Paul A. Lindahl	<i>Texas A&M University</i>	Low-Molecular-Mass Zinc, Copper, and Heme Trafficking-Complexes in Biological Cells
Brian M. Lindley	<i>Baylor University</i>	The Development of Diborylamide Ligand Platforms for Electrochemical CO ₂ Reduction
Alexander R. Lippert	<i>Southern Methodist University</i>	Single Molecule Localization Lithography
Glen Liszczak	<i>The University of Texas Southwestern Medical Center</i>	Regulation and Function of DNA Damage-Induced Chromatin ADP-Ribosylation
Aimin Liu	<i>The University of Texas at San Antonio</i>	Characterization of 2-Oxindole Forming Heme Enzyme in the Biosynthetic Pathway of Maremycins
Hung-wen Liu	<i>The University of Texas at Austin</i>	Mechanistic Studies of Novel Enzymes
Wenshe Liu	<i>Texas A&M University</i>	The Identification and Characterization of SARS-CoV-2 Main Protease Inhibitors with Novel Chemical Entities
Yi Liu	<i>The University of Texas Southwestern Medical Center</i>	A Code Within the Code: Codon Usage Regulates Co-Translational Protein Folding
Yuan Yue Liu	<i>The University of Texas at Austin</i>	First-Principles Simulations of Atomic-level Kinetics of Electrocatalysis at Solid-Water Interface

PRINCIPAL INVESTIGATOR	INSTITUTION	TITLE OF RESEARCH
Jun Lou	<i>Rice University</i>	Synthesis, Characterization and Applications of Ultrathin Crystals
George J. Lu	<i>Rice University</i>	Chaperone-Assisted Assembly of Gas-Filled Protein Nanostructures
Vassiliy Lubchenko	<i>University of Houston</i>	Omega-Phases and the Puzzles of Solid-to-Solid Transformations
Lloyd L. Lumata	<i>The University of Texas at Dallas</i>	Hyperpolarized Magnetic Resonance Tracking of the Altered Biochemistry in Non-Alcoholic Fatty Liver Disease
Weibo Luo	<i>The University of Texas Southwestern Medical Center</i>	Novel Role of Ubiquitination in Hypoxia-Inducible Factor 1 Transcriptional Activity
Xuelian Luo	<i>The University of Texas Southwestern Medical Center</i>	Mechanistic and Structural Analyses of the Hippo Pathway
Jodie Lutkenhaus	<i>Texas A&M University</i>	In Situ Redox Observations of Conjugated Polymers for Organic Electrochemical Transistors
Peter Ly	<i>The University of Texas Southwestern Medical Center</i>	Mutagenic Chromosomal Rearrangements from Diverse DNA Repair Pathways
Nathaniel A. Lynd	<i>The University of Texas at Austin</i>	Functional Epoxide Photopolymerization: Fundamentals and Materials Synthesis
Jianpeng Ma	<i>Baylor College of Medicine</i>	Exploring the Chemical Forces Stabilizing Human Polycomb Repressive Complex 2
Allan H. MacDonald	<i>The University of Texas at Austin</i>	Spintronics in Two-Dimensional Magnetic Materials
Corina Maeder	<i>Trinity University</i>	Implication of an Uncharacterized Protein Auto-Cleavage in Spliceosome Assembly Regulation
Dmitrii E. Makarov	<i>The University of Texas at Austin</i>	New Methods for Predicting the Kinetics of Complex Molecular Rearrangements
David J. Mangelsdorf	<i>The University of Texas Southwestern Medical Center</i>	Targeting the DAF-12 Signaling Pathway in Parasitic Nematodes
Filippo Mangolini	<i>The University of Texas at Austin</i>	Encapsulation of Lubricious Ionic Liquids within Polymer Nanoshells
Arumugam Manthiram	<i>The University of Texas at Austin</i>	Synthesis and Properties of Transition Metal Oxides with Unusual Valence States
Amanda B. Marciel	<i>Rice University</i>	Synthesis of Polyampholytes via Protein Engineering to Decode Complex Solution Behavior
Edward M. Marcotte	<i>The University of Texas at Austin</i>	A Mass Spectrometry-Based Map of Protein Assemblies in the Brain
Caleb D. Martin	<i>Baylor University</i>	Investigating the Chemistry of the 9-Borataphenanthrene Anion
Stephen F. Martin	<i>The University of Texas at Austin</i>	Synthesis of Biologically Relevant Molecules
Elisabeth D. Martinez	<i>The University of Texas Southwestern Medical Center</i>	Inhibitors of Jumonji Enzymes to Reverse Pathological Heart Remodeling
Andreas Matouschek	<i>The University of Texas at Austin</i>	Structure and Function of a Nano-Scale Biological Machine
Devin A. Matthews	<i>Southern Methodist University</i>	Understanding X-Ray and Raman Signatures of Disordered Systems

PRINCIPAL INVESTIGATOR	INSTITUTION	TITLE OF RESEARCH
Jeremy A. May	<i>University of Houston</i>	Novel Synthetic Methods in Organic Chemistry Derived from Highly Reactive Intermediates
Jennifer A. Maynard	<i>The University of Texas at Austin</i>	Determinants of Antibody Folding, Aggregation and Stability
David G. McFadden	<i>The University of Texas Southwestern Medical Center</i>	Mechanism of Action of Neuroendocrine-Selective Cancer Toxins
Gabriele Meloni	<i>The University of Texas at Dallas</i>	Assembly, Selectivity, Structure, Metalloaromaticity and Reactivity in Protein Metal-Thiolate Clusters
Joshua T. Mendell	<i>The University of Texas Southwestern Medical Center</i>	The Regulation and Composition of NORAD-PUMILIO Bodies
Quentin Michaudel	<i>Texas A&M University</i>	C-C Cross Couplings Enabled by SuFEx Click Chemistry
Delia J. Milliron	<i>The University of Texas at Austin</i>	Plasmonic Transparent Conducting Oxide Nanocrystals: Dopant Chemistry and Heterogeneity
Jeetain Mittal	<i>Texas A&M University</i>	Unraveling Sequence-encoded Dynamics and Rheology Using Molecular Simulations: From Polymers to Disordered Proteins
Emilia Morosan	<i>Rice University</i>	Accelerated Search for Correlated Topological Materials
Ping Mu	<i>The University of Texas Southwestern Medical Center</i>	Small Molecule Inhibitors Targeting Lineage Plasticity and Neuroendocrine Differentiation in Advanced Prostate Cancer
Charles B. Mullins	<i>The University of Texas at Austin</i>	Nano-Structured Materials for Chemistry
Yunsun Nam	<i>The University of Texas Southwestern Medical Center</i>	Biochemical Probing of Substrate Specificity in RNA Methylation
Douglas Natelson	<i>Rice University</i>	Single- and Few-Molecule Vibrational Spectroscopy and Energy Flow
Andriy Nevidomskyy	<i>Rice University</i>	Exotic Phases of Matter in Quantum Spin Ice and Other Frustrated Magnets
Robert Newberry	<i>The University of Texas at Austin</i>	Fundamental Chemical Determinants of Protein Beta-Strand Structure and Stability
Kyriacos C. Nicolaou	<i>Rice University</i>	Total Synthesis of Bioactive Natural and Designed Molecules
Deepak Nijhawan	<i>The University of Texas Southwestern Medical Center</i>	Using Forward Genetics to Understand Mechanism of Action for Anticancer Toxins
Michael Nippe	<i>Texas A&M University</i>	Tuning Molecular Electrocatalysts via Secondary Coordination Sphere Modifications
Peter J.A. Nordlander	<i>Rice University</i>	Plasmon Enhanced Chemistry
Adam D. Norris	<i>Southern Methodist University</i>	New Chemosensory Isoform of a Canonical Mechanosensory Protein
Kathryn A. O'Donnell	<i>The University of Texas Southwestern Medical Center</i>	Dissecting Novel Mechanisms of Translational Control in Lung Cancer
Mohammad A. Omary	<i>University of North Texas</i>	Dawn Rise Upon New Chemical Bonds Amidst Ground- and Excited-State Bonding Assortments in Luminescent Molecules/Excitons/Polarons

PRINCIPAL INVESTIGATOR	INSTITUTION	TITLE OF RESEARCH
José Onuchic	<i>Rice University</i>	Investigating Chromatin Dynamics and Function on Evolution, Genetic Disorders, and Cancer
Robert C. Orchard II	<i>The University of Texas Southwestern Medical Center</i>	Defining the Molecular Mechanisms of Viral Inhibition by TRIM Restriction Factors
Kim Orth	<i>The University of Texas Southwestern Medical Center</i>	Bile Salts as Agonist/Antagonist for Vibrio Receptor VtrA/C
Oleg V. Ozerov	<i>Texas A&M University</i>	Catalytic Synthesis and Utilization of Arylgermanes
Zachariah A. Page	<i>The University of Texas at Austin</i>	Orthogonal Light Driven Radical- and Base-Catalysis Towards Bioinspired Polymers
Jeremy C. Palmer	<i>University of Houston</i>	Dynamic Heterogeneity, Crystallization, and Polyamorphism in Supercooled Tetrahedral Liquids
Sapun H. Parekh	<i>The University of Texas at Austin</i>	Lipid Droplets as Flexible Substrates for Disordered Protein Self-Assembly and Fibrillation
Jae Mo Park	<i>The University of Texas Southwestern Medical Center</i>	Development of Hyperpolarized Probes for Imaging Neurotransmitter Synthesis
Matthew W. Parker	<i>The University of Texas Southwestern Medical Center</i>	The Role of Sequence Composition in Disordered Domain Phase Separation
Matteo Pasquali	<i>Rice University</i>	Physical Chemistry of Nanorods and Nanoplates
Emily Pentzer	<i>Texas A&M University</i>	Rigid Rod Polymers via Group Transfer Polymerization
George Phillips and Anastasios Kyrillidis	<i>Rice University</i>	Machine Learning Solutions to the Crystallographic Phase Problem
Margaret A. Phillips	<i>The University of Texas Southwestern Medical Center</i>	Pyrimidine Biosynthesis as a Target in Trypanosomatids
Lionel W. Poirier	<i>Texas Tech University</i>	New Methodologies for Accurate Quantum Calculations of the Dynamics of Atomic Nuclei
David C. Powers	<i>Texas A&M University</i>	Development and Application of Dimensionally Expanded Open-Metal-Site Catalysts
B. V. Venkataram Prasad	<i>Baylor College of Medicine</i>	X-ray Crystallographic Studies on Viruses and Viral Proteins
Han Pu	<i>Rice University</i>	Neural Networks and Quantum Many-Body Systems
Tian Qin	<i>The University of Texas Southwestern Medical Center</i>	Leveraging the Reactivity of Sulfur in Reaction Development
Emily L. Que	<i>The University of Texas at Austin</i>	Extraction and Retention of Metal Ions in Perfluorinated Solvents
Arun Radhakrishnan	<i>The University of Texas Southwestern Medical Center</i>	Molecular Mechanisms of Cholesterol Sensors in Human Cells
Abelardo Ramirez-Hernandez	<i>The University of Texas at San Antonio</i>	Molecular Bottlebrushes at Liquid-Liquid Interfaces: Surface Rheology and Structure
Frank M. Raushel	<i>Texas A&M University</i>	Enzyme Reaction Mechanisms
Joseph M. Ready	<i>The University of Texas Southwestern Medical Center</i>	Controlling the Selectivity of Radical Reactions
Michael L. Reese	<i>The University of Texas Southwestern Medical Center</i>	How are Substrates Recognized in Parasite Kinases Lacking a Canonical Walker Motif?

PRINCIPAL INVESTIGATOR	INSTITUTION	TITLE OF RESEARCH
Linda E. Reichl	<i>The University of Texas at Austin</i>	Quasibound States and Decay Processes in Nanometer Scale Quantum Systems and Fluids
Pengyu Ren	<i>The University of Texas at Austin</i>	Molecular Mechanism of Dopamine Transporter from Atomistic Simulations using Advanced Electrostatics
Peter M. Rentzepis	<i>Texas A&M University</i>	Ultrafast Time and Space Structural Dynamics in Solids. Efficient, Remote Detection and Inactivation of Pathogens
Joaquin Resasco	<i>The University of Texas at Austin</i>	Understanding and Controlling Structural Dynamics in Electrocatalysis
Luke M. Rice	<i>The University of Texas Southwestern Medical Center</i>	Biochemical and Structural Analysis of TOG Domains in Microtubule Regulation
Michael G. Richmond	<i>University of North Texas</i>	Synthesis and Reactivity Studies of Polynuclear Clusters
Jeffrey D. Rimer	<i>University of Houston</i>	Physicochemical Factors Governing Molecular Modification of Pathological Crystallization
Jose RizoRey	<i>The University of Texas Southwestern Medical Center</i>	NMR and Cryo-EM Methods to Study Protein Complexes on Lipid Bilayers
Sean T. Roberts	<i>The University of Texas at Austin</i>	Designing Supramolecular Assemblies for Photon Splitting
Debora F. Rodrigues	<i>University of Houston</i>	Plant-Based Antibiotic Nanocarriers Investigation in the Simultaneous Reduction of Pathogen Mutation Rates and Intestinal Infections in Humans
Liela A. Romero	<i>Baylor University</i>	New Strategies in Asymmetric Synthesis: Routes to Multifunctional Chiral Organic Building Blocks
Daniel Romo	<i>Baylor University</i>	Novel Strategies for β -Lactone Synthesis and Annulation to Impact Basic Cell Biology
Michael J. Rose	<i>The University of Texas at Austin</i>	Elucidating Design Principles for Semiconductor Molecule Electronic Coupling
Michael K. Rosen	<i>The University of Texas Southwestern Medical Center</i>	Tackling Complexity in Multi-Component Phase Separated Droplets
Daniel M. Rosenbaum	<i>The University of Texas Southwestern Medical Center</i>	High-resolution cryo-EM of GPCRs in native-like membrane bilayers
Tomce Runcevski	<i>Southern Methodist University</i>	Exploring the Organic Mineralogy of Titan, Saturn's Moon
Lorena Saelices Gomez	<i>The University of Texas Southwestern Medical Center</i>	Cryo-Electron Microscopy Study of the Conformational Switch of Monomeric Tau that Drives its Amyloid Aggregation
John W. Schoggins	<i>The University of Texas Southwestern Medical Center</i>	Protein-RNA Interactions Underlying a Virus-Host Genetics Arms Race
Hans A. Schuessler	<i>Texas A&M University</i>	Optical Studies of Atomic and Molecular Systems with Femtosecond, XUV and IR Laser Radiation
Marlan O. Scully	<i>Texas A&M University</i>	Quantum Studies in Chemical, Physical, and Biological Science
Jonathan T. Szczepanski	<i>Texas A&M University</i>	Synthesis and Applications of DNA-Encoded Libraries of Mirror-Image RNA
Joachim Seemann	<i>The University of Texas Southwestern Medical Center</i>	Biochemical and Structural Analysis of Golgi-Based Spindle Assembly Activities

PRINCIPAL INVESTIGATOR	INSTITUTION	TITLE OF RESEARCH
Irina I. Serysheva	<i>The University of Texas Health Science Center at Houston</i>	Cryo-EM Analysis of Ion Channels in a Lipid Membrane
Libo Shan	<i>Texas A&M University</i>	Biochemical and Regulatory Constraints of Immune Sensors
Bryan F. Shaw	<i>Baylor University</i>	Supercharging Prions via Amyloid-Selective Lysine Acylation
Jason B. Shear	<i>The University of Texas at Austin</i>	Laser-Activated Smart Protein Hydrogels for Real-Time Perturbation of Cellular Behavior
Matthew Sheldon	<i>Texas A&M University</i>	Nanophotonic Platforms for Polaritonic Chemistry
Benjamin D. Sherman	<i>Texas Christian University</i>	Monolithic Tandem Photoelectrodes for Solar Driven Organic Conversions or Water Oxidation Coupled to Hydrogen Formation
Chih-Kang Shih	<i>The University of Texas at Austin</i>	Controlling Interlayer Electronic Interactions in Transition Metal Dichalcogenide Hetero-Bilayers
Michael Shiloh	<i>The University of Texas Southwestern Medical Center</i>	Activation of Airway Nociceptive Neurons by Mycobacterial Phenolic Glycolipid
Qimiao Si	<i>Rice University</i>	Theoretical Studies of Electronic Correlations and Dynamics in Carbon-Based and Related Low Dimensional Systems
Matthew H. Sieber	<i>The University of Texas Southwestern Medical Center</i>	Examination of the Mitochondrial Mechanisms that Drive Quiescence and the Re-Initiation of Growth
Daniel Siegwart	<i>The University of Texas Southwestern Medical Center</i>	Elucidating fundamental mechanisms driving Selective Organ Targeting (SORT) lipid nanoparticles (LNPs)
Daniel A. Singleton	<i>Texas A&M University</i>	Localized Vibrational Promotion of Organic Reactions in Solution
Myles W. Smith	<i>The University of Texas Southwestern Medical Center</i>	Enantioselective Diketone Desymmetrization for the Synthesis of Chiral Heterocycles
Alexei V. Sokolov	<i>Texas A&M University</i>	Molecular Coherence Techniques for Ultrafast Spectroscopy at the Nanoscale
Anju Sreelatha	<i>The University of Texas Southwestern Medical Center</i>	AMPulation of Manganese Superoxide Dismutase by Selenoprotein O
Francois St-Pierre	<i>Baylor College of Medicine</i>	Developing Near-Infrared Fluorescent Voltage Sensors with Optimized Photochemistry
Jeanne C. Stachowiak	<i>The University of Texas at Austin</i>	Protein Liquid Droplets as Dynamic Supramolecular Catalysts for in situ Self-Assembly in Cells
Mihaela C. Stefan	<i>The University of Texas at Dallas</i>	Functionalized Polycaprolactones for Delivery of Anticancer Drugs
Allison L. Stelling	<i>The University of Texas at Dallas</i>	Development and Application of IR-Based Methods for Detecting A-T Hoogsteen Base Pairs in the Nucleosome
Lu O. Sun	<i>The University of Texas Southwestern Medical Center</i>	Molecular Mechanisms Underlying Autophagy-Dependent Myelination
Jerzy O. Szablowski	<i>Rice University</i>	Engineering a New Class of Site-Specific Therapeutics for Brain Disorders
Daniel P. Tabor	<i>Texas A&M University</i>	Mapping the Structure and Formation of Aerosols Through Theoretical Spectroscopy and Multiscale Simulation

PRINCIPAL INVESTIGATOR	INSTITUTION	TITLE OF RESEARCH
Jeffrey J. Tabor	<i>Rice University</i>	Next-Generation Antibiotics: High Throughput Discovery of Inhibitors of Pathogenic Bacterial Two-Component Systems
Vincent S. Tagliabracci	<i>The University of Texas Southwestern Medical Center</i>	Novel Protein Kinases and Pseudokinases
Uttam K. Tambar	<i>The University of Texas Southwestern Medical Center</i>	Catalyst-Controlled Stereoselective Rearrangements
Yizhi Jane Tao	<i>Rice University</i>	Mechanisms of Genome Packaging and Replication by a Filamentous dsRNA Virus
David W. Taylor	<i>The University of Texas at Austin</i>	Mechanism of improved specificity by high-fidelity Cas9 variants
Thomas S. Teets	<i>University of Houston</i>	Blue-Phosphorescent Platinum Complexes Supported by Strong sigma-Donor Carbenes
Jonathan R. Terman	<i>The University of Texas Southwestern Medical Center</i>	Chemistry and Enzymology of MICAL Family Oxidoreductases
Andy A. Thomas	<i>Texas A&M University</i>	Exploring New Avenues for Organolithium Reagents
Zachary J. Tonzetich	<i>The University of Texas at San Antonio</i>	Iron-Heteroatom Bonds as Key Species in Hydrofunctionalization Catalysis
Erdal Toprak	<i>The University of Texas Southwestern Medical Center</i>	Beta-Lactamase-Traps: A novel Class of Molecules that Select Against Antibiotic-Resistant Bacteria Carrying Beta-Lactamase Genes
James M. Tour	<i>Rice University</i>	Molecular Jackhammers (MJH) to Open Cell Membranes through Vibronic-Driven Action (VDA)
Thomas M. Truskett	<i>The University of Texas at Austin</i>	Liquids Near Interfaces: Single-Molecule and Collective Dynamics
Francis T.F. Tsai	<i>Baylor College of Medicine</i>	Structure, Function, and Mechanism of a Novel Envelope Stress-Response System
Kuang-Lei Tsai	<i>The University of Texas Health Science Center at Houston</i>	Biochemical and Structural Analysis of the Transcription Mediator Subunit Med13
Benjamin P. Tu	<i>The University of Texas Southwestern Medical Center</i>	Translational Adaptations to Sulfur Starvation
Emanuel Tutuc	<i>The University of Texas at Austin</i>	Correlated Electrons in Controlled Moire Patterns of Two-Dimensional Materials
Adam R. Urbach	<i>Trinity University</i>	Affinity-Controlled Release Mediated by Synthetic Receptors
Rafael Verduzco	<i>Rice University</i>	New Concepts for Selective Ion Transport in Charged Polymers
Dino Villagran	<i>The University of Texas at El Paso</i>	Molecularly Inspired Metal-Free Water Splitting Electrocatalysts
Fei Wang	<i>The University of Texas Southwestern Medical Center</i>	Mechanistic Dissection of a Novel Meiotic Exit Regulation by Autophagy
Haotian Wang	<i>Rice University</i>	Isolated Transition Metal Single Atomic Sites for Selective CO ₂ Reduction
Huiliang Wang	<i>The University of Texas at Austin</i>	Developing Non-Viral, Covalently-Assembled DNA Delivery Strategy for Optogenetics

PRINCIPAL INVESTIGATOR	INSTITUTION	TITLE OF RESEARCH
Meng C. Wang	<i>Baylor College of Medicine</i>	Chemical Imaging of Glutathione Spatiotemporal Dynamics During Aging
Qinghua Wang	<i>Baylor College of Medicine</i>	Chemical Mechanisms of Human Adaptation of Influenza Virus
Weiwei Wang	<i>The University of Texas Southwestern Medical Center</i>	Molecular Mechanism and Functional Significance of the Mammalian Heteromeric Glycine Receptor and its Interaction with Scaffolding Protein Gephyrin
Aryeh Warmflash	<i>Rice University</i>	Embryonic Patterning as a Reaction-Diffusion System
Coran Watanabe	<i>Texas A&M University</i>	<i>Streptomyces sahachiroi</i> : A Rich Treasure Trove of Unique Biosynthetic Reactions
Benjamin P. Weaver	<i>The University of Texas Southwestern Medical Center</i>	Regulation of Non-Canonical Caspase Functions by Distinct Protein Complexes
Lauren J. Webb	<i>The University of Texas at Austin</i>	Electrostatic Fields in Chemically Diverse Lipid Bilayer Membranes
Geoff Wehmeyer	<i>Rice University</i>	Probing Anharmonic Atomic Bonding Using Thermal Phonon Mean Free Path Spectroscopy
Julian G. West	<i>Rice University</i>	New Fluorination Reactions Using Earth Abundant Elements
Kenneth D. Westover	<i>The University of Texas Southwestern Medical Center</i>	Development of JNK2 selective inhibitors for cancer
Dawn M. Wetzel	<i>The University of Texas Southwestern Medical Center</i>	Defining the Mechanism of a Novel Antiparasitic Small Molecule that Facilitates Tubulin Polymerization
Angelique W. Whitehurst	<i>The University of Texas Southwestern Medical Center</i>	Molecular Mechanisms of a Novel Anti-Cancer Target, Testis Specific Serine Kinase 6
Christian Whitman	<i>The University of Texas at Austin</i>	Enzymes of the Tomaymycin Biosynthetic Pathway
Sebastian E. Winter	<i>The University of Texas Southwestern Medical Center</i>	Chemical Biology of Salmonella-Host Interactions
Jeffrey B. Woodruff	<i>The University of Texas Southwestern Medical Center</i>	Molecular Rules Determining Centrosome Composition
Jun Wu	<i>The University of Texas Southwestern Medical Center</i>	Dissecting the Novel Function of Tasor in Regulating Mouse Pluripotent Stem Cells
Chuan Xiao	<i>The University of Texas at El Paso</i>	Decipher the Biochemistry Folding and Assembly Mysteries of the Most Common Protein Motif Used by Viruses
Han Xiao	<i>Rice University</i>	Precision Protein Modification using Proximity-Induced Chemistry
Boris I. Yakobson	<i>Rice University</i>	Science of Nearly-1D Materials: From Nanotubes to Nanowires
Xin Yan	<i>Texas A&M University</i>	Nitrogen Transfer to Unactivated C=C Bonds in Lipids for Their Positional and Stereo Isomer Identification at Nanomolar Scale
Ding-Shyue Yang	<i>University of Houston</i>	Ultrafast Electron Crystallography and Femtosecond Spectroscopy of Structural Transformation Dynamics in Transition Metal Systems

PRINCIPAL INVESTIGATOR	INSTITUTION	TITLE OF RESEARCH
Jin Ye	<i>The University of Texas Southwestern Medical Center</i>	Chemical Reactions Controlling Ferroptosis
Hsin-Chih Yeh	<i>The University of Texas at Austin</i>	NanoCluster Beacons for Highly Specific DNA Methylation Detection
Ming Yi	<i>Rice University</i>	Tuning Complex Quantum Phases One Parameter at a Time
Seung-hee Yoo	<i>The University of Texas Health Science Center at Houston</i>	Regulatory role of the CRYPTOCHROME-FAD axis in mitochondrial bioenergetic oscillation
Damian Young	<i>Baylor College of Medicine</i>	Stapled Peptide DNA-Encoded Libraries
Guihua Yu	<i>The University of Texas at Austin</i>	Probing the Charge Storage Mechanisms of Molecularly-Assembled Two-Dimensional Inorganic Solids
Yonghao Yu	<i>The University of Texas Southwestern Medical Center</i>	Cell Death Switch Mediated by the Cross-Talk Between Protein ADP-Ribosylation and Caspase Signaling
Anvar A. Zakhidov	<i>The University of Texas at Dallas</i>	Ionically Tunable Perovskite Light Emitting Electrochemical Cells
Junjie Zhang	<i>Texas A&M University</i>	Ribosomal Structures in Drug-Resistant Mycobacterium Tuberculosis
Renyi Zhang	<i>Texas A&M University</i>	Chemical Kinetics and Mechanism of Hydrocarbon Oxidation Reactions
Xuewu Zhang	<i>The University of Texas Southwestern Medical Center</i>	Cryo-EM structural and mechanistic analyses of the innate immunity receptor STING
John C.-G. Zhao	<i>The University of Texas at San Antonio</i>	Expeditious Modification of Organocatalyst Structures for Improved Stereoselectivities
Alexey M. Zheltikov	<i>Texas A&M University</i>	Multimodal Chemically Selective Optical Imaging and Fiber-Optic Thermometry
Yubin Zhou	<i>Texas A&M University Health Science Center</i>	Chemical Biology Toolkit for Remote Control of 3D Genome Architecture
Hanyu Zhu	<i>Rice University</i>	Synthesizing and Probing Chiral Interactions in Atomically Thin Lattices
Xuejun Zhu	<i>Texas A&M University</i>	Elucidating Gut Bacterial Enzymes for the Reductive Metabolism of Small Molecules

Endowed Chairs

The Welch Foundation endows 49 chairs at 21 institutions.

INSTITUTION	CHAIRHOLDER AND CHAIR NAME
<i>Baylor College of Medicine</i>	Theodore G. Wensel, Welch Chair in Chemistry
<i>Baylor College of Medicine</i>	Thomas Westbrook, Welch Chair in Chemistry
<i>Baylor College of Medicine</i>	Damian Young, The R. P. Doherty, Jr.-Welch Chair in Science
<i>Baylor College of Medicine*</i>	Welch Chair in Science
<i>Baylor University</i>	John L. Wood, Welch Chair in Chemistry
<i>Rice University</i>	Stephan Link, The Charles W. Duncan, Jr.-Welch Chair in Chemistry
<i>Rice University</i>	Gustavo E. Scuseria, Welch Chair in Chemistry
<i>Rice University</i>	Peter Wolynes, The D. R. Bullard-Welch Chair in Science
<i>Texas A&M University</i>	Tadhg P. Begley, Welch Chair in Chemistry
<i>Texas A&M University</i>	James C. Sacchettini, The Roger J. Wolfe-Welch Chair in Science
<i>Texas A&M University</i>	Karen L. Wooley, The W. T. Doherty-Welch Chair in Chemistry
<i>Texas A&M University</i>	Hongcai Joe Zhou, Welch Chair in Chemistry
<i>Texas A&M University Health Science Center</i>	Vytas A. Bankaitis, The E. L. Wehner-Welch Chair in Chemistry
<i>Texas A&M University Health Science Center</i>	Thomas A. Kent, Welch Chair in Chemistry
<i>Texas A&M University Health Science Center</i>	Roderic I. Pettigrew, Welch Chair in Chemistry
<i>Texas Christian University</i>	Eric E. Simanek, Welch Chair in Chemistry
<i>Texas Tech University</i>	Yehia Mechref, Welch Chair in Chemistry
<i>Texas Tech University Health Sciences Center</i>	Vadivel Ganapathy, Welch Chair in Biochemistry
<i>The University of Texas at Arlington</i>	Daniel W. Armstrong, Welch Distinguished University Chair in Chemistry
<i>The University of Texas at Austin</i>	Eric V. Anslyn, Welch Regents Chair in Chemistry
<i>The University of Texas at Austin</i>	Richard M. Crooks, Welch Chair in Chemistry (Materials Chemistry)
<i>The University of Texas at Austin</i>	John Ekerdt, Norbert Dittrich-Welch Chair in Chemical Engineering
<i>The University of Texas at Austin</i>	Michael J. Krische, Welch Chair in Science
<i>The University of Texas at Austin</i>	Yi Lu, The Richard J.V. Johnson-Welch Regents Chair in Chemistry
<i>The University of Texas at Austin</i>	Jason S. McLellan, Welch Chair in Chemistry
<i>The University of Texas at Austin</i>	Jonathan L. Sessler, The R. P. Doherty, Jr.-Welch Regents Chair in Chemistry
<i>The University of Texas at Austin</i>	Devarajan Thirumalai, The Marvin K. Collie-Welch Regents Chair in Chemistry
<i>The University of Texas at Austin*</i>	The Jack S. Josey-Welch Chair in Science
<i>The University of Texas at Austin*</i>	The Norman Hackerman-Welch Regents Chair in Chemistry

*Chair not filled



Stephan Link | Yehia Mechref | Damien Young

INSTITUTION

CHAIRHOLDER AND CHAIR NAME

<i>The University of Texas at Dallas</i>	Ray H. Baughman, Welch Chair in Chemistry
<i>The University of Texas at Dallas</i>	Vladimir Gevorgyan, Welch Chair in Chemistry
<i>The University of Texas at El Paso</i>	Luis Echegoyen, Welch Chair in Chemistry
<i>The University of Texas at San Antonio</i>	Oleg Larionov, Welch Chair in Chemistry
<i>The University of Texas at San Antonio</i>	Kirk S. Schanze, Welch Distinguished University Chair in Chemistry
<i>The University of Texas Health Science Center at Houston</i>	Zhiqiang An, Welch Distinguished University Chair in Chemistry
<i>The University of Texas Health Science Center at Houston</i>	John L. Spudich, Welch Chair in Chemistry
<i>The University of Texas Health Science Center at San Antonio</i>	Charles P. France, Welch Distinguished University Chair in Chemistry
<i>The University of Texas Health Science Center at San Antonio</i>	Patrick M. Sung, Welch Distinguished University Chair in Chemistry
<i>The University of Texas MD Anderson Cancer Center*</i>	Welch Chair in Chemistry
<i>The University of Texas MD Anderson Cancer Center</i>	John A. Tainer, Welch Chair in Chemistry
<i>The University of Texas Medical Branch</i>	B. Montgomery Pettitt, Welch Distinguished University Chair in Chemistry
<i>The University of Texas Medical Branch</i>	Michael P. Sheetz, Welch Distinguished University Chair in Chemistry
<i>The University of Texas Southwestern Medical Center</i>	J. Russell Falck, Welch Chair in Chemistry
<i>The University of Texas Southwestern Medical Center</i>	Eric N. Olson, Welch Chair in Science
<i>University of Houston</i>	Olafs Daugulis, Welch Chair in Chemistry
<i>University of Houston</i>	Jan-Åke Gustafsson, Welch Chair in Chemistry
<i>University of Houston</i>	Allan J. Jacobson, Welch Chair in Science
<i>University of North Texas</i>	Shengqian Ma, Welch Chair in Chemistry
<i>University of North Texas Health Science Center</i>	Laszlo Prokai, Welch Chair in Biochemistry

Departmental Grants

The Welch Foundation funds **43** institutions, **241** faculty and **550** trainees.

INSTITUTION	PARTICIPATING FACULTY	CHEMICAL RESEARCH TRAINEES
<i>Abilene Christian University</i> (Abilene, TX)	6	17
<i>Angelo State University</i> (San Angelo, TX)	6	15
<i>Austin College</i> (Sherman, TX)	6	8
<i>East Texas Baptist University</i> (Marshall, TX)	3	4
<i>Hardin-Simmons University</i> (Abilene, TX)	2	3
<i>Houston Baptist University</i> (Houston, TX)	3	11
<i>Huston-Tillotson University</i> (Austin, TX)	1	4
<i>Jarvis Christian College</i> (Hawkins, TX)	1	7
<i>Lamar University</i> (Beaumont, TX)	10	17
<i>LeTourneau University</i> (Longview, TX)	3	9
<i>Lubbock Christian University</i> (Lubbock, TX)	4	7
<i>McMurry University</i> (Abilene, TX)	3	6
<i>Midwestern State University</i> (Wichita Falls, TX)	4	18
<i>Our Lady of the Lake University</i> (San Antonio, TX)	2	3
<i>Prairie View A&M University</i> (Prairie View, TX)	10	2
<i>St. Edward's University</i> (Austin, TX)	4	17
<i>St. Mary's University</i> (San Antonio, TX)	3	11
<i>Sam Houston State University</i> (Huntsville, TX)	12	35
<i>Schreiner University</i> (Kerrville, TX)	4	7
<i>Southwestern University</i> (Georgetown, TX)	7	22
<i>Stephen F. Austin State University</i> (Nacogdoches, TX)	12	40
<i>Sul Ross State University</i> (Alpine, TX)	2	4
<i>Tarleton State University</i> (Stephenville, TX)	6	8
<i>Texas A&M International University</i> (Laredo, TX)	6	7
<i>Texas A&M University-Commerce</i> (Commerce, TX)	6	6
<i>Texas A&M University-Corpus Christi</i> (Corpus Christi, TX)	11	11
<i>Texas A&M University-Kingsville</i> (Kingsville, TX)	12	34
<i>Texas A&M University-Texarkana</i> (Texarkana, TX)	2	—
<i>Texas Lutheran University</i> (Seguin, TX)	4	8
<i>Texas Wesleyan University</i> (Fort Worth, TX)	1	7
<i>Texas Woman's University</i> (Denton, TX)	7	30
<i>The University of Texas at Tyler</i> (Tyler, TX)	8	27
<i>The University of Texas of the Permian Basin</i> (Odessa, TX)	6	17
<i>The University of Texas Rio Grande Valley</i> (Edinburg, TX)	20	33
<i>Trinity University</i> (San Antonio, TX)	9	16
<i>University of Dallas</i> (Irving, TX)	4	11
<i>University of Houston-Clear Lake</i> (Houston, TX)	6	7
<i>University of Houston-Downtown</i> (Houston, TX)	7	17
<i>University of Mary Hardin-Baylor</i> (Belton, TX)	3	11
<i>University of St. Thomas</i> (Houston, TX)	5	15
<i>University of the Incarnate Word</i> (San Antonio, TX)	3	9
<i>Wayland Baptist University</i> (Plainview, TX)	2	2
<i>West Texas A&M University</i> (Canyon, TX)	5	7



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